



**TOWN OF NEWMARKET, NEW HAMPSHIRE  
TOWN COUNCIL AGENDA**

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**WEDNESDAY, MARCH 7, 2018, 7:00PM  
NEWMARKET TOWN HALL AUDITORIUM**

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**6:30PM NON-PUBLIC MEETING PURSUANT TO RSA 91-A:3,II(i) – Consideration of matters relating to preparation for and the carrying out of emergency functions.**

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1. Pledge of Allegiance
2. Public Forum (*Public Forum is an opportunity for the public to address the Town Council. All comments should be addressed to the Chair of the Council. No person will be allowed to speak longer than five (5) minutes.*)
3. Public Hearing – None
4. Town Council to Consider Acceptance of Minutes
  - a. February 21, 2018 Regular Meeting Minutes
5. Report of the Town Administrator
6. Committee Reports
7. Old Business
  - a. Resolutions/Ordinances in the 2<sup>nd</sup> Reading
  - b. Resolutions/Ordinances in the 3<sup>rd</sup> Reading – None
  - c. \* Items Laid on the Table –
    - i. Resolution #2015/2016-52 – Resolution Authorizing the Designation of a portion of Rt. 152 as an Economic Recovery Zone (This Resolution is tabled from the June 15, 2016 Council Meeting pending Planning Board action).
8. New Business/Correspondence
  - a. Town Council to Consider Nominations, Appointments and Elections –
    - i. Joan DeYoreo – Library Trustee – Term expires March 2021
    - ii. Richard Alperin – Cemetery Trustee – Term expires March 2021
    - iii. Nancy Eaton – Veterans Memorial Trust Committee – Term expires 2021
    - iv. David Wade – Veterans Memorial Trust Committee – Term expires 2021

**b. Resolutions/Ordinances in the 1<sup>st</sup> Reading**

- i. **Resolution #2017/2018-35** – *Authorizing the Town Administrator to enter into a Performance Contract Agreement with Energy Efficient Investments for HVAC, Lighting and Building Envelope Improvements to the Community Center. (TA Requests the Suspension of Rules)*
- ii. **Resolution #2017/2018-36** – *Authorizing the Town Administrator to enter into an agreement with Siemens Industry, Inc. to replace a failed gas-fired unit heater in the Police Department. (TA Requests the Suspension of Rules)*
- iii. **Resolution #2017/2018-37** – *Authorizing the Town Administrator enter into an agreement with Siemens Industry, Inc. to replace a failed gas-fired unit in the Public Works Garage. (TA Requests the Suspension of Rules)*
- iv. **Resolution #2017/2018-38** – *The purchase of six (6) Motorola Mobile Radios for the Fire Department.*
- v. **Resolution #2017/2018-39** – *Purchase 2018 Ford F350 4X4 Truck with Plow for Public Works Department.*
- vi. **Resolution #2017/2018-40** – *Authorizing the Town Administrator to withdraw \$25,000.00 from the Buildings and Improvements Capital Reserve Fund for required infrastructure repairs/upgrades to the Community Center. (TA Requests the Suspension of Rules)*
- vii. **Resolution #2017/2018-41** – *Authorizing the Town Administrator to enter into an agreement with Municipal Leasing Consultants of Grand Isle, Vermont for a 10-year municipal lease for capital repairs/upgrades to the Community Center. (TA Requests the Suspension of Rules)*

**c.** Correspondence to the Town Council

**d.** Closing Comments by Town Councilors

**e.** Next Council Meeting – March 28, 2018

**9. Adjournment**



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6 **TOWN OF NEWMARKET, NEW HAMPSHIRE**  
7 **TOWN COUNCIL REGULAR MEETING**  
8 **FEBRUARY 21, 2018 7:00 PM**  
9 **TOWN HALL AUDITORIUM**

10  
11  
12 PRESENT: Council Chairman Dale Pike, Council Vice Chairman Toni Weinstein, Councilor Amy Thompson,  
13 Councilor Gretchen Kast, Councilor Kyle Bowden, Councilor Casey Finch, Councilor Amy Burns  
14

15 ALSO PRESENT: Town Administrator Steve Fournier, Water & Wastewater Superintendent Sean Greig  
16

17 **AGENDA**

18  
19 Chairman Dale Pike welcomed everyone to the February 21, 2018 Newmarket Town Council Meeting and  
20 called the meeting to order at 7:00 pm, followed by the Pledge of Allegiance.  
21

22 **PUBLIC FORUM**

23  
24 Chairman Pike opened the Public Forum at 7:01 pm.  
25

26 As no one from the public came forward, Chairman Pike closed the Public Forum at 7:01 pm.  
27

28 **PUBLIC HEARING – Pursuant to RSA 284:51.I (b) - Petitioned Warrant Article – To Allow the Operation of**  
29 ***Keno Games within the Town of Newmarket.***

30  
31 Chairman Pike opened the Public Hearing Pursuant to RSA 284:51.I (b) - Petitioned Warrant Article – To  
32 *Allow the Operation of Keno Games within the Town of Newmarket* at 7:02 pm.  
33

34 As no one from the public was in attendance, Chairman Pike closed the Public Hearing at 7:02 pm.  
35

36 **TOWN COUNCIL TO CONSIDER ACCEPTANCE OF MINUTES**

37  
38 **Acceptance of the Minutes of the Regular Meeting of February 14, 2018**  
39

Vice-Chair Weinstein made a motion to approve the minutes of the Regular Meeting of February 14, 2018 which was seconded by Councilor Thompson.

Changes/Corrections:

Councilor Kast made a correction on page 4, line 162 to change "Councilor" to *Council*.

Town Administrator Fournier polled the Council and the minutes of the Regular Meeting of February 14, 2018 were approved as amended by a vote 7-0.

**REPORT OF THE TOWN ADMINSTRATOR**

Town Administrator Steve Fournier stated that the School was having issues trying to secure a **Clerk of the Works** for the High School Project, and that the School Board had requested additional time of the Facilities Director to serve in that capacity. He said he had worked with the Superintendent and the Facilities Director to come up with a solution, and said the School had \$100,000 in their Bond for Clerk of the Works services which would go toward a part-time temporary assistant to cover when Facilities Director Marles worked on the School project. He said they would advertise for the position to field candidates, and said if that did not work the School would go back and look at securing additional funds for a Clerk of the Works.

Discussion: Councilor Thompson said she was concerned that Facilities Director Marles not be overworked or overburdened, and said she personally felt it would be too much and she would be against that. Town Administrator Fournier said it was his concern as well that Town projects not fall behind. He said the first person consulted was Facilities Director Marles who wrote a memo explaining that if he did that work he would need assistance.

Councilor Thompson asked if there were specific qualifications for the position. Town Administrator Fournier said the School could not fund a Clerk of the Works with the money they had, and if they could not find a capable candidate they would tell the School the extra hours would not be possible. Vice-Chair Weinstein said she would also have some concerns, and pointed out that when the Facilities Director was hired it was with the understanding that there would be a School Building Project. She said she assumed that if his role needed to be bigger, the School would have taken that into account and figured it into their budget.

Town Administrator Fournier said Facilities Director Marles would still be doing Town work and overseeing his department, and that the assistant would take some small projects and day-to-day clerical things off his plate while he worked for the School. Councilor Kast asked if there was a way to maintain a priority. Town Administrator Fournier said he discussed with the Superintendent that he did not want anything changing from what was currently being done. He said if it did not work out they would pull the employee. He said he would put it in writing and have a memo of understanding as the next meeting. Councilor Burns said she shared the same concerns, and asked if the reason for the School coming to the Council was purely a financial reason. Town Administrator Fournier said he understood it was purely financial.



Chairman Pike said he also felt the Facilities Director had made a big impact, and said his argument for what the Town Administrator worked out with the Superintendent was that construction management was now in high demand and it was an expensive time to hire for that kind of temporary position. He said it was the same taxpayer for the School and the Town, and if things could be worked out and the Facilities Director was comfortable with exploring this, it was the plan worked out by the Town Administrator and the Superintendent and the idea was worth trying. If it worked, it would be the most efficient way forward for the Town. He said if it did not work out, the Facilities Director had a commitment on the Town side and they would not lose his services.

Town Administrator Fournier pointed out that the Town would not be paying anything additional and would be taking the funds from the School earmarked to pay the individual. Councilor Bowden asked if there would be an opportunity for the Council to talk with the Facilities Director and the Superintendent. Town Administrator Fournier said it was possible, but that any staffing decisions, by Charter, were the Town Administrator's decisions.

Chairman Pike said he had met today with the School Board Chairman and the Superintendent to discuss when the next Joint Town Council/School Board meeting would be held and to work on the agenda. He said the meeting would be held in the first or second week of May, and Town Administrator Fournier said the date was set for May 7, 2018. Chairman Pike said he felt it was important to continue to develop these kinds of shared services and try to work together. Councilor Thompson said she wished this had been better planned and thought about, and had been budgeted before it had come to this point.

Town Administrator Fournier reported on the **FY2018 Budget**, and said that as of the end of January they had expended 60% of the total Operating Budget. He said snow removal was on track as well as Revenues. He said Motor Vehicle Registrations were pretty flat but higher than anticipated last year.

Town Administrator Fournier said they had received some comments about the **LED Lighting** in Town being too bright, and there had been some articles saying LED lighting was not environmentally friendly. He said the lights used by the Town were dark-sky friendly and recommended by the American Medical Association in recent articles about color temperature. He said it had also been asked if the LED lights could be dimmed, and stated that currently the Public Utility Commission and Eversource would not allow installation of the system that controlled dimming the lights. He said they were able to dim the decorative lights in Downtown, but that they had been put in for pedestrian safety reasons.

Discussion: Councilor Kast asked if there were any avenues of recourse for the Town to get around the dimming issue. Town Administrator Fournier said there were no options available as Eversource would not allow it.

#### **COMMITTEE REPORTS**

Chairman Pike reported that the *Macallen Dam Committee* met last week and there was some discussion with abutters of the dam which was non-public and confidential. He said they were still working on the Public Hearing by the Dam Committee for some time in the spring. He said he appreciated that members



of the Lamprey River Association were present at the meeting, and said they had suggested a Grant Application that might help with the project in that area.

**OLD BUSINESS**

**ORDINANCES AND RESOLUTIONS IN THE 2<sup>ND</sup> READING**

**Resolution #2017/2018-31 Enter into a Contract with Electrical Installation for Water & Sewer Supervisory Control and Data Acquisition (SCADA) System Improvements**

Vice-Chair Weinstein made a motion to approve Resolution #2017/2018-31 Enter into a Contract with Electrical Installation for Water & Sewer Supervisory Control and Data Acquisition (SCADA) System Improvements, which was seconded by Councilor Kast.

Water & Wastewater Superintendent Sean Greig explained that SCADA was the system for water that monitored and operated the water system. He said the current system was installed in 2001 and was no longer supported and needed to be updated. He said they had been waiting for the new Wastewater Treatment Facility to come online and use the same SCADA system for Water. He said the Water Department also had 6 pumping stations with alarm systems installed in 1969 that did not match up with their current SCADA system. He said this would bring everything up to current standards.

Town Administrator Fournier polled the Council and Resolution #2017/2018-31 Enter into a Contract with Electrical Installation for Water & Sewer Supervisory Control and Data Acquisition (SCADA) System Improvements was approved by a vote of 7-0.

**Resolution #2017-2018-32 Withdrawal of Water and Wastewater Department Capital Reserve Funds for Water and Sewer Supervisory Control and Data Acquisition (SCADA) System Improvements**

Vice-Chair Weinstein made a motion to approve Resolution #2017-2018-32 Withdrawal of Water and Wastewater Department Capital Reserve Funds for Water and Sewer Supervisory Control and Data Acquisition (SCADA) System Improvements, which was seconded by Councilor Bowden.

Water & Wastewater Superintendent Greig said this was essentially to withdraw the money to pay for the project. He said the Water and Sewer Departments had been saving for this particular project and were now requesting the withdrawal from the Water & Sewer Capital Reserve Fund. Vice-Chair Weinstein commended the Water & Sewer Department on their planning for projects.

Town Administrator Fournier polled the Council and Resolution #2017-2018-32 Withdrawal of Water and Wastewater Department Capital Reserve Funds for Water and Sewer Supervisory Control and Data Acquisition (SCADA) System Improvements was approved by a vote of 7-0.

**Resolution #2017/2018-33 An Engineering Contract for Bennett and Sewall Well Improvements**

Vice-Chair Weinstein made a motion to approve Resolution #2017/2018-33 An Engineering Contract for Bennett and Sewall Well Improvements, which was seconded by Councilor Burns.

Water & Wastewater Superintendent Greig said everything for the Sewall Well had been put in the building in 1984, and they had since added chemicals to prevent stripping of the pipes. He said in 2010-2011 they had submitted a CIP plan to the Council which listed 6 projects as most important, and this was the only project not yet completed as they could not shut down the wells. He said that now with the MacIntosh Well online, they were able to shut down one well at a time and wanted to move forward with this project. He said there was State money available to help with the project, and they would file an application in May and learn in the fall if funds were awarded. He said they currently had \$600,000 set aside for this project.

Discussion: Chairman Pike said they would need to do more treatment in the future when the Tucker Well came online, and asked if that affected what was needed for the Bennett and Sewall Wells. Water & Wastewater Superintendent Greig stated that for the Sewall Well there were currently safety hazards for the personnel. He said this would update all the equipment and provide a more sound water supply.

Town Administrator Fournier polled the Council and Resolution #2017/2018-33 An Engineering Contract for Bennett and Sewall Well Improvements was approved by a vote of 7-0.

**Resolution #2017/2018-34 Withdrawal of Water Department Capital Reserve Funds for Bennett and Sewall Well Improvements Project**

Vice-Chair Weinstein made a motion to approve Resolution #2017/2018-34 Withdrawal of Water Department Capital Reserve Funds for Bennett and Sewall Well Improvements Project, which was seconded by Councilor Thompson.

Town Administrator Fournier polled the Council and Resolution #2017/2018-34 Withdrawal of Water Department Capital Reserve Funds for Bennett and Sewall Well Improvements Project was approved by a vote of 7-0.

**ORDINANCES AND RESOLUTIONS IN THE 3<sup>RD</sup> READING – None**

**ITEMS LAID ON THE TABLE**

**Resolution #2015/2016-52 Authorizing the Designation of a Portion of Route 152 as an Economic Recovery Zone.** (This Resolution is tabled from the June 15, 2016 Council Meeting pending Planning Board action.)

**NEW BUSINESS /CORRESPONDENCE**

**TOWN COUNCIL TO CONSIDER NOMINATIONS, APPOINTMENTS AND ELECTIONS – None**

**ORDINANCES AND RESOLUTIONS IN THE 1<sup>ST</sup> READING – None**



**CORRESPONDENCE – None**

**CLOSING COMMENTS**

Vice-Chair Weinstein said there was a series called “Mindful Mondays” held at the Stone Church on Monday evenings. She said they had approached her about doing a presentation on Town Government, and a date had been set for Monday, March 5, 2018 from 7:00 pm to 9:00 pm. She invited anyone interested to attend the meeting.

Chairman Pike said he had recently read an article in the Wall Street Journal about thrombectomy, which was a treatment for strokes. He said patients were transported to the hospital by ambulance, but that not all hospitals provided the treatment. He said as a result the patient would then need to be transferred to a hospital with the expertise to perform the procedure and the window of opportunity could then be gone. He said he had spoken to Chief Rick Malasky about the process for the Seacoast and for Newmarket, and was told they had discussed it a year ago and found that Portsmouth Hospital provided the procedure. Chief Malasky said they were in touch with a Medical Center which directed those patients to Portsmouth Hospital.

Chairman Pike commended Chief Malasky and said he really appreciated his having taken care of the problem. He pointed out that this was an example of the quality of their Ambulance Service in Newmarket.

**NEXT MEETING:** The next Regular Town Council Meeting will be held on March 7, 2018 in the Town Hall Auditorium.

**ADJOURNMENT**

Chairman Pike adjourned the meeting at 7:36 pm.

Respectfully submitted,

Patricia Denmark, Recording Secretary





TOWN OF NEWMARKET, NEW HAMPSHIRE  
*OFFICE of the TOWN ADMINISTRATOR*

**REPORT OF THE TOWN ADMINISTRATOR**  
**March 7, 2018**

**Town Council Chambers Renovations:** The Town Council Chambers renovations are moving along. As the Town Council knows, we could not install a second door into the Council Chambers due to a beam that holds the stage arch in the auditorium.

The Council dais renovations are almost complete with new outlets and improved electrical work to remove wires.

We are looking at new Agenda/Meeting management software to help with the processing of meeting information and to replace the talk buttons that the Town Council uses. We will have more information on it soon.

**Financial Software:** We have had our first meeting with Tyler Technology to roll out MUNIS to replace our financial software. This project will take approximately 9 months to complete.

**Election Day:** Just a reminder that Election Day is Tuesday March 13. We have the following councilors scheduled to work at the polls:

7AM	11AM	Finch	Thompson
11AM	3PM	Bowden	Thompson
3PM	Close	Weinstein	Thompson

**Meeting Schedule:** Just a reminder that we will be meeting on March 28 instead of March 21.

**ONGOING PROJECTS**

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**\*\*\*This section will not be reported on orally to the Town Council at the meeting, but will use this as a chance to update on any developments in ongoing projects. \*\*\***

**Newfields Dispatch:** This started on March 1.

**Homeland Security Grant:** The Emergency Management Team will be meeting on March 27 to kick this off.

Respectfully Submitted,

A handwritten signature in dark ink, appearing to read "Stephen R. Fournier", with a long horizontal line extending to the right.

Stephen R. Fournier  
Town Administrator

CHARTERED JANUARY 1, 1991

FOUNDED DECEMBER 15, 1727



**TOWN OF NEWMARKET, NEW HAMPSHIRE**  
**By the Newmarket Town Council**

**Resolution 2015/2016-52**

**Authorizing the Designation of a portion of Rt. 152 as an Economic Recovery Zone**

WHEREAS: NH RSA 162N allows for the creation of Economic Recover Zones in communities to encourage the redevelopment of certain land in exchange for state tax credits for the developer, and

WHEREAS: The Town desires to redevelop what is the B3 zone along Rt. 152, including the following lots on Town Tax Map R6 (updated April 2015):

Lots 1, 2, 3, 4-1, 4-2, 4-3, 5, 6, 7, 8, 9, 10, 11-1, 11-1A, 11-2, 12, 50, 50A, 50B, 50C, 50-1, 50-2, 50-3, 50-4, 50-4, 50-5, 50-6, 50-7, 50-8, 51 and 52. .

NOW, THEREFORE, BE IT RESOLVED BY THE NEWMARKET TOWN COUNCIL THAT:

The Town Council requests that the Commissioner of the Department of Resources and Economic Development declare this portion an Economic Recovery zone and authorizes the Town Administrator to execute any agreements.

First Reading: June 1, 2016

Tabled: June 1, 2016

Second Reading:

Approval:

Approved: \_\_\_\_\_  
Dale Pike, Chair, Town Council

A True Copy Attest \_\_\_\_\_  
Terri J. Littlefield, Town Clerk





RECEIVED

JAN 24 2018

TOWN OF NEW MARKET  
ADMINISTRATOR'S OFFICE

APPLICATION FOR APPOINTMENT TO A BOARD,  
COMMISSION, OR COMMITTEE POSITION WITHIN THE  
TOWN OF NEWMARKET

Applicant's Name: Joan R.M. DeYoreo

Address: 191 Bay Rd. Newmarket Phone/Cell (603) 659-6530

RSA 669:19 Newmarket Registered Voter: (Yes) No # of Years as Resident: 25 yrs  
RSA 91:2 Are you an American Citizen? (Yes) No

Email address: nhmaplemom@yahoo.com

Full membership (3 year term) position applying for Library Trustee

State what the new term expiration date is: March 2021

Alternate position (3 year term) position applying for \_\_\_\_\_

State what the new term expiration date is: \_\_\_\_\_

I feel the following experience and background qualifies me for this position: have been a Library Trustee since 2000. We have a good board, work well together, and I would like to continue promoting our great little library and its diverse programs, wonderful staff and hard-working directors

(need more room, please use the back)

Joan R.M. DeYoreo  
Signature

Jan 24, 2018  
Date

*You are welcome to submit a letter or resume with this form. Applicants are requested to attend the Council meeting to address the Town Council prior to the decision making process. Applicants will be notified of the time and date of this meeting in advance. Thank you for your application and interest in the Town of Newmarket.*



RECEIVED

FEB -5 2018

TOWN OF NEWMARKET  
ADMINISTRATOR'S OFFICE

APPLICATION FOR APPOINTMENT TO A BOARD,  
COMMISSION, OR COMMITTEE POSITION WITHIN THE  
TOWN OF NEWMARKET

Applicant's Name: Richard Alperin

Address: 183 Main St Apt 5, NmkT Phone/Cell 603-686-3642

RSA 669:19 Newmarket Registered Voter: Yes No # of Years as Resident: 32  
RSA 91:2 Are you an American Citizen? Yes No

Email address: ralperin@gmail.com

Full membership (3 year term) position applying for Cemetery Trustee

State what the new term expiration date is: March 2021

Alternate position (3 year term) position applying for \_\_\_\_\_

State what the new term expiration date is: \_\_\_\_\_

I feel the following experience and background qualifies me for this position: \_\_\_\_\_

6 years president New Market Historical Society  
7 years president New Hampshire Old Graveyard Assoc  
Cemetery Trustee since inception

(need more room, please use the back)  
Richard Alperin 2/3/2018  
Signature Date

You are welcome to submit a letter or resume with this form. Applicants are requested to attend the Council meeting to address the Town Council prior to the decision making process. Applicants will be notified of the time and date of this meeting in advance. Thank you for your application and interest in the Town of Newmarket.





RECEIVED

FEB 12 2018

TOWN OF NEW MARKET  
ADMINISTRATOR'S OFFICE

APPLICATION FOR APPOINTMENT TO A BOARD,  
COMMISSION, OR COMMITTEE POSITION WITHIN THE  
TOWN OF NEWMARKET

Applicant's Name: Wesley A. Esten

Address: 26 Boss St, Newmarket, N.H. Phone/Cell 292-6331 (home)  
953-4823 (cell)

RSA 669:19 Newmarket Registered Voter: ☒ Yes ☐ No # of Years as Resident: 24

RSA 91:2 Are you an American Citizen? ☒ Yes ☐ No

Email address: estend@comcast.net

Full membership (3 year term) position applying for Veterans Committee

State what the new term expiration date is: 2021

Alternate position (3 year term) position applying for N/A

State what the new term expiration date is: N/A

I feel the following experience and background qualifies me for this position: Attached

on supply of resume per request.

(need more room, please use the back)

Signature

Date

You are welcome to submit a letter or resume with this form. Applicants are requested to attend the Council meeting to address the Town Council prior to the decision making process. Applicants will be notified of the time and date of this meeting in advance. Thank you for your application and interest in the Town of Newmarket.



2/7/18

Dear Newmarket Town Council (Veteran's Committee),

I am a 5yr. widow of CMS David L. Eaton(RET)WCC-NHANG, a veteran of Vietnam, Persian Gulf & Iraqi Freedom. My husband served the USAF for 40.5yrs. with a varied expertise in Aircraft Technology, Quality Assurance & finished his career as Wing Command Chief of NHANG. David served as liaison between Enlisted personnel & Officers & served as area Rep for ESGR & attended AFSA conferences yearly after retiring in June, 2009. David also served as a Docent @ Air Museum in Manchester, NH, Odd Fellow (Contoocook, NH) & Legion member in York, Me. He served on 8 different military organizations after his long military career & the most positive person I have ever known. David was known all over the USA & mentored 100's of Airmen & a graduate of Franklin Institute (Boston), College of the Air Force & Certification from UNH in Public Speaking.

We lived a military life, as a family & it was a wonderful career. We have two adult children, a daughter, Brittany, who is an Instructor @ a post-secondary school in Portsmouth & a son, Nate, who is a local LEO. I graduated from Hopkinton HS in 1969 & a member of National Honor Society attended NHTI. My work included banking & medical field for over 14yrs. I retired in June, 2015, after 18yrs. w/ORSD/ORHS as a certified child nutritionist. I also served as Sunday school teacher @ Union Cong. Church, Madbury, NH for 10yrs. & we were church members for 22yrs. Presently am on the Alumni Assn. of the HS my husband & I attended, Hopkinton HS, Hopkinton, NH, one of NH's top HS's. I serve on the Board presently & my husband was VP @ the time of his passing. In addition to serving on the Veteran's committee these past 3yrs., am also on the Board of the Newmarket Historical Society. Presently working afternoons during the school year for a family member in town in my retirement.

My family has a rich history in Newmarket. My mothers' family (Gillis) took up residence in Newmarket in 1936. My grandfather, Walter A. Gillis, was a Newmarket Selectman during WWII & totally disabled from WWI, sustaining a shot to the neck & 16 surgeries. He was a patent atty. on Tremont St., Boston & took early retirement & became a chicken farmer on the corner of Grant Rd. (then Epping Rd.) & Ash Swamp (old schoolhouse). Corporal Gillis was Newmarket's most highly decorated WWI resident & a graduate of MIT, Boston, serving w/Yankee Division (Stubby the wardog). He resided here from 1937-1970 & was Past Commander of Post #67 Legion. My parents bought the farm when I was 2 in 1953. We lived there until 1960 when my father accepted a transfer from Schiller Station (Ports.) to Merrimack Station, Bow, NH for PSNH.

My fathers' family has lived in town since 1919 & my grandparents owned a home on Elder St. (John & Mary Gielar) for over 50yrs. My GF, John Albert Gielar, was one of the 182 men/women volunteering from Newmarket for WWI. Every male in my family was in the military; those being Walter A. Gillis, Francis E. Gillis-NHST, my grandfather & uncle. John, Louie & Fred Gielar,

those being my grandfather, uncle & my father. My godfather, Neljo Jakubowski, also served in the military. My brother, John T. Gielar, served in US Navy & his son, Cody M. Gielar currently serves in Army Reserves. All these men were long-term town residents for many yrs., w/the exception of my brother & his son.

Though I moved away with my family when I was 9, I returned as an adult & lived here between 1977-87. My husband & I built a home @ 23 Smith Garrison Rd., Newmarket & our kids were born here. We move to Madbury in 1987 as we wanted our kids to attend ORSD & there was not public kindergarten here @ that time. I have lived in Newmarket a total of 24yrs. over reigns of living in town.

We always had a desire to return to Newmarket @ some point. My husband & I planned to build another home after David retired in June, 2009. I planned to retire June, 2014 but that did not happen due to my husbands' untimely passing from cancer in October, 2012. Within 7 wks. of his passing, I c/o our home of 27yrs. in Madbury & bought a condo here in Newmarket in Nov., 2012. Our house sold in July, 2013. Unf., my condo was severely damaged in the 4-alarm fire 10/13/17 @ River Ridge on Bass St. in town. We are currently displaced in a rental in town & hope to return to our rebuilt condo approx. June of 2018.

I continue to live a very structured life in retirement & feel I can continue to benefit the Veteran's Committee for another 3yrs. I do enjoy the camaraderie w/other committee members & would like to continue serving if possible.

Sincerely,

Nancy A. Eaton

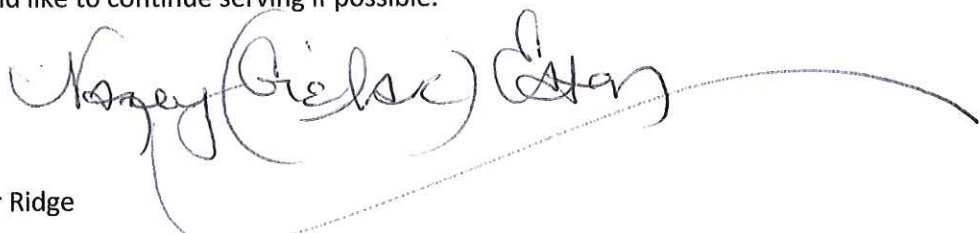
2F-Bass St., River Ridge

Newmarket, NH 03857-1151

Home # 292-6331

Cell # 953-4823

Email; eatond@comcast.net

A handwritten signature in blue ink, appearing to read 'Nancy (Gielar) Eaton', with a long horizontal flourish extending to the right.



RECEIVED

FEB 26 2018

TOWN OF NEWMARKET  
ADMINISTRATOR'S OFFICE

APPLICATION FOR APPOINTMENT TO A BOARD,  
COMMISSION, OR COMMITTEE POSITION WITHIN THE  
TOWN OF NEWMARKET

Applicant's Name: DAVID D. WADE

Address: 344 WADSWORTH FALLS RD Phone/Cell 205-5314

RSA 669:19 Newmarket Registered Voter: ☒ Yes ☐ No # of Years as Resident: 26  
RSA 91:2 Are you an American Citizen? ☒ Yes ☐ No

Email address: dave.wade@myfairpoint.net

Full membership (3 year term) position applying for VICE CHAIR

State what the new term expiration date is: 3/2021

Alternate position (3 year term) position applying for \_\_\_\_\_

State what the new term expiration date is: \_\_\_\_\_

I feel the following experience and background qualifies me for this position: \_\_\_\_\_

USMC VETERAN / PRIOR EXPERIENCE ON THIS  
COMMITTEE

(need more room, please use the back)

David D. Wade  
Signature

2-26-18  
Date

You are welcome to submit a letter or resume with this form. Applicants are requested to attend the Council meeting to address the Town Council prior to the decision making process. Applicants will be notified of the time and date of this meeting in advance. Thank you for your application and interest in the Town of Newmarket.





**TOWN OF NEWMARKET, NEW HAMPSHIRE**  
**By the Newmarket Town Council**

**Resolution #2017/2018 - 35**

**Authorizing the Town Administrator enter into a Performance Contract agreement with Energy Efficient Investments for HVAC, Lighting and Building Envelope Improvements to the Community Center:**

- WHEREAS:** it has been determined that our HVAC systems have exceeded their life expectancy and currently requires major repairs, our lighting systems are very inefficient, our building envelope needs sealing/insulation, and
- WHEREAS:** the Director of Facilities requested proposals for Performance Contracting Services from Energy Efficient Investments based on approved Resolution #2017/2018-25 for an energy audit after a major equipment failure, and
- WHEREAS:** the Community Center requires major infrastructure repairs, we have engaged with Energy Efficient Investments to conduct auditing of our facilities, detailed Performance Contracting proposals, and
- WHEREAS:** the Town Administrator recommends that the Town enters into a Performance Contract agreement with Energy Efficient Investments to provide for infrastructure improvements with energy saving returns helping to offset the cost impact for these systems, and

**NOW, THEREFORE, BE IT RESOLVED BY THE NEWMARKET TOWN COUNCIL THAT:**

The Town Council authorizes the Town Administrator to enter into a Performance Contract agreement with Energy Efficient Investments to make system improvements to the Community Center. The cost for these improvements is \$188,844.00 with funding from the Buildings and Improvements Capital Reserve Fund (Resolution #2017/2018-40) and the balance to be funded by a municipal lease (Resolution #2017/2018-41). Additional rebates will be applied towards the balance of the contract reducing the overall costs when they are authorized by the granting agencies. Additional rebates currently estimated at \$14,050.00.



*First Reading:*        *March 7, 2018*

*Second Reading:*    *March 7, 2018*

*Approval:*

Approved: \_\_\_\_\_  
Dale Pike, Chair Town Council

A True Copy Attest: \_\_\_\_\_  
Terri Littlefield, Town Clerk



TOWN HALL  
186 MAIN STREET  
NEWMARKET, NH 03857

TEL: (603) 659-3617  
FAX: (603) 659-8508

FOUNDED DECEMBER 15, 1727  
CHARTERED JANUARY 1, 1991

## TOWN OF NEWMARKET, NEW HAMPSHIRE

# STAFF REPORT

**DATE:** March 1, 2018

**TITLE:** Community Center repairs/upgrades with Performance contracting  
Resolution: 2017/2018-35, 40 & 41

**PREPARED BY:** Greg Marles, Director of Facilities

**TOWN ADMINISTRATOR'S COMMENTS – RECOMMENDATION:**

I recommend its approval and request to suspend the rules to act on it this evening.

**BACKGROUND:**

We had one (1) of the three (3) warm air furnaces suffer a cracked heater exchanger allowing products of combustion to enter the space. We have shut down and locked out the failed equipment for safety reasons and have been limping along with two units to condition the space. The two units cannot keep up with the demands and several areas of the facility remain cold. We have looked into a replacement heat exchanger for the failed unit which has been currently out of production for the past 10 years. In order to replace the exchanger we would have to have one custom made with a 4 to 6 week delivery period. This unit is 25 years old, with one other matching unit the same age, and the last unit being 27 years old. We are very concerned with the operating condition of the two remaining units given the overall condition and age. All three of these units have been out of production for at least 10 years and have exceeded their life expectancy. This also holds true for two of the three outside condensing units that provide cooling for the building. We are asked Energy Efficient Investments to conduct a full energy audit for the facility looking at ways to use energy efficient upgrades to help offset the costs of replacing the heating and cooling systems within the building. They have provided us with energy saving options to upgrade the lighting, HVAC, and building envelope.

**DISCUSSION:**

Our existing HVAC and lighting systems are out of date, in need of major repairs, and they have exceeded their useful life expectancy. Energy Efficient Investments has provided us with a Performance Contract to upgrade these systems and tighten the building envelope for a total cost of \$188,844.00. These repairs/upgrades would provide us not only with energy savings but provide us with an average life expectancy of 25 years. We would also like to request that this project be approved in a single session as we do have a major equipment failure in the facility which puts us at risk in freezing conditions.

**FISCAL IMPACT:**

We recommend \$25,000.00 in funds to be withdrawn from Buildings and Improvements Capital reserve fund to reduce the impact of the project to \$163,844.00 with an additional projected rebate amount of \$14,050.00 from different agencies or a balance of \$149,794.00. It would be our recommendation that we enter into a municipal lease with Municipal Leasing Consultant for a 10 year period at 3.98%APR creating an annual lease payment of \$18,182.04 with \$3,940.00 of energy savings to be used to reduce the annual payment to \$14,242.04. Energy Efficient Investments will guarantee the energy saving in fuel and electricity operating cost reduction. This allows for these saving to help offset the overall cost impacts of the project. The payment for the \$18,182.04 would come from heating energy reductions, electricity reductions and the remaining from Building and Grounds Operations Budget.

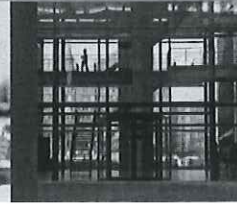
**RECOMMENDATION:**

We recommend that we engage with Energy Efficient Investments to do the necessary repairs/upgrades to our systems and building envelope, drawn \$25,000.00 from our Buildings and Improvements Capital Reserve fund, and enter into a municipal lease with Municipal Leasing Consultants of Grand Isle, Vermont.

**DOCUMENTS ATTACHED:**

EEl Performance agreement and scope of work  
Amortization Schedule  
Buildings and Improvements Capital Fund balance report  
Municipal Leasing Consultants report





**ENE Systems, Inc./Energy Efficient Investments, Inc.  
Final Investment Grade Audit**

FOR:

**Town of Newmarket NH  
Recreation Center**

Prepared by:

Michael Davey, CEM

Date: February 28, 2018



## Executive Summary

EEI is located in Merrimack, NH, and has a proven track record of designing and implementing energy improvements to mechanical systems, building controls systems, insulation, and renewable systems. EEI is also an approved energy management contractor with Better Buildings, Pay for Performance, Eversource, Liberty Utilities, and Unitil in New Hampshire.

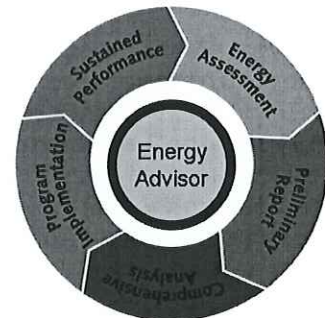
**EEI has developed a plan which could reduce annual energy expenditures by more than \$3,940.00**

EEI in its role as Energy Service Company (ESCO) has agreed to develop an energy project targeting energy savings at the locations identified below:

Building	Location
Newmarket Recreation Center	1 Terrace Dr. Newmarket, NH

The development of every energy project starts with the initial energy assessment which includes a site visit and the collection of utility and operational costs for each location. The next step entails defining measures, budgetary costs, and estimated savings values by measure for each building.

On the following page, the Energy Conservation Measures Matrix shows the upgrades for the Town of Newmarket Recreation Center. Approval of this Final Investment Grade Audit will lead to an **Energy Performance Contract (EPC)** which will clearly define the responsibilities of each party and will include a **Measurement and Verification (M&V)** procedure that will be used to measure the energy performance of the new systems and equipment.



**Newmarket Recreation Center****Comprehensive Option**

	Description	Cost	Savings	Rebate
ECM 1	LED Lighting with Smart Controls	\$29,500	\$2,100	\$7,350
ECM 2	New Condensing Furnaces w/ DX cooling	\$113,344	\$750	\$2,500
ECM 3	Attic Insulation	\$15,000	\$890	\$3,000
ECM 4	Carpentry & Mis Project cost	\$5,000		
ECM 5	DDC Controls	\$26,000	\$200	\$1,200
	<b>Total Newmarket Community Center</b>	<b>\$188,844</b>	<b>\$3,940</b>	<b>\$14,050</b>



## 1. Utility Data Analysis

In order to understand the energy use of each building we analyzed the energy consumption data. We used historical oil delivery data and electrical bills. To understand how the building behaves during the heating and cooling seasons we analyzed the consumption as it is related to heating (HDD) and cooling degree days (CDD). This gives us a baseline to understand how the building may react to changes that we make to the heating system, cooling system, and building envelope of the building.

### Building Summary Information

Project Name: Newmarket  
Recreation Center

### Annual Utility Data

#### Total Use 2017

Gas (gal)	2,593
Elec (KWH)	78,360

### Contract Utility Rates

Gas (LP)	LP Rate	\$1.39
Electricity	Electric Rate	\$0.14

## 1. Economic Analysis

Making good economic decisions requires analysis of available information and understanding the monetary value of time. A Discounted Life Cycle Cost Analysis (DLCCA) is very useful for this type of analysis when multiple alternatives exist. This is the Federal Energy Management Program (FEMP) approved method of analysis and is used to aid in decisions that are based on the most favorable economic outcome. The School District can see the estimated time it will take for this energy project to payback shown on the ECM Matrix on page 3.

The key assumptions EEI used in our Economic Analysis include the baseline fuel usage and KWH use in which savings calculations were based on the fiscal year 2016 totals. Building interior lighting fixtures were assumed to run 1,700 hours per year, this is based on observation and interviews with staff. Exterior fixtures were assumed to run 4,380 hours per year.

## **2. Energy Conservation Measures**

In this section of the document we will define the Energy Conservation Measures we have evaluated for this project. Then we will define the measures on a building by building basis. Careful consideration was given to each measure and its interaction with the overall building performance.

### ***General ECM Descriptions***

#### **Newmarket Recreation Center**

#### **COMPREHENSIVE OPTION**

##### **ECM 1 – LED Lighting with Smart Controls**

The building currently utilizes a combination of T8 and T12 fluorescent lighting, compact fluorescent and Metal Halide lighting. EEI proposes replacing the existing fixtures with new LED lighting. EEI performed a detailed survey of the interior and exterior spaces in order to identify opportunities in which we can improve lighting quality, reduce maintenance costs, and save energy.

The existing lighting demand (kW) per fixture, hours of operation, fixture quantities, and recommended retrofits are based on the physical inspection and site visits conducted by EEI. As a result of the survey and analysis, EEI has developed a high efficiency lighting upgrade project that will provide new LED fixtures with smart controls, resulting in guaranteed annual energy savings and a reduction in electrical demand.

LED type lighting provides significant illumination, has longer life expectancy, increased savings in electric consumption, and provides dimming capabilities. Also, by standardizing all fixtures will reduce future maintenance requirements.

LED fixtures have an estimated life of more than 20 years. There is significant maintenance savings when LED fixtures are used due to longer lifespan.

- Install (70) Led 2x4 Retrofit fixtures with automatic dimming and occupancy-based operation
- Install (24) 6" LED recessed fixtures
- Install (7) 4' LED Strip fixtures with automatic dimming and occupancy-based operation
- Install (12) LED 2x4 fixtures with automatic dimming and occupancy-based operation
- Install (6) LED Exit signs
- Install (10) LED tubes at the cove lighting
- Install (13) exterior LED wallpacks and floodlights
- Install (2) exterior LED recessed canopy lights



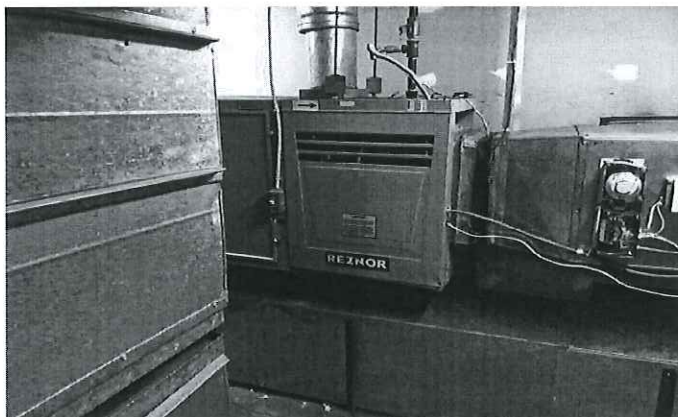
## **ECM 2 – New Condensing Furnaces with DX Cooling**

Replace existing gas fired Carrier Condensing 96.5% efficient gas furnaces to replace existing standard efficiency 80% efficient gas units. The existing primary unit has a cracked section and needs to be replaced. Scope of work includes power wiring, roof penetration. The furnaces shall all be Model 59SPA. EEI will replace 2 existing condensing units and 1 condensing unit is in good shape and will be re-used.

### **Proposed Units**



### **Existing Unit**



### ECM 3 – Attic Insulation

EEI completed a detailed building audit and verified suspected air leakage locations and found opportunity to improve building performance and save energy. Air leakage is caused by pressure differences subjective to variations in wind velocity and HVAC systems. In order to control heating and cooling loads, and allow the mechanical systems to operate effectively, pressure differences from the outdoor environment to the indoor building spaces must be controlled. The best way to do this is by tightening the building envelope by insulating and air sealing. This will extend the life cycle of the building by protecting it from the elements and minimizing moisture carried by the air to penetrate the building. Also, insulation and air sealing increases thermal performance of the building and the comfort, health and safety of the building occupants.

The existing attic insulation consists of R-19 Batt Insulation and does not meet current code requirements. EEI proposes air sealing attic open space and installing an R-50 cellulose. This will improve building comfort and

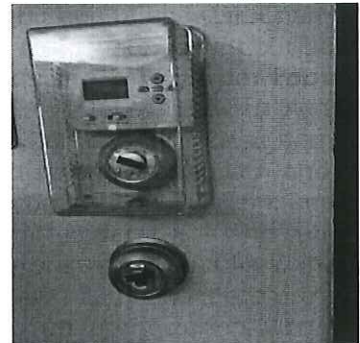
### ECM 4 – Carpentry and Misc. Project Costs

This scope of work includes necessary ceiling and framing adjustments to remove existing gas equipment from attic and allow for new high efficiency condensing to be installed in the attic.

### ECM 5 – DDC Controls

The existing building controls systems are antiquated which can lead to both overheating and under ventilation of spaces. The HVAC units have primarily standalone heating systems without outdoor temperature re-set schedules. **Existing 3 Tstat per room set up to right**

Direct Digital Controls are designed to provide overall building scheduling and setback capability, and can be accessed or modified by using any computer. It is very important to have the ability to trend the space temperatures and run times of equipment. A more advanced control strategy will limit the amount of time the heating or air conditioning can run, therefore saving fuel. For example, a morning warm up optimization would allow the building heating systems to be brought online via an automated process taking into account outdoor air temperatures.



EEI has included a budget to install Digital controls which will control new furnaces and building exhaust fans. Remote monitoring, graphics and alarming capabilities are included in this budget.



## FEATURES & SPECIFICATIONS

**INTENDED USE** — The 6" Wafer-Thin LED recessed downlight with remote driver box combines high quality light output and efficiency while eliminating the pot light housing for competitive affordability. This innovative wafer-slim Type IC design allows easy installation for new construction or remodel from below the ceiling without the requirement of a pot light housing. The LED module maintains at least 70% light output for 36,000 hours. These LED Wafer downlights are intended for closets, attics, hallways, bathrooms, kitchens, basements, soffits, entry ways, porches, garages, stairwells, corridors, nursing/retirement homes, condos, elevators, apartments, and any other small areas.

**CONSTRUCTION** — Ideal for shallow ceiling plenum since a pot light housing is NOT required. IC rated driver and fixture - approved for direct contact with insulation. Aluminum die cast outer frame. Durable, powder coat paint to prevent rust. Round fixture with integral edge-lit LED's. Steel spring clip for easy installation. Plenum rated cable connector to connect from module to remote driver box. Isolated driver integrated inside steel remote box with four 7/8" knockouts with slots for pryout. Not suitable for pulling wires.

**PATENT PENDING.**

**INSTALLATION** — Ideal for shallow ceiling plenum; no housing required. Steel spring clip for easy installation. 6" cut out template is provided to ensure a correct sized hole is cut into ceiling for proper installation of the trim. Size of hole should not exceed 6 1/4 inches for this product. Suitable for installation in t-grid and drop ceiling applications.

**OPTICS** — Wafer-Thin downlight edge-lit LED technology uses light guided plate to distribute light. Polycarbonate lens provides even illumination throughout the space. Utilized 3000K and 4000K color temperature LEDs.

**ELECTRICAL** — Connect directly to 120V power supply via provided UL recognized driver. High efficient driver with power factor > 0.9. Ambient operating temperature: -40°F (-40°C) to +104°F (+40°C). Dimming down to 10% (See page 2 for recommended dimmers). Standard input wattage is 13W, 79 lumens per watt.

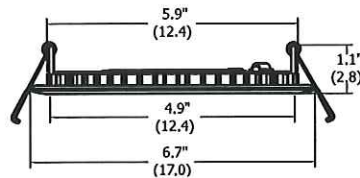
**LISTINGS** — CSA certified to US and Canadian safety standards. ENERGY STAR® certified product. Wet location. Air Tight certified in accordance with ASTM E283-2004.

**WARRANTY** — 5-year limited warranty. Complete warranty terms located at: [www.acuitybrands.com/CustomerResources/Terms\\_and\\_conditions.aspx](http://www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx)

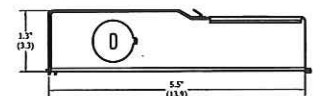
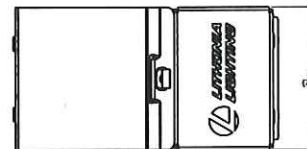
**Note:** Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

### Specifications

Aperture:	4.9 (12.4)
Ceiling opening:	6 (15.2)
Overlap trim:	6.7 (17)
Height:	1.1 (2.8)



All dimensions are inches (centimeters) unless otherwise indicated.



Catalog Number
Notes
Type

### Wafer LED Recessed Downlight

# WF6

## 6" LED Module

IC/Non-IC

New Construction/Remodel



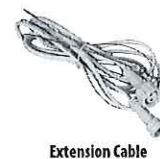
### ORDERING INFORMATION

For shortest lead times, configure product using **standard options (shown in bold)**.

**Example: WF6 LED 30K MW**

WF6	Lamp	CCT/CRI/W/Lumens <sup>1</sup>	Finish
<b>Series</b>	<b>Lamp</b>	<b>CCT/CRI/W/Lumens<sup>1</sup></b>	<b>Finish</b>
<b>WF6</b> 6" wafer-thin LED downlight	<b>LED</b> LED	<b>30K</b> 3000K/80CRI/13W/1020L <b>40K</b> 4000K/80CRI/13.6W/1200L	<b>MW</b> Matte white <b>MB</b> Matte black <b>BN</b> Brushed nickel <b>ORB</b> Oil-rubbed bronze
	<b>LL LED</b> Low Lumen LED	<b>27K</b> 2700K/80CRI/12.7W/780L <b>30K</b> 3000K/80CRI/12.6W/865L <b>40K</b> 4000K/80CRI/12.9W/944L	

Accessories: Order as separate catalog number.	
WF6 PAN R12	6" new construction pan, retail pack of 12
WFJB R4	Remodel joist bar, retail pack of 4
WFEXC6 U	6' FT4 cable
WFEXC10 U	10' FT4 cable
WFEXC20 U	20' FT4 cable



**Notes**  
1 Total system delivered lumens.

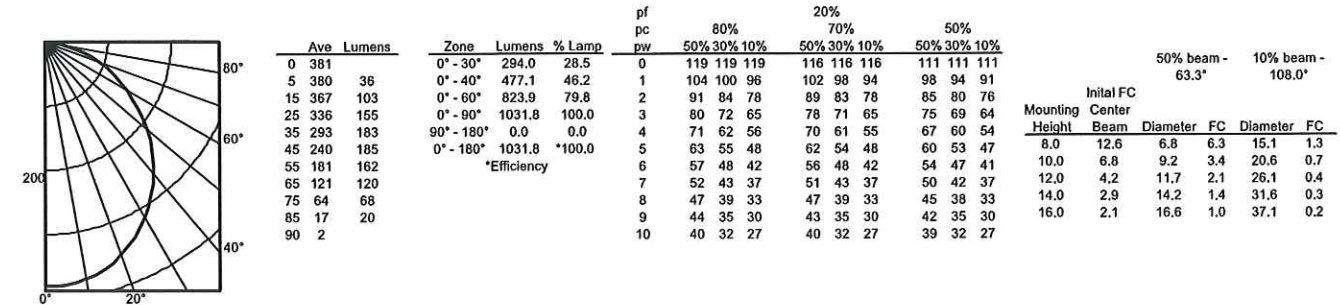


# WF6 6" LED Wafer Module

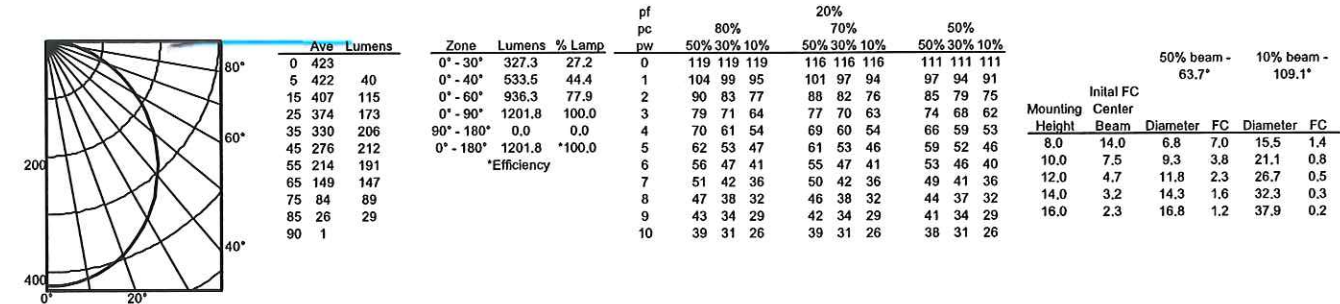
## PHOTOMETRICS

Distribution Curve	Distribution Data	Output Data	Coefficient of Utilization	Illuminance Data at 30" Above Floor for a Single Luminaire
--------------------	-------------------	-------------	----------------------------	--

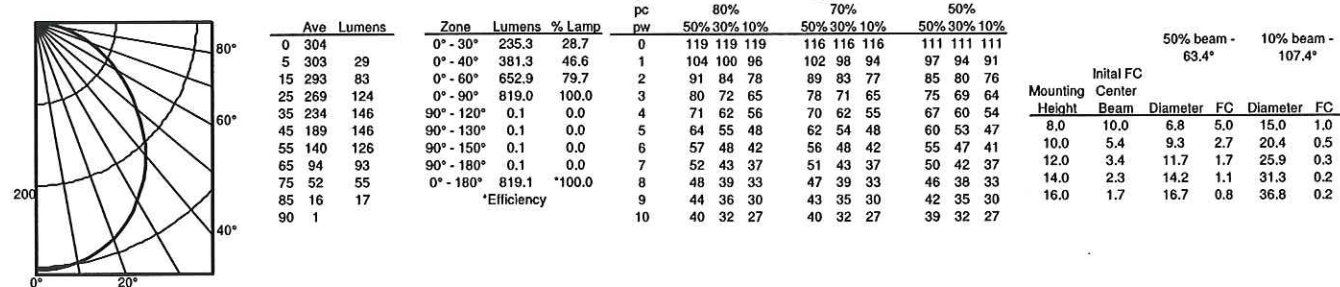
WF6 LED 30K, 3000 K LEDs, input watts: 13, delivered lumens: 1020, LM/W=78.5, test no. ISF 30024



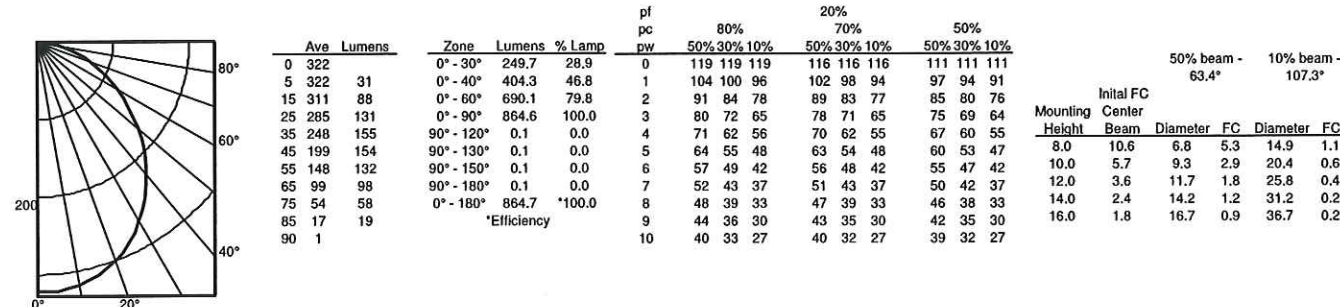
WF6 LED 40K, 4000 K LEDs, input watts: 13.6, delivered lumens: 1200, LM/W=88.2, test no. ISF 30376



WF6 LL LED 27K, 2700 K LEDs, input watts: 12.7, delivered lumens: 819, LM/W=64.4, test no. ISF 32780P1

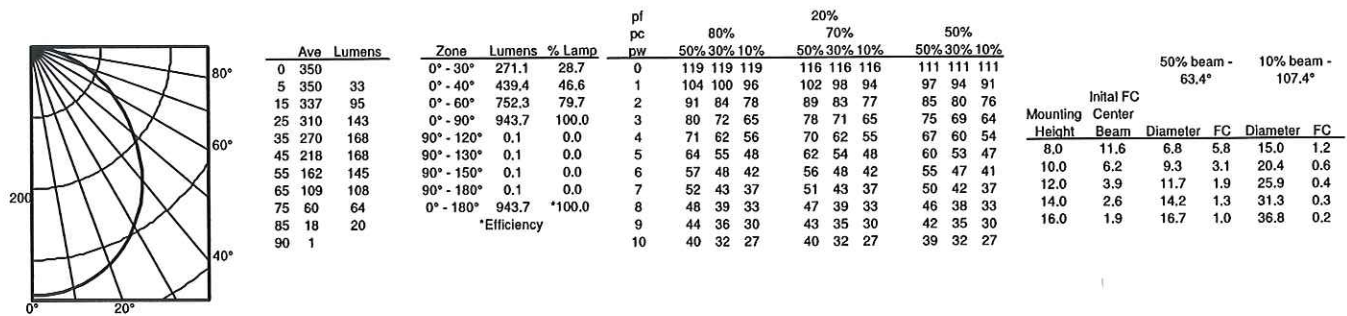


WF6 LL LED 30K, 3000 K LEDs, input watts: 12.6, delivered lumens: 865, LM/W=68.7, test no. ISF 32781



# WF6 6" LED Wafer Module

WF6 LL LED 40K, 4000 K LEDs, input watts: 12.9, delivered lumens: 944, LM/W=73.2, test no. ISF 32780



## ENERGY DATA & DIMMING CAPABILITY

6" ENERGY DATA		
Color Temperature	3000K	4000K
Lumens	1020	1200
CRI	80	80
Lumens/Watt	78.5	88.2
Min. starting temperature	-40°C (-40°F)	-40°C (-40°F)
EMI/RFI	FCC Title 47 CFR, Part 15, Class B	FCC Title 47 CFR, Part 15, Class B
Sound rating	Class A Standards	Class A Standards
Input voltage	120V	120V
Total Harmonic Distortion	17.9%	17.9%
Min. power factor	0.99	0.99
Input frequency	50/60 Hz	50/60 Hz
Rated wattage	13W	13.6W
Input power	13W	13.6W
Input current	0.11A	0.11A

6" LOW LUMEN ENERGY DATA			
Color Temperature	2700K	3000K	4000K
Lumens	780	865	944
CRI	80	80	80
Lumens/Watt	61.3	68.7	73.2
Min. starting temperature	-40°C (-40°F)	-40°C (-40°F)	-40°C (-40°F)
EMI/RFI	FCC Title 47 CFR, Part 15, Class B	FCC Title 47 CFR, Part 15, Class B	FCC Title 47 CFR, Part 15, Class B
Sound rating	Class A Standards	Class A Standards	Class A Standards
Input voltage	120V	120V	120V
Total Harmonic Distortion	12%	15.0%	11.6%
Min. power factor	0.99	0.99	0.99
Input frequency	50/60 Hz	50/60 Hz	50/60 Hz
Rated wattage	12.7W	12.6W	12.9W
Input power	12.7W	12.6W	12.9W
Input current	0.11A	0.11A	0.11A

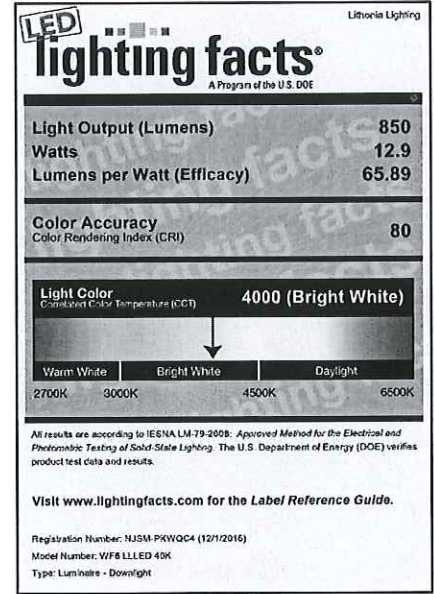
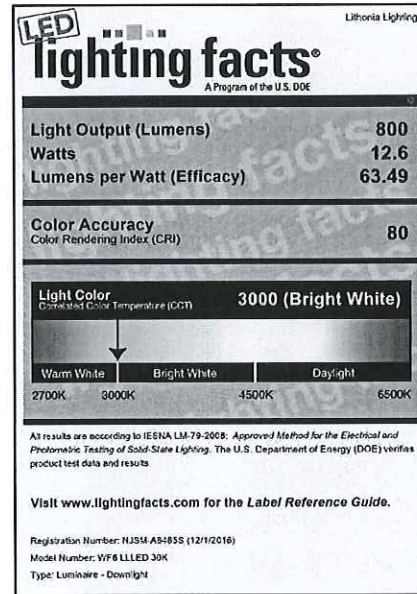
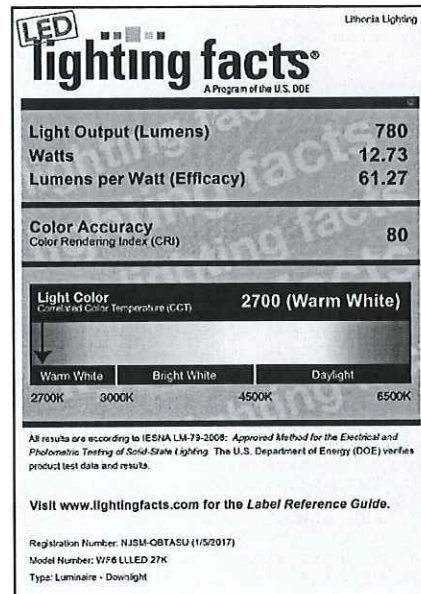
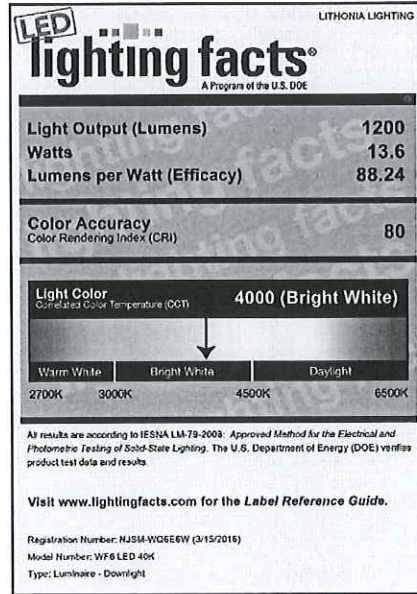
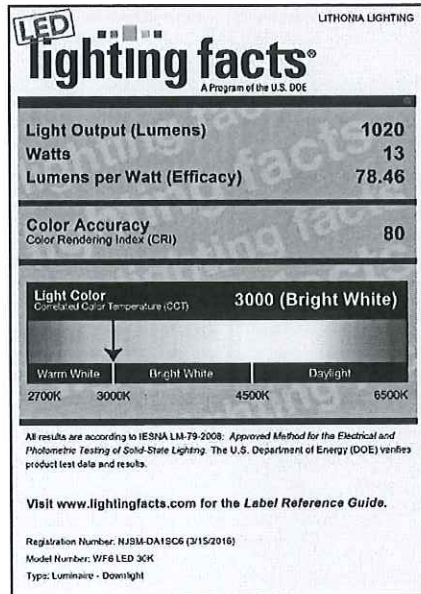
COMPATIBLE DIMMERS				
Insteon	Leviton	Lutron	Sensorswitch	Synergy/Leviton
2477D	6633-PA	CTCL-153P-WH	nSP5 PCD 2W	ISD 600 I 120/IP106
	IPL06-LED/INC mode	DV-603P-LA	nSP5 PCD ELV 120	ISD 400 ELV 120/IPE04
	6615-P	CT-603PR-WH		
		DVELV-300P		
		NTELV-300P		
		NLV600		
		300P-SELV		
		DV-600P		
		AYCL-153P-WH		
		Caseta PD-6WCL*		

\*Requires Lutron Smart Bridge L-BDG2-WH (sold separately)



# WF6 6" LED Wafer Module

## LIGHTING FACTS





#### codes and standards

- UL listed to Standard 924
- NFPA 70 (National Electric Code)
- NFPA 101 (Life Safety Code)
- California Energy Commission
- UL listed for damp location

#### construction

- White housing only.
- Low profile, snap-together quick mount design.
- Flame rated, UV stable thermoplastic housing.

#### installation

- Universal wall/ceiling/end mounting.
- Canopy not required for flat wall mount. (electronics contained inside housing).
- Pop-out chevron directional indicators are easily removed when required.
- Exit sign mounts to a standard 4" square outlet box. (canopy provided)
- All exits signs are provided with an extra stencil face plate for double face sign applications.

#### electronics

- 120/277 VAC selectable input.
- VE Units: AC Only  
Input Power: 0.026A (120VAC)  
Input Power: 0.012A (277VAC)
- VE Units: Emergency  
Input Power: 0.033A (120VAC)  
Input Power: 0.017A (277VAC)
- Surge protection, low voltage disconnect, AC lockout installation, brown out protection, and constant current charger.

#### battery

- VE Exits contain 6V maintenance free nickel cadmium battery with a service life of 8 to 10 years and a operating temperature range of 10°C to 40°C (50°F to 104°F).
- Provides 90 minutes of emergency illumination.

#### lamps

- Bright red or green energy efficient LED lamps. Uniform 6" letter illumination (3/4" stroke).

#### warranty

- Three year warranty on unit.

**CE-15050**

## Commercial Exit Signs

**VE Series**

Value+ Economy Grade

Thermoplastic



#### Specifier's Reference

Project

Type

Model No.

Comments

## Green Product Choice: VERWEM

Exit Signs Catalog Number	Letter Color	Housing Color	Operation
<b>VERW</b>	Red	White	AC only
<b>VEGW</b>	Green	White	AC only
<b>VERWEM</b>	Red	White	Emergency (nicad battery)
<b>VEGWEM</b>	Green	White	Emergency (nicad battery)

#### Accessories

**VEPMC** – Pendant mount canopy, white, (requires stem assembly).

**PVS2** – Polycarbonate shield

**WG4** – Wire guard

**CXPA12W** – Pendant assembly, Rigid canopy, 12" white stem (requires VEPMC).

**CXPAS12W** – Pendant assembly, Swivel white canopy, 12" white stem (requires VEPMC).

Stem lengths available: 18", 24", 30", 36", 48", and 60"

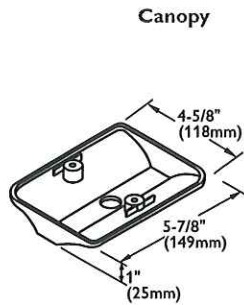
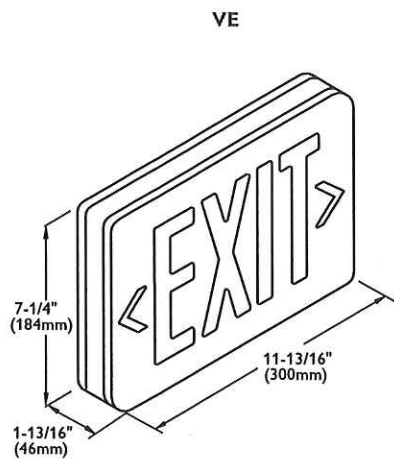
#### Note:

All exit signs are universal (single face with an extra stencil face plate)  
Canopy provided on all exits.



**PHILIPS  
CHLORIDE**

dimensions



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[philips.com/luminaires](http://philips.com/luminaires)



Philips Lighting North America Corporation  
200 Franklin Square Drive, Somerset, NJ 08873  
Tel. 855-486-2216

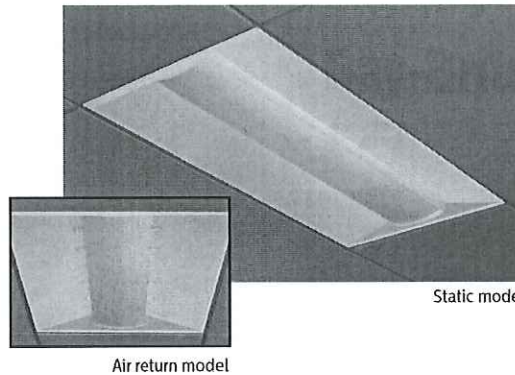
Philips Lighting Canada Ltd.  
281 Hillmount Rd, Markham, ON, Canada L6C 2S3  
Tel. 800-668-9008

# PHILIPS Day-Brite CFI

Recessed

EvoGrid  
LED 2x4

Up to 7400 lumens



Project: \_\_\_\_\_  
Location: \_\_\_\_\_  
Cat.No: \_\_\_\_\_  
Type: \_\_\_\_\_  
Lamps: \_\_\_\_\_ Qty: \_\_\_\_\_  
Notes: \_\_\_\_\_

The Philips Day-Brite / Philips CFI EvoGrid LED recessed utilizes highly reliable and efficient Philips LED platform boards and dimmable driver enabling market leading performance in its category. Its soft opal diffuser with large luminous area minimizes apparent brightness compared to other basket luminaires and provides general lighting perfect for a wide variety of applications.

## Ordering guide

Example: 2EVG38L840-4-D-UNV-DIM

Width	Family	Ceiling Type	Air Function	Lumens	Color	Length	Center Diffuser	Voltage	Driver	Options
2	EV	G				4				
2' 2"	EV EvoGrid	G Grid	blank Static H Air Return	<u>Standard efficacy</u> 38L 3800 nominal delivered lumens 43L 4300 nominal delivered lumens 48L 4800 nominal delivered lumens 54L 5400 nominal delivered lumens 74L 7400 nominal delivered lumens  <u>High efficacy</u> 38LH 3800 nominal delivered lumens 43LH 4300 nominal delivered lumens 48LH 4800 nominal delivered lumens 54LH 5400 nominal delivered lumens 74LH 7400 nominal delivered lumens	830 <sup>3</sup> 80 CRI, 3000K 835 80 CRI, 3500K 840 80 CRI, 4000K 850 <sup>3</sup> 80 CRI, 5000K	4' 4"	D Diffuse (opal) DS Diffuse smooth (opal) R Diffuse round ribbed (opal) RS Diffuse round smooth (opal)	UNV Universal Voltage, 120-277 volt 120 <sup>2</sup> 120V 277 <sup>2</sup> 277V 347 347V	DIM <sup>3,4</sup> 0-10V dimming Step dimming to 40% input power SDIM <sup>4</sup> MarkX phase dimming XDIM <sup>2</sup> Lutron Hi-lume A 1% dimming LDE Lutron LDE5, 5% dimming DALI DALI	F1 3/8" flex, 3 wire 18 gauge 6' F2 3/8" flex, 4 wire 18 gauge 6' F1/D 3/8" twin flex, 3 wire 18 gauge 6' for dimmable luminaires F2/5W 3/8" single flex, 5 wire 18 gauge 6' for dimmable luminaires F2/6W 3/8" single flex, 6 wire 18 gauge 6' for dimmable and emergency luminaires GLR Fusing, fast blow EMLED Integral emergency battery pack, 1100lm nominal (ballast enclosure on top of luminaire) SWZG2 <sup>5,7</sup> Integral sensor, daylighting and occupancy, advanced grouping with dwell time and zoning SWZDT <sup>6</sup> Integral sensor, daylighting and occupancy, advanced grouping with dwell time DAYOCC <sup>6</sup> Integral sensor, daylighting and occupancy, basic grouping CHIC Chicago Plenum rated CRM <sup>8</sup> Continuous row mount

## Footnotes

- 3000K and 5000K color temperatures available only on high efficacy configurations
- XDIM requires 120V or 277V specification.
- Integral SWZDT and DAYOCC options dimmable to 5% via wireless all switch. See page 2.
- Consult factory for SDIM on 74L and 74LH packages.
- Specify with 38L or 43L lumen packages only. Consult factory for higher lumen packages.
- Specify only with -DIM driver option
- Must order SWZ-REMOTE SpaceWise handheld remote with each system order.
- CRM includes side cover with top access plate and additional end cover. 7/8" gap between fixtures.
- Non-controls and SWZG2 configurations are 0-10v dimmable to 1% for Standard configurations. Base configurations are 0-10v dimmable to 5%.

## SpaceWise accessories (order separately)

- LRM1743 – External sensor to increase occupancy coverage area of SpaceWise luminaire groups
- SWZ-REMOTE – SpaceWise handheld remote for grouping and configuration (at least one remote required for any SpaceWise installation)
- UID8451/10 – Wireless Dimmer Switch Selector
- UID8461/10 – Wireless Scene Selector

## Other accessories (order separately)

- FMA24 – 2'x4' "F" mounting frame for NEMA "F" mounting
- EVD4L – EvoGrid 2'x4' rectangular ribbed replacement lens
- EVD54L – EvoGrid 2'x4' rectangular smooth replacement lens
- EVR4L – EvoGrid 2'x4' round ribbed replacement lens
- EVR54L – EvoGrid 2'x4' round smooth replacement lens
- FSK24 – 2'x4' surface mount field installation kit, order with -TAP (top access plate) option (SWZG2 option not available)





# 2EV EvoGrid LED recessed 2x4

Up to 7400 lumens

## Application

- A highly efficient, visually comfortable, architecturally styled recessed LED luminaire designed with a minimalistic strategy to achieve sustainable objectives.
- Low profile configuration is only 2-3/4" deep, requiring minimal plenum space.
- Soft opal diffuser with large luminous area minimizes apparent brightness and provides high visual comfort perfect for a wide variety of general lighting applications like offices, schools, retail, or healthcare.
- Multiple lumen packages over a wide range to provide significant application flexibility over light levels and/or luminaire spacing.
- Directs a controlled amount of light to the higher angles in the room to balance the brightness of the surfaces and eliminate "cave effect" while creating the impression of a larger, brighter space without glare.
- Excellent color rendering with a CRI of 80.
- LEDs are an excellent source for use with controls since dimming or frequent switching does not degrade the performance or life of the source. Integral or external sensors are available for use.
- Designed for use with standard Grid (NEMA "G") or Narrow Grid (NEMA "NFG") ceiling T-bars. Drywall or plaster requirements can be accommodated by using an FMA24 "F" mounting frame (sold separately.)
- Continuous row mount option (CRM) includes wireway covers on each end and on one side of housing.

## Construction/Finish

- Uncomplicated design is 2-3/4" in depth and only requires a few parts outside of the electrical system and hardware, creating several benefits:
  - Less material required
  - Less packaging required
  - Reduced weight
  - Less energy required for construction and assembly
  - More luminaires can be shipped per truck to reduce fuel use and emissions
- Luminaire finish is matte white polyester for a high quality, durable finish.
- T-bar grid clips are integral to body.

## Electrical

- Integral sensor options for occupancy sensing and/or daylight harvesting are available for additional energy savings with no reduction of life or increase in installation labor.
- Total luminaire efficacy exceeding 139 LPW (lumens per Watt) with high efficiency packages.
- LED board is easily accessible from below without tools. Single LED board is replaceable if needed via plug-in connectors to ensure long service life.
- LED driver is accessible from above.
- Emergency driver is accessible from above. To estimate lumen output in emergency mode, multiply emergency pack wattage by efficacy, then by 1.10. Typical lumen output is 1300lm for EMLED.
- Step dim 100/40% and additional dimming options available.
- Five year limited luminaire warranty includes LED boards and driver. Visit [www.philips.com/warranties](http://www.philips.com/warranties) for complete warranty information.
- TM-21 predicted L70 lumen maintenance up to 80,000 hours for high efficacy and 50,000 hours for standard efficacy configurations.
- cETLus listed to UL and CSA standards, suitable for damp locations.
- EvoGrid luminaires are DesignLights Consortium® qualified. Please see the DLC QPL list for exact catalog numbers (<http://www.designlights.org/QPL>)

## Enclosure

- Opal diffuser provides soft, comfortable lighting while maintaining high efficiency.
- Diffuser requires no frames or fasteners and can be easily removed from below without tools if needed.

## General Notes

- All options factory installed.
- All accessories are field installed.
- Many luminaire components, such as reflectors, refractors, lenses, sockets, lampholders, and LEDs are made from various types of plastics which can be adversely affected by airborne contaminants. If sulfur based chemicals, petroleum based products, cleaning solutions, or other contaminants are expected in the intended area of use, consult factory for compatibility.

## SpaceWise (SWZG2)

- Commissioning via SWZ-REMOTE handheld remote, must order a minimum of one per installation
- Integral sensing options (DAYOCC, SWZG2, SWZDT) may not be combined
- For more information on the sensor, please refer to [www.lightingproducts.philips.com/documents/webdb2/DayBrite/pdf/SWZG2\\_sensor.pdf](http://www.lightingproducts.philips.com/documents/webdb2/DayBrite/pdf/SWZG2_sensor.pdf)
- Visit [Philips.com/spacewise](http://Philips.com/spacewise) for more information about SpaceWise Technology (SWZG2)

## DAYOCC & SpaceWise DT (SWZDT)

- Commissioning via compatible Android phone and Philips Field App
- Dimming via compatible wireless wall switch only (see below)
- Register for the commissioning app at <http://registration.componentcloud.philips.com/appregistration/>
- Integral sensing options (DAYOCC, SWZG2, SWZDT) may not be combined
- For more information including recommended switches, refer to the following –

**DAYOCC** – [www.lightingproducts.philips.com/documents/webdb2/DayBrite/pdf/DAYOCC\\_sensor.pdf](http://www.lightingproducts.philips.com/documents/webdb2/DayBrite/pdf/DAYOCC_sensor.pdf)

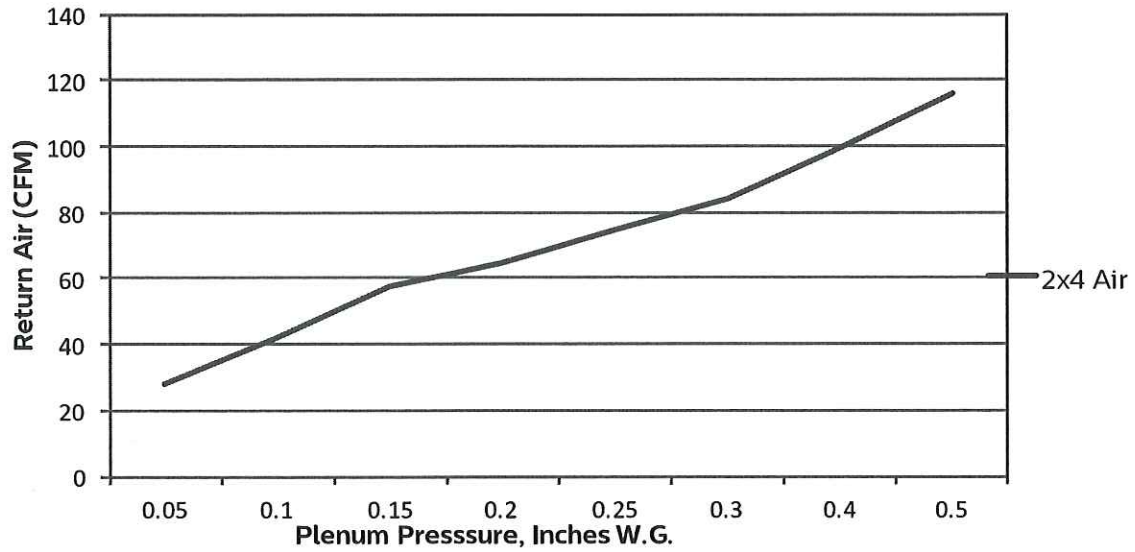
**SWZDT** – [www.lightingproducts.philips.com/documents/webdb2/DayBrite/pdf/SWZDT\\_sensor.pdf](http://www.lightingproducts.philips.com/documents/webdb2/DayBrite/pdf/SWZDT_sensor.pdf)

## Energy data

Luminaire	Catalog Number	Input Power	Efficacy
2x4	2EVG38L840-4-D	37	110
	2EVG43L840-4-D	41	108
	2EVG48L840-4-D	48	105
	2EVG54L840-4-D	55	103
	2EVG74L840-4-D	83	93
	2EVG38L840-4-R	31	124
	2EVG43L840-4-R	35	124
	2EVG48L840-4-R	40	122
	2EVG54L840-4-R	46	120
	2EVG74L840-4-R	67	111
2x4 High Efficacy	2EVG38LH840-4-D	27	139
	2EVG43LH840-4-D	32	139
	2EVG48LH840-4-D	36	138
	2EVG54LH840-4-D	39	137
	2EVG74LH840-4-D	56	134
	2EVG38LH840-4-R	26	142
	2EVG43LH840-4-R	30	142
	2EVG48LH840-4-R	34	143
	2EVG54LH840-4-R	39	143
	2EVG74LH840-4-R	53	140

## 2EV EvoGrid LED recessed 2x4

Up to 7400 lumens

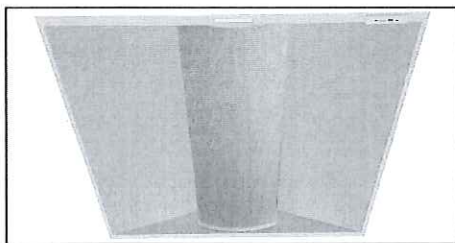
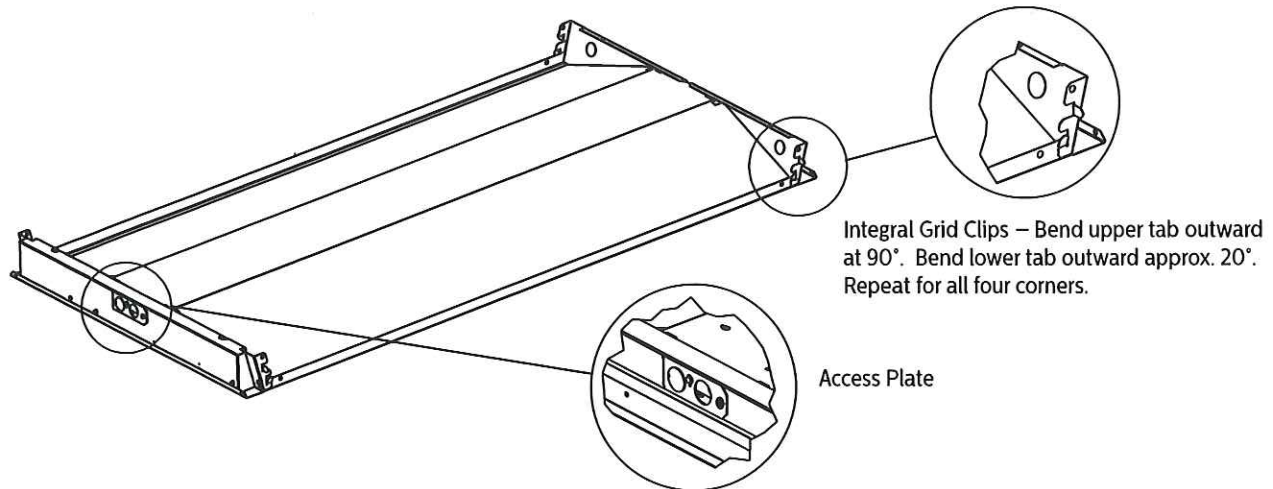
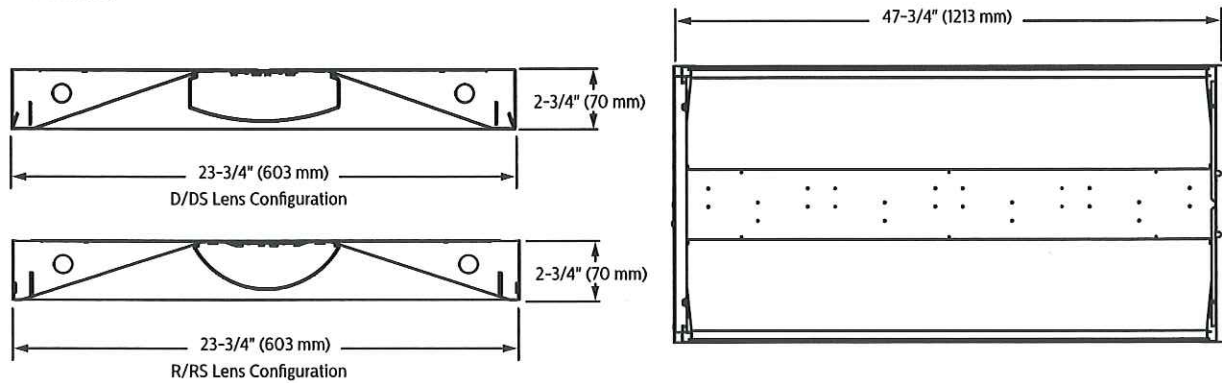


Pressure	0.05	0.1	0.15	0.2	0.25	0.3	0.4	0.5
CFM	28	42	58	65	75	84	100	116
Noise	<15	24	34	37	41	45	47	49

## 2EV EvoGrid LED recessed 2x4

Up to 7400 lumens

### Dimensions



SpaceWise (SWZG2) automated wireless technology is available for integrated occupancy and daylight harvesting. Individual options for dimming, occupancy detection, and daylight harvesting are also available if SpaceWise option is not selected.

SpaceWise DT (SWZDT) sensor is located in the center on one end flange similar to SWZG2 shown.



# 2EV EvoGrid LED recessed 2x4

Up to 7400 lumens

## Photometry

2x4 EvoGrid recessed LED, high efficacy, 4800 nominal delivered lumens

LER – 138

Catalog No.	2EVG48LH840-4-D-UNV-DIM
Test No.	34935
S/MH	1.2
Lamp Type	LED
Lumens	4897
Input Watts	36

Comparative yearly lighting energy cost per 1000 lumens – \$1.74 based on 3000 hrs. and \$.08 pwr KWH.

The photometric results were obtained in the Philips Day-Brite laboratory which is NVLAP accredited by the National Institute of Standards and Technology.

Photometric values based on test performed in compliance with LM-79.

### Candlepower

Angle	End	45	Cross	Back-45
0	1778	1778	1778	1778
5	1749	1771	1782	1771
15	1669	1701	1714	1701
25	1509	1545	1566	1545
35	1283	1333	1364	1333
45	1022	1087	1134	1087
55	751	838	913	838
65	494	613	704	613
75	264	393	465	393
85	74	114	119	114

### Light Distribution

Degrees	Lumens	% Luminaire
0-30	1358	27.7
0-40	2189	44.7
0-60	3775	77.1
0-90	4899	100.0
0-180	4899	100.0

### Average Luminance

Zone	End	45°	Cross
0-30	7532	8012	8362
0-40	6828	7614	8295
0-60	6090	7566	8686
0-90	5319	7922	9360
0-180	4450	6795	7112

### Coefficients of Utilization

EFFECTIVE FLOOR CAVITY REFLECTANCE 20 PER (pfc=0.20)								
pcc	80			70			50	
	70	50	30	70	50	30	50	30
RCR								
0	118	118	118	115	115	115	111	111
1	108	103	98	106	101	96	96	93
2	97	90	82	95	88	81	83	79
3	90	79	69	86	77	68	73	68
4	81	69	60	80	68	59	66	58
5	75	61	53	72	60	53	58	52
6	69	56	46	68	55	46	53	46
7	65	51	41	63	50	41	48	40
8	59	46	38	58	46	38	45	36
9	56	42	34	55	41	34	40	34
10	53	40	32	52	39	30	38	30

2x4 EvoGrid recessed LED, 4800 nominal delivered lumens

LER – 105

Catalog No.	2EVG48L840-4-D-UNV-DIM
Test No.	34090
S/MH	1.2
Lamp Type	LED
Lumens	5015
Input Watts	48

Comparative yearly lighting energy cost per 1000 lumens – \$1.29 based on 3000 hrs. and \$.08 pwr KWH.

The photometric results were obtained in the Philips Day-Brite laboratory which is NVLAP accredited by the National Institute of Standards and Technology.

Photometric values based on test performed in compliance with LM-79.

### Candlepower

Angle	End	45	Cross	Back-45
0	1830	1830	1830	1777
5	1813	1820	1825	1770
15	1725	1739	1746	1700
25	1554	1571	1582	1541
35	1317	1347	1365	1330
45	1048	1096	1132	1086
55	771	851	930	838
65	510	642	733	614
75	279	417	485	394
85	81	123	132	111

### Light Distribution

Degrees	Lumens	% Luminaire
0-30	1387	27.6
0-40	2228	44.4
0-60	3836	76.4
0-90	5019	100.0
0-180	5020	100.0

### Average Luminance

Zone	End	45°	Cross
0-30	7725	8080	8349
0-40	7009	7732	8457
0-60	6290	7919	9045
0-90	5613	8389	9769
0-180	4870	7342	7903

### Coefficients of Utilization

EFFECTIVE FLOOR CAVITY REFLECTANCE 20 PER (pfc=0.20)								
pcc	80			70			50	
	70	50	30	70	50	30	50	30
RCR								
0	118	118	118	115	115	115	111	111
1	108	103	98	105	101	96	96	93
2	97	90	82	94	88	81	83	79
3	89	79	69	86	77	68	73	67
4	81	69	60	79	68	59	66	57
5	75	61	53	72	60	52	58	51
6	69	56	46	68	55	46	53	46
7	65	51	41	63	50	41	47	40
8	59	46	38	58	46	38	44	36
9	56	42	34	55	41	34	40	34
10	53	39	32	51	39	30	38	30

# 2EV EvoGrid LED recessed 2x4

Up to 7400 lumens

2x4 EvoGrid recessed LED, high efficacy, 4800 nominal delivered lumens

LER – 144

Catalog No. 2EVG48LH840-4-R-UNV-DIM  
Test No. 38774  
S/MH 1.3  
Lamp Type LED  
Lumens 4927  
Input Watts 34

Comparative yearly lighting energy cost per 1000 lumens – \$1.67 based on 3000 hrs. and \$0.08 pwr KWH.

The photometric results were obtained in the Philips Day-Brite laboratory which is NVLAP accredited by the National Institute of Standards and Technology.

Photometric values based on test performed in compliance with LM-79.

## Candlepower

Angle	End	45	Cross	Back-45
0	1666	1666	1666	1666
5	1634	1661	1671	1661
15	1560	1599	1619	1599
25	1420	1475	1513	1475
35	1227	1304	1363	1304
45	998	1101	1186	1101
55	752	886	998	886
65	468	674	780	674
75	238	408	502	408
85	54	132	128	132

## Light Distribution

Degrees	Lumens	% Luminaire
0-30	1286	26.1
0-40	2100	42.6
0-60	3736	75.8
0-90	4932	100.0
0-180	4932	100.0

## Average Luminance

Zone	End	45°	Cross
45	7359	8120	8741
55	6833	8050	9071
65	5772	8313	9621
75	4800	8216	10115
85	3218	7919	7650

## Coefficients of Utilization

EFFECTIVE FLOOR CAVITY REFLECTANCE 20 PER (pfc=0.20)								
pcc	80			70			50	
pw	70	50	30	70	50	30	50	30
RCR	70	50	30	70	50	30	50	30
0	118	118	118	115	115	115	111	111
1	108	103	97	105	101	95	95	93
2	97	89	81	94	86	81	83	78
3	89	78	68	85	76	68	72	67
4	81	68	59	79	68	58	65	57
5	75	60	52	72	59	52	57	50
6	68	55	46	67	54	46	52	45
7	64	50	40	61	48	40	47	40
8	58	46	36	57	45	36	44	35
9	56	41	34	54	40	33	40	33
10	52	39	30	51	38	29	36	29

2x4 EvoGrid recessed LED, 4800 nominal delivered lumens

LER – 122

Catalog No. 2EVG48L840-4-R-UNV-DIM  
Test No. 38786  
S/MH 1.3  
Lamp Type LED  
Lumens 4903  
Input Watts 40

Comparative yearly lighting energy cost per 1000 lumens – \$1.97 based on 3000 hrs. and \$0.08 pwr KWH.

The photometric results were obtained in the Philips Day-Brite laboratory which is NVLAP accredited by the National Institute of Standards and Technology.

Photometric values based on test performed in compliance with LM-79.

## Candlepower

Angle	End	45	Cross	Back-45
0	1658	1658	1658	1658
5	1623	1653	1664	1653
15	1550	1591	1612	1591
25	1411	1468	1506	1468
35	1219	1299	1357	1299
45	991	1097	1179	1097
55	747	882	992	882
65	465	673	775	673
75	236	405	480	405
85	54	127	126	127

## Light Distribution

Degrees	Lumens	% Luminaire
0-30	1280	26.1
0-40	2090	42.6
0-60	3719	75.8
0-90	4902	100.0
0-180	4903	100.0

## Average Luminance

Zone	End	45°	Cross
45	7307	8088	8690
55	6785	8019	9012
65	5735	8297	9556
75	4761	8153	9672
85	3206	7578	7524

## Coefficients of Utilization

EFFECTIVE FLOOR CAVITY REFLECTANCE 20 PER (pfc=0.20)								
pcc	80			70			50	
pw	70	50	30	70	50	30	50	30
RCR	70	50	30	70	50	30	50	30
0	118	118	118	115	115	115	111	111
1	108	103	97	105	101	96	95	93
2	97	89	81	94	86	81	83	78
3	89	78	69	85	76	68	72	67
4	81	68	59	79	68	58	65	57
5	75	60	52	72	59	52	57	50
6	68	55	46	67	54	46	52	45
7	64	50	40	61	48	40	47	40
8	58	46	36	57	45	36	44	35
9	56	41	34	54	40	33	40	33
10	52	39	30	51	38	29	36	29

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Philips Lighting North America Corporation  
200 Franklin Square Drive, Somerset, NJ 08873  
Tel. 855-486-2216

Philips Lighting Canada Ltd.  
281 Hillmount Rd, Markham, ON, Canada L6C 2S3  
Tel. 800-668-9008



# PHILIPS

## Recessed

### EvoKit LED Retrofit Kit Gen 4



Project: \_\_\_\_\_  
 Location: \_\_\_\_\_  
 Cat.No: \_\_\_\_\_  
 Type: \_\_\_\_\_  
 Lamps: \_\_\_\_\_ Qty: \_\_\_\_\_  
 Notes: \_\_\_\_\_

Philips EvoKit LED retrofit kit gen 4 is an energy efficient LED alternative to traditional linear fluorescent troffers. Not only does it offer energy savings<sup>1</sup>, it also helps reduce maintenance costs due to its long lifetime. Simple construction helps decrease the installation time meaning you can have an LED solution in your ceiling in just minutes.

#### Ordering guide (continued on next page)

Product Number	12NC	Description	Watts <sup>3</sup>	Volts	Lumen Maintenance (Hrs.) <sup>2</sup>	Approx. Lumens <sup>3</sup>	Color Temp. (K)	Efficacy	Diffusor
Dimming: 0-10V									
515692	929000781813	EvoKit 2x2 P 23L 17W 835 2 0-10 7 G4	17	120-277	70,000	2300	3500	134	Ribbed
515759	929000782213	EvoKit 2x2 P 23L 17W 840 2 0-10 7 G4	17	120-277	70,000	2300	4000	137	Ribbed
◆ 516005	929000783313	EvoKit 2x2 P 32L 24W 835 2 0-10 7 G4	24	120-277	70,000	3200	3500	132	Ribbed
◆ 515940	929000782713	EvoKit 2x2 P 32L 24W 840 2 0-10 7 G4	24	120-277	70,000	3200	4000	135	Ribbed
516237	929000785513	EvoKit 2x4 P 30L 22W 835 2 0-10 7 G4	22	120-277	70,000	3000	3500	135	Ribbed
516039	929000783613	EvoKit 2x4 P 30L 22W 840 2 0-10 7 G4	22	120-277	70,000	3000	4000	137	Ribbed
◆ 516286	929000786013	EvoKit 2x4 P 36L 27W 835 2 0-10 7 G4	27	120-277	70,000	3600	3500	135	Ribbed
◆ 516328	929000786413	EvoKit 2x4 P 36L 26W 840 2 0-10 7 G4	26	120-277	70,000	3600	4000	137	Ribbed
◆ 516427	929000787413	EvoKit 2x4 P 42L 32W 835 2 0-10 7 G4	32	120-277	70,000	4200	3500	134	Ribbed
◆ 516369	929000786813	EvoKit 2x4 P 42L 31W 840 2 0-10 7 G4	31	120-277	70,000	4200	4000	136	Ribbed
516534	929000788513	EvoKit 2x4 P 47L 36W 835 2 0-10 7 G4	36	120-277	70,000	4700	3500	132	Ribbed
516476	929000787913	EvoKit 2x4 P 47L 35W 840 2 0-10 7 G4	35	120-277	70,000	4700	4000	135	Ribbed
517482	929000798813	EvoKit 2x2 P 32L 24W 835 2 0-10 7 G4 SM	24	120-277	70,000	3200	3500	132	Smooth
517466	929000798613	EvoKit 2x2 P 32L 24W 840 2 0-10 7 G4 SM	24	120-277	70,000	3200	4000	135	Smooth
517508	929000799013	EvoKit 2x4 P 36L 27W 835 2 0-10 7 G4 SM	27	120-277	70,000	3600	3500	135	Smooth
517516	929000799113	EvoKit 2x4 P 36L 26W 840 2 0-10 7 G4 SM	26	120-277	70,000	3600	4000	137	Smooth
517540	929000799413	EvoKit 2x4 P 42L 32W 835 2 0-10 7 G4 SM	32	120-277	70,000	4200	3500	134	Smooth
517524	929000799213	EvoKit 2x4 P 42L 31W 840 2 0-10 7 G4 SM	31	120-277	70,000	4200	4000	136	Smooth

See footnotes on the last page.





# EvoKit LED retrofit kit gen 4

## Ordering guide (continued from previous page)

Product Number	12NC	Description	Watts	Volts	Lumen Maintenance (Hrs.) <sup>2</sup>	Approx. Lumens <sup>3</sup>	Color Temp. (K)	Efficacy	Diffusor
<b>Driver: 0-10V dimming</b>									
515643	929000781613	EvoKit 2x2 P 23L 17W 850 2 0-10 7 G4	17	120-277	70,000	2300	5000	138	Ribbed
515981	929000783113	EvoKit 2x2 P 32L 24W 850 2 0-10 7 G4	24	120-277	70,000	3200	5000	135	Ribbed
516260	929000785813	EvoKit 2x4 P 36L 26W 850 2 0-10 7 G4	26	120-277	70,000	3600	5000	139	Ribbed
516401	929000787213	EvoKit 2x4 P 42L 31W 850 2 0-10 7 G4	31	120-277	70,000	4200	5000	138	Ribbed
516518	929000788313	EvoKit 2x4 P 47L 34W 850 2 0-10 7 G4	34	120-277	70,000	4700	5000	136	Ribbed
<b>Driver: 120V Mark 10 dimming</b>									
515650	929000781713	EvoKit 2x2 P 23L 19W 835 1 MK10 7 G4	19	120	70,000	2478	3500	130	Ribbed
515742	929000782113	EvoKit 2x2 P 23L 19W 840 1 MK10 7 G4	19	120	70,000	2526	4000	132	Ribbed
515999	929000783213	EvoKit 2x2 P 32L 25W 835 1 MK10 7 G4	25	120	70,000	3224	3500	130	Ribbed
515932	929000782613	EvoKit 2x2 P 32L 25W 840 1 MK10 7 G4	25	120	70,000	3295	4000	133	Ribbed
516229	929000785413	EvoKit 2x4 P 30L 26W 835 1 MK10 7 G4	26	120	70,000	3304	3500	127	Ribbed
516187	929000785013	EvoKit 2x4 P 30L 23W 840 1 MK10 7 G4	23	120	70,000	2928	4000	130	Ribbed
516278	929000785913	EvoKit 2x4 P 36L 29W 835 1 MK10 7 G4	29	120	70,000	3686	3500	128	Ribbed
516310	929000786313	EvoKit 2x4 P 36L 29W 840 1 MK10 7 G4	29	120	70,000	3769	4000	131	Ribbed
516419	929000787313	EvoKit 2x4 P 42L 34W 835 1 MK10 7 G4	34	120	70,000	4303	3500	128	Ribbed
516351	929000786713	EvoKit 2x4 P 42L 34W 840 1 MK10 7 G4	34	120	70,000	4399	4000	131	Ribbed
516526	929000788413	EvoKit 2x4 P 47L 38W 835 1 MK10 7 G4	38	120	70,000	4831	3500	128	Ribbed
516468	929000787813	EvoKit 2x4 P 47L 38W 840 1 MK10 7 G4	38	120	70,000	4934	4000	130	Ribbed
<b>Driver: 277V Mark 10 dimming</b>									
● 515700	929000781913	EvoKit 2x2 P 23L 19W 835 5 MK10 7 G4	19	277	70,000	2300	3500	121	Ribbed
● 515767	929000782313	EvoKit 2x2 P 23L 21W 840 5 MK10 7 G4	21	277	70,000	2526	4000	123	Ribbed
● 516021	929000783513	EvoKit 2x2 P 32L 26W 835 5 MK10 7 G4	26	277	70,000	3200	3500	124	Ribbed
515965	929000782913	EvoKit 2x2 P 32L 25W 840 5 MK10 7 G4	26	277	70,000	3200	4000	127	Ribbed
● 516252	929000785713	EvoKit 2x4 P 30L 25W 835 5 MK10 7 G4	25	277	70,000	3000	3500	120	Ribbed
● 516211	929000785313	EvoKit 2x4 P 30L 25W 840 5 MK10 7 G4	25	277	70,000	3000	4000	122	Ribbed
● 516294	929000786113	EvoKit 2x4 P 36L 30W 835 5 MK10 7 G4	30	277	70,000	3687	3500	123	Ribbed
516336	929000786513	EvoKit 2x4 P 36L 29W 840 5 MK10 7 G4	28	277	70,000	3600	4000	126	Ribbed
● 516443	929000787613	EvoKit 2x4 P 42L 35W 835 5 MK10 7 G4	35	277	70,000	4303	3500	124	Ribbed
516385	929000787013	EvoKit 2x4 P 42L 33W 840 5 MK10 7 G4	33	277	70,000	4200	4000	127	Ribbed
● 516559	929000788713	EvoKit 2x4 P 47L 38W 835 5 MK10 7 G4	38	277	70,000	4700	3500	125	Ribbed
516492	929000788113	EvoKit 2x4 P 47L 37W 840 5 MK10 7 G4	37	277	70,000	4700	4000	127	Ribbed
<b>Dimming: 0-10V at 347V</b>									
515718	929000782013	EvoKit 2x2 P 23L 18W 835 6 0-10 7 G4	18	347	70,000	2300	3500	128	Ribbed
515866	929000782413	EvoKit 2x2 P 23L 18W 840 6 0-10 7 G4	18	347	70,000	2300	4000	130	Ribbed
515973	929000783013	EvoKit 2x2 P 32L 24W 835 6 0-10 7 G4	24	347	70,000	3200	3500	135	Ribbed
515890	929000782513	EvoKit 2x2 P 32L 24W 840 6 0-10 7 G4	24	347	70,000	3200	4000	135	Ribbed
516302	929000786213	EvoKit 2x4 P 36L 27W 835 6 0-10 7 G4	27	347	70,000	3600	3500	133	Ribbed
516344	929000786613	EvoKit 2x4 P 36L 26W 840 6 0-10 7 G4	26	347	70,000	3600	4000	136	Ribbed
516450	929000787713	EvoKit 2x4 P 42L 31W 835 6 0-10 7 G4	31	347	70,000	4200	3500	138	Ribbed
516393	929000787113	EvoKit 2x4 P 42L 31W 840 6 0-10 7 G4	31	347	70,000	4200	4000	136	Ribbed
516567	929000788813	EvoKit 2x4 P 47L 36W 835 6 0-10 7 G4	36	347	70,000	4700	3500	132	Ribbed
516500	929000788213	EvoKit 2x4 P 47L 35W 840 6 0-10 7 G4	35	347	70,000	4700	4000	135	Ribbed

See footnotes on the last page.

# EvoKit LED retrofit kit gen 4

## Ordering guide (continued from previous page)

Product Number	12NC	Description	Watts	Volts	Lumen Maintenance (Hrs.) <sup>2</sup>	Approx. Lumens <sup>3</sup>	Color Temp. (K)	Efficacy	Diffusor
<b>Dimming: SR</b>									
516013	929000783413	EvoKit 2x2 P 32L 25W 835 2 SR 7 G4	25	120-277	70,000	3200	3500	129	Ribbed
◆ 515957	929000782813	EvoKit 2x2 P 32L 24W 840 2 SR 7 G4	24	120-277	70,000	3200	4000	132	Ribbed
516245	929000785613	EvoKit 2x4 P 30L 23W 835 2 SR 7 G4	23	120-277	70,000	3000	3500	131	Ribbed
516203	929000785213	EvoKit 2x4 P 30L 23W 840 2 SR 7 G4	23	120-277	70,000	3000	4000	133	Ribbed
516435	929000787513	EvoKit 2x4 P 42L 32W 835 2 SR 7 G4	32	120-277	70,000	4200	3500	132	Ribbed
◆ 516377	929000786913	EvoKit 2x4 P 42L 32W 840 2 SR 7 G4	32	120-277	70,000	4200	4000	134	Ribbed
516542	929000788613	EvoKit 2x4 P 47L 36W 835 2 SR 7 G4	36	120-277	70,000	4700	3500	130	Ribbed
516484	929000788013	EvoKit 2x4 P 47L 36W 840 2 SR 7 G4	36	120-277	70,000	4700	4000	132	Ribbed
517557	929000799513	EvoKit 2x4 P 42L 32W 835 2 SR 7 G4 SM	32	120-277	70,000	4200	3500	132	Smooth
517532	929000799313	EvoKit 2x4 P 42L 32W 840 2 SR 7 G4 SM	32	120-277	70,000	4200	4000	134	Smooth
517490	929000798913	EvoKit 2x2 P 32L 25W 835 2 SR 7 G4 SM	25	120-277	70,000	3200	3500	129	Smooth
517474	929000798713	EvoKit 2x2 P 32L 24W 840 2 SR 7 G4 SM	24	120-277	70,000	3200	4000	132	Smooth
<b>EvoKit with Air Return</b>									
515494	929000781013	EvoKit 2x2 A 23L 17W 835 2 0-10 7 G4	17	120-277	70,000	2300	3500	134	Ribbed
515544	929000781113	EvoKit 2x2 A 23L 17W 840 2 0-10 7 G4	17	120-277	70,000	2300	4000	136	Ribbed
515551	929000781213	EvoKit 2x2 A 32L 24W 835 2 0-10 7 G4	24	120-277	70,000	3200	3500	135	Ribbed
515585	929000781513	EvoKit 2x2 A 32L 25W 835 2 SR 7 G4	24	120-277	70,000	3200	3500	130	Ribbed
515569	929000781313	EvoKit 2x2 A 32L 24W 840 2 0-10 7 G4	24	120-277	70,000	3200	4000	135	Ribbed
515577	929000781413	EvoKit 2x2 A 32L 24W 840 2 SR 7 G4	24	120-277	70,000	3200	4000	133	Ribbed
516054	929000783813	EvoKit 2x4 A 30L 22W 835 2 0-10 7 G4	22	120-277	70,000	3000	3500	135	Ribbed
516062	929000783913	EvoKit 2x4 A 30L 23W 835 2 SR 7 G4	23	120-277	70,000	3000	3500	132	Ribbed
516195	929000785113	EvoKit 2x4 A 30L 22W 840 2 0-10 7 G4	22	120-277	70,000	3000	4000	138	Ribbed
516047	929000783713	EvoKit 2x4 A 30L 22W 840 2 SR 7 G4	22	120-277	70,000	3000	4000	136	Ribbed
516088	929000784013	EvoKit 2x4 A 36L 27W 835 2 0-10 7 G4	27	120-277	70,000	3600	3500	135	Ribbed
516096	929000784113	EvoKit 2x4 A 36L 26W 840 2 0-10 7 G4	26	120-277	70,000	3600	4000	137	Ribbed
516120	929000784413	EvoKit 2x4 A 42L 31W 835 2 0-10 7 G4	32	120-277	70,000	4200	3500	134	Ribbed
516138	929000784513	EvoKit 2x4 A 42L 32W 835 2 SR 7 G4	32	120-277	70,000	4200	3500	132	Ribbed
516104	929000784213	EvoKit 2x4 A 42L 31W 840 2 0-10 7 G4	31	120-277	70,000	4200	4000	136	Ribbed
516112	929000784313	EvoKit 2x4 A 42L 31W 840 2 SR 7 G4	36	120-277	70,000	4200	4000	135	Ribbed
516161	929000784813	EvoKit 2x4 A 47L 36W 835 2 0-10 7 G4	36	120-277	70,000	4700	3500	132	Ribbed
516179	929000784913	EvoKit 2x4 A 47L 36W 835 2 SR 7 G4	36	120-277	70,000	4700	3500	131	Ribbed
516146	929000784613	EvoKit 2x4 A 47L 35W 840 2 0-10 7 G4	35	120-277	70,000	4700	4000	135	Ribbed
516153	929000784713	EvoKit 2x4 A 47L 35W 840 2 SR 7 G4	35	120-277	70,000	4700	4000	134	Ribbed

See footnotes on the last page.



# EvoKit LED retrofit kit gen 4

## EvoKit with SpaceWise DT technology

Product Number	12NC	Description	Watts	Volts	Lumen Maint. (Hrs.) <sup>2</sup>	Approx. Lumens <sup>3</sup>	Color Temp. (K)	Efficacy	Diffusor
518332	929001709313	EvoKit 2x2 P 32L 25W 835 2 SWZDT 7 G4	25	120-277	70,000	3200	3500	129	Ribbed
518324	929001709213	EvoKit 2x2 P 32L 24W 840 2 SWZDT 7 G4	24	120-277	70,000	3200	4000	132	Ribbed
518407	929001710013	EvoKit 2x4 P 30L 23W 835 2 SWZDT 7 G4	23	120-277	70,000	3000	3500	131	Ribbed
518415	929001710113	EvoKit 2x4 P 30L 23W 840 2 SWZDT 7 G4	23	120-277	70,000	3000	4000	133	Ribbed
518423	929001710213	EvoKit 2x4 P 42L 32W 835 2 SWZDT 7 G4	32	120-277	70,000	4200	3500	132	Ribbed
518431	929001710313	EvoKit 2x4 P 42L 32W 840 2 SWZDT 7 G4	32	120-277	70,000	4200	4000	134	Ribbed
518449	929001710413	EvoKit 2x4 P 47L 36W 835 2 SWZDT 7 G4	36	120-277	70,000	4700	3500	130	Ribbed
518456	929001710513	EvoKit 2x4 P 47L 36W 840 2 SWZDT 7 G4	36	120-277	70,000	4700	4000	132	Ribbed
518316	929001709113	EvoKit 2x2 A 32L 25W 835 2 SWZDT 7 G4	25	120-277	70,000	3200	3500	130	Ribbed
518308	929001709013	EvoKit 2x2 A 32L 24W 840 2 SWZDT 7 G4	24	120-277	70,000	3200	4000	133	Ribbed
518357	929001709513	EvoKit 2x4 A 30L 23W 835 2 SWZDT 7 G4	23	120-277	70,000	3000	3500	132	Ribbed
518340	929001709413	EvoKit 2x4 A 30L 22W 840 2 SWZDT 7 G4	22	120-277	70,000	3000	4000	136	Ribbed
518373	929001709713	EvoKit 2x4 A 42L 32W 835 2 SWZDT 7 G4	32	120-277	70,000	4200	3500	132	Ribbed
518365	929001709613	EvoKit 2x4 A 42L 31W 840 2 SWZDT 7 G4	31	120-277	70,000	4200	4000	135	Ribbed
518399	929001709913	EvoKit 2x4 A 47L 36W 835 2 SWZDT 7 G4	36	120-277	70,000	4700	3500	131	Ribbed
518381	929001709813	EvoKit 2x4 A 47L 35W 840 2 SWZDT 7 G4	35	120-277	70,000	4700	4000	134	Ribbed

See footnotes on page 9. Please refer to Philips.com/Spacewise for more detailed specification sheets as well as a list of compatible wireless dimming switches.

### Features

- Occupancy sensing, daylight harvesting and task tuning in one device
- Granular dimming (occupancy sharing)
- Dwell time
- Scene setting
- Configuration of sensor parameters – if desired – using NFC or IR via intuitive Android-based Philips field apps
- Quick task tuning in the field to optimize light and power levels
- Enables auto-off/manual-on and auto-off/partial-on application
- DLC qualified: Listed on the QPL for Networked Lighting Controls

### Benefits

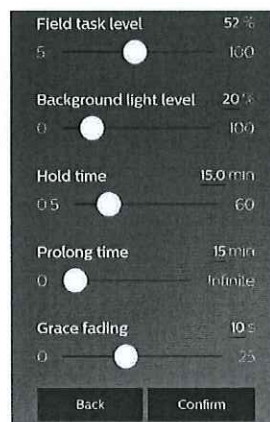
- Installation savings – integral wireless controls factory installed. No need to order separate components.
- Minimal startup and configuration expertise – savings on labor time & effort
- Deep energy savings & code compliance strategies
- Faster ROI with attractive payback periods (varies depending on luminaire choices)

### Applications

- Conference rooms
- Individual offices
- Open offices
- Classrooms
- Storage and break areas
- Restrooms
- Lobbies



### New configuration tool



Sensor parameters can be configured via Philips field apps. Two versions are available:

1. NFC – This app allows configuring sensor parameters only when you can physically access the sensor with a smartphone.
2. IR – This app allows configuring sensor parameters plus enables grouping to a wireless switch, which can be done with the IR feature of applicable phones from floor level.

You must first register for the app to receive a username and password, then download Philips field apps from the Google Play Store.

Refer to the website for registration details:

[www.usa.lighting.philips.com/support/support/tools/](http://www.usa.lighting.philips.com/support/support/tools/)



# EvoKit LED retrofit kit gen 4

## Application

- A highly efficient, visually comfortable, architecturally styled LED retrofit kit designed to replace recessed linear fluorescent troffers.
- Unique modular design offers refreshing new look in the ceiling when compared to traditional fluorescent luminaires.
- Single light bar combined with slanted troffer helps reflect light to reduce glare and provide uniform light distribution making it ideal for applications such as offices, schools, healthcare and retail.
- Excellent color rendering with a CRI above 80.
- Extremely high efficacies up to 138 lumens per watt.
- LEDs are an excellent source for use with controls since dimming or frequent switching does not degrade the performance or life of the source.
- Designed for use with standard grid (NEMA "G") or Narrow Grid (NEMA "NFG") ceiling T-Grids.
- High efficiency source and luminaire design help significantly reduce energy consumption and more easily comply with known energy codes.
- Helps meet regulation requirements such as ASHRAE 90.1 and Title 24 when matched with suitable controls.

## Construction/Finish

- Simple design allows for quick installation in existing luminaire without the need to break the ceiling plenum.

- Constructed using galvanized steel which helps fight rust and makes for more durable product.
- Integrated ceiling tabs for securement within the ceiling for areas prone to extreme conditions
- Minimum depth of only 3" necessary to allow proper clearance and installation of the EvoKit.
- Retrofit kit is powder coated after fabrication with high quality, durable finish to ensure no unfinished edges and avoid future potential of corrosion.
- Components fit together easily without the need for tools during installation.

## Electrical

- Multiple driver options available
  - Philips Advance Xitanium SR driver allows flexibility to integrate a range of control options.
  - 0-10V dimming satisfies universal voltage requirements
- 5-year limited warranty includes all components of the retrofit kit, including driver, LED board and nonelectrical components."
- Listed with UL and Design Lights Consortium<sup>1</sup> to ensure quality performance and safety standards are met.
- High efficiency LEDs have a minimum 70,000 hour rated life ( $L_{70}$ ).

## Enclosure

- Diffuser requires no frames or fasteners and can be easily removed from below without tools if needed.

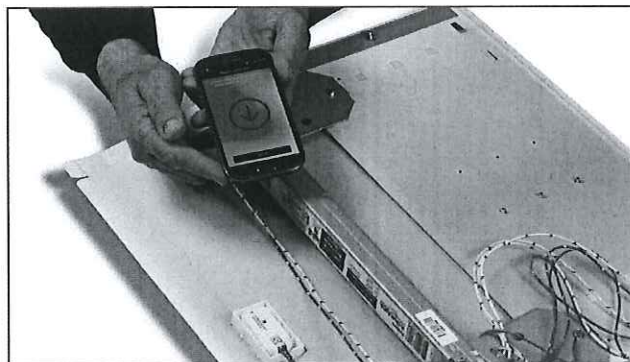
## Accessories

- Suitable for use with Philips 503441 emergency backup.
- Suitable for use with a wide range of control systems.
- Appropriate for new construction when used with standard listed lensed or parabolic troffers.

Prod. No.	Description
502583	EvoKit 2x4 replacement lens ribbed
517748	EvoKit 2x4 replacement lens smooth
502575	EvoKit 2x2 replacement lens ribbed
517755	EvoKit 2x2 replacement lens smooth
503441	EvoKit field installed emergency battery backup (requires the use of bracket)
517730	EvoKit emergency battery backup bracket (brackets come in packs of 4)

## EvoKit with new SimpleSet technology for wireless lumen level programming

EvoKit with new SimpleSet technology allows the maximum lumen level to be set prior to installation using a smartphone-based app without requiring power to the luminaire. Available in the 0-10V and SR versions only. The app can be downloaded at Google Play. Please contact your Philips representative for the current list of approved Android smartphones. Distributors can set lumen levels prior to shipping, and contractors can set lumen levels prior to installation. Lumen level is quickly and easily set in two steps:



Step 1: Place the smartphone next to the NFC antenna on the driver.

Step 2: Follow the on-screen instructions.



# EvoKit LED retrofit kit gen 4

## EvoKit with air return

The air return versions of EvoKit are suitable for retrofitting listed air return troffers.

### 2x2 air return data

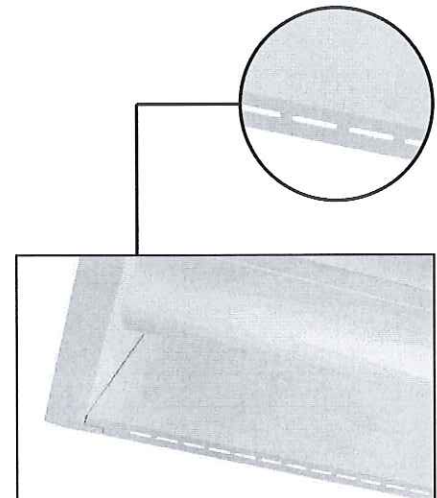
Return Air Volume, SCFM.	61	69	80	97	112	131
Negative Static Pressure, in. H <sub>2</sub> O	0.11	0.15	0.20	0.30	0.40	0.55
**Noise Criteria (NC)	17	21	25	31	34	38

Note: 24 total air slots, each 30mm x 6mm.

### 2x4 air return data

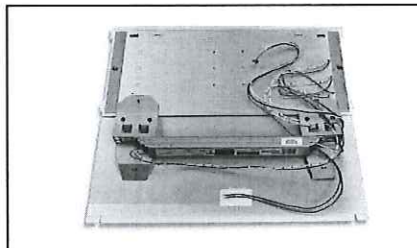
Return Air Volume, SCFM.	105	119	128	162	259	272
Negative Static Pressure, in. H <sub>2</sub> O	0.05	0.08	0.10	0.20	0.45	0.55
**Noise Criteria (NC)	<15	32	32	36	38	40

Note: 50 total air slots, each 30mm x 6mm.

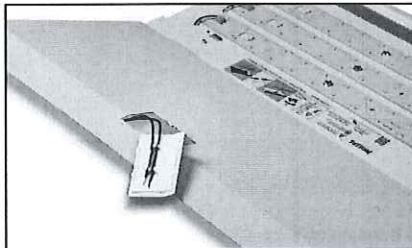


## EvoKit Sensor Ready (SR) with Philips Advance Xitanium SR for connected lighting solutions

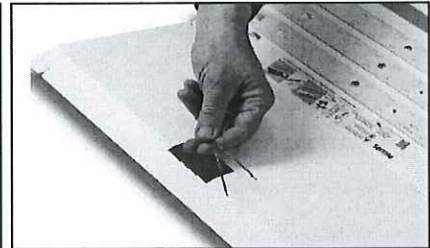
EvoKit SR is a new platform that allows users to choose different control platforms to suit their needs and budget; from simple occupancy and daylight sensing to cloud-connected data-reporting sensing. This empowers users to fine-tune their energy use for reduced energy costs. Various Philips EasySense, SpaceWise and other SR certified controls are available. Please refer to [Philips.com/Evokit](http://Philips.com/Evokit) for details. Contact your Philips representative for a current list of additional approved sensors. Sensors are connected in the field with just a few simple steps:



Step 1: EvoKit SR is shipped with a plate covering the sensor hole. There are two wires secured to the back of the plate.



Step 2: The plate can be removed before or after you install EvoKit SR. Just gently slide the plate to one end and remove.



Step 3: Remove the two wires that were secured to the back of the plate.



Step 4: Take these two wires and insert them into the sensor. They are not polarity sensitive.



Step 5: Insert the sensor back into the hole. The sensor may or may not require a socket.

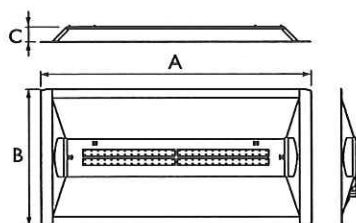
Commercial Product Name	Order Code
EasySense EVO102	514877
EasySense EVO200	516575
EasySense EVO300	517763



# EvoKit LED retrofit kit gen 4

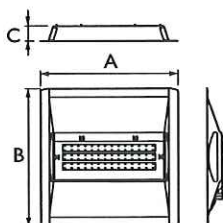
## Dimensions 2x4

A Face Plate Length	B Face Plate Width	C Height
47.83"	23.9"	2.95"



## Dimensions 2x2

A Face Plate Length	B Face Plate Width	C Height
23.9"	23.9"	2.95"



## 2'x2' EvoKit, P 23L 17W 835 2 0-10 7 G4, 2,202 delivered lumens

Catalog No.	515692
Test No.	x223L
S/MH	1.2
Lamp Type	LED
Lumens/Watt	131
Input Watts	17

Comparative yearly lighting energy cost per 1000 lumens - \$1.83 based on 3000 hours and \$0.08/kWh

The photometric results were obtained in the Design Lights Consortium Test Lab which is NVLAP accredited by the National Institute of Standards and Technology

Photometric values based on tests performed in compliance with LM-79

Candlepower Angle	End	Cross	Back-45
0	800	800	0
5	799	796	0
10	785	784	0
15	763	765	0
20	733	738	0
25	695	704	0
30	650	663	0
35	600	617	0
40	545	569	0
45	486	519	0
50	427	468	0
55	365	418	0
60	304	367	0
65	243	313	0
70	182	255	0
75	124	192	0
80	71	126	0
85	26	60	0

## Coefficients of Utilization EFFECTIVE FLOOR CAVITY REFLECTANCE 20 PER (pfc=0.20)

pcc	80			70			50		
	70	50	30	70	50	30	50	30	
pw									
RCR									
0	118	118	118	115	115	115	111	111	
1	108	104	98	106	101	96	96	93	
2	97	90	82	95	88	81	84	79	
3	90	79	70	86	77	69	73	68	
4	81	69	60	80	68	59	66	58	
5	76	63	53	72	60	53	58	52	
6	69	56	46	68	55	46	54	46	
7	65	51	41	63	50	41	48	40	
8	59	46	38	58	46	38	45	36	
9	56	42	34	55	41	34	40	34	
10	53	40	32	52	39	30	38	30	

## Light Distribution

Degrees	Lumens	% Luminaire	Average Luminance			
Angle	End	45°	Cross			
0-30	609	27.7				
0-40	984	44.7				
0-60	1709	77.6				
0-90	2202	100				
			45	5897	6110	6297
			55	5463	5913	6259
			65	4936	5867	6356
			75	4122	5880	6369
			85	2597	5689	5953

## 2'x2' EvoKit, P 32L 24W 835 2 0-10 7 G4, 3,062 delivered lumens

Catalog No.	516005
Test No.	x232L
S/MH	1.2
Lamp Type	LED
Lumens/Watt	129
Input Watts	24

Comparative yearly lighting energy cost per 1000 lumens - \$1.86 based on 3000 hours and \$0.08/kWh

The photometric results were obtained in the Design Lights Consortium Test Lab which is NVLAP accredited by the National Institute of Standards and Technology

Photometric values based on tests performed in compliance with LM-79

Candlepower Angle	End	Cross	Back-45
0	1112	1112	0
5	1109	1102	0
10	1090	1082	0
15	1060	1052	0
20	1018	1010	0
25	966	959	0
30	903	901	0
35	832	836	0
40	756	768	0
45	674	699	0
50	591	630	0
55	506	559	0
60	421	486	0
65	338	410	0
70	254	328	0
75	173	238	0
80	99	148	0
85	37	51	0

## Coefficients of Utilization EFFECTIVE FLOOR CAVITY REFLECTANCE 20 PER (pfc=0.20)

pcc	80			70			50		
	70	50	30	70	50	30	50	30	
pw									
RCR									
0	118	118	118	115	115	115	111	111	
1	108	104	98	106	101	96	96	93	
2	97	90	82	95	88	81	84	79	
3	90	79	70	86	77	69	73	67	
4	81	69	60	80	68	59	66	58	
5	76	63	53	72	60	53	58	52	
6	69	56	46	68	55	46	54	46	
7	65	51	41	63	50	41	48	40	
8	59	46	38	58	46	38	45	36	
9	56	42	34	55	41	34	40	34	
10	53	40	32	52	39	30	38	30	

## Light Distribution

Degrees	Lumens	% Luminaire	Average Luminance			
Angle	End	45°	Cross			
0-30	846	27.6				
0-40	1369	44.7				
0-60	2377	77.6				
0-90	3062	100				
			45	8183	8270	8488
			55	7572	7953	8358
			65	6858	7768	8336
			75	5744	7440	7901
			85	3651	5398	4985



# EvoKit LED retrofit kit gen 4

## 2'x4' EvoKit, P 30L 22W 835 2 0-10 7 G4, 2,758 delivered lumens

Catalog No. 516237  
Test No. x430L  
S/MH 1.2  
Lamp Type LED  
Lumens/Watt 133  
Input Watts 21

Comparative yearly lighting energy cost per 1000 lumens - \$1.80 based on 3000 hours and \$0.08/kWh

The photometric results were obtained in the Design Lights Consortium Test Lab which is NVLAP accredited by the National Institute of Standards and Technology

Photometric values based on tests performed in compliance with LM-79

Candlepower Angle	End	45	Cross	Back-45
0	952	952	952	952
5	937	948	962	946
15	899	911	927	907
25	824	838	855	832
35	585	613	642	604
45	445	488	531	480
55	648	700	762	686
65	299	369	413	362
75	156	239	263	232
85	35	79	78	67

### Coefficients of Utilization EFFECTIVE FLOOR CAVITY REFLECTANCE 20 PER (pfc=0.20)

pcc	80			70			50		
pw	70	50	30	70	50	30	50	30	
RCR									
0	118	118	118	115	115	115	111	111	
1	108	103	97	105	101	96	95	93	
2	97	89	81	94	86	81	83	78	
3	89	78	69	86	76	68	72	67	
4	81	68	59	79	68	58	65	57	
5	75	61	52	72	59	52	57	51	
6	68	55	46	67	54	46	53	45	
7	64	50	40	61	48	40	47	40	
8	59	46	36	57	45	36	44	35	
9	56	41	34	54	40	34	40	33	
10	52	39	30	51	38	30	36	29	

Light Distribution			Average Luminance			
Degrees	Lumens	% Luminaire	Angle	End	45°	Cross
0-30	731	26.5	45	4125	4319	4526
0-40	1189	43.1	55	3864	4239	4613
0-60	2092	75.9	65	3524	4350	4864
0-90	2758	100	75	3004	4607	5066
			85	2007	4500	4471

## 2'x4' EvoKit, P 36L 27W 835 2 0-10 7 G4, 3,368 delivered lumens

Catalog No. 516286  
Test No. x436L  
S/MH 1.3  
Lamp Type LED  
Lumens/Watt 132  
Input Watts 26

Comparative yearly lighting energy cost per 1000 lumens - \$1.82 based on 3000 hours and \$0.08/kWh

The photometric results were obtained in the Design Lights Consortium Test Lab which is NVLAP accredited by the National Institute of Standards and Technology

Photometric values based on tests performed in compliance with LM-79

Candlepower Angle	End	45	Cross	Back-45
0	1167	1167	1167	1167
5	1149	1161	1180	1159
15	1103	1117	1136	1111
25	1012	1027	1048	1019
35	883	901	925	890
45	718	749	783	738
55	548	596	645	586
65	370	450	502	441
75	195	290	320	282
85	45	87	93	82

### Coefficients of Utilization EFFECTIVE FLOOR CAVITY REFLECTANCE 20 PER (pfc=0.20)

pcc	80			70			50		
pw	70	50	30	70	50	30	50	30	
RCR									
0	118	118	118	115	115	115	111	111	
1	108	103	97	105	101	96	95	93	
2	97	89	81	94	86	81	83	78	
3	89	78	69	86	77	68	73	67	
4	81	68	59	79	68	58	65	57	
5	75	61	52	72	60	52	57	51	
6	68	56	46	67	55	46	53	45	
7	64	50	40	61	50	40	47	40	
8	59	46	36	57	45	36	44	35	
9	56	41	34	54	41	34	40	33	
10	52	39	30	51	38	30	36	29	

Light Distribution			Average Luminance			
Degrees	Lumens	% Luminaire	Angle	End	45°	Cross
0-30	896	26.6	45	5063	5281	5517
0-40	1456	43.2	55	4758	5181	5606
0-60	2559	76.0	65	4363	5306	5915
0-90	3368	100	75	3758	5574	6159
			85	2550	4992	5340

# EvoKit LED retrofit kit gen 4

## 2'x4' EvoKit, P 42L 32W 835 2 0-10 7 G4, 4,134 delivered lumens

Catalog No. 516427  
Test No. x442L  
S/MH 1.3  
Lamp Type LED  
Lumens/Watt 131  
Input Watts 32

Comparative yearly lighting energy cost per 1000 lumens - \$1.83 based on 3000 hours and \$0.08/kWh

The photometric results were obtained in the Design Lights Consortium Test Lab which is NVLAP accredited by the National Institute of Standards and Technology

Photometric values based on tests performed in compliance with LM-79

Candlepower	Angle	End	45	Cross	Back-45
0	1435	1435	1435	1435	
5	1414	1428	1451	1424	
15	1359	1375	1396	1364	
25	1247	1264	1288	1249	
35	1087	1109	1135	1089	
45	888	924	961	902	
55	676	734	791	714	
65	457	552	614	535	
75	242	358	392	341	
85	56	122	117	104	

Coefficients of Utilization EFFECTIVE FLOOR CAVITY REFLECTANCE 20 PER (pfc=0.20)									
pcc	80			70			50		
pw	70	50	30	70	50	30	50	30	
RCR									
0	118	118	118	115	115	115	111	111	
1	108	103	97	105	101	96	95	93	
2	97	89	81	94	86	81	83	78	
3	89	78	69	86	77	68	73	67	
4	81	68	59	79	68	58	65	57	
5	75	61	53	72	60	52	57	51	
6	68	56	46	67	55	46	53	45	
7	64	50	40	61	50	40	47	40	
8	59	46	36	57	45	36	44	35	
9	56	41	34	54	41	34	40	33	
10	52	39	30	51	38	30	36	29	

Light Distribution			Average Luminance			
Degrees	Lumens	% Luminaire	Angle	End	45°	Cross
0-30	1102	26.7	45	4688	4877	5077
0-40	1790	43.3	55	4403	4775	5147
0-60	3143	76.0	65	4033	4881	5427
0-90	4134	100	75	3484	5171	5655
			85	2412	5244	5021

## 2'x4' EvoKit, P 47L 36W 835 2 0-10 7 G4, 4,662 delivered lumens

Catalog No. 516534  
Test No. x447L  
S/MH 1.3  
Lamp Type LED  
Lumens/Watt 131  
Input Watts 36

Comparative yearly lighting energy cost per 1000 lumens - \$1.83 based on 3000 hours and \$0.08/kWh

The photometric results were obtained in the Design Lights Consortium Test Lab which is NVLAP accredited by the National Institute of Standards and Technology

Photometric values based on tests performed in compliance with LM-79

Candlepower	Angle	End	45	Cross	Back-45
0	1616	1616	1616	1616	
5	1593	1609	1634	1604	
15	1534	1548	1574	1536	
25	1408	1425	1451	1408	
35	1230	1250	1280	1227	
45	1007	1041	1085	1016	
55	767	827	893	805	
65	519	624	693	603	
75	277	405	443	384	
85	68	139	133	119	

Coefficients of Utilization EFFECTIVE FLOOR CAVITY REFLECTANCE 20 PER (pfc=0.20)									
pcc	80			70			50		
pw	70	50	30	70	50	30	50	30	
RCR									
0	118	118	118	115	115	115	111	111	
1	108	103	97	105	101	96	95	93	
2	97	89	81	94	86	81	83	78	
3	89	78	69	86	77	68	73	67	
4	81	68	59	79	68	58	65	57	
5	75	61	52	72	60	52	57	51	
6	68	56	46	67	55	46	53	45	
7	64	50	40	61	50	40	47	40	
8	59	46	36	57	45	36	44	35	
9	56	41	34	54	41	34	40	33	
10	52	39	30	51	38	30	36	29	

Light Distribution			Average Luminance			
Degrees	Lumens	% Luminaire	Angle	End	45°	Cross
0-30	1241	26.6	45	5317	5496	5727
0-40	2017	43.3	55	4990	5386	5813
0-60	3543	76.0	65	4587	5511	6119
0-90	4662	100	75	3990	5849	6384
			85	2913	5968	5711

# EvoKit LED retrofit kit gen 4

## Energy saving solution – EvoKit 2'x4'

Estimated lighting costs using a standard 3 lamp T8 troffer			
Present Wattage	85	W	
× Annual operating hours	4,380	hrs	
=	372,300	Watt-Hours	
÷ 1,000	372.3	kWh per year	
× kWh rate of \$0.10	\$37.23	per year	
× 125 fixtures	\$4,653.75	annual energy cost per space	
Estimated lighting costs using a Philips 42L 2x4 Evokit G4			
Present Wattage	31	W	
× Annual operating hours	4,380	hrs	
=	135,780	Watt-Hours	
÷ 1,000	135.78	kWh per year	
× kWh rate of \$0.10	\$13.58	per year	
× 125 fixtures	\$1,697.25	annual energy cost per space	
<b>Total estimated annual savings<sup>‡</sup></b>	<b>\$2,956.50</b>		
<sup>‡</sup> Based on 125 fixtures per space operating 4,380 hours a year. 125 fixtures is roughly equivalent to a 10,000 square foot space. kWh rates will vary.			

### FOOTNOTES:

- 1) Please refer to the energy saving chart above for details.
- 2) L<sub>70</sub> 72,000 hours @ 35°C based on TM21 and LM80.
- 3) Based on photometric testing consistent with IES LM-79. Actual wattage may differ by +/- 10%. Actual initial lumen output may vary between -10 and +10% of the rated lumens.
- ♦ Made to stock product (Contact your Philips sales representative for stock availability and lead time).
- \*\*\* Please visit [www.philips.com/warranties](http://www.philips.com/warranties) for full details.
- † Restrictions on Hazardous Substances (RoHS) is a European directive (2002/95/EC) designed to limit the content of 6 substances [lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB), and polybrominated diphenyl ethers (PBDE)] in electrical and electrical products. For products used in North America, compliance with RoHS is voluntary and self-certified.
- ‡ Evokit luminaires are Design Lights Consortium qualified. Please see the DLC QPL list for exact catalog numbers (<http://www.designlights.org/QPL>).
- These SKUs do not meet DLC Premium qualification criteria. Evokit luminaires are Design Lights Consortium qualified. Please see the DLC QPL list for exact catalog numbers (<http://www.designlights.org/QPL>).

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[philips.com/evokit](http://philips.com/evokit)



Philips Lighting North America Corporation  
200 Franklin Square Drive, Somerset, NJ 08873  
Tel. 855-486-2216

Philips Lighting Canada Ltd.  
281 Hillmount Rd, Markham, ON, Canada L6C 2S3  
Tel. 800-668-9008



# PHILIPS Day-Brite CFI

Linear

FluxStream  
wraparound

2', 4' and 8'



Project: \_\_\_\_\_  
Location: \_\_\_\_\_  
Cat.No: \_\_\_\_\_  
Type: \_\_\_\_\_  
Lumens: \_\_\_\_\_ Qty: \_\_\_\_\_  
Notes: \_\_\_\_\_

Philips Day-Brite / Philips CFI FluxStream LED wraparound is a high performing luminaire delivering smooth diffuse light ideal for light industrial, commercial and residential applications with the unparalleled energy efficiency of Philips LED lighting.

## Ordering guide

Example: FSW440L840-UNV-DIM

Series	Length (nominal)	Lumens <sup>2</sup> (nominal)	Color temp. (K)	Voltage	Driver	Options
<b>FSW</b>	<input type="text"/>	<input type="text"/>	<input type="text"/> - <input type="text"/>	<input type="text"/> - <input type="text"/>	<input type="text"/> - <input type="text"/>	<input type="text"/>
FSW FluxStream Wraparound	2' 2' length	20L 2000 lumens 30L 3000 lumens	830 80 CRI, 3000K 835 80 CRI, 3500K	UNV Universal voltage 120-277V 120 <sup>3</sup> 120V 277 <sup>3</sup> 277V 347 <sup>4</sup> 347V	DIM 0-10V 1% dimming SDIM <sup>5,6</sup> Step dimming to 40% input power XDIM <sup>3,5,6</sup> MarkX phase dimming DALI <sup>7</sup> DALI	EMLED <sup>8,9</sup> Factory wired Philips Bodine BSL310LP integral emergency pack. Nominal 1100lm DAYOCC <sup>10</sup> Integral sensor, daylighting and occupancy, Philips EasySense SNS102 PCSR Pull chain switch right, 120V only PCSL Pull chain switch left, 120V only PAF Paint after fabrication (white) LSXR10 120-347V motion sensor, factory installed on end cap LSXR10ADC <sup>11</sup> 120-347V motion sensor with photocell and hi/lo trim dimming, factory installed on end cap
	4' 4' length	30L 3000 lumens 40L 4000 lumens 55L 5500 lumens 70L 7000 lumens	840 80 CRI, 4000K 850 80 CRI, 5000K			
	8' 8' length	60L 6000 lumens 80L 8000 lumens 110L 11000 lumens 140L 14000 lumens				

1. 8' is tandem (2) 4' lenses with single piece 8' body.
2. Nominal delivered lumens at 25°C ambient.
3. XDIM option must be specified with 120V or 277V options only.
4. 347V with EMLED only available in 8' models.
5. Not available in 2' models.
6. Not available in 4' 70L or 8' 140L models.
7. DALI available up to 80L options only, consult factory for other options.
8. EMLED not available on 2' models.
9. EMLED on 8' models illuminates 4' section in emergency mode.
10. Specify -DIM driver with DAYOCC option. Dimming via wall switch only.
11. Available with DIM driver option only.

## Accessories (order separately)

- FSWD2L – FluxWrap Diffuse 2' replacement lens
- FSWD4L – FluxWrap Diffuse 4' replacement lens (order two for 8' models)
- LSXR10 – Low bay PIR occ sensor, 120-277V
- LSXR10ADC – Low bay PIR occ with photocell sensor and hi/lo trim dimming, 120-277V
- FSTH – Sliding hanger bracket (set of 2)
- FSWJ – Continuous row joiner (one per joint)
- (See last page for details and more options)

## General notes

Many luminaire components, such as reflectors, refractors, lenses, sockets, lampholders, and LEDs are made from various types of plastics which can be adversely affected by airborne contaminants. If sulfur based chemicals, petroleum based products, cleaning solutions, or other contaminants are expected in the intended area of use, consult factory for compatibility.



# FSW FluxStream LED wraparound

2', 4' and 8'

## Features

- Compact design for installation in tight spaces
- Frosted acrylic diffuser provides wide light distribution and superior glare control
- Injection molded lens retainers<sup>5</sup> provide positive diffuser retention, and easy tool-free access to LED boards and driver
- 2', 4' and 8' tandem lengths available to accommodate many field applications
- Up to 100,000 hour predicted L70 LED lumen maintenance provides long service life to reduce maintenance costs
- Can be surface mounted on ceilings or walls, or suspended via chain, pendants or cables
- Wall mountable – ADA compliant
- Ideal for cold applications (-20°C to 25°C)
- FSWJ accessory required for continuous row mounting, one FSWJ at each joint
- 7/8" knock out provided at each end and on base of luminaire. Note: Center knockout is covered and not useable in 4' version with EMLED option.
- Multiple driver options available with 0-10v as standard
- Enclosed lens minimizes penetration of dust, insects, and other debris into the lamp compartment
- 8' tandem unit is two 4' optical assemblies with an aesthetic center mullion on a single full length chassis
- Integral controls options include sensor mounted in one lens retainer. Controls are commissioned via intuitive Philips app on compatible Android smartphones either through NFC or an IR blaster
- Fluxstream luminaires are Designlights Consortium<sup>®</sup> qualified. Please see the DLC QPL list for exact catalog numbers (<http://www.designlights.org/QPL>)
- 5 year manufacturer's limited warranty. Visit [www.philips.com/warranties](http://www.philips.com/warranties) for complete warranty information

## Finish

- Baked white acrylic matte high reflectance paint finish

## Shielding

- Contoured frosted acrylic lens

## Electrical

- LED boards and drivers are RoHS (Restriction of Hazardous Substances) compliant. Total system life rated at 50,000 hours. Predicted L70 lifetime based on LED manufacturer's supplied LM-80 data and in-situ laboratory testing at 25°C ambient

## Materials

- Heavy gauge cold rolled steel housing and LED pan. Polycarbonate injection molded end caps. Profile extruded acrylic diffuser

## DAYOCC

- Integrated fixture mount Philips EasySense sensor featuring daylight and PIR occupancy sensing
- Compatibility with Philips Advance Xitanium SR Sensor Ready LED drivers
- Features automatic or manual on/off scenarios for code compliance and to realize full energy savings potential
- Basic grouping to a wireless switch via an IR interface with the Philips Field App
- Self-powered single rocker switch Illumra #ZBT-S1AWH (sourced by others), up to 40 luminaires may be grouped to a single switch
- Recommended maximum spacing of 25ft between luminaires, and closest luminaire to wall switch

## Labels

- cETLus listed
- Suitable for damp locations

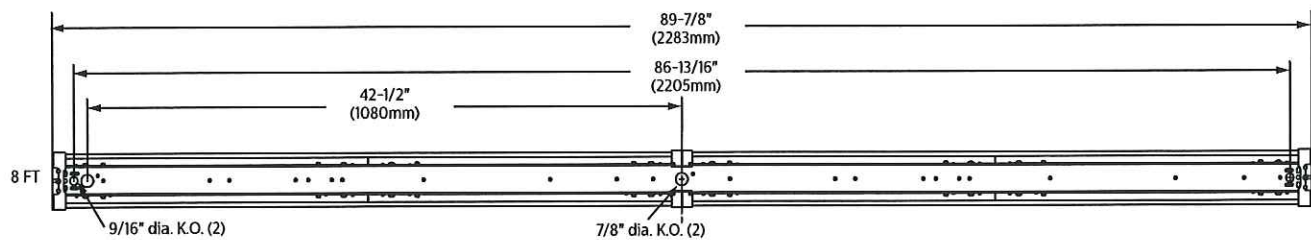
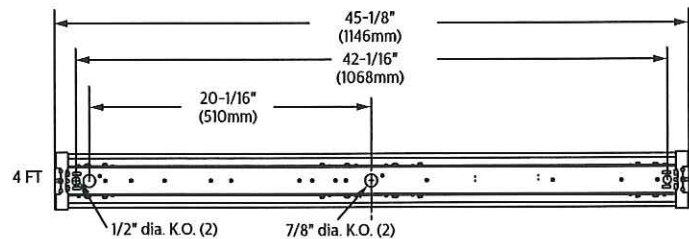
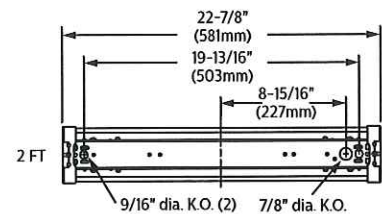
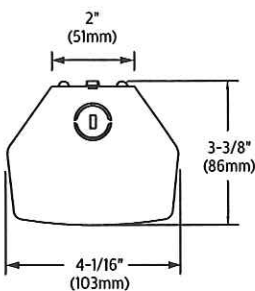
# FSW FluxStream LED wraparound

2', 4' and 8'

## Performance data

Fixture	Lumens	Wattage	Efficacy
FSW220L840	1904lm	16.6W	114lm/w
FSW230L840	3028lm	28.9W	104lm/w
FSW440L840	3856lm	31.4W	122lm/w
FSW455L840	5339lm	44.5W	119lm/w
FSW470L840	6712lm	58.0W	114lm/w

## Dimensions





# FSW FluxStream LED wraparound

2', 4' and 8'

## Photometry

### 2' FluxStream LED wraparound, 2000 nominal delivered lumens

LER - 114

Catalog No. FSW220L840-UNV-DIM  
Test No. 37658  
S/MH 1.3  
Lamp Type LED  
Lumens 1904  
Input Watts 17

#### Candlepower

Angle	End	45	Cross	Back-45
0	559	559	559	559
5	551	558	560	558
15	531	541	545	541
25	490	504	512	504
35	432	452	463	452
45	359	386	401	386
55	278	312	330	312
65	190	233	254	233
75	100	153	176	153
85	23	77	103	77

Comparative yearly lighting energy cost per 1000 lumens – \$2.09 based on 3000 hrs. and \$.08 pwr KWH.

The photometric results were obtained in the Philips Day-Brite laboratory which is NVLAP accredited by the National Institute of Standards and Technology.

Photometric values based on test performed in compliance with LM-79.

#### Light Distribution

Degrees	Lumens	% Luminaire
0-30	437	22.9
0-40	718	37.7
0-60	1291	67.7
0-90	1754	92
90-180	153	8.0
0-180	1906	100

#### Average Luminance

Zone	End	45'	Cross
45	8732	7352	7212
55	8094	6557	6466
65	7141	5657	5641
75	5584	4560	4685
85	2667	3099	3553

#### Coefficients of Utilization

EFFECTIVE FLOOR CAVITY REFLECTANCE 20 PER (pfc=0.20)									
pfc =	20	80	70	50	30	50	30	50	30
Cell	70	50	30	70	50	30	50	30	70
Wall	70	50	30	70	50	30	50	30	70
RCR	70	50	30	70	50	30	50	30	70
0	116	116	116	112	112	112	107	107	107
1	106	100	95	102	96	93	91	88	88
2	94	86	79	92	83	77	79	73	73
3	86	76	67	83	72	66	68	63	63
4	79	67	57	76	65	56	60	54	54
5	72	58	50	69	57	48	55	46	46
6	67	53	44	65	52	42	48	41	41
7	61	47	39	59	46	39	45	36	36
8	57	44	34	56	42	34	40	34	34
9	54	40	32	52	39	32	38	30	30
10	50	36	28	48	35	28	34	28	28

### 2' FluxStream LED wraparound, 3000 nominal delivered lumens

LER - 104

Catalog No. FSW230L840-UNV-DIM  
Test No. 37662  
S/MH 1.3  
Lamp Type LED  
Lumens 3028  
Input Watts 29

#### Candlepower

Angle	End	45	Cross	Back-45
0	912	912	912	912
5	899	910	914	910
15	866	882	890	882
25	800	824	836	824
35	706	740	756	740
45	587	633	656	633
55	425	478	523	478
65	290	358	388	358
75	153	235	270	235
85	36	119	158	119

Comparative yearly lighting energy cost per 1000 lumens – \$2.29 based on 3000 hrs. and \$.08 pwr KWH.

The photometric results were obtained in the Philips Day-Brite laboratory which is NVLAP accredited by the National Institute of Standards and Technology.

Photometric values based on test performed in compliance with LM-79.

#### Light Distribution

Degrees	Lumens	% Luminaire
0-30	713	23.5
0-40	1174	38.7
0-60	2085	68.8
0-90	2794	92.2
90-180	238	7.8
0-180	3032	100

#### Average Luminance

Zone	End	45'	Cross
45	14277	12051	11797
55	12361	10058	10244
65	10928	8693	8623
75	8566	7007	7172
85	4110	4810	5437

#### Coefficients of Utilization

EFFECTIVE FLOOR CAVITY REFLECTANCE 20 PER (pfc=0.20)									
pfc =	20	80	70	50	30	50	30	50	30
Cell	70	50	30	70	50	30	50	30	70
Wall	70	50	30	70	50	30	50	30	70
RCR	70	50	30	70	50	30	50	30	70
0	116	116	116	113	113	113	107	107	107
1	106	101	95	102	96	93	92	88	88
2	95	86	80	92	83	78	80	73	73
3	86	76	68	83	73	66	69	63	63
4	80	67	57	77	65	56	61	55	55
5	72	59	51	69	57	50	55	47	47
6	67	54	45	65	53	44	50	41	41
7	63	48	40	59	47	39	45	38	38
8	57	44	35	56	42	34	40	34	34
9	54	40	33	52	40	32	38	30	30
10	51	38	29	48	36	28	34	28	28

# FSW FluxStream LED wraparound

2', 4' and 8'

## Photometry

### 4' FluxStream LED wraparound, 4000 nominal delivered lumens

LER - 122

Catalog No. FSW440L840-UNV-DIM  
Test No. 37656  
S/MH 1.3  
Lamp Type LED  
Lumens 3856  
Input Watts 31

Comparative yearly lighting energy cost per 1000 lumens – \$1.95 based on 3000 hrs. and \$.08 pwr KWH.

The photometric results were obtained in the Philips Day-Brite laboratory which is NVLAP accredited by the National Institute of Standards and Technology.

Photometric values based on test performed in compliance with LM-79.

#### Candlepower

Angle	End	45	Cross	Back-45
0	1123	1123	1123	1123
5	1107	1117	1124	1117
15	1067	1085	1096	1085
25	987	1014	1033	1014
35	871	913	934	913
45	728	790	813	790
55	557	642	674	642
65	360	451	505	451
75	190	297	341	297
85	43	155	206	155

#### Light Distribution

Degrees	Lumens	% Luminaire
0-30	880	22.8
0-40	1449	37.5
0-60	2612	67.6
0-90	3514	91
90-180	348	9.0
0-180	3862	100

#### Average Luminance

Zone	End	45°	Cross
45	9388	7848	7492
55	8718	7090	6755
65	7439	5791	5742
75	6070	4741	4639
85	3243	3385	3631

#### Coefficients of Utilization

EFFECTIVE FLOOR CAVITY REFLECTANCE 20 PER (pfc=0.20)									
pfc =	20	80							
Cell		80			70			50	
Wall	70	50	30	70	50	30	50	30	
RCR									
0	116	116	116	112	112	112	106	106	
1	105	100	94	102	96	93	91	88	
2	94	86	79	92	83	77	79	72	
3	86	76	67	82	72	66	68	63	
4	79	67	57	76	65	56	60	54	
5	72	59	50	69	57	48	55	46	
6	67	53	44	65	52	44	48	41	
7	61	47	40	59	46	39	45	36	
8	57	44	34	56	42	34	40	34	
9	54	40	32	52	39	32	38	30	
10	50	36	28	48	35	28	34	28	

### 4' FluxStream LED wraparound, 5500 nominal delivered lumens

LER - 119

Catalog No. FSW455L840-UNV-DIM  
Test No. 376555  
S/MH 1.3  
Lamp Type LED  
Lumens 5339  
Input Watts 45

Comparative yearly lighting energy cost per 1000 lumens – \$2.00 based on 3000 hrs. and \$.08 pwr KWH.

The photometric results were obtained in the Philips Day-Brite laboratory which is NVLAP accredited by the National Institute of Standards and Technology.

Photometric values based on test performed in compliance with LM-79.

#### Candlepower

Angle	End	45	Cross	Back-45
0	1546	1546	1546	1546
5	1523	1538	1549	1538
15	1468	1493	1511	1493
25	1357	1396	1423	1396
35	1199	1256	1286	1256
45	1002	1086	1119	1086
55	776	883	927	883
65	495	663	716	663
75	261	408	468	408
85	60	211	279	211

#### Light Distribution

Degrees	Lumens	% Luminaire
0-30	1211	22.7
0-40	1995	37.3
0-60	3602	67.4
0-90	4871	91.1
90-180	477	8.9
0-180	3862	100

#### Average Luminance

Zone	End	45°	Cross
45	12919	10790	10317
55	12142	9742	9297
65	10244	8513	8138
75	8365	6504	6366
85	4505	4608	4912

#### Coefficients of Utilization

EFFECTIVE FLOOR CAVITY REFLECTANCE 20 PER (pfc=0.20)									
pfc =	20	80							
Cell		80			70			50	
Wall	70	50	30	70	50	30	50	30	
RCR									
0	116	116	116	112	112	112	106	106	
1	105	100	95	102	96	93	91	88	
2	94	86	79	92	83	77	79	72	
3	86	76	67	82	72	66	68	61	
4	79	67	57	76	65	56	60	54	
5	72	58	50	69	57	48	55	46	
6	67	53	44	64	52	42	48	41	
7	61	47	39	59	46	39	45	36	
8	57	44	34	56	42	34	40	34	
9	54	40	32	52	39	30	36	29	
10	50	36	28	48	35	28	34	28	



# FSW FluxStream LED wraparound

2', 4' and 8'

## Photometry

4' FluxStream LED wraparound, 7000 nominal delivered lumens

LER - 114

Catalog No.	FSW470L840-UNV-DIM
Test No.	37654
S/MH	1.3
Lamp Type	LED
Lumens	6712
Input Watts	58

Comparative yearly lighting energy cost per 1000 lumens - \$2.07 based on 3000 hrs. and \$.08 pwr KWH.

The photometric results were obtained in the Philips Day-Brite laboratory which is NVLAP accredited by the National Institute of Standards and Technology.

Photometric values based on test performed in compliance with LM-79.

### Candlepower

Angle	End	45	Cross	Back-45
0	1941	1941	1941	1941
5	1914	1930	1941	1930
15	1845	1875	1893	1875
25	1706	1753	1784	1753
35	1506	1576	1611	1576
45	1259	1362	1402	1362
55	975	1106	1161	1106
65	665	830	895	830
75	327	531	608	531
85	75	264	350	264

### Light Distribution

Degrees	Lumens	% Luminaire
0-30	1520	22.6
0-40	2503	37.2
0-60	4518	67.2
0-90	6130	91.2
90-180	593	8.8
0-180	6723	100

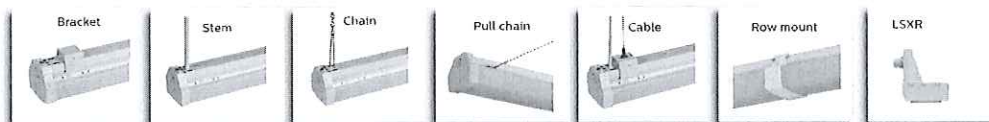
### Average Luminance

Zone	End	45°	Cross
45	16224	13532	12918
55	15244	12210	11640
65	13762	10665	10181
75	10461	8469	8275
85	5654	5775	6164

### Coefficients of Utilization

EFFECTIVE FLOOR CAVITY REFLECTANCE 20 PER (pfc=0.20)									
pfc =	20	80							
Ceiling									
Wall	70	50	30	70	50	30	50	30	
RCR									
0	116	116	116	112	112	112	106	106	
1	105	100	94	102	96	93	91	88	
2	94	86	79	92	83	77	79	72	
3	86	76	67	82	72	65	68	61	
4	79	67	57	76	65	56	60	54	
5	72	58	50	69	57	48	55	46	
6	67	53	44	64	52	42	48	41	
7	61	47	39	59	46	39	45	36	
8	57	44	34	56	42	34	40	33	
9	54	40	32	52	39	30	36	29	
10	50	36	28	48	35	28	34	28	

## Accessories



Accessory Catalog Code	Description	
FSTH	Sliding hanger bracket (pair)	
SV5F12	12" Stem and canopy kit	White stem and canopy kit, 1/4" trade size (1/2" O.D.) locknuts included. Works with 9/16" K.O. on base of housing.
SV5F18	18" Stem and canopy kit	
SV5F24	24" Stem and canopy kit	
SV5F36	36" Stem and canopy kit	
SV5F48	48" Stem and canopy kit	
FKR-126	Chain hanger set (pair)	Includes two 5' heavy duty link chains with "V" hooks. Attaches to base of housing.
DACHxx	Adjustable cable hanger kit (single)	Works with 1/4" hole on base of housing or FSTH hanger bracket. xx=cable length in inches, enter 48" to 180" lengths in 12" increments
DACHxx-1-SC	Adjustable cable hanger kit with white straight 18/3 cord (single)	
DACHxx-1-CC	Adjustable cable hanger kit with white coiled 18/3 cord (single)	
DACHxx-2-SC	Adjustable cable hanger kit with white straight 18/4 cord (single)	
DACHxx-2-CC	Adjustable cable hanger kit with white coiled 18/4 cord (single)	
DACHxx-1D-SC	Adjustable cable hanger kit with white straight 18/5 cord with dimming leads (single)	
FSWJ	External continuous row joiner (one per joint).	FSWJ accessory required for continuous row mounting
LSXR10	Low bay pir motion sensor (120-277v)	
LSXR10ADC	Low bay pir motion sensor with photocell and hi/lo trim dimming (120-277v)	
FSWD2L	2' Diffuse replacement lens	
FSWD4L	4' Diffuse replacement lens (order two for 8' models)	

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Philips Lighting North America Corporation  
200 Franklin Square Drive, Somerset, NJ 08873  
Tel. 855-486-2216

Philips Lighting Canada Ltd.  
281 Hillmount Rd, Markham, ON, Canada L6C 2S3  
Tel. 800-668-9008

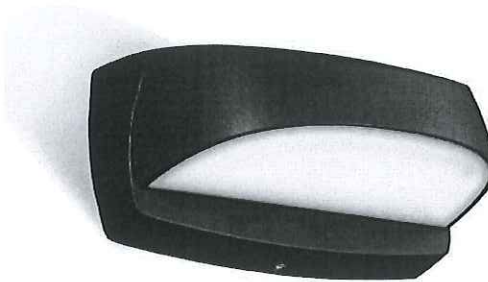


**PHILIPS**  
**Stonco**

Wall mount

LytePro LED Sconce

LPW7



Project: \_\_\_\_\_

Location: \_\_\_\_\_

Cat.No: \_\_\_\_\_

Type: \_\_\_\_\_

Quantity: \_\_\_\_\_

Notes: \_\_\_\_\_

The Philips Stonco LytePro LED Small Wall Sconce LPW7 features outstanding value in a compact, architectural design. This wall sconce offers chip-on-board (COB) LED technology for outstanding energy savings with good photometric performance. LPW7 is ideal for entryways, corridors, facade and other wall/surface lighting applications.

#### Stocked luminaires – Ordering guide<sup>1</sup>

Catalog Number	Description	Master Pack, Qty	UPC Code
LPW7-8BZ	LPW7, 14W COB LED, 350mA, 4000K, 120-277V, Bronze textured paint	6	786034960441
LPW7-8DGY	LPW7, 14W COB LED, 350mA, 4000K, 120-277V, Dark gray textured paint	6	786034960458
LPW7-1BZPCB	LPW7, 14W COB LED, 350mA, 4000K, 120V, Bronze textured paint, w/button photocell	6	786034960472

#### Stocked accessories – Ordering guide (Must be ordered separately)

Catalog Number	Description	Master Pack, Qty	UPC Code
LPWCVRPLT-BZ	LPW Universal wall cover mounting plate, Bronze textured paint	(none)	786034960618

#### Description of catalog codes

Family	Drive current	Voltage	Finish	Options
LPW7 = LytePro 7 LED Small Wall Sconce	(Blank – standard 350mA drive current)	8 = 120-277V 1 = 120V	BZ = Bronze textured paint DGY = Dark gray textured paint	PCB = Button photocontrol

1. Color availability and options vary by model; consult stock luminaires ordering guide above.

# LPW7 LytePro LED Small Wall Sconce

## Features

- LPW7 wall sconce delivers 1,154 lumens at 14W, with an efficacy of 82 lumens per watt.
- 14W LED may effectively replace 60-200W incandescent, 26-42W compact fluorescent and 35-39W HID luminaires.<sup>2</sup>
- 4000K neutral white at 70 CRI (minimum) is standard.
- Offers two in-stock colors on standard units.\*
- 5-year limited warranty; see philips.com/warranties for specific details.

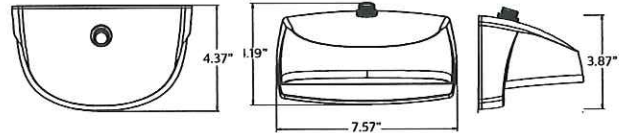
## Performance/Specifications

Distribution	Type 2
Initial Lumens (4000K)*	1,154
Average Wattage*	14
Lumens/Watt	82
BUG Rating*	B1/U0/G1
Luminaire Weight	~4lbs (1.8Kg)

## Ratings/Approbations/Certifications

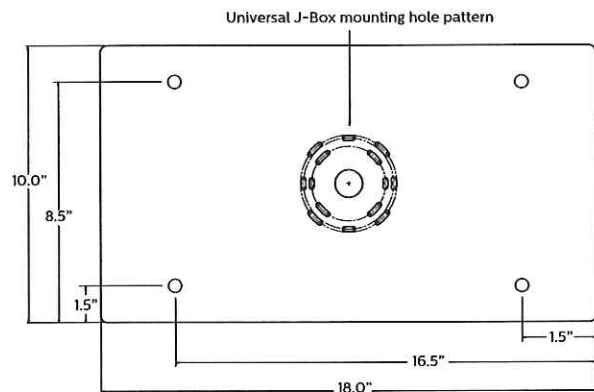
Ingress Protection	IP65 Optical
cETLus	Certified for use in wet locations
Rated Ambient Temperature	-30°C (-22°F) to 40°C (104°F)

## Fixture Dimensions<sup>3</sup>



## Accessory Dimensions (ordered separately)

LPWCVRPLT-BZ LPW Universal wall cover mounting plate, 0.08" aluminum, bronze textured paint (used to cover larger pre-existing opening or surfaces, field installed). Offers same J-Box pattern as luminaire or may be lagged to wall using (4) knockouts.

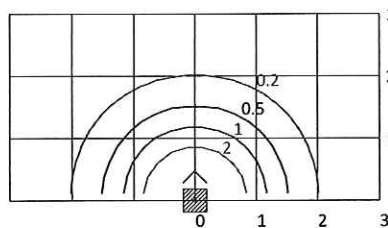


2. Comparable equivalency to HID and other lamp sources depends on multiple criteria including mounting height, fixture spacing, efficiency, performance and classification of the luminaire being replaced and application lighting criteria required for the given project.
3. PCB shown for placement only, available on specific models only (see ordering guide).

## Distribution Pattern

LPW7 - 8" MOUNTING HEIGHT			
MOUNTING HEIGHT	6'	8'	10'
MULTIPLIER	1.78	1.0	0.64

- 4. Isolines shown at 2.0, 1.0, 0.5, & 0.2 FC.
- 5. Choose mounting height. Use MULTIPLIER (X) EXISTING FC VALUE = NEW FC VALUE.
- 6. FC values are based on initial lumen output.
- 7. Gridline spacing is in units of chosen mounting height.



# LPW7 LytePro LED Small Wall Sconce

## General Description

The Philips Stonco LytePro LED Small Wall Sconce LPW7 combines excellent performance, design and value to meet the needs of the energy and budget conscious. The LPW7 is available for use in downward facing, surface wall mount applications, over recessed j-boxes or where power can be directly fed through back surface, whereby connections splices can be made inside the luminaire housing. Three SKU's are available as in-stock configurations (2-day quick ship). Two standard finishes. 120V button photocell is available in bronze only.

## Housing

Die-cast housing houses both the LED and driver assemblies. Design incorporates an integrated heat sink to maximize thermal performance and reliability. Backplate is corrosion free, composite polycarbonate, with built-in level bubble, offers integral interlocking hook and mount design for easy installation.

## Mounting

Easy interlocking hook and mount housing/backplate design for easy installation. Mounts over 3.5", 4" octagonal j-boxes and single gang switch boxes (mounted horizontally) or can be directly lagged to surface. Ensure proper steps for gasket/sealing luminaire to surface.

## IP Rating

Optical compartment is IP65 rated.

## LED Board and Array

Provides up to 82 lm/W at the system level. Standard color temp is 4000K +/- 250K, minimum 70 CRI.

## Electrical

Driver efficiency (>90% standard). 120-277V. Temp range: -30°C (-22°F) to 40°C (104°F). Open/short circuit protection. RoHS compliant.

## Listings

Product is cETLus listed suitable for Wet Locations. Suitable for use in ambients from -30°C to 40°C (-22°F to 104°F).

## Finish

Each luminaire receives a fade and abrasion resistant, electrostatically applied, thermally cured, triglycidal isocyanurate (TGIC) textured polyester powdercoat finish. Two standard colors are available: Dark Grey, and Bronze. Specific options are only available in bronze.

## Warranty

LPW7 luminaires, the LED arrays, and the drivers are all covered by a 5-year limited warranty. See [philips.com/warranties](http://philips.com/warranties) for details.

## LED Performance:

### PREDICTED LUMEN DEPRECIATION DATA<sup>4,6</sup>

Ambient Temp. °C	Calculated L70 hrs <sup>5</sup>	Reported L70 Per TM-21 <sup>5,6</sup>	Calculated Lumen Maint. % @60,000 hrs
up to 40°C	>200,000 hrs	>36,000 hrs	97%

4. Calculated performance derived from LED manufacturer's data and engineering design estimates, based on IESNA LM-80 methodology. Actual experience may vary due to field application conditions.

5. L70 is the predicted time when LED performance depreciates to 70% of initial lumen output.

6. Reported per IESNA TM21-11. Published L70 hours limited to 6 times actual LED test hours.



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Philips Lighting North America Corporation  
200 Franklin Square Drive, Somerset, NJ 08873  
Tel. 855-486-2216

Philips Lighting Canada Ltd.  
281 Hillmount Rd, Markham, ON, Canada L6C 2S3  
Tel. 800-668-9008



**PHILIPS**  
**Stonco**

Wall mount

LytePro LED Sconce

LPW16



Project:

Location:

Cat.No:

Type:

Quantity:

Notes:

The Philips Stonco LytePro LED Small Wall Sconce LPW16 features outstanding value in a compact, architectural design. This wall sconce features state-of-the-art, long-life and maintenance savings, in a combined discreet LED package with high precision over-optic design. This powerful and precise combination offers outstanding energy savings with excellent photometric performance. LPW16 is ideal for entryways and corridors in addition to wall lighting applications requiring strong lateral spacing and forward pattern projection.

**Stocked luminaires – Ordering guide** (LPW16 products are only available in the following stock luminaire configurations shown)

Catalog Number	Description	Master Pack, Qty	UPC Code
<b>LPW16-58BZ</b>	LPW16, 30W, 530mA, 4000K, 120-277V, Bronze textured paint	6	786034960540
<b>LPW16-51BZPCB</b>	LPW16, 30W, 530mA, 4000K, 120V, Bronze textured paint, w/button photocell	6	786034960557
<b>LPW16-78BZ</b>	LPW16, 40W, 700mA, 4000K, 120-277V, Bronze textured paint	6	786034960502
<b>LPW16-78DGY</b>	LPW16, 40W, 700mA, 4000K, 120-277V, Dark gray textured paint	6	786034960489
<b>LPW16-71BZPCB</b>	LPW16, 40W, 700mA, 4000K, 120V, Bronze textured paint, w/button photocell	6	786034960519

**Stocked accessories – Ordering guide** (Must be ordered separately)

Catalog Number	Description	Master Pack, Qty	UPC Code
<b>LPWCVRPLT-BZ</b>	LPW Universal wall cover mounting plate, Bronze textured paint	(none)	786034960618

# LPW16 LytePro LED Small Wall Sconce

## Features

LPW16 wall sconce delivers 3,374 lumens at 36W, with an efficacy of 93 lumens per watt. Other wattages available per charts noted below--.

- LP16W-5, 30W LED may effectively replace 70-100W HID luminaires<sup>2</sup>
- LP16W-7, 40W LED may effectively replace 100-150W HID luminaires<sup>1</sup>
- 4000K neutral white at 70 CRI (minimum) is standard
- Button photocell available in 120V, bronze luminaires only
- 5-year limited warranty, see [philips.com/warranties](http://philips.com/warranties) for specific details

## Performance/Specifications (LP16W-7)

Distribution	Type 3
Initial Lumens	3,374
Average Wattage	36
Lumens/Watt	93
BUG Rating*	B1/U0/G1
Luminaire Weight	~6lbs (2.7Kg)

## Performance/Specifications (LP16W-5)

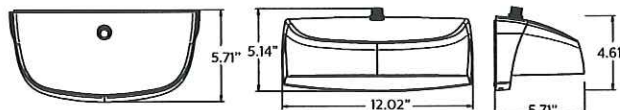
Distribution	Type 3
Initial Lumens	2,698
Average Wattage	28
Lumens/Watt	96
BUG Rating	B1/U0/G1
Luminaire Weight	~6lbs (2.7Kg)

## Ratings/Approbations/Certifications

Ingress Protection	IP65 Optical
DLC Listed	DLC QPL
cETLus	Certified for use in wet locations
Rated Ambient Temperature	-40°C (-40°F) to 40°C (104°F)

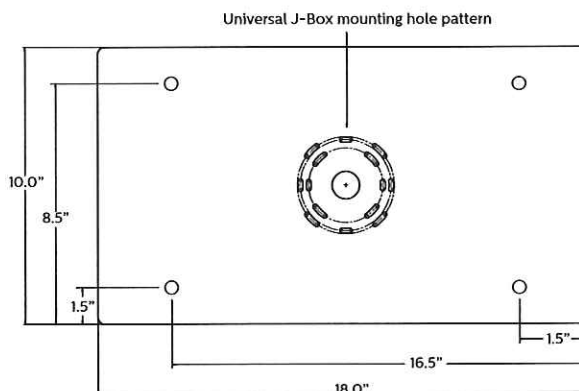
2. Comparable equivalency to HID and other lamp sources depends on multiple criteria including mounting height, fixture spacing, efficiency, performance and classification of the luminaire being replaced and application lighting criteria required for the given project.
3. PCB shown for placement only, available on specific models only (see ordering guide).

## Fixture Dimensions<sup>3</sup>



## Accessory Dimensions (ordered separately)

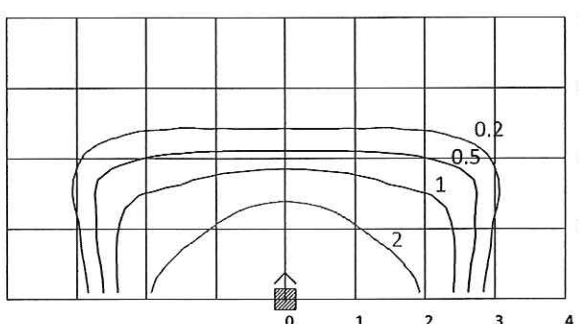
LPWCVRPLT-BZ LPW Universal wall cover mounting plate, 0.08" aluminum, bronze textured paint (used to cover larger pre-existing opening or surfaces, field installed). Offers same J-Box pattern as luminaire or may lagged to wall using (4) knockouts.



## Distribution Pattern

LPW16-7 10' MOUNTING HEIGHT			
MOUNTING HEIGHT	8'	10'	12'
MULTIPLIER	1.60	1.0	0.70

- Isolines shown at 2.0, 1.0, 0.5, & 0.2 FC.
- Choose mounting height. Use MULTIPLIER (X) EXISTING FC VALUE = NEW FC VALUE.
- FC values are based on initial lumen output.
- Gridline spacing is in units of chosen mounting height
- For LPW16-5 configuration, scale down by 29%.



# LPW16 LytePro LED Small Wall Sconce

## General Description

The Philips Stonco LytePro LED Small Wall Sconce LPW16 combines excellent performance, design and value to meet the needs of the energy and budget conscious. The LPW16 is available for use in downward facing, surface wall mount applications, over recessed j-boxes or where power can be directly fed through back surface, whereby connections splices can be made inside the luminaire housing. Five SKU's are available as in-stock configurations only (2-day quick ship).

40W Model: Two standard units are available in two different finishes. 120V button photocell is available in bronze only. 30W Model: Standard units available in bronze only, with and without photocell. 30W model is California Title 24 compliant.

## Housing

Die-cast housing houses both the LED and driver assemblies. Design incorporates an integrated heat sink to maximize thermal performance and reliability. Backplate is corrosion free, composite polycarbonate, with built-in level bubble, offers integral interlocking hook and mount design for easy installation.

## Mounting

Easy interlocking hook and mount housing/backplate design for easy installation. Mounts over 3.5", 4" octagonal j-boxes and single gang switch boxes or can be directly lagged to surface. Ensure proper steps for gasket/sealing luminaire to surface.

## IP Rating

Optical compartment is IP65 rated.

## LED Board and Array

Provides up to 93 lm/W in LPW16-7 and 96 lm/W in LPW16-5 at the system level. Standard color temp is 4000K +/- 250K, minimum 70 CRI.

## Electrical

Driver efficiency (>90% standard). 120-277V. Temp range: -40°C (-40°F) to 40°C (104°F). Open/short circuit protection. Inherent surge protection up to (4KVA). RoHS compliant.

## Listings

Product is cETLus listed suitable for Wet Locations. Suitable for use in ambients from -40°C to 40°C (-40°F to 104°F). DesignLights Consortium® qualified. Stocked SKUs of the LPW family are made in China.

## Finish

Each luminaire receives a fade and abrasion resistant, electrostatically applied, thermally cured, triglycidal isocyanurate (TGIC) textured polyester powdercoat finish.

## Warranty

LPW16 luminaires, the LED arrays, and the drivers are all covered by a 5-year limited warranty. See [philips.com/warranties](http://philips.com/warranties) for details.

## LED Performance:

PREDICTED LUMEN DEPRECIATION DATA <sup>4,6</sup>			
Ambient Temp. °C	Calculated L70 hrs <sup>5</sup>	Reported L70 Per TM-21 <sup>5,6</sup>	Calculated Lumen Maint. % @60,000 hrs
up to 40°C	>200,000 hrs	>60,000 hrs	94.0%

4. Calculated performance derived from LED manufacturer's data and engineering design estimates, based on IESNA LM-80 methodology. Actual experience may vary due to field application conditions.

5. L70 is the predicted time when LED performance depreciates to 70% of initial lumen output.

6. Reported per IESNA TM21-11. Published L70 hours limited to 6 times actual LED test hours.



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200 Franklin Square Drive, Somerset, NJ 08873  
Tel. 855-486-2216

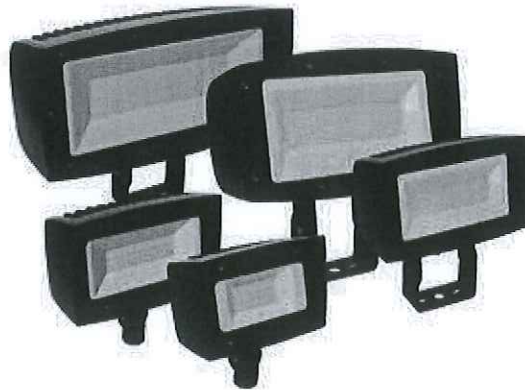
Philips Lighting Canada Ltd.  
281 Hillmount Rd, Markham, ON, Canada L6C 2S3  
Tel. 800-668-9008



# PHILIPS Stonco

## Floodlights

General  
purpose flood



Project: \_\_\_\_\_  
Location: \_\_\_\_\_  
Cat.No: \_\_\_\_\_  
Type: \_\_\_\_\_  
Qty: \_\_\_\_\_  
Notes: \_\_\_\_\_

The Philips Stonco LED Floodlights offer energy saving LED technology for long life and reduced maintenance. Versatile and stylish with five different sizes to choose from provides application flexibility for ground mount, wall mount, or pole mount installations. Ideal for sign lighting, building facades, security lighting, and general purpose floodlighting applications.

### Ordering guide

example: FL150-NW-G1-T-FL-8-BZ

Luminaire	LED Color	Generation	Mounting	Distribution	Voltage	Finish
<input type="text"/>	<input type="text" value="NW"/>	<input type="text" value="G1"/>	<input type="text"/>	<input type="text" value="FL"/>	<input type="text" value="8"/>	<input type="text" value="BZ"/>
<b>FL20</b> LED Floodlight 20W	<b>NW</b> Neutral White 4000K, 80CRI	<b>G1</b> Generation 1	<b>K</b> Knuckle Mount ½" NPS male	<b>FL</b> Flood	<b>8</b> 120-277VAC	<b>BZ</b> Bronze
<b>FL40</b> LED Floodlight 40W						
<b>FL80</b> LED Floodlight 80W			<b>T</b> Trunnion Mount			
<b>FL150</b> LED Floodlight 150W						
<b>FL300</b> LED Floodlight 300W						

1. K Knuckle Mount only available with FL20 and FL40.
2. T Trunnion Mount only available with FL80, FL150 and FL300.

### LED Wattage and Lumen Values

Neutral White Ordering Codes	Total LEDs	LED Current (mA)	Color Temp. (K)	Average System Wattage <sup>1</sup>	Lumen Output <sup>1,2</sup>	Efficacy (LPW)
<b>FL20-NW-G1-K-FL-8-BZ</b>	32	500	4000	20	2122	109
<b>FL40-NW-G1-K-FL-8-BZ</b>	64	1100	4000	39	4433	113
<b>FL80-NW-G1-T-FL-8-BZ</b>	128	2450	4000	79	8856	113
<b>FL150-NW-G1-T-FL-8-BZ</b>	248	4200	4000	146	16,325	112
<b>FL300-NW-G1-T-FL-8-BZ</b>	544	2100	4000	301	34,025	113

1. Wattage and lumen output may vary by +/- 8% due to LED manufacturer forward volt specification and ambient temperature.  
Wattage shown is average for 120V through 277V input. Actual wattage may vary by an additional +/- 10% due to actual input voltage.
2. Lumen values based on photometric tests performed in compliance with IESNA LM-79.

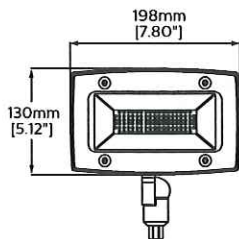
NOTE: Contact outdoorlighting.applications@philips.com for additional photometric tests or information.



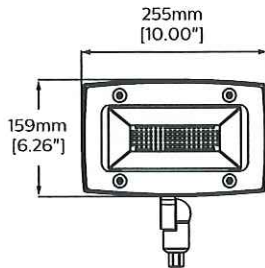
# General purpose flood LED

FL20/40/80/150/300

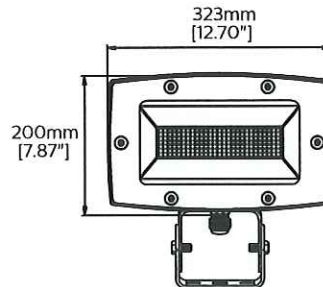
## Dimensions



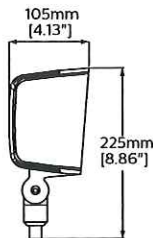
FL20 Front



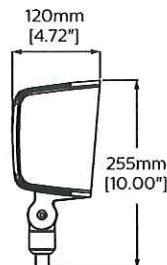
FL40 Front



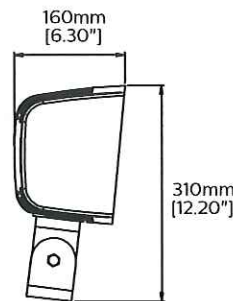
FL80 Front



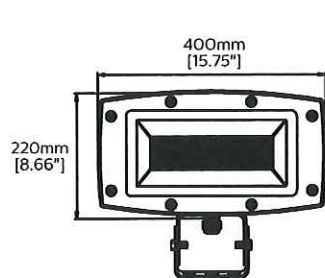
FL20 Side



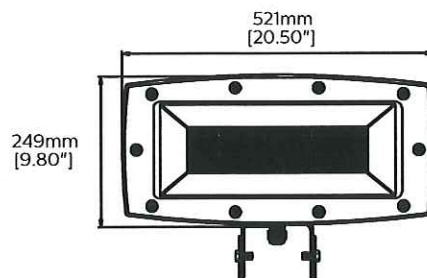
FL40 Side



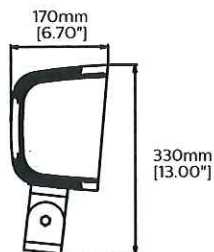
FL80 Side



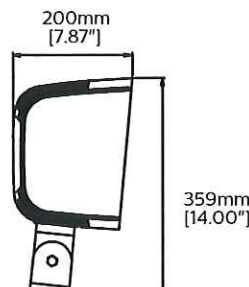
FL150 Front



FL300 Front

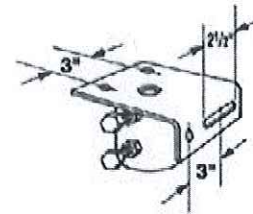


FL150 Side



FL300 Side

Accessory  
(ordered separately,  
field installed)

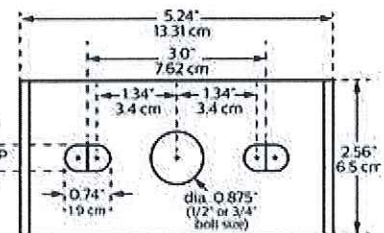


USF10BRZ

Mounting adapter for trunnion, fits  
2-3/8" O.D. tenon, bronze finish.

## EPA and Weight

Product	Effective Projected Area (EPA-ft <sup>2</sup> )			Weight
	0° Aim	45° Aim	90° Aim	
FL20	0.238	0.271	0.316	4.6lbs (2.09kg)
FL40	0.351	0.415	0.500	6.6lbs (2.99kg)
FL80	0.595	0.680	0.798	15lbs (6.8kg)
FL150	0.784	0.915	1.089	20lbs (9.1kg)
FL300	1.199	1.369	1.604	33lbs (14.9kg)



Trunnion Mount Bolt Pattern



# General purpose flood LED

FL20/40/80/150/300

## Specifications

### Housing and Heat Sink

Single piece die cast aluminum alloy. Housing also acts as a heat sink, designed to ensure high efficacy and superior cooling by natural convection. Air flow pattern always close to LEDs and driver optimizing their efficiency and life. Product does not use any cooling device with moving parts (only passive cooling).

### Mounting

**Suitable for mounting within 4' (1.2m) of the ground.**

**Knuckle (K, see Ordering guide):** Integral die cast Aluminum adjustable knuckle (K) with ½" NPS male threads, made of a lower copper alloy for resistance to corrosion, with locking teeth and bolt to lock in aiming angle. Ships fully assembled, ready to install. Six inch (6" or 152mm) leads exit out of Knuckle for connection by others.

**Trunnion (T, see Ordering guide):** Integral structural steel adjustable trunnion (T) for direct surface mounting, painted for resistance to corrosion, with bolt to lock in aiming angle. Ships fully assembled, ready to install. Six foot (6' or 1.83m) watertight STW 16 gauge cord exits out of Housing for connection by others, IP66 liquid tight connector to seal cord exit point.

### Lens

Heat and impact resistant tempered glass lens with one piece silicone gasket surrounding the entire perimeter of the LED light engine and electronics compartment providing an IP66 seal. Lens secured with screws and recessed sleeve washers outside of gasket perimeter. Lens includes silk screen to help reduce glare and for aesthetic purposes.

### Light Engine

Composed of 3 main components: LED Module / Optical System / Driver. Electrical components are RoHS compliant. LEDs tested by ISO 17025-2005 accredited lab in accordance with IESNA LM-80 guidelines extrapolations in accordance with IESNA TM-21. Metal core substrate ensures greater heat transfer and longer lifespan.

### Predicted Lumen Depreciation Data

Ambient Temperature °C	System Current	L <sub>70</sub> per TM21 <sup>1,2</sup>	Lumen Maintenance @ 42,000hrs
25°C	4200 mA	>42,000	85%

1. L<sub>70</sub> is the predicted time when LED performance depreciates to 70% of initial lumen output.  
2. Calculated per IESNA TM 21-11. Published L<sub>70</sub> hours limited to 6 times actual LED test hours.

### LED Module

Composed of mid-power performance white LEDs. Color temperature as per ANSI/NEMA bin Neutral White, 4000 Kelvin nominal (3985 +/- 275K or 3710K to 4260K), CRI 80 Min.

### Optical System

Flood distribution, optimized for target lumens and a superior lighting uniformity. Photometric performance shall be tested per LM-79 (IESNA) certifying its photometric performance and published in accordance with LM-63.

### Driver

High power factor of 90% min. Electronic driver, operating range 50/60 Hz, Class 1 or Class 2.

### Other Integrated Features

**Surge Protection:** Each luminaire is provided as standard with surge protector (Philips designed SP1 or SP1HV) tested in accordance with ANSI/IEEE C62.45 per ANSI/IEEE C62.41.2 Scenario I Category C High Exposure 10kV/10kA waveforms for Line Ground, Line Neutral and Neutral Ground.

### Wiring

Insulated internal wiring located inside the housing, silicone seals all places where wiring passes through openings including sealed going into the knuckle or exiting the luminaire for trunnion mount. Due to the inrush current that occurs with electronic drivers, recommend using a time delay or slow blow fuse to avoid unnecessary and unwanted fuse blowing that can occur with fast acting fuses.

### Hardware

All exposed screws shall be stainless steel and/or corrosion resistant and captive. All seals and sealing devices are made and/or lined with EPDM and/or silicone and/or rubber.

### Finish

Fade and abrasion resistant, electrostatically applied, thermally cured, triglycidal isocyanurate (TGIC) polyester powdercoat textured bronze finish.

### LED Products Manufacturing Standard

The electronic components sensitive to electrostatic discharge (ESD) such as light emitting diodes (LEDs) are assembled in compliance with EC61340-5-1 and ANSI/ESD S20.20 standards so as to eliminate ESD events that could decrease the useful life of the product.

### Vibration Resistance

Knuckle mounts meet the ANSI C136.31 Luminaire vibration specifications for normal applications (1.5G).

### Certifications and Compliance

cULus Listed for Canada and USA. DesignLights Consortium qualified. Entire luminaire is rated for operation in ambient temperature of -30°C (-22°F) up to +40°C (+104°F).

### IP66 Rating

Entire luminaire including light engine and driver/electrical compartment IP66 rated in all aiming positions including upward aiming floodlighting applications.

### Limited Warranty

5-year limited warranty. See philips.com/warranties for details and restrictions. Visit our eCatalog or contact your local sales representative for more information.

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Philips Lighting North America Corporation  
200 Franklin Square Drive, Somerset, NJ 08873  
Tel. 855-486-2216

Philips Lighting Canada Ltd.  
281 Hillmount Rd, Markham, ON, Canada L6C 2S3  
Tel. 800-668-9008



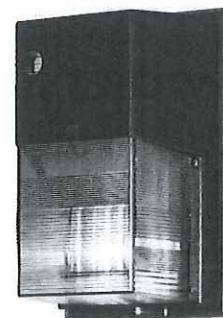
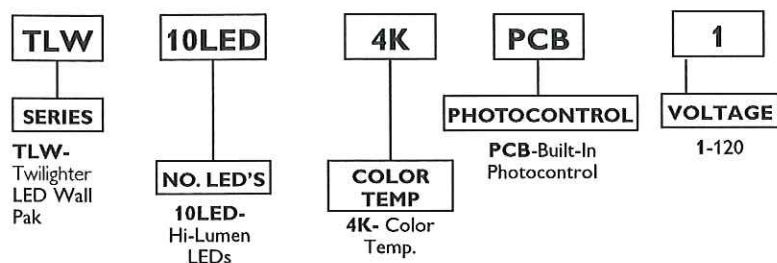
CATALOG NO. \_\_\_\_\_

TYPE NO. \_\_\_\_\_ JOB NAME \_\_\_\_\_

## Twilighter LED Wall Pak

### ORDERING INFORMATION

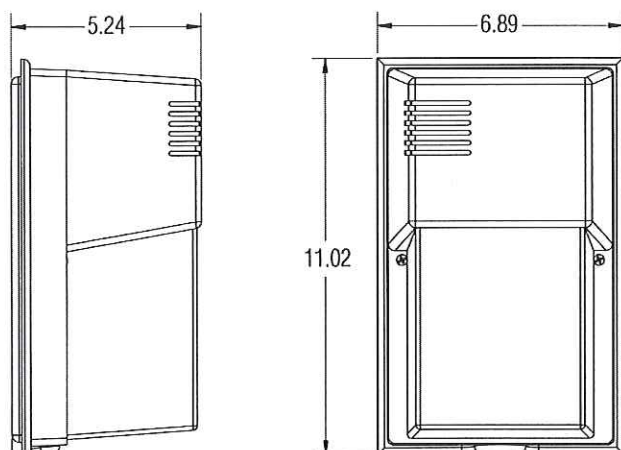
Catalog Number: Example: TLW10LED4KPCB-1



### PRODUCT SPECIFICATIONS

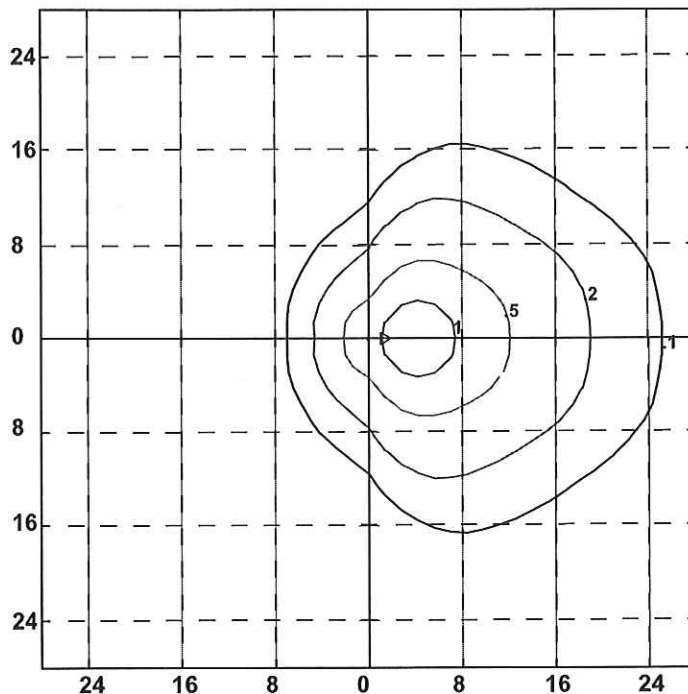
- 13.9 watt high-powered LED array
- 50,000 hour life
- Lightweight, compact design
- Sturdy die-cast aluminum housing
- Architectural bronze UV resistant powder coat finish
- UV stabilized polycarbonate lens/refractor
- UV stabilized polycarbonate front housing
- Continuous silicone rubber gasket between housing and lens/cover
- Energy-efficient, high-powered LED Array
- Provides 707 delivered lumens, LM79
- Excellent heat management for long life
- Efficacy: 50.9 lumens per watt (LPW)
- CRI: 86
- 4386 CCT
- Operating temperature: -25°C (-13°F) to 35°C (95°F)
- Voltage: 120V 50/60Hz
- Factory-installed photocontrol
- UL Listed for wet locations
- 5-year warranty

### TECHNICAL INFORMATION



# Twilighter LED Wall Pak

## PHOTOMETRIC DATA



Philips Stonco LED Twilighter Wall Pak  
Photometric Filename: TLW10LED4K.IES

### Characteristics

Horizontal Footcandles  
Mounting Height = 8 Ft.  
Light Loss Factor = 1.00  
Lumens Per Lamp = N.A. (absolute photometry)  
Luminaire Lumens = 710  
Mounting Height = 8.00 Ft  
Maximum Calculated Value = 1.39 Fc  
Arrangement: Single

### Footcandle Correction

Multiply the following factors times the footcandle values for changes in mounting height.

To change from 8'

New Height	6'	7'	8'	9'	10'	12'
Factor	1.78	1.31	1.00	.79	.64	.44



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Specifications are subject to change without notice.  
[www.philips.com/luminaires](http://www.philips.com/luminaires)

05/13

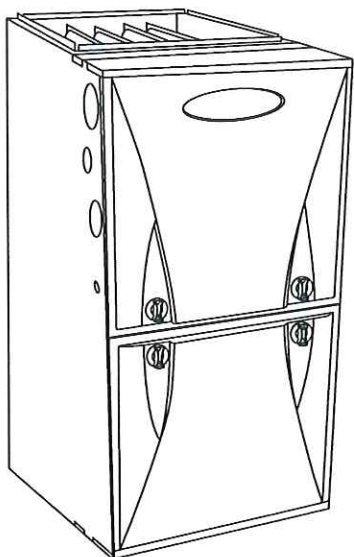
Philips Lighting Company  
200 Franklin Square Drive  
Somerset, NJ 08873  
Phone: 855-486-2216

Philips Lighting Company  
281 Hillmount Road  
Markham ON, Canada L6C 2S3  
Phone: 800-668-9008

**59SP5A**  
**Performance™ Boost, Single-Stage**  
**4-Way Multipoise**  
**Condensing Gas Furnace**  
**Series 100**



## Product Data



A11263

The 59SP5A Multipoise Performance™ Boost Condensing Gas Furnace features SEER-boosting year-round electrical efficiency when paired with a compatible condensing unit. Energy efficiency is at the heart of this furnace with up to 96.5% AFUE gas efficiency and the electrically-efficient basic ECM blower motor. This gas furnace also features 4-way multipoise installation flexibility, and is available in six model sizes. The 59SP5A can be vented for direct vent/two-pipe, ventilated combustion air, or single-pipe applications. All units meet California Air Quality Management District emission requirements, are design certified in Canada, and are certified for mobile/manufactured home use.

### STANDARD FEATURES

- Quiet operation. Compare for yourself at [HVACpartners.com](http://HVACpartners.com).
- Most sizes meet ENERGY STAR® Version 4.0 criteria for gas furnaces: 95+ AFUE; AMACF electrical rating; 2% or less cabinet airflow leakage. *See table on Page 2.*
- High-efficiency basic ECM multiple-speed blower motor for electrically efficient operation all year long in heating, cooling and continuous fan operation.
- Humidistat™ Control compatible; dehumidification input for better comfort.
- SmartEvap™ technology helps control humidity levels in the home when used with a compatible humidity control system.
- ComfortFan™ technology allows control of continuous fan speed from a compatible thermostat.
- Ideal height 35" (889 mm) cabinet: short enough for taller coils, but still allows enough room for service.
- Silicon Nitride Power Heat™ Hot Surface Igniter.
- External Media Filter Cabinet included.
- 4-way multipoise design for upflow, downflow or horizontal installation, with unique vent elbow and optional venting through-the-cabinet downflow venting capability.
- Single-speed inducer motor, and single-stage gas valve.
- Self diagnostics with SuperBrite LED.
- Approved for Twinning applications with accessory kit (60-14 through 120-22 models, only).
- Approved for Manufactured Housing/Mobile Home applications with MH accessory kit.
- Adjustable blower speed for heating, cooling and continuous fan
- Aluminized-steel primary heat exchanger.
- Stainless-steel condensing secondary heat exchanger.
- Propane convertible (see Accessory list).
- Factory-configured ready for upflow applications.
- Fully-insulated casing including blower section.
- Convenient Air Purifier and Humidifier connections.
- Direct-vent/sealed combustion, single-pipe venting or ventilated combustion air.
- Installation flexibility: (sidewall or vertical vent).
- Residential installations may be eligible for consumer financing through the Retail Credit Program.
- Certified to leak 2% or less of nominal air conditioning CFM delivered when pressurized to 1-in. water column with all present air inlets, air outlets, and condensate drain port(s) sealed.

Performance  
 SERIES



Select Models



Use of the AHRI Certified TM Mark indicates a manufacturer's participation in the program. For verification of certification for individual products, go to [www.ahridirectory.org](http://www.ahridirectory.org).



SAP ORDERING NO.	CASING DIMENSIONS (IN.)			RATED HEATING OUTPUT†			HEATING AIRFLOW		COOLING CFM @ 0.5 ESP (in. W.C.)	MOTOR HP SPEED	MEDIA CABINET SUPPLIED (IN.)
	H	D	W	BTUH	AFUE	ENERGY STAR	HEATING CFM	HEATING ESP (in. W.C.)			
59SP5A040E14-10	35	29.5	14.2	39,000	96.5%	✓	695	0.1	925	1/2 - 5	16
59SP5A040E17-12	35	29.5	17.5	39,000	96.5%	✓	705	0.1	1085	1/2 - 5	16
59SP5A060E14-12	35	29.5	14.2	58,000	95.5%	✓	940	0.12	1090	1/2 - 5	16
59SP5A060E17-14	35	29.5	17.5	58,000	96.5%	✓	1000	0.12	1505	3/4 - 5	16
59SP5A080E17-16	35	29.5	17.5	78,000	96.5%	✓	1360	0.15	1610	3/4 - 5	16
59SP5A080E21-20	35	29.5	21.0	78,000	96.5%	✓	1360	0.15	2015	1 - 5	20
59SP5A100E21-20	35	29.5	21.0	97,000	96.3%	-	1700	0.2	2110	1 - 5	20
59SP5A120E24-22	35	29.5	24.0	117,000	96.5%	-	2125	0.2	2055	1 - 5	24

† Capacity in accordance with DOE test procedures. Ratings are position dependent. See rating plate.

‡ Heating CFM at factory default blower motor heating tap settings.

ESP — External Static Pressure

✓ Meets ENERGY STAR criteria

## FEATURES AND BENEFITS

**SmartEvap™ Technology** — When paired with a compatible thermostat, this dehumidification feature overrides the cooling blower off-delay when there is a call for dehumidification. By deactivating the blower off-delay, SmartEvap technology prevents condensate that remains on the coil after a dehumidification cycle from re-humidifying throughout the home. This results in reduced humidity and a more comfortable indoor environment for the homeowner.

Unlike competitive systems, SmartEvap technology only overrides the cooling blower off-delay when humidity control is needed. Once humidity is back in control, SmartEvap re-enables the energy-saving cooling blower off-delay.

**ComfortFan™ Technology** — Sometimes the constant fan setting on a standard furnace system can actually reduce homeowner comfort by providing too much or too little air! Comfort Fan technology improves comfort all year long by allowing the homeowner to select the continuous fan speed of their choice using a compatible thermostat.

**HYBRID HEAT® Dual Fuel System** — This system can provide more control over your monthly energy bills by automatically selecting the most economical method of heating. With HYBRID HEAT components, our system automatically switches between the gas furnace and the electric heat pump as outside temperatures change to maintain greater efficiency and comfort than with any traditional single-source heating system. The heat pump also delivers high-efficiency cooling in the summer.

**Power Heat™ Igniter** — Carrier's unique SiN igniter is not only physically robust but it is also electrically robust. It is capable of running at line voltage and does not require complex voltage regulators as do other brands. This unique feature further enhances the gas furnace reliability and continues Carrier's tradition of technology leadership and innovation in providing a reliable and durable product.

**Performance™ ECM Blower Motor** — This basic ECM, or electronically commutated motor, can provide an efficiency enhancement for select Carrier air conditioner or heat pump systems. It uses less electrical power than its PSC counterpart and also has a wider range of speeds

**Reliable Heat Exchanger Design** — The aluminized steel, clam shell primary heat exchanger was re-engineered to achieve greater efficiency out of a smaller size. The first two passes of the heat exchanger are based on the current 80% product, a design with more than ten years of field-proven performance and success. These innovations, paired with the continuation of a crimped, no-weld seam create an efficient, robust design for this essential component.

The condensing heat exchanger, a stainless steel fin and tube design, is positioned in the furnace to extract additional heat. Stainless steel coupling box componentry between heat exchangers has exceptional corrosion resistance in both natural gas and propane applications.

**Media Filter Cabinet** — Enhanced indoor air quality in the home is made easier with our media filter cabinet—a standard accessory on all deluxe furnaces. When installed as a part of the system, this cabinet allows for easy and convenient addition of a Carrier high efficiency air filter.

**4-Way Multipoise Design** — One model for all applications — there is no need to stock special downflow or horizontal models when one unit will do it all. The new heat exchanger design allows these units to achieve the certified AFUE in all positions.

**Direct or Single-pipe Venting, or Optional Ventilated Combustion Air** — This furnace can be installed as a 2-pipe (Direct Vent) furnace, in an optional ventilated combustion air application, or in single-pipe, non-direct vent applications. This provides added flexibility to meet diverse installation needs.

**Sealed Combustion System** — This furnace brings in combustion air from outside the furnace, which results in especially quiet operation. By sealing the entire combustion vestibule, the entire furnace can be made quieter, not just the burners.

**Insulated Casing** — Foil-faced insulation in the heat exchanger section of the casing minimizes heat loss. The acoustical insulation in the blower compartment reduces air and motor noise for quiet operation.

**Monoport Burners** — The burners are specially designed and finely tuned for smooth, quiet combustion and economical operation.

**Bottom Closure** — Factory-installed for side return; easily removable for bottom return. The multi-use bottom closure can also serve for roll-out protection in horizontal applications, and act as the bottom closure for the optional return air base accessory.

**Blower Access Panel Switch** — Automatically shuts off 115-v power to furnace whenever blower access panel is opened.

**Quality Registration** — Our furnaces are engineered and manufactured under an ISO 9001 registered quality system.

**Certifications** — This furnace is CSA (AGA and CGA) design certified for use with natural and propane gases. The furnace is factory-shipped for use with natural gas. A CSA listed gas conversion kit is required to convert furnace for use with propane gas. The efficiency is AHRI efficiency rating certified. This furnace meets California Air Quality Management District emission requirements.



## SPECIFICATIONS

Heating Capacity and Efficiency		040-10	040-12	060-12	060-14	080-16	080-20	100-20	120-22
Input	High Heat (BTUH)	40,000	40,000	60,000	60,000	80,000	80,000	100,000	120,000
Output									117,000
Certified Temperature Rise Range °F (°C)	High Heat	40 - 70 (22 - 39)	40 - 70 (22 - 39)	45 - 75 (25 - 42)	40 - 70 (22 - 39)	40 - 70 (22 - 39)	40 - 70 (22 - 39)	40 - 70 (22 - 39)	40 - 70 (22 - 39)
Airflow Capacity and Blower Data		040-10	040-12	060-12	060-14	080-16	080-20	100-20	120-22
Rated External Static Pressure (in. w.c.)	Heating	0.10	0.10	0.12	0.12	0.15	0.15	0.20	0.20
	Cooling	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Airflow Delivery @ Rated ESP (CFM)	High Heat	695	705	940	1000	1360	1360	1700	2125
	Cooling	925	1085	1090	1505	1610	2015	2110	2055
Cooling Capacity (tons) @ 400, 350 CFM/ton	CFM/ton	2	2.5	2.5	3.5	4	5	5	5
	CFM/ton	2.5	3	3	4	4.5	5.5	6	6
Direct-Drive Motor Type		Electronically Commutated Motor (ECM)							
Direct-Drive Motor HP		1/2	1/2	1/2	3/4	3/4	1	1	1
Motor Full Load Amps		6.8	6.8	6.8	8.4	8.4	10.9	10.9	10.9
RPM Range		600 - 1200							
Speed Selections		5							
Blower Wheel Dia x Width	in.	11 x 7	11 x 8	11 x 7	11 x 8	11 x 8	11 x 10	11 x 10	11 x 11
Air Filtration System		Factory Supplied Media Cabinet Field Supplied Filter							
Filter Used for Certified Watt Data		KGAWF1506UFR							
Electrical Data		040-10	040-12	060-12	060-14	080-16	080-20	100-20	120-22
Input Voltage	Volts-Hertz-Phase	115-60-1							
Operating Voltage Range	Min-Max	104-127							
Maximum Input Amps	Amps	7.4	7.4	7.5	9.1	9.1	11.6	11.7	11.7
Unit Ampacity	Amps	10.3	10.3	10.4	12.4	12.4	15.5	15.6	15.6
Minimum Wire Size	AWG	14	14	14	14	14	12	12	12
Maximum Wire Length @ Minimum Wire Size	Feet	36	36	35	30	30	37	36	36
	(M)	(11.0)	(11.0)	(10.7)	(9.1)	(9.1)	(11.3)	(11.0)	(11.0)
Maximum Fuse/Ckt Bkr (Time-Delay Type Recommended)	Amps	15	15	15	15	15	20	20	20
Transformer Capacity (24vac output)		40 VA							
External Control Power Available	Heating	27.9 VA							
	Cooling	34.6 VA							
Controls		040-10	040-12	060-12	060-14	080-16	080-20	100-20	120-22
Gas Connection Size		1/2" - NPT							
Burners (Monoport)		2	2	3	3	4	4	5	6
Gas Valve (Redundant)		White Rodgers							
Minimum Inlet Gas pressure (in. wc)		4.5							
Maximum Inlet Gas pressure (in. wc)		13.6							
Gas Conversion Kit - Natural to Propane		KGANP50011SP							
Gas Conversion Kit - Propane to Natural		KGAPN42011SP							
Manufactured (Mobile) Home Kit		KGAMH0601KIT							
Ignition Device		Silicon Nitride							
Limit Control		165	180	165	180	170	200	180	160
Heating Blower Control (Heating Off-Delay)		Adjustable: 90, 120, 150, 180 seconds							
Cooling Blower Control (Time Delay Relay)		90 seconds							
Communication System		none							
Thermostat Connections		Com 24V, R, W, G, Y/Y2, DHUM, Y1							
Accessory Connections		EAC (115vac); HUM (24vac); 1-stg AC (via Y/Y2)							

\* See Accessory List for part numbers available.

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## MODEL NUMBER NOMENCLATURE

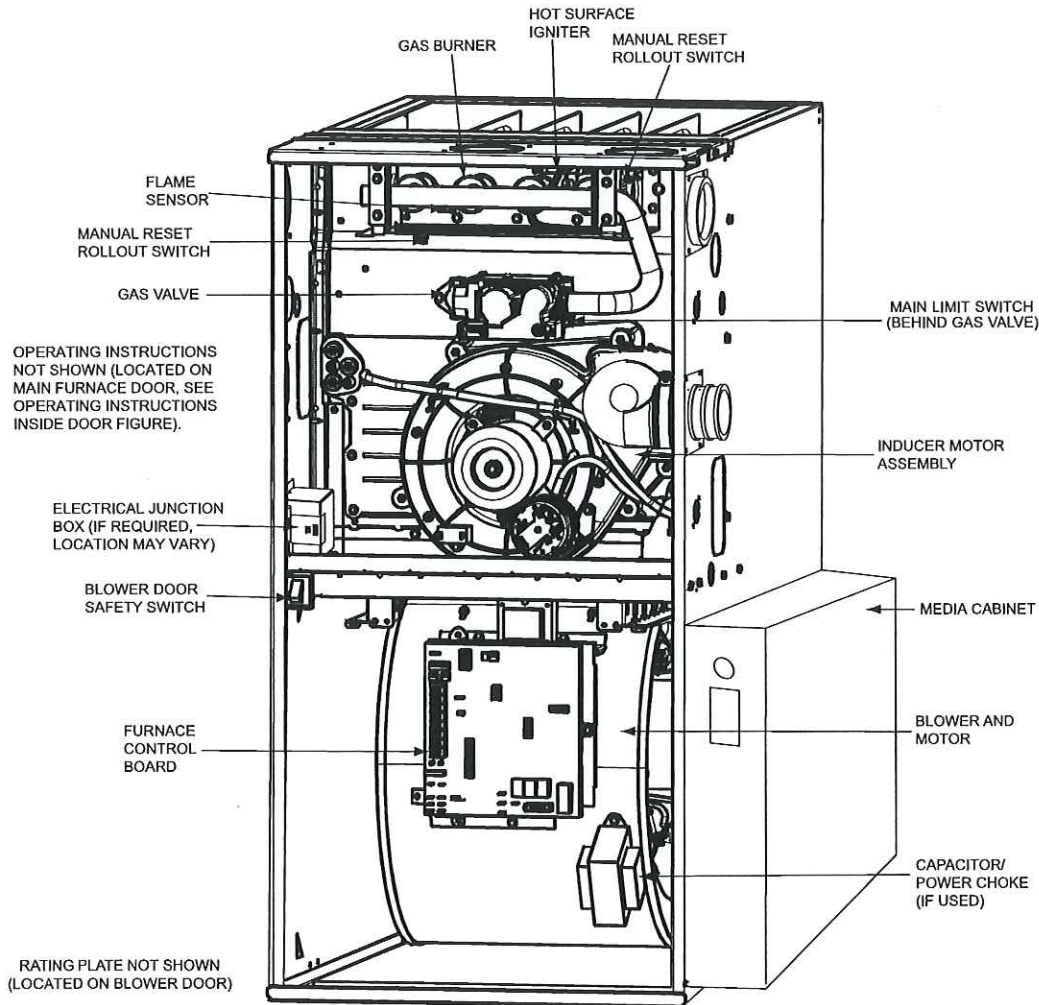
Example of Model Number

1 - 2 Family	3 Htg. Stages	4 Tier	5 Base Effy.	6 Major Series	7 - 9 Htg. Cap.	10 Motor	11 - 12 Width	13 Voltage	14 Minor Series	15 - 16 Airflow
59	T	N	6	A	060	V	17	--	--	14
Family	S - Single Stage T - Two Stage M - Modulating	C - Comfort P - Performance N - Infinity	0 - +90 AFUE 2 - +92 AFUE 3 - +93 AFUE 5 - +95 AFUE 6 - +96 AFUE 7 - +97 AFUE	Major Series	040=40,000 BTU 060=60,000 BTU 080=80,000 BTU 100=100,000 BTU 120=120,000 BTU 140=140,000 BTU	S - Standard E - Energy Efficient V - Variable Speed	14 - 14.2" 17 - 17.5" 21 - 21.0" 24 - 24.5"	Voltage	Minor Series	08 - 800 CFM 10 - 1000 CFM 12 - 1200 CFM 14 - 1400 CFM 16 - 1600 CFM 18 - 1800 CFM 20 - 2000 CFM 22 - 2200 CFM

Not all families have these models.

A12373

## FURNACE COMPONENTS



REPRESENTATIVE DRAWING ONLY, SOME MODELS MAY VARY IN APPEARANCE.

A11408



## ACCESSORIES

DESCRIPTION	PART NUMBER	040-10	060-12	040-12	060-14	080-16	080-20	100-20	120-22
<b>Venting Accessories</b>									
Vent Kit - Through the Cabinet	KGADC0101BVC	•	•	•	•	•	•	•	•
Vent Terminal - Concentric - 2" (51 mm)	KGAVT0701CVT	See Venting Tables							
Vent Terminal - Concentric - 3" (76 mm)	KGAVT0801CVT								
Vent Terminal Bracket - 2" (51 mm)	KGAVT0101BRA								
Vent Terminal Bracket - 3" (76 mm)	KGAVT0201BRA								
Vent Kit – Rubber Coupling	KGAAC0101RVC	See Venting Tables							
<b>Condensate Drainage Accessories</b>									
Freeze Protect Kit - Heat Tape	KGAHT0101CFP	•	•	•	•	•	•	•	•
CPVC to PVC Drain Adapters - 1/2" CPVC to 3/4" PVC	KGAAD0110PVC	•	•	•	•	•	•	•	•
Horizontal Trap Grommet - Direct Vent	KGACK0101HCK	All DV Horizontal							
Condensate Neutralizer Kit	P908-0001	•	•	•	•	•	•	•	•
External Trap Kit	KGAET0201ETK	•	•	•	•	•	•	•	•
<b>Ductwork Adapter Accessories</b>									
Furnace Base Kit for Combustible Floors	KGASB0201ALL	•	•	•	•	•	•	•	•
Coil Adapter Kits – No Offset	KGADA0101ALL	•	•	•	•	•	•	•	•
Coil Adapter Kits – Single Offset	KGADA0201ALL	•	•	•	•	•	•	•	•
Coil Adapter Kits – Double Offset	KGADA0301ALL	•	•	•	•	•	•	•	•
Return Air Base (Upflow Applications) 14.0–in. wide	KGARP0301B14	•	•						
Return Air Base (Upflow Applications) 17.5–in. wide	KGARP0301B17			•	•	•			
Return Air Base (Upflow Applications) 21.0–in. wide	KGARP0301B21						•	•	
Return Air Base (Upflow Applications) 24.5–in. wide	KGARP0301B24								•
IAQ Device Duct Adapters 20.0–in. IAQ to 16 in. Side Return	KGAAD0101MEC	20"x25" IAQ Devices							
IAQ Device Duct Adapters 24.0–in. IAQ to 16 in. Side Return	KGAAD0201MEC	24"x25" IAQ Devices							
<b>Gas Conversion Accessories</b>									
Mobile Home Kit	KGAMH0601KIT	•	•	•	•	•	•	•	•
Gas Conversion Kit - Nat to LP	KGANP50011SP	•	•	•	•	•	•	•	•
Gas Conversion Kit - LP to Nat	KGAPN42011SP	•	•	•	•	•	•	•	•
Gas Orifice Kit - #42 (Nat Gas)	LH32DB207	•	•	•	•	•	•	•	•
Gas Orifice Kit - #43 (Nat Gas)	LH32DB202	•	•	•	•	•	•	•	•
Gas Orifice Kit - #44 (Nat Gas)	LH32DB200	•	•	•	•	•	•	•	•
Gas Orifice Kit - #45 (Nat Gas)	LH32DB205	•	•	•	•	•	•	•	•
Gas Orifice Kit - #46 (Nat Gas)	LH32DB208	•	•	•	•	•	•	•	•
Gas Orifice Kit - #47 (Nat Gas)	LH32DB078	•	•	•	•	•	•	•	•
Gas Orifice Kit - #48 (Nat Gas)	LH32DB076	•	•	•	•	•	•	•	•
Gas Orifice Kit - #54 (LP)	LH32DB203	•	•	•	•	•	•	•	•
Gas Orifice Kit - #55 (LP)	LH32DB201	•	•	•	•	•	•	•	•
Gas Orifice Kit - #56 (LP)	LH32DB206	•	•	•	•	•	•	•	•
Gas Orifice Kit - 1.25mm (LP)	LH32DB209	•	•	•	•	•	•	•	•
Gas Orifice Kit - 1.30mm (LP)	LH32DB210	•	•	•	•	•	•	•	•
<b>Control Accessories</b>									
Twinning Kit	KGATW0701HSI				•	•	•	•	•
<b>IAQ Accessories</b>									
Filter Pack (6 pack) – Washable - 16x25x1 (406x635x25 mm)	KGAWF1306UFR	•	•	•	•	•	•	•	•
Filter Pack (6 pack) – Washable - 24x25x1 (610x635x25 mm)	KGAWF1506UFR	•	•	•	•	•	•	•	•
EZ-Flex Filter - 16" (406 mm)	EXPXXFIL0016	Use with EZXCAB – 1016							
EZ-Flex Filter - 20" (508 mm)	EXPXXFIL0020	Use with EZXCAB – 1020							
EZ-Flex Filter - 24" (610 mm)	EXPXXFIL0024	Use with EZXCAB – 1024							
EZ-Flex Filter with End Caps - 16" (406 mm)	EXPXXUNV0016	Use with EZXCAB – 1016							
EZ-Flex Filter with End Caps - 20" (508 mm)	EXPXXUNV0020	Use with EZXCAB – 1020							
EZ-Flex Filter with End Caps - 24" (610 mm)	EXPXXUNV0024	Use with EZXCAB – 1024							
Cartridge Media Filter - 16" (406 mm)	FILXXCAR0016	Use with FILCABXL – 1016							
Cartridge Media Filter - 20" (508 mm)	FILXXCAR0020	Use with FILCABXL – 1020							
Cartridge Media Filter - 24" (610 mm)	FILXXCAR0024	Use with FILCABXL – 1024							
Carrier Performance Air Purifier - 16x25 (508x635 mm)	PGAPXX1625	Up to 1600 CFM							
Carrier Performance Air Purifier - 20x25 (508x635 mm)	PGAPXX2025	Up to 2000 CFM							
Carrier Performance Air Purifier Repl Filter - 16x25 (406x635 mm)	PGAPAXXCAR1625	GAPAXXC1625							
Carrier Performance Air Purifier Repl. Filter - 20x25 (508x635 mm)	PGAPAXXCAR2025	GAPAXXC2025							

• = Used with the model furnace

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## AIR DELIVERY - CFM (BOTTOM RETURN WITH FILTER)

UNIT SIZE	RETURN-AIR CONNECTION	SPEED TAPS <sup>2, 3</sup>	EXTERNAL STATIC PRESSURE (IN.W.C.)									
			0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
040-10	SIDE/BOTTOM	Gray	1120	1080	1030	980	925	875	820	760	690	630
		Yellow	880	845	810	780	740	710	680	640	615	570
		Blue	695	665	620	575	535	495	455	420	370	280
		Orange	640	595	540	495	460	420	370	310	260	230
		Red	570	525	475	425	385	330	255	220	- <sup>6</sup>	- <sup>6</sup>
040-12	SIDE/BOTTOM	Gray	1255	1220	1175	1130	1085	1040	990	940	880	825
		Yellow	940	905	870	840	805	770	735	695	665	630
		Blue	705	670	630	575	540	500	455	410	380	325
		Orange	580	535	480	425	380	335	290	235	- <sup>6</sup>	- <sup>6</sup>
		Red	555	485	425	375	330	280	215	- <sup>6</sup>	- <sup>6</sup>	- <sup>6</sup>
060-12	SIDE/BOTTOM	Gray	1265	1225	1185	1140	1090	1030	975	920	850	760
		Yellow	1115	1085	1060	1030	1000	970	930	880	810	715
		Orange	1000	970	940	910	880	845	815	770	735	695
		Blue	945	915	885	855	820	785	745	705	675	635
		Red	770	740	700	660	620	575	540	500	455	415
060-14	SIDE/BOTTOM	Gray	1720	1670	1620	1565	1505	1440	1375	1295	1220	1135
		Yellow	1325	1285	1255	1220	1185	1145	1115	1075	1040	1000
		Blue	1010	970	925	875	835	785	745	690	660	620
		Orange	1160	1115	1080	1045	1000	960	920	875	840	785
		Red	785	715	655	595	530	490	435	385	340	285
080-16	SIDE/BOTTOM	Gray	1810	1770	1720	1665	1610	1540	1475	1400	1315	1235
		Yellow	1535	1500	1475	1435	1405	1370	1340	1310	1245	1160
		Blue	1380	1340	1305	1270	1240	1200	1165	1130	1090	1050
		Orange	1180	1130	1095	1060	1015	975	935	895	850	800
		Red	1100	1045	1010	970	920	885	845	790	745	690
080-20	BOTTOM or TWO-SIDES <sup>4, 5</sup>	Gray	2290	2225	2155	2090	2015	1930	1845	1750	1640	1515
		Yellow	1810	1760	1725	1685	1640	1600	1555	1520	1480	1415
		Blue	1385	1340	1285	1240	1200	1140	1090	1050	995	950
		Orange	1560	1520	1475	1430	1385	1335	1295	1240	1200	1150
		Red	1055	985	910	860	795	750	680	615	565	495
100-20	BOTTOM or TWO-SIDES <sup>4, 5</sup>	Gray	2340	2295	2250	2195	2110	2030	1935	1835	1725	1605
		Yellow	1950	1900	1855	1800	1755	1705	1655	1605	1560	1485
		Blue	1750	1700	1650	1605	1555	1500	1455	1395	1350	1300
		Orange	1570	1520	1460	1410	1350	1300	1240	1195	1140	1095
		Red	1350	1280	1225	1155	1105	1045	1000	950	895	830
120-22	BOTTOM or TWO-SIDES <sup>4, 5</sup>	Gray	2275	2230	2185	2130	2055	1950	1825	1710	1610	1500
		Yellow	1875	1820	1770	1720	1660	1600	1550	1505	1450	1390
		Blue	2170	2125	2075	2025	1975	1900	1790	1695	1590	1470
		Orange <sup>3</sup>	1475	1420	1350	1280	1215	1165	1105	1050	995	930
		Red <sup>3</sup>	1625	1565	1505	1445	1385	1325	1275	1225	1170	1130

**NOTE:**

1. A filter is required for each return-air inlet. Airflow performance includes a 3/4-in. (19 mm) washable filter media such as contained in a factory-authorized accessory filter rack. See accessory list. To determine airflow performance without this filter, assume an additional 0.1 in. w.c. available external static pressure.
2. **ADJUST THE BLOWER SPEED TAPS AS NECESSARY FOR THE PROPER AIR TEMPERATURE RISE FOR EACH INSTALLATION.**
3. Shaded areas indicate that this airflow range is **BELOW THE RANGE ALLOWED FOR HEATING OPERATION. THESE AIRFLOW RANGES MAY ONLY BE USED FOR COOLING.**
4. Airflows over 1800 CFM require bottom return, two-side return, or bottom and side return. A minimum filter size of 20" x 25" (508 x 635 mm) is required.
5. For upflow applications, air entering from one side into both the side of the furnace and a return air base counts as a side and bottom return.
6. The "-" entry indicates an unstable operating condition.



# **MAXIMUM EQUIVALENT VENT LENGTH - FT. (M)**

**Table 1 – Maximum Equivalent Vent Length - Ft. (M)**

**0 to 4500 Ft. (0 to 1370 M) Altitude**

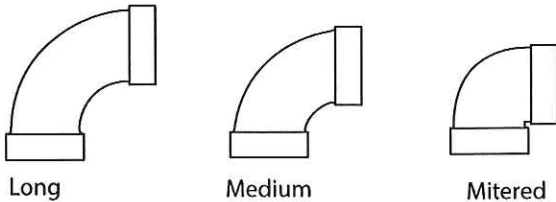
**NOTE: Maximum Equivalent Vent Length (MEVL) includes standard and concentric vent termination and does NOT include elbows.**  
**Use Table 2 - Deductions from Maximum Equivalent Vent Length to determine allowable vent length for each application.**

Altitude FT (M)	Unit Size BTU/Hr	DIRECT VENT (2-PIPE) AND NON-DIRECT VENT (1-PIPE)									
		Vent Pipe Diameter (in.) <sup>1</sup>									
		1-1/2		2		2-1/2		3		4	
0 to 2000 (0 to 610)	40,000 <sup>3</sup>	50	(15.2)	210	(64.0)	250	(76.2)	NA <sup>2</sup>		NA	
	60,000	30	(9.1)	135	(41.1)	235	(71.6)	265	(80.8)	NA	
	80,000	20	(6.1)	70	(21.3)	175	(53.3)	235	(71.6)	265	(80.8)
	100,000	NA		25	(7.6)	110	(33.5)	235	(71.6)	265	(80.8)
	120,000	NA		NA		15	(4.6)	100	(30.5)	250	(76.2)
	140,000 <sup>4</sup>	NA		NA		10	(3.0)	90	(27.4)	210	(64.0)
2001 to 3000 (610 to 914)	40,000	45	(13.7)	198	(60.4)	232	(70.7)	NA		NA	
	60,000	27	(8.2)	127	(38.7)	222	(67.7)	250	(76.2)	NA	
	80,000	17	(5.2)	64	(19.5)	165	(50.3)	222	(67.7)	249	(75.9)
	100,000	NA		22	(6.7)	104	(31.7)	223	(68.0)	250	(76.2)
	120,000	NA		NA		11	(3.4)	93	(28.3)	237	(72.2)
	140,000 <sup>4</sup>	NA		NA		NA		80	(24.4)	185	(56.4)
3001 to 4000 (914 to 1219)	40,000	39	(11.9)	184	(56.1)	214	(65.2)	NA		NA	
	60,000	23	(7.0)	119	(36.3)	210	(64.0)	235	(71.6)	NA	
	80,000	15	(4.6)	59	(18.0)	155	(47.2)	210	(64.0)	232	(70.7)
	100,000	NA		19	(5.8)	98	(29.9)	211	(64.3)	236	(71.9)
	120,000	NA		NA		8	(2.4)	86	(26.2)	224	(68.3)
	140,000 <sup>4</sup>	NA		NA		NA		79	(24.1)	158	(48.2)
4001 to 4500 (1219 to 1370)	40,000	36	(11.0)	177	(53.9)	205	(62.5)	NA		NA	
	60,000	21	(6.4)	115	(35.1)	204	(62.2)	228	(69.5)	NA	
	80,000	14	(4.3)	56	(17.1)	150	(45.7)	202	(61.6)	224	(68.3)
	100,000	NA		17	(5.2)	94	(28.7)	205	(62.5)	229	(69.8)
	120,000	NA		NA		NA		83	(25.3)	217	(66.1)
	140,000 <sup>4</sup>	NA		NA		NA		69	(21.0)	146	(44.5)

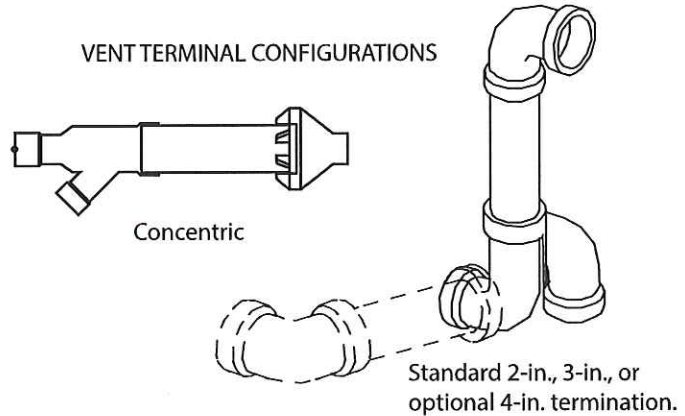
**NOTES:** See notes at end of venting tables.  
 See Table 3 for altitudes over 4500 ft. (1370 M)

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**ELBOW CONFIGURATIONS**



**VENT TERMINAL CONFIGURATIONS**



A13110

**Table 2 – Deductions from Maximum Equivalent Vent Length - Ft. (M)**

Pipe Diameter (in):	1-1/2		2		2-1/2		3		4	
Mitered 90° Elbow	8	(2.4)	8	(2.4)	8	(2.4)	8	(2.4)	8	(2.4)
Medium Radius 90° Elbow	5	(1.5)	5	(1.5)	5	(1.5)	5	(1.5)	5	(1.5)
Long Radius 90° Elbow	3	(0.9)	3	(0.9)	3	(0.9)	3	(0.9)	3	(0.9)
Mitered 45° Elbow	4	(1.2)	4	(1.2)	4	(1.2)	4	(1.2)	4	(1.2)
Medium Radius 45° Elbow	2.5	(0.8)	2.5	(0.8)	2.5	(0.8)	2.5	(0.8)	2.5	(0.8)
Long Radius 45° Elbow	1.5	(0.5)	1.5	(0.5)	1.5	(0.5)	1.5	(0.5)	1.5	(0.5)
Tee	16	(4.9)	16	(4.9)	16	(4.9)	16	(4.9)	16	(4.9)
Concentric Vent Termination	NA		0	(0.0)	NA		0	(0.0)	NA	
Standard Vent Termination	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)



## Venting System Length Calculations

The Total Equivalent Vent Length (TEVL) for **EACH** combustion air or vent pipe equals the length of the venting system, plus the equivalent length of elbows used in the venting system from Table 2.

Standard vent terminations or factory accessory concentric vent terminations count for zero deduction.

See vent system manufacturer's data for equivalent lengths of flexible vent pipe or other termination systems. **DO NOT ASSUME** that one foot of flexible vent pipe equals one foot of straight PVC/ABS DWV vent pipe.

Compare the Total Equivalent Vent Length to the Maximum Equivalent Vent Lengths in Tables 1 and 3.

### Example 1

A direct-vent 60,000 Btuh furnace installed at 2100 ft. (640 M). Venting system includes, **FOR EACH PIPE**, 100 feet (30 M) of vent pipe, 95 feet (28 M) of combustion air inlet pipe, (3) 90° long radius elbows, (2) 45° long radius elbows and a factory accessory concentric vent kit.

Can this application use 2-in. (50 mm ND) PVC/ABS DWV vent piping?

Measure the required linear length of air inlet and vent pipe; insert the longest of the two here:					100 ft	Use length of the longer of the vent or air inlet piping system
Add equiv length of (3) 90° long-radius elbows (use the highest number of elbows for either the vent or inlet pipe)	3	x	3 ft	=	9 ft.	From Table 2
Add equiv length of (2) 45° long-radius elbows (use the highest number of elbows for either the vent or inlet pipe)	2	x	1.5 ft	=	3 ft.	From Table 2
Add equiv length of vent termination					0 ft.	From Table 2
Add correction for flexible vent pipe, if any					0 ft.	From Vent Manufacturer's instructions; zero for PVC/ABS DWV
Total Equivalent Vent Length (TEVL)					112 ft.	Add all of the above lines
Maximum Equivalent Vent Length (MEVL)					127 ft.	For 2" pipe from Table 1
Is TEVL less than MEVL?					YES	Therefore, 2" pipe may be used

### Example 2

A direct-vent 60,000 Btuh furnace installed at 2100 ft. (640 M) Venting system includes, **FOR EACH PIPE**, 100 feet (30 M) of vent pipe, 95 feet (28 M) of combustion air inlet pipe, (3) 90° long radius elbows, and a polypropylene concentric vent kit. Also includes 20 feet (6.1 M) of flexible polypropylene vent pipe, included within the 100 feet (30 M) of vent pipe.

Assume that one meter of flexible 60 mm or 80 mm polypropylene pipe equals 1.8 meters of PVC/ABS pipe. **VERIFY FROM VENT MANUFACTURER'S INSTRUCTIONS.**

Can this application use 60 mm (O.D.) polypropylene vent piping? If not what size piping can be used?

Measure the required linear length of air inlet and vent pipe; insert the longest of the two here:					100 ft	Use length of the longer of the vent or air inlet piping system
Add equiv length of (3) 90° long-radius elbows (use the highest number of elbows for either the vent or inlet pipe)	3	x	3 ft	=	9 ft.	From Vent Manufacturer's instructions
Add equiv length of (2) 45° long-radius elbows (use the highest number of elbows for either the vent or inlet pipe)	0	x		=	0 ft.	From Vent Manufacturer's instructions
Add equiv length of vent termination	9 M	x	3 ft/M	=	18 ft.	From Vent Manufacturer's instructions
Add correction for flexible vent pipe, if any	1.8	x	20 ft	=	36 ft.	From Vent Manufacturer's instructions
Total Equivalent Vent Length (TEVL)					163 ft.	Add all of the above lines
Maximum Equivalent Vent Length (MEVL)					127 ft.	For 2" pipe from Table 1
Is TEVL less than MEVL?					NO	Therefore, 60mm pipe may NOT be used; try 80 mm
Maximum Equivalent Vent Length (MEVL)					250 ft.	For 3" pipe from Table 1
Is TEVL less than MEVL?					YES	Therefore, 80 mm pipe may be used

# MAXIMUM EQUIVALENT VENT LENGTH - FT. (M) (CONTINUED)

Table 3 – Maximum Equivalent Vent Length - Ft. (M)

4501 to 10,000 Ft. (0 to 1370 M) Altitude

**NOTE:** Maximum Equivalent Vent Length (MEVL) includes standard and concentric vent termination and does NOT include elbows.

Use Table 2 - Deductions from Maximum Equivalent Vent Length to determine allowable vent length for each application.

Altitude FT (M) <sup>5</sup>	Unit Size	DIRECT VENT (2-PIPE) AND SINGLE-PIPE									
		Vent Pipe Diameter (In.) <sup>1</sup>									
		1-1/2		2		2-1/2		3		4	
4501 to 5000 (1370 to 1524)	40,000	33	(10.1)	171	(52.1)	196	(59.7)	NA <sup>2</sup>		NA	
	60,000	20	(6.1)	111	(33.8)	198	(60.4)	221	(67.4)	NA	
	80,000	13	(4.0)	54	(16.5)	146	(44.5)	195	(59.4)	216	(65.8)
	100,000	NA		16	(4.9)	91	(27.7)	200	(61.0)	222	(67.7)
	120,000	NA		NA		NA		80	(24.4)	211	(64.3)
	140,000 <sup>4</sup>	NA		NA		NA		60	(18.3)	134	(40.8)
5001 to 6000 (1524 to 1829)	40,000	27	(8.2)	158	(48.2)	179	(54.6)	NA		NA	
	60,000	16	(4.9)	103	(31.4)	186	(56.7)	207	(63.1)	NA	
	80,000	11	(3.4)	49	(14.9)	137	(41.8)	183	(55.8)	200	(61.0)
	100,000	NA		12	(3.7)	85	(25.9)	188	(57.3)	208	(63.4)
	120,000	NA		NA		NA		74	(22.6)	199	(60.7)
	140,000 <sup>4</sup>	NA		NA		NA		50	(15.2)	109	(33.2)
6001 to 7000 (1829 to 2134)	40,000	21	(6.4)	145	(44.2)	162	(49.4)	NA		NA	
	60,000	13	(4.0)	96	(29.3)	174	(53.0)	194	(59.1)	NA	
	80,000	NA		44	(13.4)	120	(36.6)	171	(52.1)	185	(56.4)
	100,000	NA		10	(3.0)	79	(24.1)	178	(54.3)	195	(59.4)
	120,000	NA		NA		NA		68	(20.7)	187	(57.0)
	140,000 <sup>4</sup>	NA		NA		NA		41	(12.5)	87	(26.5)
7001 to 8000 (2134 to 2438)	40,000	15	(4.6)	133	(40.5)	146	(44.5)	NA		NA	
	60,000	10	(3.0)	89	(27.1)	163	(49.7)	181	(55.2)	NA	
	80,000	NA		40	(12.2)	120	(36.6)	159	(48.5)	170	(51.8)
	100,000	NA		NA		73	(22.3)	167	(50.9)	182	(55.5)
	120,000	NA		NA		NA		62	(18.9)	175	(53.3)
	140,000 <sup>4</sup>	NA		NA		NA		32	(9.8)	63	(19.2)
8001 to 9000 (2438 to 2743)	40,000	10	(3.0)	121	(36.9)	130	(39.6)	NA		NA	
	60,000	7	(2.1)	82	(25.0)	152	(46.3)	168	(51.2)	NA	
	80,000	NA		35	(10.7)	111	(33.8)	148	(45.1)	156	(47.5)
	100,000	NA		NA		67	(20.4)	157	(47.9)	170	(51.8)
	120,000	NA		NA		NA		56	(17.1)	164	(50.0)
	140,000 <sup>4</sup>	NA		NA		NA		23	(7.0)	42	(12.8)
9001 to 10,000 (2743 to 3048)	40,000	5	(1.5)	110	(33.5)	115	(35.1)	NA		NA	
	60,000	NA		76	(23.2)	142	(43.3)	156	(47.5)	NA	
	80,000	NA		31	(9.4)	103	(31.4)	137	(41.8)	142	(43.3)
	100,000	NA		NA		62	(18.9)	147	(44.8)	157	(47.9)
	120,000	NA		NA		NA		51	(15.5)	153	(46.6)
	140,000 <sup>4</sup>	NA		NA		NA		16	(4.9)	20	(6.1)

## NOTES:

1. Use only the vent pipe sizes shown for each furnace. It is NOT necessary to choose the smallest diameter pipe possible for venting.
2. NA – Not allowed. Pressure switch will not close, or flame disturbance may result.
3. Total equivalent vent lengths under 10' for 40,000 BTUH furnaces from 0 to 2000 ft. (0 to 610 M) above sea level require use of an outlet choke plate .  
Failure to use an outlet choke when required may result in flame disturbance or flame sense lockout.
4. Not all furnace families include 140,000 BTUH input models.
5. Vent sizing for Canadian installations over 4500 ft (1370 M) above sea level are subject to acceptance by local authorities having jurisdiction.
6. Size both the combustion air and vent pipe independently, then use the larger size for both pipes.
7. Assume the two 45° elbows equal one 90° elbow. Wide radius elbows are desirable and may be required in some cases.
8. Elbow and pipe sections within the furnace casing and at the vent termination should not be included in vent length or elbow count.
9. The minimum pipe length is 5 ft. (1.5 M) linear feet (meters) for all applications.
10. Use 3-in. (76 mm) diameter vent termination kit for installations requiring 4-in. (102 mm) diameter pipe.



# MAXIMUM ALLOWABLE EXPOSED VENT LENGTHS INSULATION TABLE - FT. (M)

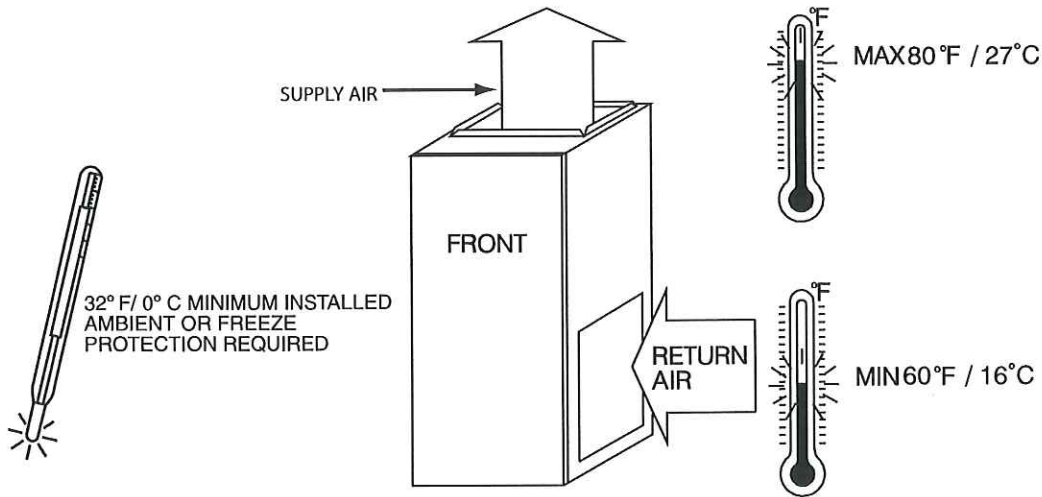
Maximum Length of Uninsulated and Insulated Vent Pipe-Ft (M)																	
Single Stage Furnace Input	Winter Design Temp °F (°C)	Pipe Length in Ft. & M	No Insulation					3/8-in. (9.5 mm) Insulation					1/2-in. (12.7 mm) Insulation				
			Pipe Diameter-inches (mm)					Pipe Diameter-inches (mm)					Pipe Diameter-inches (mm)				
			1 1/2	2	2 1/2	3	4	1 1/2	2	2 1/2	3	4	1 1/2	2	2 1/2	3	4
			(38)	(51)	(64)	(76)	(102)	(38)	(51)	(64)	(76)	(102)	(38)	(51)	(64)	(76)	(102)
40000	20 (-10)	Ft.	48	42	42	N/A	N/A	50	122	111	N/A	N/A	50	144	130	N/A	N/A
		M	14.6	12.8	12.8	N/A	N/A	15.2	37.2	33.8	N/A	N/A	15.2	43.9	39.6	N/A	N/A
	0 (-20)	Ft.	25	19	17	N/A	N/A	50	75	66	N/A	N/A	50	90	79	N/A	N/A
		M	7.6	5.8	5.2	N/A	N/A	15.2	22.9	20.1	N/A	N/A	15.2	27.4	24.1	N/A	N/A
	-20 (-30)	Ft.	14	7	5	N/A	N/A	50	52	45	N/A	N/A	50	64	55	N/A	N/A
		M	4.3	2.1	1.5	N/A	N/A	15.2	15.8	13.7	N/A	N/A	15.2	19.5	16.8	N/A	N/A
	-40 (-40)	Ft.	7	0	0	N/A	N/A	50	38	31	N/A	N/A	50	48	40	N/A	N/A
		M	2.1	0.0	0.0	N/A	N/A	15.2	11.6	9.4	N/A	N/A	15.2	14.6	12.2	N/A	N/A
60000	20 (-10)	Ft.	30	61	61	54	N/A	30	135	163	142	N/A	30	135	191	166	N/A
		M	9.1	18.6	18.6	16.5	N/A	9.1	41.1	49.7	43.3	N/A	9.1	41.1	58.2	50.6	N/A
	0 (-20)	Ft.	30	31	30	23	N/A	30	113	100	85	N/A	30	135	120	101	N/A
		M	9.1	9.4	9.1	7.0	N/A	9.1	34.4	30.5	25.9	N/A	9.1	41.1	36.6	30.8	N/A
	-20 (-30)	Ft.	24	17	15	7	N/A	30	81	70	57	N/A	30	98	85	70	N/A
		M	7.3	5.2	4.6	2.1	N/A	9.1	24.7	21.3	17.4	N/A	9.1	29.9	25.9	21.3	N/A
	-40 (-40)	Ft.	15	8	5	0	N/A	30	61	52	40	N/A	30	75	64	51	N/A
		M	4.6	2.4	1.5	0.0	N/A	9.1	18.6	15.8	12.2	N/A	9.1	22.9	19.5	15.5	N/A
80000	20 (-10)	Ft.	20	70	78	70	60	20	70	175	183	154	20	70	175	215	181
		M	6.1	21.3	23.8	21.3	18.3	6.1	21.3	53.3	55.8	46.9	6.1	21.3	53.3	65.5	55.2
	0 (-20)	Ft.	20	42	41	33	21	20	70	132	111	89	20	70	157	133	107
		M	6.1	12.8	12.5	10.1	6.4	6.1	21.3	40.2	33.8	27.1	6.1	21.3	47.9	40.5	32.6
	-20 (-30)	Ft.	20	25	23	14	1	20	70	94	77	57	20	70	113	94	71
		M	6.1	7.6	7.0	4.3	0.3	6.1	21.3	28.7	23.5	17.4	6.1	21.3	34.4	28.7	21.6
	-40 (-40)	Ft.	20	14	12	3	0	20	70	71	56	38	20	70	86	70	50
		M	6.1	4.3	3.7	0.9	0.0	6.1	21.3	21.6	17.1	11.6	6.1	21.3	26.2	21.3	15.2
100000	20 (-10)	Ft.	N/A	25	99	89	78	N/A	25	110	233	265	N/A	25	110	235	229
		M	N/A	7.6	30.2	27.1	23.8	N/A	7.6	33.5	71.0	80.8	N/A	7.6	33.5	71.6	69.8
	0 (-20)	Ft.	N/A	25	55	46	33	N/A	25	110	145	117	N/A	25	110	173	140
		M	N/A	7.6	16.8	14.0	10.1	N/A	7.6	33.5	44.2	35.7	N/A	7.6	33.5	52.7	42.7
	-20 (-30)	Ft.	N/A	25	34	24	11	N/A	25	110	103	79	N/A	25	110	124	97
		M	N/A	7.6	10.4	7.3	3.4	N/A	7.6	33.5	31.4	24.1	N/A	7.6	33.5	37.8	29.6
	-40 (-40)	Ft.	N/A	23	20	11	0	N/A	25	95	77	55	N/A	25	110	94	70
		M	N/A	7.0	6.1	3.4	0.0	N/A	7.6	29.0	23.5	16.8	N/A	7.6	33.5	28.7	21.3
120000	20 (-10)	Ft.	N/A	N/A	15	99	86	N/A	N/A	15	100	219	N/A	N/A	15	100	250
		M	N/A	N/A	4.6	30.2	26.2	N/A	N/A	4.6	30.5	66.8	N/A	N/A	4.6	30.5	76.2
	0 (-20)	Ft.	N/A	N/A	15	51	38	N/A	N/A	15	100	130	N/A	N/A	15	100	156
		M	N/A	N/A	4.6	15.5	11.6	N/A	N/A	4.6	30.5	39.6	N/A	N/A	4.6	30.5	47.5
	-20 (-30)	Ft.	N/A	N/A	15	28	14	N/A	N/A	15	100	88	N/A	N/A	15	100	108
		M	N/A	N/A	4.6	8.5	4.3	N/A	N/A	4.6	30.5	26.8	N/A	N/A	4.6	30.5	32.9
	-40 (-40)	Ft.	N/A	N/A	15	14	0	N/A	N/A	15	85	62	N/A	N/A	15	100	79
		M	N/A	N/A	4.6	4.3	0.0	N/A	N/A	4.6	25.9	18.9	N/A	N/A	4.6	30.5	24.1
140000	20 (-10)	Ft.	N/A	N/A	10	90	99	N/A	N/A	10	90	210	N/A	N/A	10	90	210
		M	N/A	N/A	3.0	27.4	30.2	N/A	N/A	3.0	27.4	64.0	N/A	N/A	3.0	27.4	64.0
	0 (-20)	Ft.	N/A	N/A	10	61	47	N/A	N/A	10	90	153	N/A	N/A	10	90	183
		M	N/A	N/A	3.0	18.6	14.3	N/A	N/A	3.0	27.4	46.6	N/A	N/A	3.0	27.4	55.8
	-20 (-30)	Ft.	N/A	N/A	10	35	21	N/A	N/A	10	90	104	N/A	N/A	10	90	128
		M	N/A	N/A	3.0	10.7	6.4	N/A	N/A	3.0	27.4	31.7	N/A	N/A	3.0	27.4	39.0
	-40 (-40)	Ft.	N/A	N/A	10	20	NA	N/A	N/A	10	90	75	N/A	N/A	10	90	94
		M	N/A	N/A	3.0	6.1	NA	N/A	N/A	3.0	27.4	22.9	N/A	N/A	3.0	27.4	28.7

\*Not all families have these models.



## RETURN AIR TEMPERATURE

This furnace is designed for continuous return-air minimum temperature of 60°F (15°C) db or intermittent operation down to 55°F (13°C) db such as when used with a night setback thermometer. Return-air temperature must not exceed 80°F (27°C) db. Failure to follow these return air limits may affect reliability of heat exchangers, motors and controls.



A10490

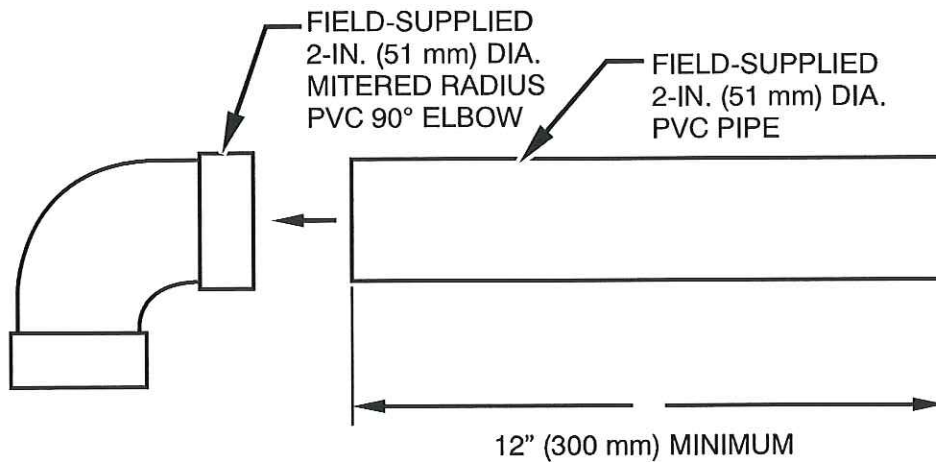
## MINIMUM CLEARANCES TO COMBUSTIBLE MATERIALS

POSITION	CLEARANCE
Rear	0 (0 mm)
Front (Combustion air openings in furnace and in structure)	1 in. (25 mm)
Required for service**	24 in. (610 mm)*
All Sides of Supply Plenum**	1 in. (25 mm)
Sides	0 (0 mm)
Vent	0 (0 mm)
Top of Furnace	1 in. (25 mm)

\* Recommended

\*\*Consult your local building codes

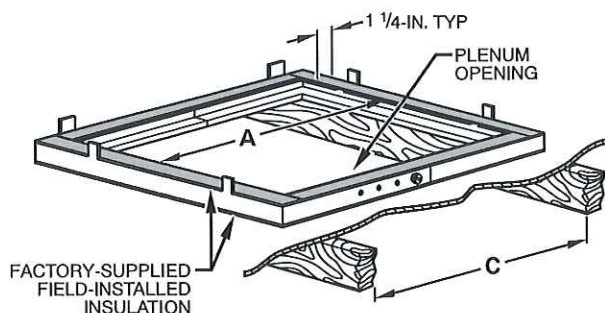
## COMBUSTION-AIR PIPE FOR NON-DIRECT (1-PIPE) VENT APPLICATION



A12376

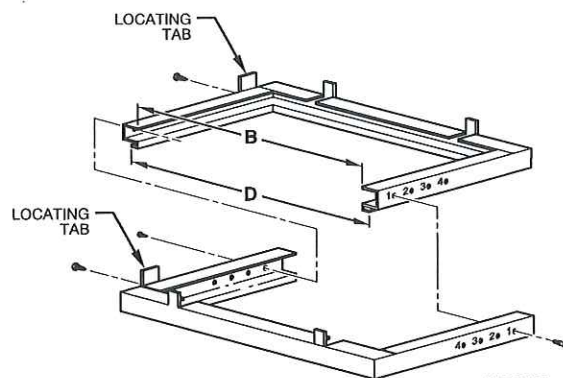
**NOTE:** See Installation Instructions for specific venting configurations.

## DOWNFLOW SUBBASE



A97427

Assembled

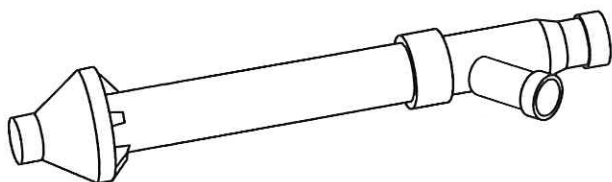


A88207

Disassembled

DIMENSIONS (IN. / MM)						
FURNACE CASING WIDTH	FURNACE IN DOWNFLOW APPLICATION	PLENUM OPENING*		FLOOR OPENING		HOLE NO. FOR WIDTH ADJUSTMENT
		A	B	C	D	
14-3/16 (360)	Furnace with or without Cased Coil Assembly or Coil Box	11-3/16 (322)	19 (483)	13-7/16 (341)	20-5/8 (600)	4
17-1/2 (445)	Furnace with or without Cased Coil Assembly or Coil Box	15-1/8 (384)	19 (483)	16-3/4 (426)	20-5/8 (600)	3
21 (533)	Furnace with or without Cased Coil Assembly or Coil Box	18-5/8 (396)	19 (483)	20-1/4 (514)	20-5/8 (600)	2
24-1/2 (622)	Furnace with or without Cased Coil Assembly or Coil Box	22-1/8 (562)	19 (483)	23-3/4 (603)	20-5/8 (600)	1

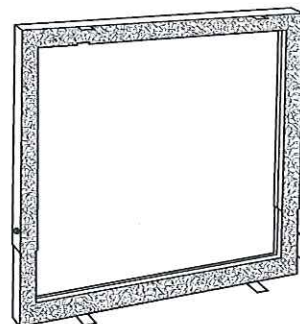
\*The plenum should be constructed 1/4-in. (6 mm) smaller in width and depth than the plenum dimensions shown above.



Concentric Vent Kit

A93086

A concentric vent kit allows vent and combustion-air pipes to terminate through a single exit in a roof or side wall. One pipe runs inside the other allowing venting through the inner pipe and combustion air to be drawn in through the outer pipe.

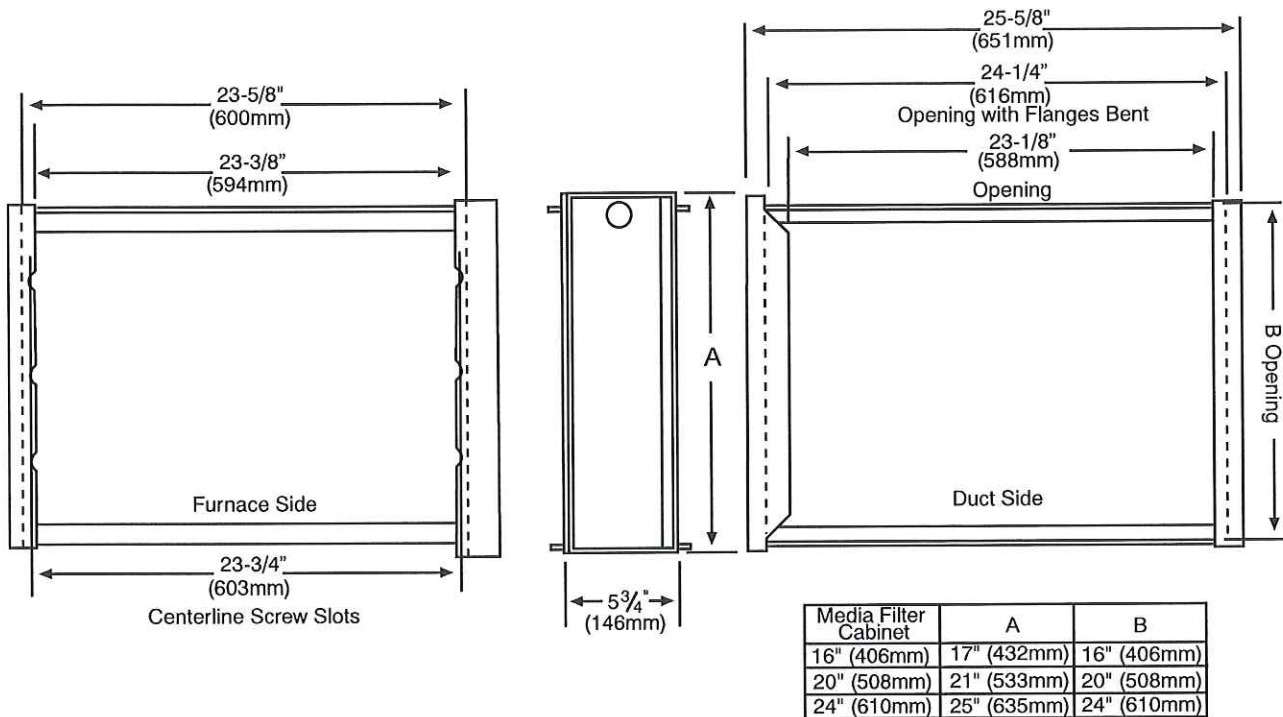


Downflow Subbase

A88202

One base fits all furnace sizes. The base is designed to be installed between the furnace and a combustible floor when no coil box is used or when a coil box other than a Carrier cased coil is used. It is CSA design certified for use with Carrier branded furnaces when installed in downflow applications.

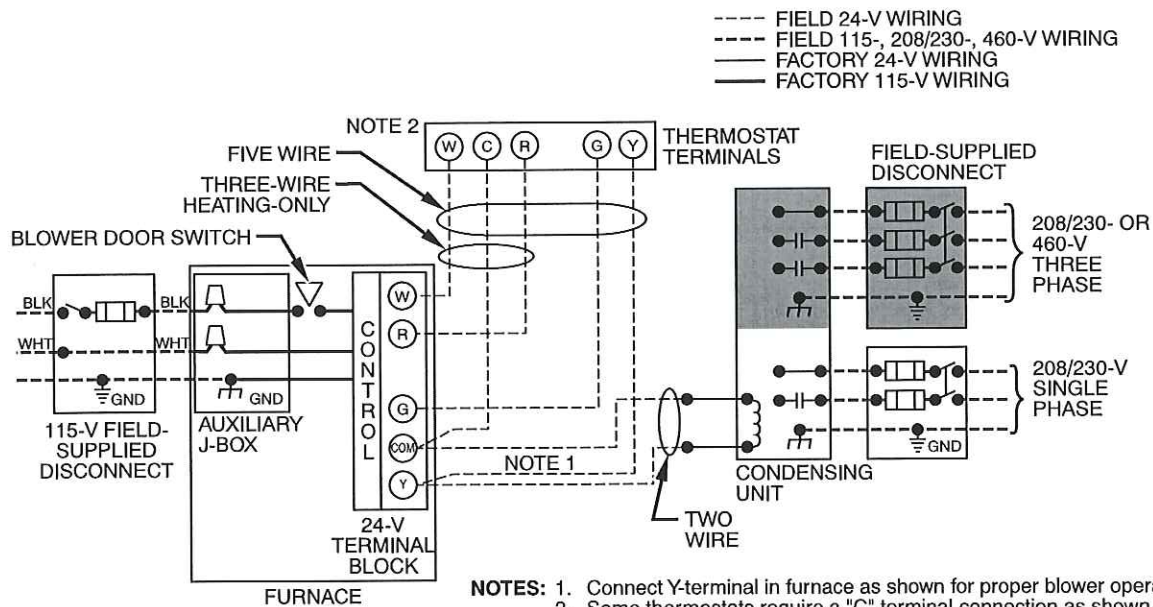
## MEDIA FILTER CABINET



NOTE: Media cabinet is matched to the bottom opening on furnace. May also be used for side return.

A12428

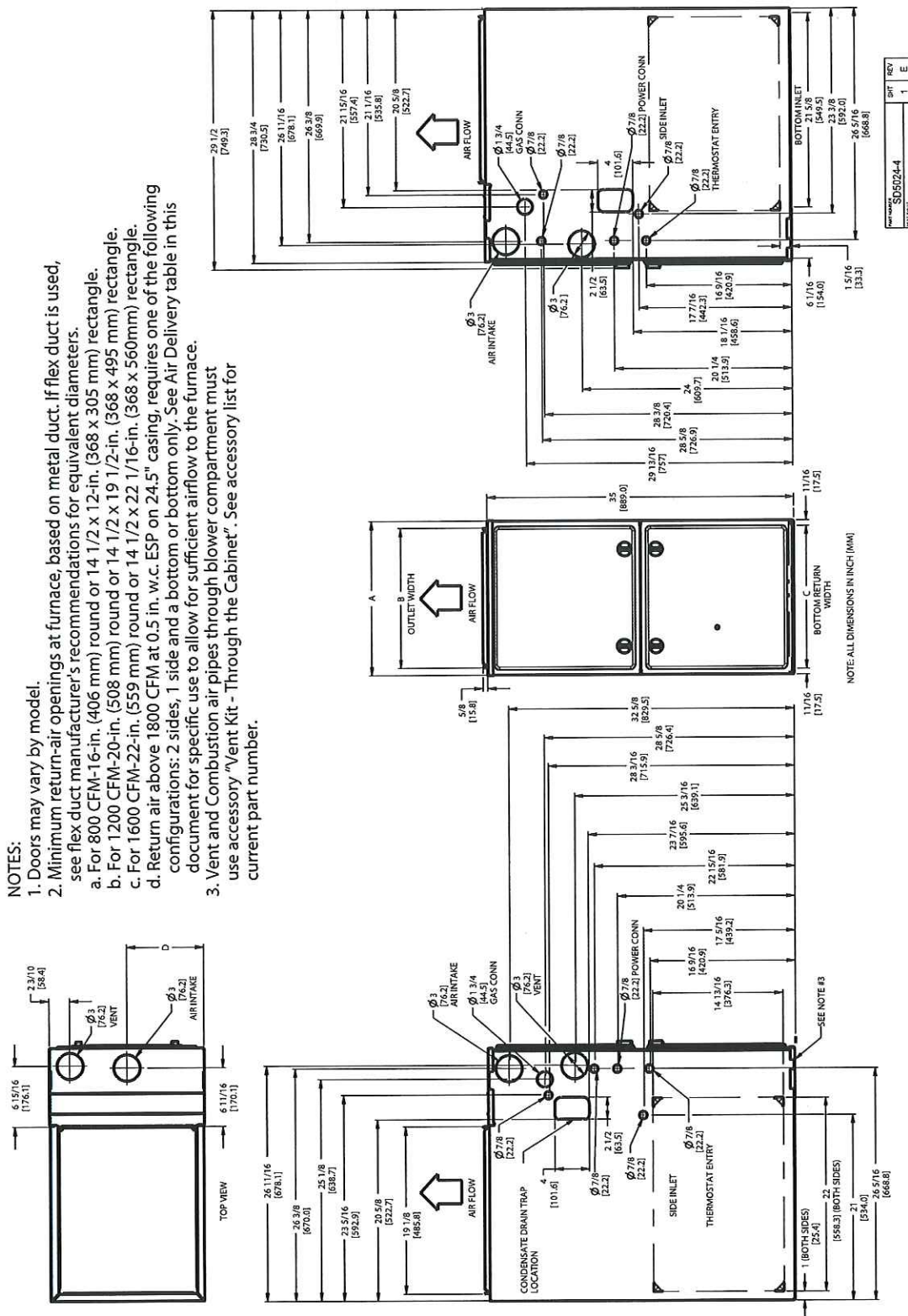
## TYPICAL WIRING SCHEMATIC



A11387



## DIMENSIONAL DRAWING



59SP5 FURNACE SIZE	A	B	C	D	SHIP WT. LB (KG)
	CABINET WIDTH	OUTLET WIDTH	BOTTOM INLET WIDTH	AIR INTAKE	
040-10	14-3/16 (361)	12-1/2 (319)	12-9/16 (322)	7-1/8 (181)	120.0 (54.4)
060-12					130.5 (59.2)
040-12	17-1/2 (445)	15-7/8 (403)	16 (406)	8-3/4 (222)	131.0 (59.4)
060-14					141.0 (64.0)
080-16					145.0 (65.8)
080-20					155.5 (70.5)
100-20	21 (533)	19-3/8 (492)	19-1/2 (495)	10-1/2 (267)	156.5 (71.0)
120-22	24-1/2 (622)	22-7/8 (581)	23 (584)	12-1/4 (311)	189.5 (86.0)

## GUIDE SPECIFICATIONS

### General

#### System Description

Furnish a \_\_\_\_\_ 4-way multipoise gas-fired condensing furnace for use with natural gas or propane (factory-authorized conversion kit required for propane); furnish external media cabinet for use with accessory media filter or standard filter.

#### Quality Assurance

Unit will be designed, tested and constructed to the current ANSI Z 21.47/CSA 2.3 design standard for gas-fired central furnaces.

Unit will be third party certified by CSA to the current ANSI Z 21.47/CSA 2.3 design standard for gas-fired central furnaces. Unit will carry the CSA Blue Star® and Blue Flame® labels. Unit efficiency testing will be performed per the current DOE test procedure as listed in the Federal Register.

Unit will be certified for capacity and efficiency and listed in the latest AHRI Consumer's Directory of Certified Efficiency Ratings.

Unit will carry the current Federal Trade Commission Energy Guide efficiency label.

#### Delivery, Storage, and Handling

Unit will be shipped as single package only and is stored and handled per unit manufacturer's recommendations.

#### Warranty (for inclusion by specifying engineer)

U.S. and Canada only. Warranty certificate available upon request.

#### Equipment

##### Blower Wheel and ECM Blower Motor

Galvanized blower wheel shall be centrifugal type, statically and dynamically balanced. Blower motor of ECM type shall be permanently lubricated with sealed ball bearings, of \_\_\_\_\_ hp, and have multiple speeds from 600-1200 RPM operating only when 24-VAC motor inputs are provided. Blower motor shall be direct drive and soft mounted to the blower housing to reduce vibration transmission.

##### Filters

Furnace shall have reusable-type filters. Filter shall be \_\_\_\_\_ in. (mm) X \_\_\_\_\_ in. (mm). An accessory highly efficient Media Filter is available as an option. \_\_\_\_\_ Media Filter.

##### Casing

Casing shall be of .030 in. thickness minimum, pre-painted galvanized steel.

##### Draft Inducer Motor

Draft inducer motor shall be single-speed PSC design.

#### Primary Heat Exchangers

Primary heat exchangers shall be 3-Pass corrosion-resistant aluminized steel of fold-and-crimp sectional design and applied operating under negative pressure.

#### Secondary Heat Exchangers

Secondary heat exchangers shall be of a stainless steel flow-through of fin-and-tube design and applied operating under negative pressure.

#### Controls

Controls shall include a micro-processor-based integrated electronic control board with at least 16 service troubleshooting codes displayed via diagnostic flashing LED light on the control, a self-test feature that checks all major functions of the furnace, and a replaceable automotive-type circuit protection fuse. Multiple operational settings available, including blower speeds for high heat, low cooling, high cooling and continuous fan. Continuous fan speed may be adjusted from the thermostat. Features will also include temporary reduced airflow in the cooling mode for improved dehumidification when a TP-PRH edge® is selected as the thermostat.

#### Operating Characteristics

Heating capacity shall be \_\_\_\_\_ Btuh input; \_\_\_\_\_ Btuh output capacity.

Fuel Gas Efficiency shall be \_\_\_\_\_ AFUE.

Air delivery shall be \_\_\_\_\_ cfm minimum at 0.50 in. W.C. external static pressure.

Dimensions shall be: depth \_\_\_\_\_ in. (mm); width \_\_\_\_\_ in. (mm); height \_\_\_\_\_ in. (mm) (casing only). Height shall be \_\_\_\_\_ in. (mm) with A/C coil and \_\_\_\_\_ in. (mm) overall with plenum.

#### Electrical Requirements

Electrical supply shall be 115 volts, 60 Hz, single-phase (nominal). Minimum wire size shall be \_\_\_\_\_ AWG; maximum fuse size of HACR-type designated circuit breaker shall be \_\_\_\_\_ amps.

#### Special Features

Refer to section of the product data identifying accessories and descriptions for specific features and available enhancements.

59SP5A





**ENE Systems, Inc./Energy Efficient Investments, Inc.  
Final Investment Grade Audit**

FOR:

**Town of Newmarket NH  
Recreation Center**

Prepared by:

Michael Davey, CEM

Date: February 28, 2018



## Executive Summary

EEI is located in Merrimack, NH, and has a proven track record of designing and implementing energy improvements to mechanical systems, building controls systems, insulation, and renewable systems. EEI is also an approved energy management contractor with Better Buildings, Pay for Performance, Eversource, Liberty Utilities, and Unitil in New Hampshire.

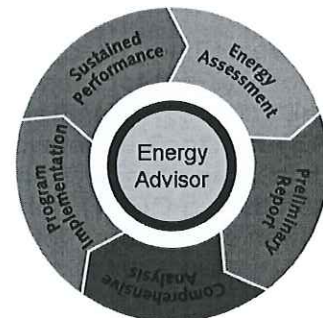
**EEI has developed a plan which could reduce annual energy expenditures by more than \$3,940.00**

EEI in its role as Energy Service Company (ESCO) has agreed to develop an energy project targeting energy savings at the locations identified below:

Building	Location
Newmarket Recreation Center	1 Terrace Dr. Newmarket, NH

The development of every energy project starts with the initial energy assessment which includes a site visit and the collection of utility and operational costs for each location. The next step entails defining measures, budgetary costs, and estimated savings values by measure for each building.

On the following page, the Energy Conservation Measures Matrix shows the upgrades for the Town of Newmarket Recreation Center. Approval of this Final Investment Grade Audit will lead to an **Energy Performance Contract (EPC)** which will clearly define the responsibilities of each party and will include a **Measurement and Verification (M&V)** procedure that will be used to measure the energy performance of the new systems and equipment.



**Newmarket Recreation Center****Comprehensive Option**

	Description	Cost	Savings	Rebate
ECM 1	LED Lighting with Smart Controls	\$29,500	\$2,100	\$7,350
ECM 2	New Condensing Furnaces w/ DX cooling	\$113,344	\$750	\$2,500
ECM 3	Attic Insulation	\$15,000	\$890	\$3,000
ECM 4	Carpentry & Mis Project cost	\$5,000		
ECM 5	DDC Controls	\$26,000	\$200	\$1,200
	<b>Total Newmarket Community Center</b>	<b>\$188,844</b>	<b>\$3,940</b>	<b>\$14,050</b>



## 1. Utility Data Analysis

In order to understand the energy use of each building we analyzed the energy consumption data. We used historical oil delivery data and electrical bills. To understand how the building behaves during the heating and cooling seasons we analyzed the consumption as it is related to heating (HDD) and cooling degree days (CDD). This gives us a baseline to understand how the building may react to changes that we make to the heating system, cooling system, and building envelope of the building.

### Building Summary Information

Project Name: Newmarket  
Recreation Center

### Annual Utility Data

#### Total Use 2017

Gas (gal)	2,593
Elec (KWH)	78,360

### Contract Utility Rates

Gas (LP)	LP Rate	\$1.39
Electricity	Electric Rate	\$0.14

## 1. Economic Analysis

Making good economic decisions requires analysis of available information and understanding the monetary value of time. A Discounted Life Cycle Cost Analysis (DLCCA) is very useful for this type of analysis when multiple alternatives exist. This is the Federal Energy Management Program (FEMP) approved method of analysis and is used to aid in decisions that are based on the most favorable economic outcome. The School District can see the estimated time it will take for this energy project to payback shown on the ECM Matrix on page 3.

The key assumptions EEI used in our Economic Analysis include the baseline fuel usage and KWH use in which savings calculations were based on the fiscal year 2016 totals. Building interior lighting fixtures were assumed to run 1,700 hours per year, this is based on observation and interviews with staff. Exterior fixtures were assumed to run 4,380 hours per year.

## **2. Energy Conservation Measures**

In this section of the document we will define the Energy Conservation Measures we have evaluated for this project. Then we will define the measures on a building by building basis. Careful consideration was given to each measure and its interaction with the overall building performance.

### ***General ECM Descriptions***

#### **Newmarket Recreation Center**

#### **COMPREHENSIVE OPTION**

##### **ECM 1 – LED Lighting with Smart Controls**

The building currently utilizes a combination of T8 and T12 fluorescent lighting, compact fluorescent and Metal Halide lighting. EEI proposes replacing the existing fixtures with new LED lighting. EEI performed a detailed survey of the interior and exterior spaces in order to identify opportunities in which we can improve lighting quality, reduce maintenance costs, and save energy.

The existing lighting demand (kW) per fixture, hours of operation, fixture quantities, and recommended retrofits are based on the physical inspection and site visits conducted by EEI. As a result of the survey and analysis, EEI has developed a high efficiency lighting upgrade project that will provide new LED fixtures with smart controls, resulting in guaranteed annual energy savings and a reduction in electrical demand.

LED type lighting provides significant illumination, has longer life expectancy, increased savings in electric consumption, and provides dimming capabilities. Also, by standardizing all fixtures will reduce future maintenance requirements.

LED fixtures have an estimated life of more than 20 years. There is significant maintenance savings when LED fixtures are used due to longer lifespan.

- Install (70) Led 2x4 Retrofit fixtures with automatic dimming and occupancy-based operation
- Install (24) 6" LED recessed fixtures
- Install (7) 4' LED Strip fixtures with automatic dimming and occupancy-based operation
- Install (12) LED 2x4 fixtures with automatic dimming and occupancy-based operation
- Install (6) LED Exit signs
- Install (10) LED tubes at the cove lighting
- Install (13) exterior LED wallpacks and floodlights
- Install (2) exterior LED recessed canopy lights



## **ECM 2 – New Condensing Furnaces with DX Cooling**

Replace existing gas fired Carrier Condensing 96.5% efficient gas furnaces to replace existing standard efficiency 80% efficient gas units. The existing primary unit has a cracked section and needs to be replaced. Scope of work includes power wiring, roof penetration. The furnaces shall all be Model 59SPA. EEI will replace 2 existing condensing units and 1 condensing unit is in good shape and will be re-used.

### **Proposed Units**



### **Existing Unit**



### ECM 3 – Attic Insulation

EEI completed a detailed building audit and verified suspected air leakage locations and found opportunity to improve building performance and save energy. Air leakage is caused by pressure differences subjective to variations in wind velocity and HVAC systems. In order to control heating and cooling loads, and allow the mechanical systems to operate effectively, pressure differences from the outdoor environment to the indoor building spaces must be controlled. The best way to do this is by tightening the building envelope by insulating and air sealing. This will extend the life cycle of the building by protecting it from the elements and minimizing moisture carried by the air to penetrate the building. Also, insulation and air sealing increases thermal performance of the building and the comfort, health and safety of the building occupants.

The existing attic insulation consists of R-19 Batt Insulation and does not meet current code requirements. EEI proposes air sealing attic open space and installing an R-50 cellulose. This will improve building comfort and

### ECM 4 – Carpentry and Misc. Project Costs

This scope of work includes necessary ceiling and framing adjustments to remove existing gas equipment from attic and allow for new high efficiency condensing to be installed in the attic.

### ECM 5 – DDC Controls

The existing building controls systems are antiquated which can lead to both overheating and under ventilation of spaces. The HVAC units have primarily standalone heating systems without outdoor temperature re-set schedules. **Existing 3 Tstat per room set up to right**

Direct Digital Controls are designed to provide overall building scheduling and setback capability, and can be accessed or modified by using any computer. It is very important to have the ability to trend the space temperatures and run times of equipment. A more advanced control strategy will limit the amount of time the heating or air conditioning can run, therefore saving fuel. For example, a morning warm up optimization would allow the building heating systems to be brought online via an automated process taking into account outdoor air temperatures.



EEI has included a budget to install Digital controls which will control new furnaces and building exhaust fans. Remote monitoring, graphics and alarming capabilities are included in this budget.



## FEATURES & SPECIFICATIONS

**INTENDED USE** — The 6" Wafer-Thin LED recessed downlight with remote driver box combines high quality light output and efficiency while eliminating the pot light housing for competitive affordability. This innovative wafer-slim Type IC design allows easy installation for new construction or remodel from below the ceiling without the requirement of a pot light housing. The LED module maintains at least 70% light output for 36,000 hours. These LED Wafer downlights are intended for closets, attics, hallways, bathrooms, kitchens, basements, soffits, entry ways, porches, garages, stairwells, corridors, nursing/retirement homes, condos, elevators, apartments, and any other small areas.

**CONSTRUCTION** — Ideal for shallow ceiling plenum since a pot light housing is NOT required. IC rated driver and fixture - approved for direct contact with insulation. Aluminum die cast outer frame. Durable, powder coat paint to prevent rust. Round fixture with integral edge-lit LED's. Steel spring clip for easy installation. Plenum rated cable connector to connect from module to remote driver box. Isolated driver integrated inside steel remote box with four 7/8" knockouts with slots for pryout. Not suitable for pulling wires.

### PATENT PENDING.

**INSTALLATION** — Ideal for shallow ceiling plenum; no housing required. Steel spring clip for easy installation. 6" cut out template is provided to ensure a correct sized hole is cut into ceiling for proper installation of the trim. Size of hole should not exceed 6 1/4 inches for this product. Suitable for installation in t-grid and drop ceiling applications.

**OPTICS** — Wafer-Thin downlight edge-lit LED technology uses light guided plate to distribute light. Polycarbonate lens provides even illumination throughout the space. Utilized 3000K and 4000K color temperature LEDs.

**ELECTRICAL** — Connect directly to 120V power supply via provided UL recognized driver. High efficient driver with power factor > 0.9. Ambient operating temperature: -40°F (-40°C) to +104°F (+40°C). Dimming down to 10% (See page 2 for recommended dimmers). Standard input wattage is 13W, 79 lumens per watt.

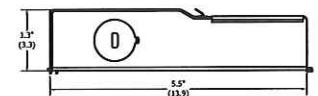
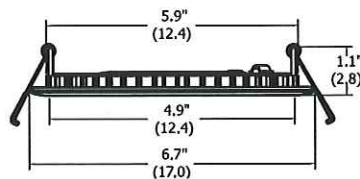
**LISTINGS** — CSA certified to US and Canadian safety standards. ENERGY STAR® certified product. Wet location. Air Tight certified in accordance with ASTM E283-2004.

**WARRANTY** — 5-year limited warranty. Complete warranty terms located at:  
[www.acuitybrands.com/CustomerResources/Terms\\_and\\_conditions.aspx](http://www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx)

**Note:** Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

### Specifications

Aperture:	4.9 (12.4)
Ceiling opening:	6 (15.2)
Overlap trim:	6.7 (17)
Height:	1.1 (2.8)



All dimensions are inches (centimeters) unless otherwise indicated.

## ORDERING INFORMATION

For shortest lead times, configure product using **standard options (shown in bold)**.

**Example: WF6 LED 30K MW**

Series	Lamp	CCT/CRI/W/Lumens <sup>1</sup>	Finish
<b>WF6</b> 6" wafer-thin LED downlight	<b>LED</b> LED	<b>30K</b> 3000K/80CRI/13W/1020L	<b>MW</b> Matte white
		<b>40K</b> 4000K/80CRI/13.6W/1200L	<b>MB</b> Matte black
	<b>LL LED</b> Low Lumen LED	<b>27K</b> 2700K/80CRI/12.7W/780L	<b>BN</b> Brushed nickel
		<b>30K</b> 3000K/80CRI/12.6W/865L	<b>ORB</b> Oil-rubbed bronze
		<b>40K</b> 4000K/80CRI/12.9W/944L	

### Accessories: Order as separate catalog number.

WF6 PAN R12	6" new construction pan, retail pack of 12
WFJB R4	Remodel joist bar, retail pack of 4
WFEXC6 U	6' FT4 cable
WFEXC10 U	10' FT4 cable
WFEXC20 U	20' FT4 cable



WF6\_Pan



Joist



Extension Cable

### Notes

<sup>1</sup> Total system delivered lumens.

Catalog Number
Notes
Type

## Wafer LED Recessed Downlight

# WF6

# 6" LED Module

IC/Non-IC

New Construction/Remodel



Matte black



Brushed nickel



Oil-rubbed bronze

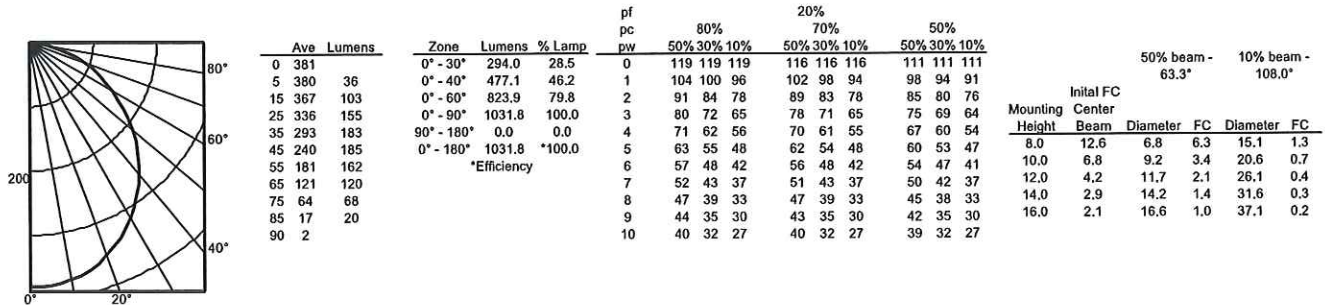


# WF6 6" LED Wafer Module

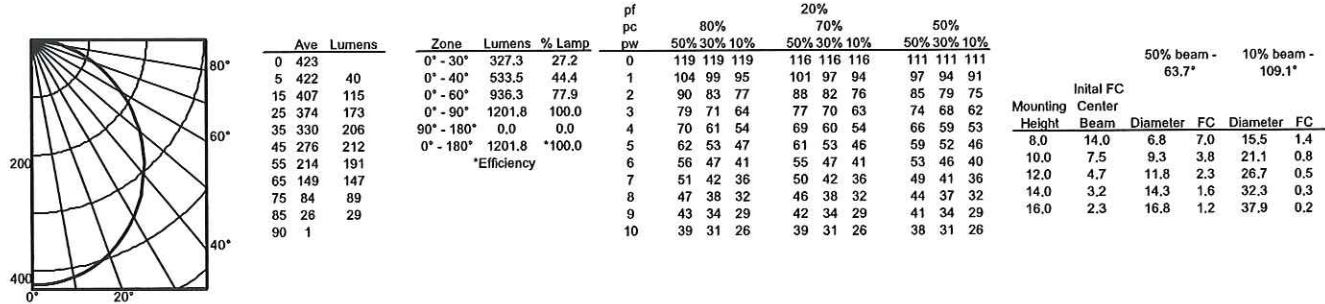
## PHOTOMETRICS

Distribution Curve	Distribution Data	Output Data	Coefficient of Utilization	Illuminance Data at 30" Above Floor for a Single Luminaire
--------------------	-------------------	-------------	----------------------------	--

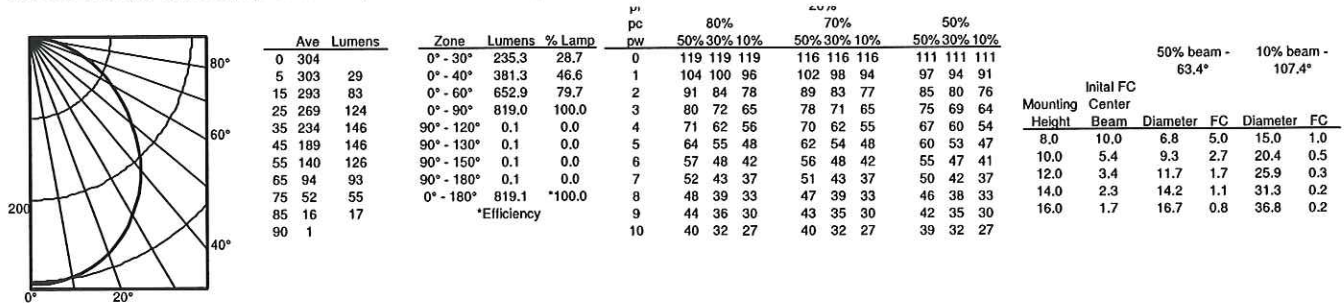
WF6 LED 30K, 3000 K LEDs, input watts: 13, delivered lumens: 1020, LM/W=78.5, test no. ISF 30024



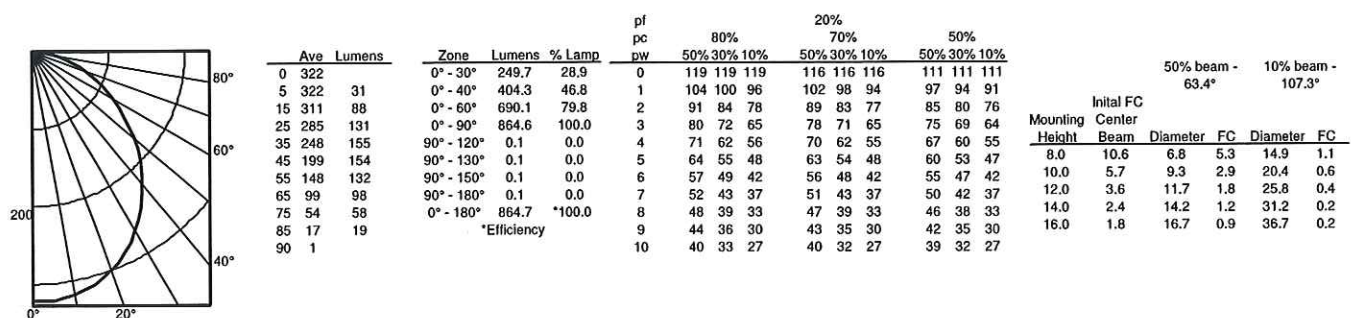
WF6 LED 40K, 4000 K LEDs, input watts: 13.6, delivered lumens: 1200, LM/W=88.2, test no. ISF 30376



WF6 LL LED 27K, 2700 K LEDs, input watts: 12.7, delivered lumens: 819, LM/W=64.4, test no. ISF 32780P1

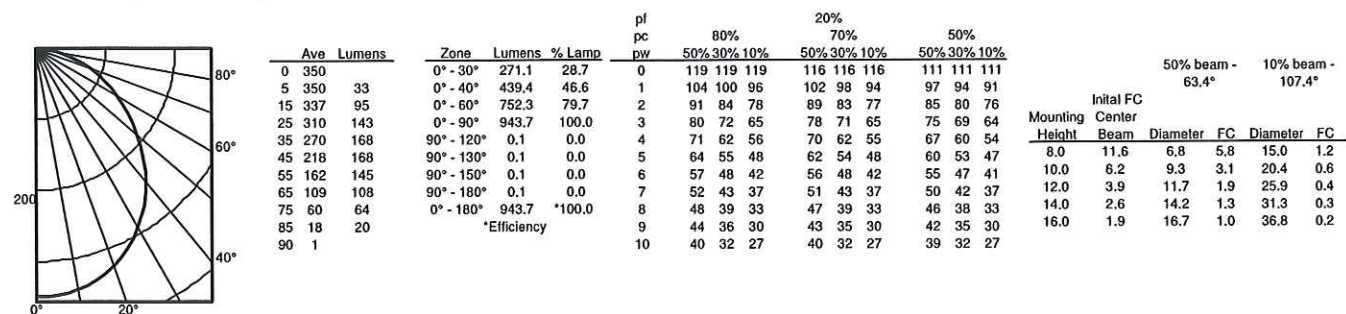


WF6 LL LED 30K, 3000 K LEDs, input watts: 12.6, delivered lumens: 865, LM/W=68.7, test no. ISF 32781



# WF6 6" LED Wafer Module

WF6 LL LED 40K, 4000 K LEDs, input watts: 12.9, delivered lumens: 944, LM/W=73.2, test no. ISF 32780



## ENERGY DATA & DIMMING CAPABILITY

6" ENERGY DATA		
Color Temperature	3000K	4000K
Lumens	1020	1200
CRI	80	80
Lumens/Watt	78.5	88.2
Min. starting temperature	-40°C (-40°F)	-40°C (-40°F)
EMI/RFI	FCC Title 47 CFR, Part 15, Class B	FCC Title 47 CFR, Part 15, Class B
Sound rating	Class A Standards	Class A Standards
Input voltage	120V	120V
Total Harmonic Distortion	17.9%	17.9%
Min. power factor	0.99	0.99
Input frequency	50/60 Hz	50/60 Hz
Rated wattage	13W	13.6W
Input power	13W	13.6W
Input current	0.11A	0.11A

6" LOW LUMEN ENERGY DATA			
Color Temperature	2700K	3000K	4000K
Lumens	780	865	944
CRI	80	80	80
Lumens/Watt	61.3	68.7	73.2
Min. starting temperature	-40°C (-40°F)	-40°C (-40°F)	-40°C (-40°F)
EMI/RFI	FCC Title 47 CFR, Part 15, Class B	FCC Title 47 CFR, Part 15, Class B	FCC Title 47 CFR, Part 15, Class B
Sound rating	Class A Standards	Class A Standards	Class A Standards
Input voltage	120V	120V	120V
Total Harmonic Distortion	12%	15.0%	11.6%
Min. power factor	0.99	0.99	0.99
Input frequency	50/60 Hz	50/60 Hz	50/60 Hz
Rated wattage	12.7W	12.6W	12.9W
Input power	12.7W	12.6W	12.9W
Input current	0.11A	0.11A	0.11A

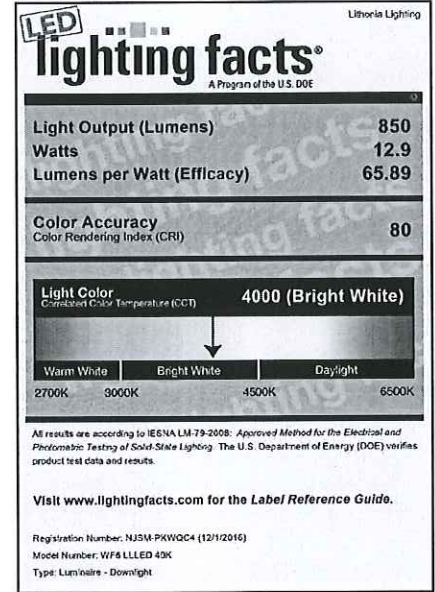
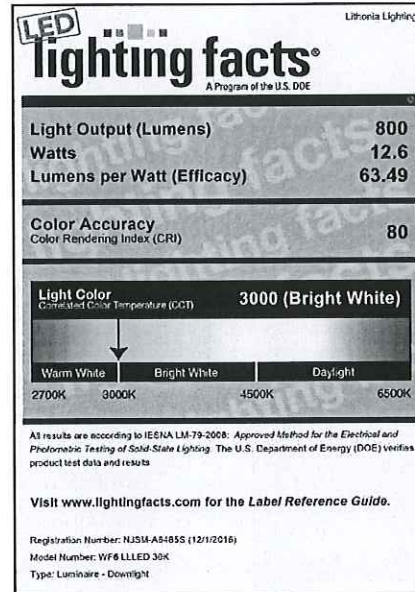
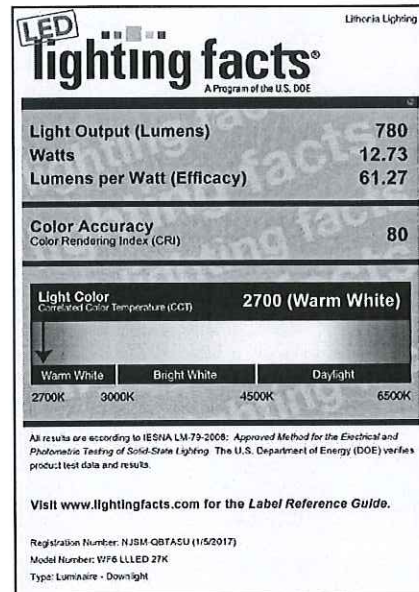
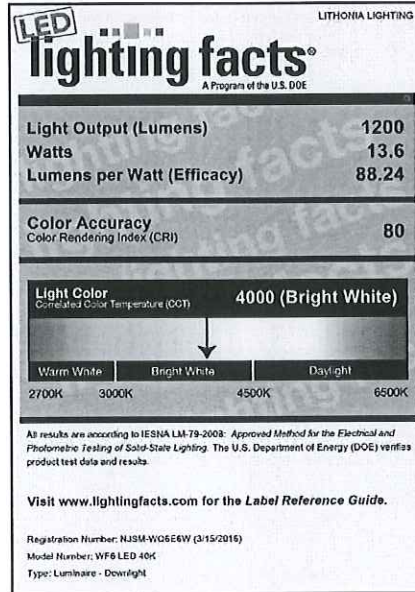
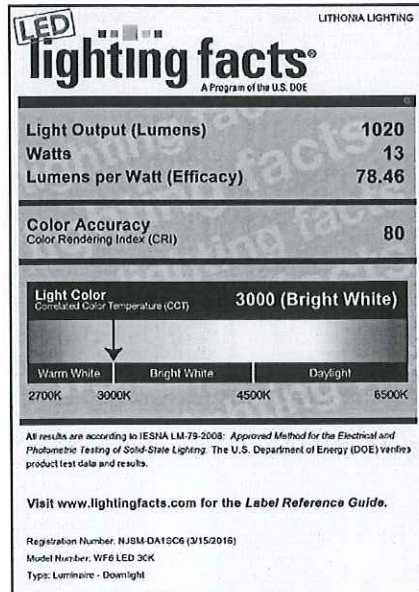
COMPATIBLE DIMMERS				
Insteon	Leviton	Lutron	Sensorswitch	Synergy/Leviton
2477D	6633-PA	CTCL-153P-WH	nSP5 PCD 2W	ISD 600 I 120/IP106
	IPL06-LED/INC mode	DV-603P-LA	nSP5 PCD ELV 120	ISD 400 ELV 120/IPE04
	6615-P	CT-603PR-WH		
		DVELV-300P		
		NTELV-300P		
		NLV600		
		300P-SELV		
		DV-600P		
		AYCL-153P-WH		
		Caseta PD-6WCL*		

\*Requires Lutron Smart Bridge L-BDG2-WH (sold separately)



# WF6 6" LED Wafer Module

## LIGHTING FACTS





#### codes and standards

- UL listed to Standard 924
- NFPA 70 (National Electric Code)
- NFPA 101 (Life Safety Code)
- California Energy Commission
- UL listed for damp location

#### construction

- White housing only.
- Low profile, snap-together quick mount design.
- Flame rated, UV stable thermoplastic housing.

#### installation

- Universal wall/ceiling/end mounting.
- Canopy not required for flat wall mount. (electronics contained inside housing).
- Pop-out chevron directional indicators are easily removed when required.
- Exit sign mounts to a standard 4" square outlet box. (canopy provided)
- All exits signs are provided with an extra stencil face plate for double face sign applications.

#### electronics

- 120/277 VAC selectable input.
- VE Units: AC Only  
Input Power: 0.026A (120VAC)  
Input Power: 0.012A (277VAC)
- VE Units: Emergency  
Input Power: 0.033A (120VAC)  
Input Power: 0.017A (277VAC)
- Surge protection, low voltage disconnect, AC lockout installation, brown out protection, and constant current charger.

#### battery

- VE Exits contain 6V maintenance free nickel cadmium battery with a service life of 8 to 10 years and a operating temperature range of 10°C to 40°C (50°F to 104°F).
- Provides 90 minutes of emergency illumination.

#### lamps

- Bright red or green energy efficient LED lamps. Uniform 6" letter illumination (3/4" stroke).

#### warranty

- Three year warranty on unit.

**CE-15050**

## Commercial Exit Signs

### VE Series

Value+ Economy Grade  
Thermoplastic



#### Specifier's Reference

Project

Type

Model No.

Comments

## Green Product Choice: VERWEM

Exit Signs Catalog Number	Letter Color	Housing Color	Operation
VERW	Red	White	AC only
VEGW	Green	White	AC only
VERWEM	Red	White	Emergency (nicad battery)
VEGWEM	Green	White	Emergency (nicad battery)

#### Accessories

**VEPMC** – Pendant mount canopy, white, (requires stem assembly).

**PVS2** – Polycarbonate shield

**WG4** – Wire guard

**CXPA12W** – Pendant assembly, Rigid canopy, 12" white stem (requires VEPMC).

**CXPAS12W** – Pendant assembly, Swivel white canopy, 12" white stem (requires VEPMC).

Stem lengths available: 18", 24", 30", 36", 48", and 60"

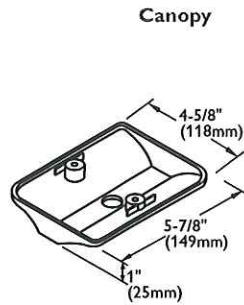
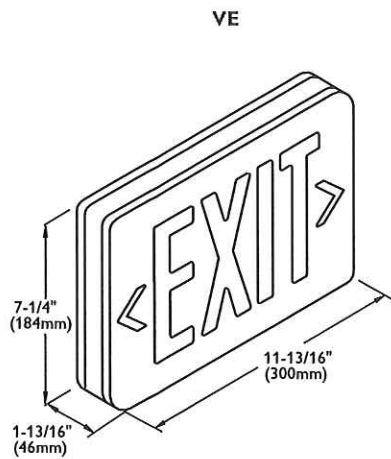
#### Note:

All exit signs are universal (single face with an extra stencil face plate)  
Canopy provided on all exits.



**PHILIPS  
CHLORIDE**

## dimensions



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200 Franklin Square Drive, Somerset, NJ 08873  
Tel. 855-486-2216

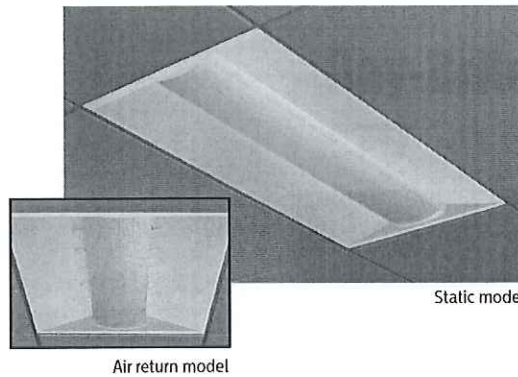
Philips Lighting Canada Ltd.  
281 Hillmount Rd, Markham, ON, Canada L6C 2S3  
Tel. 800-668-9008

# PHILIPS Day-Brite CFI

Recessed

EvoGrid  
LED 2x4

Up to 7400 lumens



Project: \_\_\_\_\_  
Location: \_\_\_\_\_  
Cat.No: \_\_\_\_\_  
Type: \_\_\_\_\_  
Lamps: \_\_\_\_\_ Qty: \_\_\_\_\_  
Notes: \_\_\_\_\_

The Philips Day-Brite / Philips CFI EvoGrid LED recessed utilizes highly reliable and efficient Philips LED platform boards and dimmable driver enabling market leading performance in its category. Its soft opal diffuser with large luminous area minimizes apparent brightness compared to other basket luminaires and provides general lighting perfect for a wide variety of applications.

## Ordering guide

Example: 2EVG38L840-4-D-UNV-DIM

Width	Family	Ceiling Type	Air Function	Lumens	Color	Length	Center Diffuser	Voltage	Driver	Options
2	EV	G				4				
2' 2"	EV EvoGrid	G Grid	blank Static H Air Return	<b>Standard efficacy</b> 38L 3800 nominal delivered lumens 43L 4300 nominal delivered lumens 48L 4800 nominal delivered lumens 54L 5400 nominal delivered lumens 74L 7400 nominal delivered lumens  <b>High efficacy</b> 38LH 3800 nominal delivered lumens 43LH 4300 nominal delivered lumens 48LH 4800 nominal delivered lumens 54LH 5400 nominal delivered lumens 74LH 7400 nominal delivered lumens	830 <sup>1</sup> 80 CRI, 3000K 835 80 CRI, 3500K 840 80 CRI, 4000K 850 <sup>1</sup> 80 CRI, 5000K	4' 4"	D Diffuse (opal) DS Diffuse smooth (opal) R Diffuse round ribbed (opal) RS Diffuse round smooth (opal)	UNV Universal Voltage, 120-277 volt 120 <sup>2</sup> 120V 277 <sup>2</sup> 277V 347 347V	DIM <sup>3,4</sup> 0-10V dimming Step SDIM <sup>4</sup> 40% input power XDIM <sup>2</sup> MarkX phase dimming L3D <sup>5</sup> Lutron Hi-lume A 1% dimming LDE Lutron LDE5, 5% dimming DALI DALI	F1 3/8" flex, 3 wire 18 gauge 6' F2 3/8" flex, 4 wire 18 gauge 6' F1/D 3/8" twin flex, 3 wire 18 gauge 6' for dimmable luminaires F2/5W 3/8" single flex, 5 wire 18 gauge 6' for dimmable luminaires F2/6W 3/8" single flex, 6 wire 18 gauge 6' for dimmable and emergency luminaires GLR Fusing, fast blow EMLED Integral emergency battery pack, 1100lm nominal (ballast enclosure on top of luminaire) SWZG2 <sup>6,7</sup> Integral sensor, daylighting and occupancy, advanced grouping with dwell time and zoning SWZDT <sup>6</sup> Integral sensor, daylighting and occupancy, advanced grouping with dwell time DAYOCC <sup>6</sup> Integral sensor, daylighting and occupancy, basic grouping CHIC Chicago Plenum rated CRM <sup>8</sup> Continuous row mount

## Footnotes

- 3000K and 5000K color temperatures available only on high efficacy configurations
- XDIM requires 120V or 277V specification.
- Integral SWZDT and DAYOCC options dimmable to 5% via wireless all switch. See page 2.
- Consult factory for SDIM on 74L and 74LH packages.
- Specify with 38L or 43L lumen packages only. Consult factory for higher lumen packages.
- Specify only with -DIM driver option
- Must order SWZ-REMOTE SpaceWise handheld remote with each system order.
- CRM includes side cover with top access plate and additional end cover. 7/8" gap between fixtures.
- Non-controls and SWZG2 configurations are 0-10V dimmable to 1% for Standard configurations. Base configurations are 0-10V dimmable to 5%.

## SpaceWise accessories (order separately)

- LRM1743 – External sensor to increase occupancy coverage area of SpaceWise luminaire groups
- SWZ-REMOTE – SpaceWise handheld remote for grouping and configuration (at least one remote required for any SpaceWise installation)
- UID8451/10 – Wireless Dimmer Switch Selector
- UID8461/10 – Wireless Scene Selector

## Other accessories (order separately)

- FMA24 – 2'x4' "F" mounting frame for NEMA "F" mounting
- EVD4L – EvoGrid 2'x4' rectangular ribbed replacement lens
- EVD54L – EvoGrid 2'x4' rectangular smooth replacement lens
- EVR4L – EvoGrid 2'x4' round ribbed replacement lens
- EVR54L – EvoGrid 2'x4' round smooth replacement lens
- FSK24 – 2'x4' surface mount field installation kit, order with -TAP (top access plate) option (SWZG2 option not available)





# 2EV EvoGrid LED recessed 2x4

Up to 7400 lumens

## Application

- A highly efficient, visually comfortable, architecturally styled recessed LED luminaire designed with a minimalistic strategy to achieve sustainable objectives.
- Low profile configuration is only 2-3/4" deep, requiring minimal plenum space.
- Soft opal diffuser with large luminous area minimizes apparent brightness and provides high visual comfort perfect for a wide variety of general lighting applications like offices, schools, retail, or healthcare.
- Multiple lumen packages over a wide range to provide significant application flexibility over light levels and/or luminaire spacing.
- Directs a controlled amount of light to the higher angles in the room to balance the brightness of the surfaces and eliminate "cave effect" while creating the impression of a larger, brighter space without glare.
- Excellent color rendering with a CRI of 80.
- LEDs are an excellent source for use with controls since dimming or frequent switching does not degrade the performance or life of the source. Integral or external sensors are available for use.
- Designed for use with standard Grid (NEMA "G") or Narrow Grid (NEMA "NFG") ceiling T-bars. Drywall or plaster requirements can be accommodated by using an FMA24 "F" mounting frame (sold separately).
- Continuous row mount option (CRM) includes wireway covers on each end and on one side of housing.

## Construction/Finish

- Uncomplicated design is 2-3/4" in depth and only requires a few parts outside of the electrical system and hardware, creating several benefits:
  - Less material required
  - Less packaging required
  - Reduced weight
  - Less energy required for construction and assembly
  - More luminaires can be shipped per truck to reduce fuel use and emissions
- Luminaire finish is matte white polyester for a high quality, durable finish.
- T-bar grid clips are integral to body.

## Electrical

- Integral sensor options for occupancy sensing and/or daylight harvesting are available for additional energy savings with no reduction of life or increase in installation labor.
- Total luminaire efficacy exceeding 139 LPW (lumens per Watt) with high efficiency packages.
- LED board is easily accessible from below without tools. Single LED board is replaceable if needed via plug-in connectors to ensure long service life.
- LED driver is accessible from above.
- Emergency driver is accessible from above. To estimate lumen output in emergency mode, multiply emergency pack wattage by efficacy, then by 1.10. Typical lumen output is 1300lm for EMLED.
- Step dim 100/40% and additional dimming options available.
- Five year limited luminaire warranty includes LED boards and driver. Visit [www.philips.com/warranties](http://www.philips.com/warranties) for complete warranty information.
- TM-21 predicted L70 lumen maintenance up to 80,000 hours for high efficacy and 50,000 hours for standard efficacy configurations.
- cETLus listed to UL and CSA standards, suitable for damp locations.
- EvoGrid luminaires are DesignLights Consortium® qualified. Please see the DLC QPL list for exact catalog numbers (<http://www.designlights.org/QPL>)

## Enclosure

- Opal diffuser provides soft, comfortable lighting while maintaining high efficiency.
- Diffuser requires no frames or fasteners and can be easily removed from below without tools if needed.

## General Notes

- All options factory installed.
- All accessories are field installed.
- Many luminaire components, such as reflectors, refractors, lenses, sockets, lampholders, and LEDs are made from various types of plastics which can be adversely affected by airborne contaminants. If sulfur based chemicals, petroleum based products, cleaning solutions, or other contaminants are expected in the intended area of use, consult factory for compatibility.

## SpaceWise (SWZG2)

- Commissioning via SWZ-REMOTE handheld remote, must order a minimum of one per installation
- Integral sensing options (DAYOCC, SWZG2, SWZDT) may not be combined
- For more information on the sensor, please refer to [www.lightingproducts.philips.com/documents/webdb2/DayBrite/pdf/SWZG2\\_sensor.pdf](http://www.lightingproducts.philips.com/documents/webdb2/DayBrite/pdf/SWZG2_sensor.pdf)
- Visit [Philips.com/spacewise](http://Philips.com/spacewise) for more information about SpaceWise Technology (SWZG2)

## DAYOCC & SpaceWise DT (SWZDT)

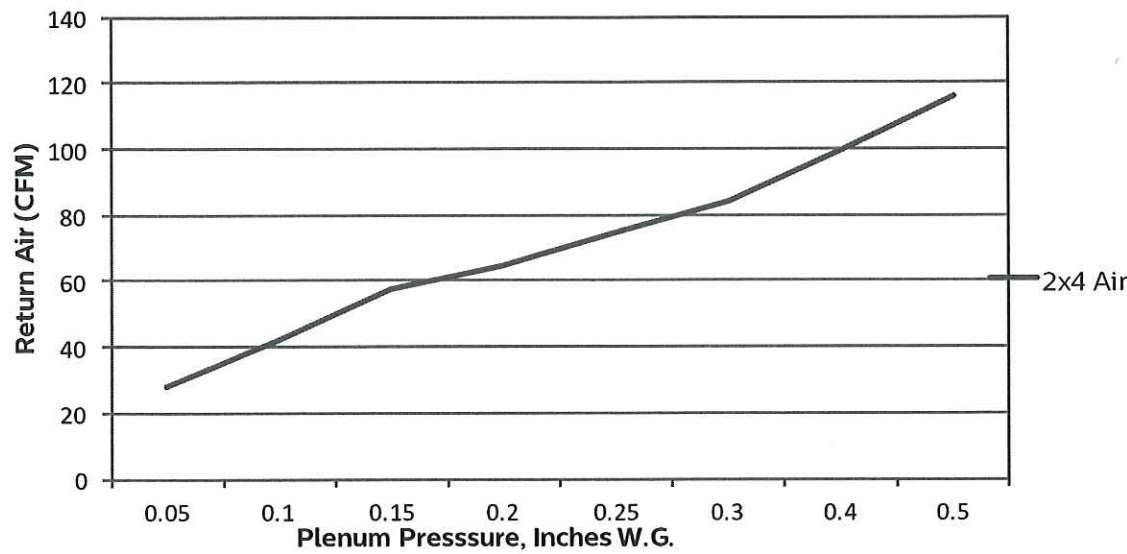
- Commissioning via compatible Android phone and Philips Field App
- Dimming via compatible wireless wall switch only (see below)
- Register for the commissioning app at <http://registration.componentcloud.philips.com/appregistration/>
- Integral sensing options (DAYOCC, SWZG2, SWZDT) may not be combined
- For more information including recommended switches, refer to the following –  
**DAYOCC** – [www.lightingproducts.philips.com/documents/webdb2/DayBrite/pdf/DAYOCC\\_sensor.pdf](http://www.lightingproducts.philips.com/documents/webdb2/DayBrite/pdf/DAYOCC_sensor.pdf)  
**SWZDT** – [www.lightingproducts.philips.com/documents/webdb2/DayBrite/pdf/SWZDT\\_sensor.pdf](http://www.lightingproducts.philips.com/documents/webdb2/DayBrite/pdf/SWZDT_sensor.pdf)

## Energy data

Luminaire	Catalog Number	Input Power	Efficacy
2x4	2EVG38L840-4-D	37	110
	2EVG43L840-4-D	41	108
	2EVG48L840-4-D	48	105
	2EVG54L840-4-D	55	103
	2EVG74L840-4-D	83	93
	2EVG38L840-4-R	31	124
	2EVG43L840-4-R	35	124
	2EVG48L840-4-R	40	122
	2EVG54L840-4-R	46	120
	2EVG74L840-4-R	67	111
2x4 High Efficacy	2EVG38LH840-4-D	27	139
	2EVG43LH840-4-D	32	139
	2EVG48LH840-4-D	36	138
	2EVG54LH840-4-D	39	137
	2EVG74LH840-4-D	56	134
	2EVG38LH840-4-R	26	142
	2EVG43LH840-4-R	30	142
	2EVG48LH840-4-R	34	143
	2EVG54LH840-4-R	39	143
	2EVG74LH840-4-R	53	140

# 2EV    EvoGrid LED recessed 2x4

Up to 7400 lumens

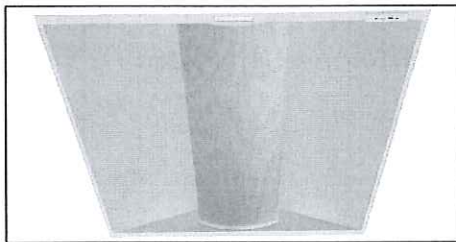
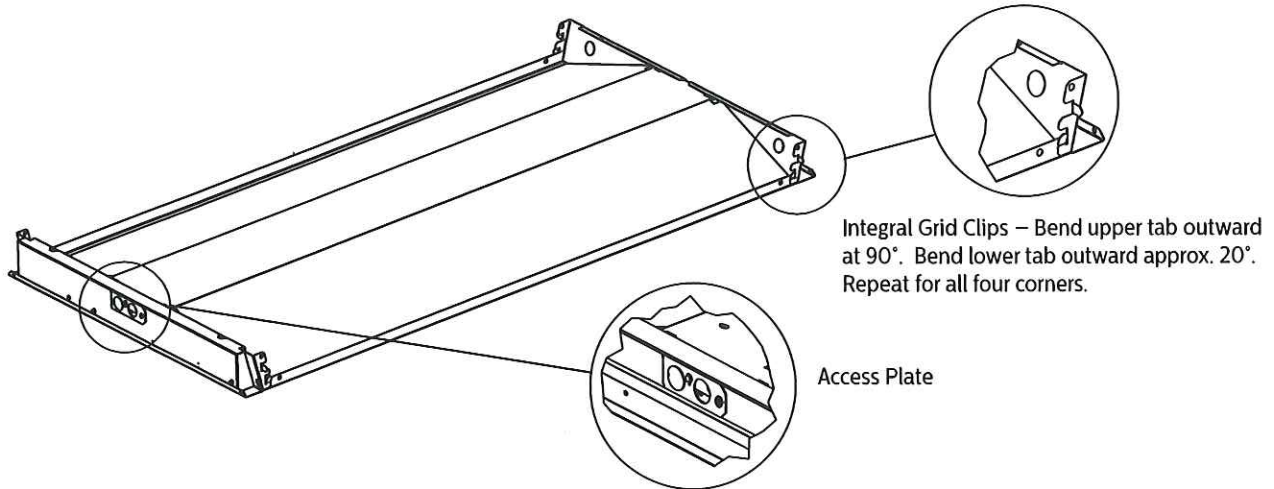
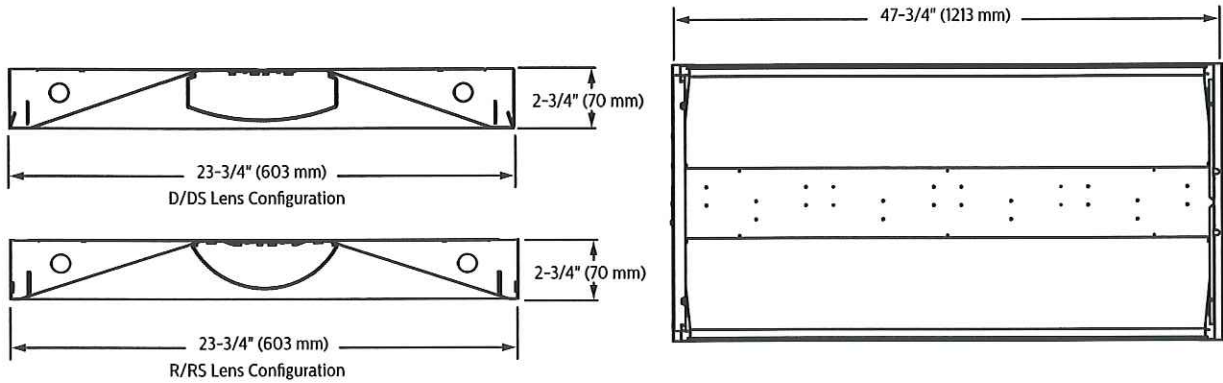


Pressure	0.05	0.1	0.15	0.2	0.25	0.3	0.4	0.5
CFM	28	42	58	65	75	84	100	116
Noise	<15	24	34	37	41	45	47	49

# 2EV EvoGrid LED recessed 2x4

Up to 7400 lumens

## Dimensions



SpaceWise (SWZG2) automated wireless technology is available for integrated occupancy and daylight harvesting. Individual options for dimming, occupancy detection, and daylight harvesting are also available if SpaceWise option is not selected.

SpaceWise DT (SWZDT) sensor is located in the center on one end flange similar to SWZG2 shown.



# 2EV EvoGrid LED recessed 2x4

Up to 7400 lumens

## Photometry

2x4 EvoGrid recessed LED, high efficacy, 4800 nominal delivered lumens

LER – 138

Catalog No.	2EVG48LH840-4-D-UNV-DIM
Test No.	34935
S/MH	1.2
Lamp Type	LED
Lumens	4897
Input Watts	36

Comparative yearly lighting energy cost per 1000 lumens – \$1.74 based on 3000 hrs. and \$.08 pwr KWH.

The photometric results were obtained in the Philips Day-Brite laboratory which is NVLAP accredited by the National Institute of Standards and Technology.

Photometric values based on test performed in compliance with LM-79.

### Candlepower

Angle	End	45	Cross	Back-45
0	1778	1778	1778	1778
5	1749	1771	1782	1771
15	1669	1701	1714	1701
25	1509	1545	1566	1545
35	1283	1333	1364	1333
45	1022	1087	1134	1087
55	751	838	913	838
65	494	613	704	613
75	264	393	465	393
85	74	114	119	114

### Light Distribution

Degrees	Lumens	% Luminaire
0-30	1358	27.7
0-40	2189	44.7
0-60	3775	77.1
0-90	4899	100.0
0-180	4899	100.0

### Average Luminance

Zone	End	45°	Cross
45	7532	8012	8362
55	6828	7614	8295
65	6090	7566	8686
75	5319	7922	9360
85	4450	6795	7112

### Coefficients of Utilization

EFFECTIVE FLOOR CAVITY REFLECTANCE 20 PER (pfc=0.20)									
pcc	80			70			50		
	70	50	30	70	50	30	50	30	
RCR									
0	118	118	118	115	115	115	111	111	
1	108	103	98	106	101	96	96	93	
2	97	90	82	95	88	81	83	79	
3	90	79	69	86	77	68	73	68	
4	81	69	60	80	68	59	66	58	
5	75	61	53	72	60	53	58	52	
6	69	56	46	68	55	46	53	46	
7	65	51	41	63	50	41	48	40	
8	59	46	38	58	46	38	45	36	
9	56	42	34	55	41	34	40	34	
10	53	40	32	52	39	30	38	30	

2x4 EvoGrid recessed LED, 4800 nominal delivered lumens

LER – 105

Catalog No.	2EVG48LH840-4-D-UNV-DIM
Test No.	34090
S/MH	1.2
Lamp Type	LED
Lumens	5015
Input Watts	48

Comparative yearly lighting energy cost per 1000 lumens – \$1.29 based on 3000 hrs. and \$.08 pwr KWH.

The photometric results were obtained in the Philips Day-Brite laboratory which is NVLAP accredited by the National Institute of Standards and Technology.

Photometric values based on test performed in compliance with LM-79.

### Candlepower

Angle	End	45	Cross	Back-45
0	1830	1830	1830	1777
5	1813	1820	1825	1770
15	1725	1739	1746	1700
25	1554	1571	1582	1541
35	1317	1347	1365	1330
45	1048	1096	1132	1086
55	771	851	930	838
65	510	642	733	614
75	279	417	485	394
85	81	123	132	111

### Light Distribution

Degrees	Lumens	% Luminaire
0-30	1387	27.6
0-40	2228	44.4
0-60	3836	76.4
0-90	5019	100.0
0-180	5020	100.0

### Average Luminance

Zone	End	45°	Cross
45	7725	8080	8349
55	7009	7732	8457
65	6290	7919	9045
75	5613	8389	9769
85	4870	7342	7903

### Coefficients of Utilization

EFFECTIVE FLOOR CAVITY REFLECTANCE 20 PER (pfc=0.20)									
pcc	80			70			50		
	70	50	30	70	50	30	50	30	
RCR									
0	118	118	118	115	115	115	111	111	
1	108	103	98	105	101	96	96	93	
2	97	90	82	94	88	81	83	79	
3	89	79	69	86	77	68	73	67	
4	81	69	60	79	68	59	66	57	
5	75	61	53	72	60	52	58	51	
6	69	56	46	68	55	46	53	46	
7	65	51	41	63	50	41	47	40	
8	59	46	38	58	46	38	44	36	
9	56	42	34	55	41	34	40	34	
10	53	39	32	51	39	30	38	30	

# 2EV EvoGrid LED recessed 2x4

Up to 7400 lumens

2x4 EvoGrid recessed LED, high efficacy, 4800 nominal delivered lumens

LER – 144

Catalog No. 2EVG48LH840-4-R-UNV-DIM  
Test No. 38774  
S/MH 1.3  
Lamp Type LED  
Lumens 4927  
Input Watts 34

Comparative yearly lighting energy cost per 1000 lumens – \$1.67 based on 3000 hrs. and \$.08 pwr KWH.

The photometric results were obtained in the Philips Day-Brite laboratory which is NVLAP accredited by the National Institute of Standards and Technology.

Photometric values based on test performed in compliance with LM-79.

## Candlepower

Angle	End	45	Cross	Back-45
0	1666	1666	1666	1666
5	1634	1661	1671	1661
15	1560	1599	1619	1599
25	1420	1475	1513	1475
35	1227	1304	1363	1304
45	998	1101	1186	1101
55	752	886	998	886
65	468	674	780	674
75	238	408	502	408
85	54	132	128	132

## Light Distribution

Degrees	Lumens	% Luminaire
0-30	1286	26.1
0-40	2100	42.6
0-60	3736	75.8
0-90	4932	100.0
0-180	4932	100.0

## Average Luminance

Zone	End	45'	Cross
45	7359	8120	8741
55	6833	8050	9071
65	5772	8313	9621
75	4800	8216	10115
85	3218	7919	7650

## Coefficients of Utilization

EFFECTIVE FLOOR CAVITY REFLECTANCE 20 PER (pfc=0.20)								
pcc	80			70			50	
pw	70	50	30	70	50	30	50	30
RCR								
0	118	118	118	115	115	115	111	111
1	108	103	97	105	101	95	95	93
2	97	89	81	94	86	81	83	78
3	89	78	68	85	76	68	72	67
4	81	68	59	79	68	58	65	57
5	75	60	52	72	59	52	57	50
6	68	55	46	67	54	46	52	45
7	64	50	40	61	48	40	47	40
8	58	46	36	57	45	36	44	35
9	56	41	34	54	40	33	40	33
10	52	39	30	51	38	29	36	29

2x4 EvoGrid recessed LED, 4800 nominal delivered lumens

LER – 122

Catalog No. 2EVG48LH840-4-R-UNV-DIM  
Test No. 38786  
S/MH 1.3  
Lamp Type LED  
Lumens 4903  
Input Watts 40

Comparative yearly lighting energy cost per 1000 lumens – \$1.97 based on 3000 hrs. and \$.08 pwr KWH.

The photometric results were obtained in the Philips Day-Brite laboratory which is NVLAP accredited by the National Institute of Standards and Technology.

Photometric values based on test performed in compliance with LM-79.

## Candlepower

Angle	End	45	Cross	Back-45
0	1658	1658	1658	1658
5	1623	1653	1664	1653
15	1550	1591	1612	1591
25	1411	1468	1506	1468
35	1219	1299	1357	1299
45	991	1097	1179	1097
55	747	882	992	882
65	465	673	775	673
75	236	405	480	405
85	54	127	126	127

## Light Distribution

Degrees	Lumens	% Luminaire
0-30	1280	26.1
0-40	2090	42.6
0-60	3719	75.8
0-90	4902	100.0
0-180	4903	100.0

## Average Luminance

Zone	End	45'	Cross
45	7307	8088	8690
55	6785	8019	9012
65	5735	8297	9556
75	4761	8153	9672
85	3206	7578	7524

## Coefficients of Utilization

EFFECTIVE FLOOR CAVITY REFLECTANCE 20 PER (pfc=0.20)								
pcc	80			70			50	
pw	70	50	30	70	50	30	50	30
RCR								
0	118	118	118	115	115	115	111	111
1	108	103	97	105	101	96	95	93
2	97	89	81	94	86	81	83	78
3	89	78	69	85	76	68	72	67
4	81	68	59	79	68	58	65	57
5	75	60	52	72	59	52	57	50
6	68	55	46	67	54	46	52	45
7	64	50	40	61	48	40	47	40
8	58	46	36	57	45	36	44	35
9	56	41	34	54	40	33	40	33
10	52	39	30	51	38	29	36	29

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philips.com/luminaires



Philips Lighting North America Corporation  
200 Franklin Square Drive, Somerset, NJ 08873  
Tel. 855-486-2216

Philips Lighting Canada Ltd.  
281 Hillmount Rd, Markham, ON, Canada L6C 2S3  
Tel. 800-668-9008



# PHILIPS

## Recessed

### EvoKit LED Retrofit Kit Gen 4



Project: \_\_\_\_\_  
 Location: \_\_\_\_\_  
 Cat.No: \_\_\_\_\_  
 Type: \_\_\_\_\_  
 Lamps: \_\_\_\_\_ Qty: \_\_\_\_\_  
 Notes: \_\_\_\_\_

Philips EvoKit LED retrofit kit gen 4 is an energy efficient LED alternative to traditional linear fluorescent troffers. Not only does it offer energy savings<sup>1</sup>, it also helps reduce maintenance costs due to its long lifetime. Simple construction helps decrease the installation time meaning you can have an LED solution in your ceiling in just minutes.

#### Ordering guide (continued on next page)

Product Number	12NC	Description	Watts <sup>3</sup>	Volts	Lumen Maintenance (Hrs.) <sup>2</sup>	Approx. Lumens <sup>3</sup>	Color Temp. (K)	Efficacy	Diffusor
Dimming: 0-10V									
515692	929000781813	EvoKit 2x2 P 23L 17W 835 2 0-10 7 G4	17	120-277	70,000	2300	3500	134	Ribbed
515759	929000782213	EvoKit 2x2 P 23L 17W 840 2 0-10 7 G4	17	120-277	70,000	2300	4000	137	Ribbed
◆ 516005	929000783313	EvoKit 2x2 P 32L 24W 835 2 0-10 7 G4	24	120-277	70,000	3200	3500	132	Ribbed
◆ 515940	929000782713	EvoKit 2x2 P 32L 24W 840 2 0-10 7 G4	24	120-277	70,000	3200	4000	135	Ribbed
516237	929000785513	EvoKit 2x4 P 30L 22W 835 2 0-10 7 G4	22	120-277	70,000	3000	3500	135	Ribbed
516039	929000783613	EvoKit 2x4 P 30L 22W 840 2 0-10 7 G4	22	120-277	70,000	3000	4000	137	Ribbed
◆ 516286	929000786013	EvoKit 2x4 P 36L 27W 835 2 0-10 7 G4	27	120-277	70,000	3600	3500	135	Ribbed
◆ 516328	929000786413	EvoKit 2x4 P 36L 26W 840 2 0-10 7 G4	26	120-277	70,000	3600	4000	137	Ribbed
◆ 516427	929000787413	EvoKit 2x4 P 42L 32W 835 2 0-10 7 G4	32	120-277	70,000	4200	3500	134	Ribbed
◆ 516369	929000786813	EvoKit 2x4 P 42L 31W 840 2 0-10 7 G4	31	120-277	70,000	4200	4000	136	Ribbed
516534	929000788513	EvoKit 2x4 P 47L 36W 835 2 0-10 7 G4	36	120-277	70,000	4700	3500	132	Ribbed
516476	929000787913	EvoKit 2x4 P 47L 35W 840 2 0-10 7 G4	35	120-277	70,000	4700	4000	135	Ribbed
517482	929000798813	EvoKit 2x2 P 32L 24W 835 2 0-10 7 G4 SM	24	120-277	70,000	3200	3500	132	Smooth
517466	929000798613	EvoKit 2x2 P 32L 24W 840 2 0-10 7 G4 SM	24	120-277	70,000	3200	4000	135	Smooth
517508	929000799013	EvoKit 2x4 P 36L 27W 835 2 0-10 7 G4 SM	27	120-277	70,000	3600	3500	135	Smooth
517516	929000799113	EvoKit 2x4 P 36L 26W 840 2 0-10 7 G4 SM	26	120-277	70,000	3600	4000	137	Smooth
517540	929000799413	EvoKit 2x4 P 42L 32W 835 2 0-10 7 G4 SM	32	120-277	70,000	4200	3500	134	Smooth
517524	929000799213	EvoKit 2x4 P 42L 31W 840 2 0-10 7 G4 SM	31	120-277	70,000	4200	4000	136	Smooth

See footnotes on the last page.





# EvoKit LED retrofit kit gen 4

## Ordering guide (continued from previous page)

Product Number	12NC	Description	Watts	Volts	Lumen Maintenance (Hrs.) <sup>2</sup>	Approx. Lumens <sup>3</sup>	Color Temp. (K)	Efficacy	Diffuser
<b>Driver: 0-10V dimming</b>									
515643	929000781613	EvoKit 2x2 P 23L 17W 850 2 0-10 7 G4	17	120-277	70,000	2300	5000	138	Ribbed
515981	929000783113	EvoKit 2x2 P 32L 24W 850 2 0-10 7 G4	24	120-277	70,000	3200	5000	135	Ribbed
516260	929000785813	EvoKit 2x4 P 36L 26W 850 2 0-10 7 G4	26	120-277	70,000	3600	5000	139	Ribbed
516401	929000787213	EvoKit 2x4 P 42L 31W 850 2 0-10 7 G4	31	120-277	70,000	4200	5000	138	Ribbed
516518	929000788313	EvoKit 2x4 P 47L 34W 850 2 0-10 7 G4	34	120-277	70,000	4700	5000	136	Ribbed
<b>Driver: 120V Mark 10 dimming</b>									
515650	929000781713	EvoKit 2x2 P 23L 19W 835 1 MK10 7 G4	19	120	70,000	2478	3500	130	Ribbed
515742	929000782113	EvoKit 2x2 P 23L 19W 840 1 MK10 7 G4	19	120	70,000	2526	4000	132	Ribbed
515999	929000783213	EvoKit 2x2 P 32L 25W 835 1 MK10 7 G4	25	120	70,000	3224	3500	130	Ribbed
515932	929000782613	EvoKit 2x2 P 32L 25W 840 1 MK10 7 G4	25	120	70,000	3295	4000	133	Ribbed
516229	929000785413	EvoKit 2x4 P 30L 26W 835 1 MK10 7 G4	26	120	70,000	3304	3500	127	Ribbed
516187	929000785013	EvoKit 2x4 P 30L 23W 840 1 MK10 7 G4	23	120	70,000	2928	4000	130	Ribbed
516278	929000785913	EvoKit 2x4 P 36L 29W 835 1 MK10 7 G4	29	120	70,000	3686	3500	128	Ribbed
516310	929000786313	EvoKit 2x4 P 36L 29W 840 1 MK10 7 G4	29	120	70,000	3769	4000	131	Ribbed
516419	929000787313	EvoKit 2x4 P 42L 34W 835 1 MK10 7 G4	34	120	70,000	4303	3500	128	Ribbed
516351	929000786713	EvoKit 2x4 P 42L 34W 840 1 MK10 7 G4	34	120	70,000	4399	4000	131	Ribbed
516526	929000788413	EvoKit 2x4 P 47L 38W 835 1 MK10 7 G4	38	120	70,000	4831	3500	128	Ribbed
516468	929000787813	EvoKit 2x4 P 47L 38W 840 1 MK10 7 G4	38	120	70,000	4934	4000	130	Ribbed
<b>Driver: 277V Mark 10 dimming</b>									
● 515700	929000781913	EvoKit 2x2 P 23L 19W 835 5 MK10 7 G4	19	277	70,000	2300	3500	121	Ribbed
● 515767	929000782313	EvoKit 2x2 P 23L 21W 840 5 MK10 7 G4	21	277	70,000	2526	4000	123	Ribbed
● 516021	929000783513	EvoKit 2x2 P 32L 26W 835 5 MK10 7 G4	26	277	70,000	3200	3500	124	Ribbed
515965	929000782913	EvoKit 2x2 P 32L 25W 840 5 MK10 7 G4	26	277	70,000	3200	4000	127	Ribbed
● 516252	929000785713	EvoKit 2x4 P 30L 25W 835 5 MK10 7 G4	25	277	70,000	3000	3500	120	Ribbed
● 516211	929000785313	EvoKit 2x4 P 30L 25W 840 5 MK10 7 G4	25	277	70,000	3000	4000	122	Ribbed
● 516294	929000786113	EvoKit 2x4 P 36L 30W 835 5 MK10 7 G4	30	277	70,000	3687	3500	123	Ribbed
516336	929000786513	EvoKit 2x4 P 36L 29W 840 5 MK10 7 G4	28	277	70,000	3600	4000	126	Ribbed
● 516443	929000787613	EvoKit 2x4 P 42L 35W 835 5 MK10 7 G4	35	277	70,000	4303	3500	124	Ribbed
516385	929000787013	EvoKit 2x4 P 42L 33W 840 5 MK10 7 G4	33	277	70,000	4200	4000	127	Ribbed
● 516559	929000788713	EvoKit 2x4 P 47L 38W 835 5 MK10 7 G4	38	277	70,000	4700	3500	125	Ribbed
516492	929000788113	EvoKit 2x4 P 47L 37W 840 5 MK10 7 G4	37	277	70,000	4700	4000	127	Ribbed
<b>Dimming: 0-10V at 347V</b>									
515718	929000782013	EvoKit 2x2 P 23L 18W 835 6 0-10 7 G4	18	347	70,000	2300	3500	128	Ribbed
515866	929000782413	EvoKit 2x2 P 23L 18W 840 6 0-10 7 G4	18	347	70,000	2300	4000	130	Ribbed
515973	929000783013	EvoKit 2x2 P 32L 24W 835 6 0-10 7 G4	24	347	70,000	3200	3500	135	Ribbed
515890	929000782513	EvoKit 2x2 P 32L 24W 840 6 0-10 7 G4	24	347	70,000	3200	4000	135	Ribbed
516302	929000786213	EvoKit 2x4 P 36L 27W 835 6 0-10 7 G4	27	347	70,000	3600	3500	133	Ribbed
516344	929000786613	EvoKit 2x4 P 36L 26W 840 6 0-10 7 G4	26	347	70,000	3600	4000	136	Ribbed
516450	929000787713	EvoKit 2x4 P 42L 31W 835 6 0-10 7 G4	31	347	70,000	4200	3500	138	Ribbed
516393	929000787113	EvoKit 2x4 P 42L 31W 840 6 0-10 7 G4	31	347	70,000	4200	4000	136	Ribbed
516567	929000788813	EvoKit 2x4 P 47L 36W 835 6 0-10 7 G4	36	347	70,000	4700	3500	132	Ribbed
516500	929000788213	EvoKit 2x4 P 47L 35W 840 6 0-10 7 G4	35	347	70,000	4700	4000	135	Ribbed

See footnotes on the last page.

# EvoKit LED retrofit kit gen 4

## Ordering guide (continued from previous page)

Product Number	12NC	Description	Watts	Volts	Lumen Maintenance (Hrs.) <sup>2</sup>	Approx. Lumens <sup>3</sup>	Color Temp. (K)	Efficacy	Diffusor
<b>Dimming: SR</b>									
516013	929000783413	EvoKit 2x2 P 32L 25W 835 2 SR 7 G4	25	120-277	70,000	3200	3500	129	Ribbed
◆ 515957	929000782813	EvoKit 2x2 P 32L 24W 840 2 SR 7 G4	24	120-277	70,000	3200	4000	132	Ribbed
516245	929000785613	EvoKit 2x4 P 30L 23W 835 2 SR 7 G4	23	120-277	70,000	3000	3500	131	Ribbed
516203	929000785213	EvoKit 2x4 P 30L 23W 840 2 SR 7 G4	23	120-277	70,000	3000	4000	133	Ribbed
516435	929000787513	EvoKit 2x4 P 42L 32W 835 2 SR 7 G4	32	120-277	70,000	4200	3500	132	Ribbed
◆ 516377	929000786913	EvoKit 2x4 P 42L 32W 840 2 SR 7 G4	32	120-277	70,000	4200	4000	134	Ribbed
516542	929000788613	EvoKit 2x4 P 47L 36W 835 2 SR 7 G4	36	120-277	70,000	4700	3500	130	Ribbed
516484	929000788013	EvoKit 2x4 P 47L 36W 840 2 SR 7 G4	36	120-277	70,000	4700	4000	132	Ribbed
517557	929000799513	EvoKit 2x4 P 42L 32W 835 2 SR 7 G4 SM	32	120-277	70,000	4200	3500	132	Smooth
517532	929000799313	EvoKit 2x4 P 42L 32W 840 2 SR 7 G4 SM	32	120-277	70,000	4200	4000	134	Smooth
517490	929000798913	EvoKit 2x2 P 32L 25W 835 2 SR 7 G4 SM	25	120-277	70,000	3200	3500	129	Smooth
517474	929000798713	EvoKit 2x2 P 32L 24W 840 2 SR 7 G4 SM	24	120-277	70,000	3200	4000	132	Smooth
<b>EvoKit with Air Return</b>									
515494	929000781013	EvoKit 2x2 A 23L 17W 835 2 O-10 7 G4	17	120-277	70,000	2300	3500	134	Ribbed
515544	929000781113	EvoKit 2x2 A 23L 17W 840 2 O-10 7 G4	17	120-277	70,000	2300	4000	136	Ribbed
515551	929000781213	EvoKit 2x2 A 32L 24W 835 2 O-10 7 G4	24	120-277	70,000	3200	3500	135	Ribbed
515585	929000781513	EvoKit 2x2 A 32L 25W 835 2 SR 7 G4	24	120-277	70,000	3200	3500	130	Ribbed
515569	929000781313	EvoKit 2x2 A 32L 24W 840 2 O-10 7 G4	24	120-277	70,000	3200	4000	135	Ribbed
515577	929000781413	EvoKit 2x2 A 32L 24W 840 2 SR 7 G4	24	120-277	70,000	3200	4000	133	Ribbed
516054	929000783813	EvoKit 2x4 A 30L 22W 835 2 O-10 7 G4	22	120-277	70,000	3000	3500	135	Ribbed
516062	929000783913	EvoKit 2x4 A 30L 23W 835 2 SR 7 G4	23	120-277	70,000	3000	3500	132	Ribbed
516195	929000785113	EvoKit 2x4 A 30L 22W 840 2 O-10 7 G4	22	120-277	70,000	3000	4000	138	Ribbed
516047	929000783713	EvoKit 2x4 A 30L 22W 840 2 SR 7 G4	22	120-277	70,000	3000	4000	136	Ribbed
516088	929000784013	EvoKit 2x4 A 36L 27W 835 2 O-10 7 G4	27	120-277	70,000	3600	3500	135	Ribbed
516096	929000784113	EvoKit 2x4 A 36L 26W 840 2 O-10 7 G4	26	120-277	70,000	3600	4000	137	Ribbed
516120	929000784413	EvoKit 2x4 A 42L 31W 835 2 O-10 7 G4	32	120-277	70,000	4200	3500	134	Ribbed
516138	929000784513	EvoKit 2x4 A 42L 32W 835 2 SR 7 G4	32	120-277	70,000	4200	3500	132	Ribbed
516104	929000784213	EvoKit 2x4 A 42L 31W 840 2 O-10 7 G4	31	120-277	70,000	4200	4000	136	Ribbed
516112	929000784313	EvoKit 2x4 A 42L 31W 840 2 SR 7 G4	36	120-277	70,000	4200	4000	135	Ribbed
516161	929000784813	EvoKit 2x4 A 47L 36W 835 2 O-10 7 G4	36	120-277	70,000	4700	3500	132	Ribbed
516179	929000784913	EvoKit 2x4 A 47L 36W 835 2 SR 7 G4	36	120-277	70,000	4700	3500	131	Ribbed
516146	929000784613	EvoKit 2x4 A 47L 35W 840 2 O-10 7 G4	35	120-277	70,000	4700	4000	135	Ribbed
516153	929000784713	EvoKit 2x4 A 47L 35W 840 2 SR 7 G4	35	120-277	70,000	4700	4000	134	Ribbed

See footnotes on the last page.



# EvoKit LED retrofit kit gen 4

## EvoKit with SpaceWise DT technology

Product Number	12NC	Description	Watts	Volts	Lumen Maint. (Hrs.) <sup>2</sup>	Approx. Lumens <sup>3</sup>	Color Temp. (K)	Efficacy	Diffusor
518332	929001709313	EvoKit 2x2 P 32L 25W 835 2 SWZDT 7 G4	25	120-277	70,000	3200	3500	129	Ribbed
518324	929001709213	EvoKit 2x2 P 32L 24W 840 2 SWZDT 7 G4	24	120-277	70,000	3200	4000	132	Ribbed
518407	929001710013	EvoKit 2x4 P 30L 23W 835 2 SWZDT 7 G4	23	120-277	70,000	3000	3500	131	Ribbed
518415	929001710113	EvoKit 2x4 P 30L 23W 840 2 SWZDT 7 G4	23	120-277	70,000	3000	4000	133	Ribbed
518423	929001710213	EvoKit 2x4 P 42L 32W 835 2 SWZDT 7 G4	32	120-277	70,000	4200	3500	132	Ribbed
518431	929001710313	EvoKit 2x4 P 42L 32W 840 2 SWZDT 7 G4	32	120-277	70,000	4200	4000	134	Ribbed
518449	929001710413	EvoKit 2x4 P 47L 36W 835 2 SWZDT 7 G4	36	120-277	70,000	4700	3500	130	Ribbed
518456	929001710513	EvoKit 2x4 P 47L 36W 840 2 SWZDT 7 G4	36	120-277	70,000	4700	4000	132	Ribbed
518316	929001709113	EvoKit 2x2 A 32L 25W 835 2 SWZDT 7 G4	25	120-277	70,000	3200	3500	130	Ribbed
518308	929001709013	EvoKit 2x2 A 32L 24W 840 2 SWZDT 7 G4	24	120-277	70,000	3200	4000	133	Ribbed
518357	929001709513	EvoKit 2x4 A 30L 23W 835 2 SWZDT 7 G4	23	120-277	70,000	3000	3500	132	Ribbed
518340	929001709413	EvoKit 2x4 A 30L 22W 840 2 SWZDT 7 G4	22	120-277	70,000	3000	4000	136	Ribbed
518373	929001709713	EvoKit 2x4 A 42L 32W 835 2 SWZDT 7 G4	32	120-277	70,000	4200	3500	132	Ribbed
518365	929001709613	EvoKit 2x4 A 42L 31W 840 2 SWZDT 7 G4	31	120-277	70,000	4200	4000	135	Ribbed
518399	929001709913	EvoKit 2x4 A 47L 36W 835 2 SWZDT 7 G4	36	120-277	70,000	4700	3500	131	Ribbed
518381	929001709813	EvoKit 2x4 A 47L 35W 840 2 SWZDT 7 G4	35	120-277	70,000	4700	4000	134	Ribbed

See footnotes on page 9. Please refer to Philips.com/Spacewise for more detailed specification sheets as well as a list of compatible wireless dimming switches.

### Features

- Occupancy sensing, daylight harvesting and task tuning in one device
- Granular dimming (occupancy sharing)
- Dwell time
- Scene setting
- Configuration of sensor parameters— if desired — using NFC or IR via intuitive Android-based Philips field apps
- Quick task tuning in the field to optimize light and power levels
- Enables auto-off/manual-on and auto-off/ partial-on application
- DLC qualified: Listed on the QPL for Networked Lighting Controls

### Benefits

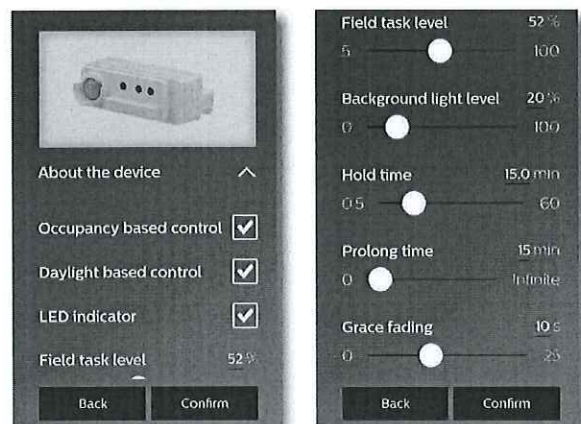
- Installation savings – integral wireless controls factory installed. No need to order separate components.
- Minimal startup and configuration expertise – savings on labor time & effort
- Deep energy savings & code compliance strategies
- Faster ROI with attractive payback periods (varies depending on luminaire choices)

### Applications

- Conference rooms
- Individual offices
- Open offices
- Classrooms
- Storage and break areas
- Restrooms
- Lobbies



### New configuration tool



Sensor parameters can be configured via Philips field apps. Two versions are available:

1. NFC – This app allows configuring sensor parameters only when you can physically access the sensor with a smartphone.
2. IR – This app allows configuring sensor parameters plus enables grouping to a wireless switch, which can be done with the IR feature of applicable phones from floor level.

You must first register for the app to receive a username and password, then download Philips field apps from the Google Play Store.

Refer to the website for registration details:

[www.usa.lighting.philips.com/support/support/tools/](http://www.usa.lighting.philips.com/support/support/tools/)



# EvoKit LED retrofit kit gen 4

## Application

- A highly efficient, visually comfortable, architecturally styled LED retrofit kit designed to replace recessed linear fluorescent troffers.
- Unique modular design offers refreshing new look in the ceiling when compared to traditional fluorescent luminaires.
- Single light bar combined with slanted troffer helps reflect light to reduce glare and provide uniform light distribution making it ideal for applications such as offices, schools, healthcare and retail.
- Excellent color rendering with a CRI above 80.
- Extremely high efficacies up to 138 lumens per watt.
- LEDs are an excellent source for use with controls since dimming or frequent switching does not degrade the performance or life of the source.
- Designed for use with standard grid (NEMA "G") or Narrow Grid (NEMA "NFG") ceiling T-Grids.
- High efficiency source and luminaire design help significantly reduce energy consumption and more easily comply with known energy codes.
- Helps meet regulation requirements such as ASHRAE 90.1 and Title 24 when matched with suitable controls.

## Construction/Finish

- Simple design allows for quick installation in existing luminaire without the need to break the ceiling plenum.

- Constructed using galvanized steel which helps fight rust and makes for more durable product.
- Integrated ceiling tabs for securement within the ceiling for areas prone to extreme conditions
- Minimum depth of only 3" necessary to allow proper clearance and installation of the EvoKit.
- Retrofit kit is powder coated after fabrication with high quality, durable finish to ensure no unfinished edges and avoid future potential of corrosion.
- Components fit together easily without the need for tools during installation.

## Electrical

- Multiple driver options available
  - Philips Advance Xitanium SR driver allows flexibility to integrate a range of control options.
  - 0-10V dimming satisfies universal voltage requirements
- 5-year limited warranty includes all components of the retrofit kit, including driver, LED board and nonelectrical components."
- Listed with UL and Design Lights Consortium† to ensure quality performance and safety standards are met.
- High efficiency LEDs have a minimum 70,000 hour rated life ( $L_{70}$ ).

## Enclosure

- Diffuser requires no frames or fasteners and can be easily removed from below without tools if needed.

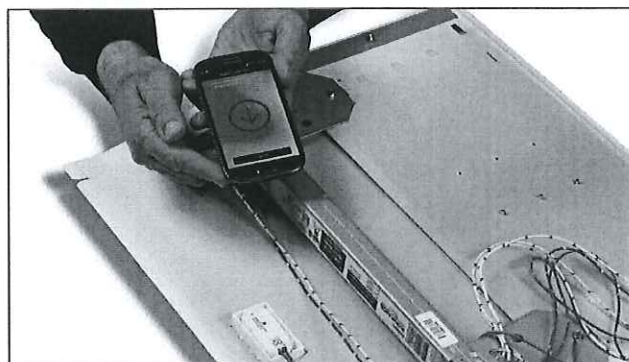
## Accessories

- Suitable for use with Philips 503441 emergency backup.
- Suitable for use with a wide range of control systems.
- Appropriate for new construction when used with standard listed lensed or parabolic troffers.

Prod. No.	Description
502583	EvoKit 2x4 replacement lens ribbed
517748	EvoKit 2x4 replacement lens smooth
502575	EvoKit 2x2 replacement lens ribbed
517755	EvoKit 2x2 replacement lens smooth
503441	EvoKit field installed emergency battery backup (requires the use of bracket)
517730	EvoKit emergency battery backup bracket (brackets come in packs of 4)

## EvoKit with new SimpleSet technology for wireless lumen level programming

EvoKit with new SimpleSet technology allows the maximum lumen level to be set prior to installation using a smartphone-based app without requiring power to the luminaire. Available in the 0-10V and SR versions only. The app can be downloaded at Google Play. Please contact your Philips representative for the current list of approved Android smartphones. Distributors can set lumen levels prior to shipping, and contractors can set lumen levels prior to installation. Lumen level is quickly and easily set in two steps:



Step 1: Place the smartphone next to the NFC antenna on the driver.

Step 2: Follow the on-screen instructions.



# EvoKit LED retrofit kit gen 4

## EvoKit with air return

The air return versions of EvoKit are suitable for retrofitting listed air return troffers.

### 2x2 air return data

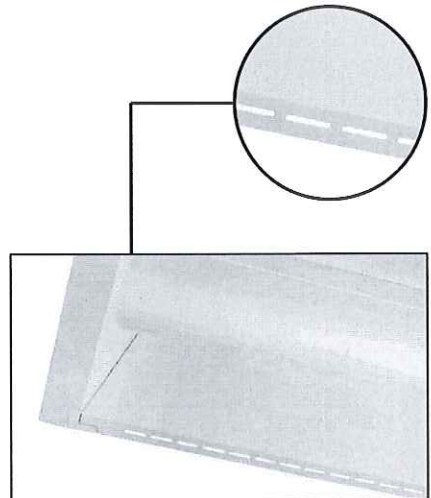
Return Air Volume, SCFM.	61	69	80	97	112	131
Negative Static Pressure, in. H <sub>2</sub> O	0.11	0.15	0.20	0.30	0.40	0.55
**Noise Criteria (NC)	17	21	25	31	34	38

Note: 24 total air slots, each 30mm x 6mm.

### 2x4 air return data

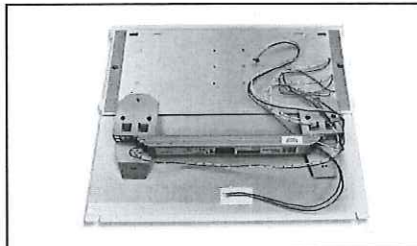
Return Air Volume, SCFM.	105	119	128	162	259	272
Negative Static Pressure, in. H <sub>2</sub> O	0.05	0.08	0.10	0.20	0.45	0.55
**Noise Criteria (NC)	<15	32	32	36	38	40

Note: 50 total air slots, each 30mm x 6mm.

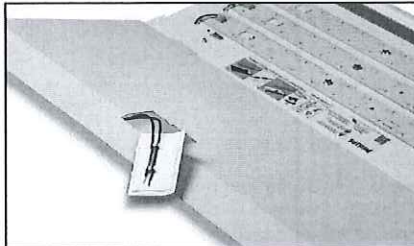


## EvoKit Sensor Ready (SR) with Philips Advance Xitanium SR for connected lighting solutions

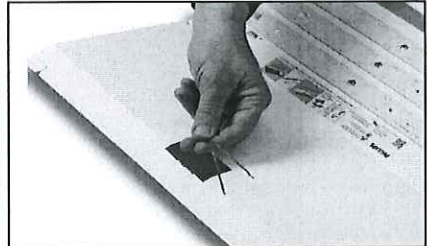
EvoKit SR is a new platform that allows users to choose different control platforms to suit their needs and budget; from simple occupancy and daylight sensing to cloud-connected data-reporting sensing. This empowers users to fine-tune their energy use for reduced energy costs. Various Philips EasySense, SpaceWise and other SR certified controls are available. Please refer to [Philips.com/Evokit](http://Philips.com/Evokit) for details. Contact your Philips representative for a current list of additional approved sensors. Sensors are connected in the field with just a few simple steps:



Step 1: Evokit SR is shipped with a plate covering the sensor hole. There are two wires secured to the back of the plate.



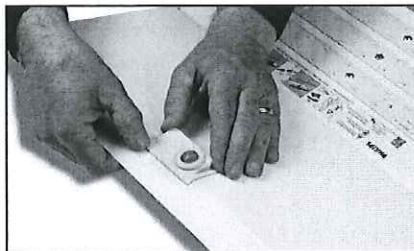
Step 2: The plate can be removed before or after you install EvoKit SR. Just gently slide the plate to one end and remove.



Step 3. Remove the two wires that were secured to the back of the plate.



Step 4: Take these two wires and insert them into the sensor. They are not polarity sensitive.



Step 5: Insert the sensor back into the hole. The sensor may or may not require a socket.

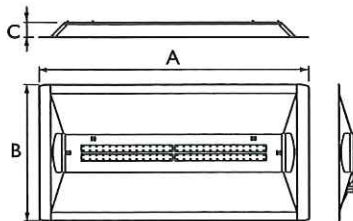
Commercial Product Name	Order Code
EasySense EVO102	514877
EasySense EVO200	516575
EasySense EVO300	517763



# EvoKit LED retrofit kit gen 4

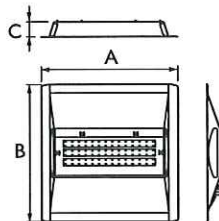
## Dimensions 2x4

A Face Plate Length	B Face Plate Width	C Height
47.83"	23.9"	2.95"



## Dimensions 2x2

A Face Plate Length	B Face Plate Width	C Height
23.9"	23.9"	2.95"



## 2'x2' EvoKit, P 23L 17W 835 2 0-10 7 G4, 2,202 delivered lumens

Catalog No. 515692  
Test No. x223L  
S/MH 1.2  
Lamp Type LED  
Lumens/Watt 131  
Input Watts 17

Comparative yearly lighting energy cost per 1000 lumens - \$1.83 based on 3000 hours and \$0.08/kWh

The photometric results were obtained in the Design Lights Consortium Test Lab which is NVLAP accredited by the National Institute of Standards and Technology

Photometric values based on tests performed in compliance with LM-79

Candlepower Angle	End	Cross	Back-45
0	800	800	0
5	799	796	0
10	785	784	0
15	763	765	0
20	733	738	0
25	695	704	0
30	650	663	0
35	600	617	0
40	545	569	0
45	486	519	0
50	427	468	0
55	365	418	0
60	304	367	0
65	243	313	0
70	182	255	0
75	124	192	0
80	71	126	0
85	26	60	0

## Coefficients of Utilization EFFECTIVE FLOOR CAVITY REFLECTANCE 20 PER (pfc=0.20)

pcc	80			70			50	
pw	70	50	30	70	50	30	50	30
RCR								
0	118	118	118	115	115	115	111	111
1	108	104	98	106	101	96	96	93
2	97	90	82	95	88	81	84	79
3	90	79	70	86	77	69	73	68
4	81	69	60	80	68	59	66	58
5	76	63	53	72	60	53	58	52
6	69	56	46	68	55	46	54	46
7	65	51	41	63	50	41	48	40
8	59	46	38	58	46	38	45	36
9	56	42	34	55	41	34	40	34
10	53	40	32	52	39	30	38	30

Light Distribution	Degrees	Lumens	% Luminaire	Average Luminance			
				Angle	End	45°	Cross
0-30	609	277		45	5897	6110	6297
0-40	984	44.7		55	5463	5913	6259
0-60	1709	77.6		65	4936	5867	6356
0-90	2202	100		75	4122	5880	6369
				85	2597	5689	5953

## 2'x2' EvoKit, P 32L 24W 835 2 0-10 7 G4, 3,062 delivered lumens

Catalog No. 516005  
Test No. x232L  
S/MH 1.2  
Lamp Type LED  
Lumens/Watt 129  
Input Watts 24

Comparative yearly lighting energy cost per 1000 lumens - \$1.86 based on 3000 hours and \$0.08/kWh

The photometric results were obtained in the Design Lights Consortium Test Lab which is NVLAP accredited by the National Institute of Standards and Technology

Photometric values based on tests performed in compliance with LM-79

Candlepower Angle	End	Cross	Back-45
0	1112	1112	0
5	1109	1102	0
10	1090	1082	0
15	1060	1052	0
20	1018	1010	0
25	966	959	0
30	903	901	0
35	832	836	0
40	756	768	0
45	674	699	0
50	591	630	0
55	506	559	0
60	421	486	0
65	338	410	0
70	254	328	0
75	173	238	0
80	99	148	0
85	37	51	0

## Coefficients of Utilization EFFECTIVE FLOOR CAVITY REFLECTANCE 20 PER (pfc=0.20)

pcc	80			70			50	
pw	70	50	30	70	50	30	50	30
RCR								
0	118	118	118	115	115	115	111	111
1	108	104	98	106	101	96	96	93
2	97	90	82	95	88	81	84	79
3	90	79	70	86	77	69	73	67
4	81	69	60	80	68	59	66	58
5	76	63	53	72	60	53	58	52
6	69	56	46	68	55	46	54	46
7	65	51	41	63	50	41	48	40
8	59	46	38	58	46	38	45	36
9	56	42	34	55	41	34	40	34
10	53	40	32	52	39	30	38	30

Light Distribution	Degrees	Lumens	% Luminaire	Average Luminance			
				Angle	End	45°	Cross
0-30	846	27.6		45	8183	8270	8488
0-40	1369	44.7		55	7572	7953	8358
0-60	2377	77.6		65	6858	7768	8336
0-90	3062	100		75	5744	7440	7901
				85	3651	5398	4985



# EvoKit LED retrofit kit gen 4

## 2'x4' EvoKit, P 30L 22W 835 2 0-10 7 G4, 2,758 delivered lumens

Catalog No. 516237  
Test No. x430L  
S/MH 1.2  
Lamp Type LED  
Lumens/Watt 133  
Input Watts 21

Comparative yearly lighting energy cost per 1000 lumens - \$1.80 based on 3000 hours and \$0.08/kWh

The photometric results were obtained in the Design Lights Consortium Test Lab which is NVLAP accredited by the National Institute of Standards and Technology

Photometric values based on tests performed in compliance with LM-79

Candlepower Angle	End	45	Cross	Back-45
0	952	952	952	952
5	937	948	962	946
15	899	911	927	907
25	824	838	855	832
35	585	613	642	604
45	445	488	531	480
55	648	700	762	686
65	299	369	413	362
75	156	239	263	232
85	35	79	78	67

Coefficients of Utilization EFFECTIVE FLOOR CAVITY REFLECTANCE 20 PER (pfc=0.20)									
pcc	80			70			50		
pw	70	50	30	70	50	30	50	30	
RCR									
0	118	118	118	115	115	115	111	111	
1	108	103	97	105	101	96	95	93	
2	97	89	81	94	86	81	83	78	
3	89	78	69	86	76	68	72	67	
4	81	68	59	79	68	58	65	57	
5	75	61	52	72	59	52	57	51	
6	68	55	46	67	54	46	53	45	
7	64	50	40	61	48	40	47	40	
8	59	46	36	57	45	36	44	35	
9	56	41	34	54	40	34	40	33	
10	52	39	30	51	38	30	36	29	

Light Distribution			Average Luminance			
Degrees	Lumens	% Luminaire	Angle	End	45°	Cross
0-30	731	26.5	45	4125	4319	4526
0-40	1189	43.1	55	3864	4239	4613
0-60	2092	75.9	65	3524	4350	4864
0-90	2758	100	75	3004	4607	5066
			85	2007	4500	4471

## 2'x4' EvoKit, P 36L 27W 835 2 0-10 7 G4, 3,368 delivered lumens

Catalog No. 516286  
Test No. x436L  
S/MH 1.3  
Lamp Type LED  
Lumens/Watt 132  
Input Watts 26

Comparative yearly lighting energy cost per 1000 lumens - \$1.82 based on 3000 hours and \$0.08/kWh

The photometric results were obtained in the Design Lights Consortium Test Lab which is NVLAP accredited by the National Institute of Standards and Technology

Photometric values based on tests performed in compliance with LM-79

Candlepower Angle	End	45	Cross	Back-45
0	1167	1167	1167	1167
5	1149	1161	1180	1159
15	1103	1117	1136	1111
25	1012	1027	1048	1019
35	883	901	925	890
45	718	749	783	738
55	548	596	645	586
65	370	450	502	441
75	195	290	320	282
85	45	87	93	82

Coefficients of Utilization EFFECTIVE FLOOR CAVITY REFLECTANCE 20 PER (pfc=0.20)									
pcc	80			70			50		
pw	70	50	30	70	50	30	50	30	
RCR									
0	118	118	118	115	115	115	111	111	
1	108	103	97	105	101	96	95	93	
2	97	89	81	94	86	81	83	78	
3	89	78	69	86	77	68	73	67	
4	81	68	59	79	68	58	65	57	
5	75	61	52	72	60	52	57	51	
6	68	56	46	67	55	46	53	45	
7	64	50	40	61	50	40	47	40	
8	59	46	36	57	45	36	44	35	
9	56	41	34	54	41	34	40	33	
10	52	39	30	51	38	30	36	29	

Light Distribution			Average Luminance			
Degrees	Lumens	% Luminaire	Angle	End	45°	Cross
0-30	896	26.6	45	5063	5281	5517
0-40	1456	43.2	55	4758	5181	5606
0-60	2559	76.0	65	4363	5306	5915
0-90	3368	100	75	3758	5574	6159
			85	2550	4992	5340

# EvoKit LED retrofit kit gen 4

## 2'x4' EvoKit, P 42L 32W 835 2 0-10 7 G4, 4,134 delivered lumens

Catalog No. 516427  
Test No. x442L  
S/MH 1.3  
Lamp Type LED  
Lumens/Watt 131  
Input Watts 32

Comparative yearly lighting energy cost per 1000 lumens - \$1.83 based on 3000 hours and \$0.08/kWh

The photometric results were obtained in the Design Lights Consortium Test Lab which is NVLAP accredited by the National Institute of Standards and Technology

Photometric values based on tests performed in compliance with LM-79

Candlepower	Angle	End	45	Cross	Back-45
0	1435	1435	1435	1435	
5	1414	1428	1451	1424	
15	1359	1375	1396	1364	
25	1247	1264	1288	1249	
35	1087	1109	1135	1089	
45	888	924	961	902	
55	676	734	791	714	
65	457	552	614	535	
75	242	358	392	341	
85	56	122	117	104	

Coefficients of Utilization EFFECTIVE FLOOR CAVITY REFLECTANCE 20 PER (pfc=0.20)									
pcc	80			70			50		
pw	70	50	30	70	50	30	50	30	
RCR									
0	118	118	118	115	115	115	111	111	
1	108	103	97	105	101	96	95	93	
2	97	89	81	94	86	81	83	78	
3	89	78	69	86	77	68	73	67	
4	81	68	59	79	68	58	65	57	
5	75	61	53	72	60	52	57	51	
6	68	56	46	67	55	46	53	45	
7	64	50	40	61	50	40	47	40	
8	59	46	36	57	45	36	44	35	
9	56	41	34	54	41	34	40	33	
10	52	39	30	51	38	30	36	29	

Light Distribution			Average Luminance			
Degrees	Lumens	% Luminaire	Angle	End	45°	Cross
0-30	1102	26.7	45	4688	4877	5077
0-40	1790	43.3	55	4403	4775	5147
0-60	3143	76.0	65	4033	4881	5427
0-90	4134	100	75	3484	5171	5655
			85	2412	5244	5021

## 2'x4' EvoKit, P 47L 36W 835 2 0-10 7 G4, 4,662 delivered lumens

Catalog No. 516534  
Test No. x447L  
S/MH 1.3  
Lamp Type LED  
Lumens/Watt 131  
Input Watts 36

Comparative yearly lighting energy cost per 1000 lumens - \$1.83 based on 3000 hours and \$0.08/kWh

The photometric results were obtained in the Design Lights Consortium Test Lab which is NVLAP accredited by the National Institute of Standards and Technology

Photometric values based on tests performed in compliance with LM-79

Candlepower	Angle	End	45	Cross	Back-45
0	1616	1616	1616	1616	
5	1593	1609	1634	1604	
15	1534	1548	1574	1536	
25	1408	1425	1451	1408	
35	1230	1250	1280	1227	
45	1007	1041	1085	1016	
55	767	827	893	805	
65	519	624	693	603	
75	277	405	443	384	
85	68	139	133	119	

Coefficients of Utilization EFFECTIVE FLOOR CAVITY REFLECTANCE 20 PER (pfc=0.20)									
pcc	80			70			50		
pw	70	50	30	70	50	30	50	30	
RCR									
0	118	118	118	115	115	115	111	111	
1	108	103	97	105	101	96	95	93	
2	97	89	81	94	86	81	83	78	
3	89	78	69	86	77	68	73	67	
4	81	68	59	79	68	58	65	57	
5	75	61	52	72	60	52	57	51	
6	68	56	46	67	55	46	53	45	
7	64	50	40	61	50	40	47	40	
8	59	46	36	57	45	36	44	35	
9	56	41	34	54	41	34	40	33	
10	52	39	30	51	38	30	36	29	

Light Distribution			Average Luminance			
Degrees	Lumens	% Luminaire	Angle	End	45°	Cross
0-30	1241	26.6	45	5317	5496	5727
0-40	2017	43.3	55	4990	5386	5813
0-60	3543	76.0	65	4587	5511	6119
0-90	4662	100	75	3990	5849	6384
			85	2913	5968	5711

# EvoKit LED retrofit kit gen 4

## Energy saving solution – EvoKit 2'x4'

Estimated lighting costs using a standard 3 lamp T8 troffer			
Present Wattage	85	W	
× Annual operating hours	4,380	hrs	
	=	372,300	Watt-Hours
÷ 1,000	=	372.3	kWh per year
× kWh rate of \$0.10	=	\$37.23	per year
× 125 fixtures		\$4,653.75	annual energy cost per space
Estimated lighting costs using a Philips 42L 2x4 Evokit G4			
Present Wattage	31	W	
× Annual operating hours	4,380	hrs	
	=	135,780	Watt-Hours
÷ 1,000	=	135.78	kWh per year
× kWh rate of \$0.10	=	\$13.58	per year
× 125 fixtures		\$1,697.25	annual energy cost per space
Total estimated annual savings <sup>‡</sup>		\$2,956.50	
‡ Based on 125 fixtures per space operating 4,380 hours a year. 125 fixtures is roughly equivalent to a 10,000 square foot space. kWh rates will vary.			

### FOOTNOTES:

- 1) Please refer to the energy saving chart above for details.
- 2) L<sub>70</sub> 72,000 hours @ 35°C based on TM21 and LM80.
- 3) Based on photometric testing consistent with IES LM-79. Actual wattage may differ by +/- 10%. Actual initial lumen output may vary between -10 and +10% of the rated lumens.
- ‡ Made to stock product (Contact your Philips sales representative for stock availability and lead time).
- \*\*\* Please visit [www.philips.com/warranties](http://www.philips.com/warranties) for full details.
- † Restrictions on Hazardous Substances (RoHS) is a European directive (2002/95/EC) designed to limit the content of 6 substances [lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB), and polybrominated diphenyl ethers (PBDE)] in electrical and electrical products. For products used in North America, compliance with RoHS is voluntary and self-certified.
- ‡ Evokit luminaires are Design Lights Consortium qualified. Please see the DLC QPL list for exact catalog numbers (<http://www.designlights.org/QPL>).
- These SKUs do not meet DLC Premium qualification criteria. Evokit luminaires are Design Lights Consortium qualified. Please see the DLC QPL list for exact catalog numbers (<http://www.designlights.org/QPL>).

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[philips.com/evokit](http://philips.com/evokit)



Philips Lighting North America Corporation  
200 Franklin Square Drive, Somerset, NJ 08873  
Tel. 855-486-2216

Philips Lighting Canada Ltd.  
281 Hillmount Rd, Markham, ON, Canada L6C 2S3  
Tel. 800-668-9008



# PHILIPS Day-Brite CFI

Linear

FluxStream  
wraparound

2', 4' and 8'



Project: \_\_\_\_\_  
Location: \_\_\_\_\_  
Cat.No: \_\_\_\_\_  
Type: \_\_\_\_\_  
Lumens: \_\_\_\_\_ Qty: \_\_\_\_\_  
Notes: \_\_\_\_\_

Philips Day-Brite / Philips CFI FluxStream LED wraparound is a high performing luminaire delivering smooth diffuse light ideal for light industrial, commercial and residential applications with the unparalleled energy efficiency of Philips LED lighting.

## Ordering guide

Example: FSW440L840-UNV-DIM

Series	Length (nominal)	Lumens <sup>2</sup> (nominal)	Color temp. (K)	Voltage	Driver	Options
<b>FSW</b>						
FSW FluxStream Wraparound	2' 2' length	20L 2000 lumens 30L 3000 lumens	830 80 CRI, 3000K 835 80 CRI, 3500K 840 80 CRI, 4000K 850 80 CRI, 5000K	UNV Universal voltage 120-277V	DIM 0-10V 1% dimming SDIM <sup>5,6</sup> Step dimming to 40% input power XDIM <sup>3,5,6</sup> MarkX phase dimming DALI <sup>7</sup> DALI	EMLED <sup>4,8,9</sup> Factory wired Philips Bodine BSL310LP integral emergency pack. Nominal 1100lm DAYOCC <sup>10</sup> Integral sensor, daylighting and occupancy, Philips EasySense SNS102 PCSR Pull chain switch right, 120V only PCSL Pull chain switch left, 120V only PAF Paint after fabrication (white) LSXR10 120-347V motion sensor, factory installed on end cap LSXR10ADC <sup>11</sup> 120-347V motion sensor with photocell and hi/lo trim dimming, factory installed on end cap
	4' 4' length	30L 3000 lumens 40L 4000 lumens 55L 5500 lumens 70L 7000 lumens		120 <sup>3</sup> 120V 277 <sup>3</sup> 277V 347 <sup>3</sup> 347V		
	8' 8' length	60L 6000 lumens 80L 8000 lumens 110L 11000 lumens 140L 14000 lumens				

1. 8' is tandem (2) 4' lenses with single piece 8' body.
2. Nominal delivered lumens at 25°C ambient.
3. XDIM option must be specified with 120V or 277V options only.
4. 347V with EMLED only available in 8' models.
5. Not available in 2' models.
6. Not available in 4' 70L or 8' 140L models.
7. DALI available up to 80L options only, consult factory for other options.
8. EMLED not available on 2' models.
9. EMLED on 8' models illuminates 4' section in emergency mode.
10. Specify -DIM driver with DAYOCC option. Dimming via wall switch only.
11. Available with DIM driver option only.

## Accessories (order separately)

- FSWD2L – FluxWrap Diffuse 2' replacement lens
- FSWD4L – FluxWrap Diffuse 4' replacement lens (order two for 8' models)
- LSXR10 – Low bay PIR occ sensor, 120-277V
- LSXR10ADC – Low bay PIR occ with photocell sensor and hi/lo trim dimming, 120-277V
- FSTH – Sliding hanger bracket (set of 2)
- FSWJ – Continuous row joiner (one per joint)
- (See last page for details and more options)

## General notes

Many luminaire components, such as reflectors, refractors, lenses, sockets, lampholders, and LEDs are made from various types of plastics which can be adversely affected by airborne contaminants. If sulfur based chemicals, petroleum based products, cleaning solutions, or other contaminants are expected in the intended area of use, consult factory for compatibility.



# FSW FluxStream LED wraparound

2', 4' and 8'

## Features

- Compact design for installation in tight spaces
- Frosted acrylic diffuser provides wide light distribution and superior glare control
- Injection molded lens retainers<sup>5</sup> provide positive diffuser retention, and easy tool-free access to LED boards and driver
- 2', 4' and 8' tandem lengths available to accommodate many field applications
- Up to 100,000 hour predicted L70 LED lumen maintenance provides long service life to reduce maintenance costs
- Can be surface mounted on ceilings or walls, or suspended via chain, pendants or cables
- Wall mountable – ADA compliant
- Ideal for cold applications (-20°C to 25°C)
- FSWJ accessory required for continuous row mounting, one FSWJ at each joint
- 7/8" knock out provided at each end and on base of luminaire. Note: Center knockout is covered and not useable in 4' version with EMLED option.
- Multiple driver options available with 0-10v as standard
- Enclosed lens minimizes penetration of dust, insects, and other debris into the lamp compartment
- 8' tandem unit is two 4' optical assemblies with an aesthetic center mullion on a single full length chassis
- Integral controls options include sensor mounted in one lens retainer. Controls are commissioned via intuitive Philips app on compatible Android smartphones either through NFC or an IR blaster
- Fluxstream luminaires are Designlights Consortium<sup>®</sup> qualified. Please see the DLC QPL list for exact catalog numbers (<http://www.designlights.org/QPL>)
- 5 year manufacturer's limited warranty. Visit [www.philips.com/warranties](http://www.philips.com/warranties) for complete warranty information

## Finish

- Baked white acrylic matte high reflectance paint finish

## Shielding

- Contoured frosted acrylic lens

## Electrical

- LED boards and drivers are RoHS (Restriction of Hazardous Substances) compliant. Total system life rated at 50,000 hours. Predicted L70 lifetime based on LED manufacturer's supplied LM-80 data and in-situ laboratory testing at 25°C ambient

## Materials

- Heavy gauge cold rolled steel housing and LED pan. Polycarbonate injection molded end caps. Profile extruded acrylic diffuser

## DAYOCC

- Integrated fixture mount Philips EasySense sensor featuring daylight and PIR occupancy sensing
- Compatibility with Philips Advance Xitanium SR Sensor Ready LED drivers
- Features automatic or manual on/off scenarios for code compliance and to realize full energy savings potential
- Basic grouping to a wireless switch via an IR interface with the Philips Field App
- Self-powered single rocker switch Illumra #ZBT-S1AWH (sourced by others), up to 40 luminaires may be grouped to a single switch
- Recommended maximum spacing of 25ft between luminaires, and closest luminaire to wall switch

## Labels

- cETLus listed
- Suitable for damp locations

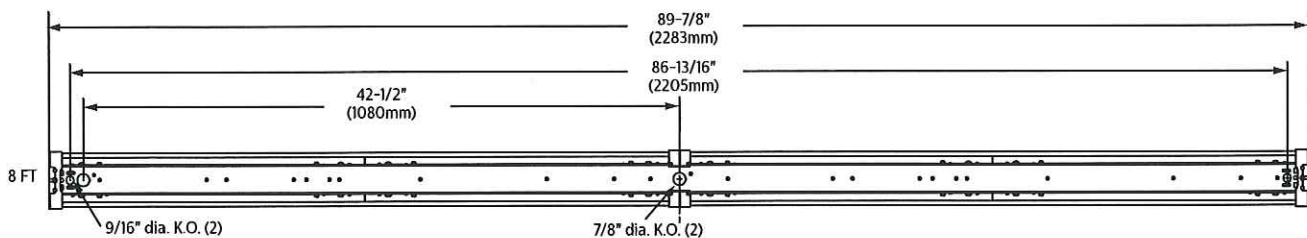
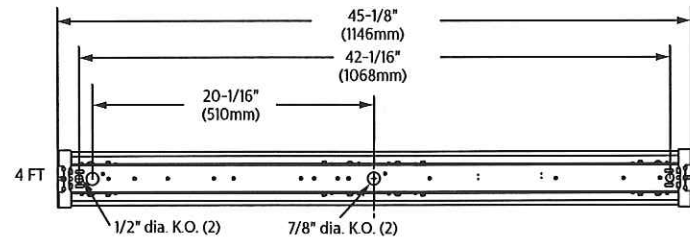
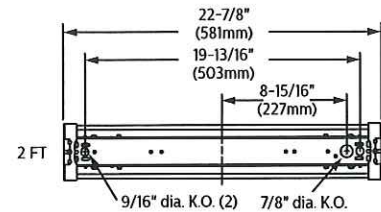
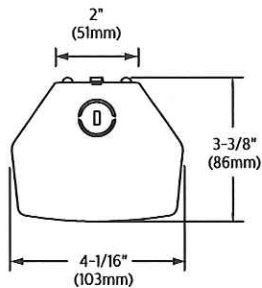
# FSW FluxStream LED wraparound

2', 4' and 8'

## Performance data

Fixture	Lumens	Wattage	Efficacy
FSW220L840	1904lm	16.6W	114lm/w
FSW230L840	3028lm	28.9W	104lm/w
FSW440L840	3856lm	31.4W	122lm/w
FSW455L840	5339lm	44.5W	119lm/w
FSW470L840	6712lm	58.0W	114lm/w

## Dimensions





# FSW FluxStream LED wraparound

2', 4' and 8'

## Photometry

### 2' FluxStream LED wraparound, 2000 nominal delivered lumens

LER - 114

Catalog No. FSW220L840-UNV-DIM  
Test No. 37658  
S/MH 1.3  
Lamp Type LED  
Lumens 1904  
Input Watts 17

#### Candlepower

Angle	End	45	Cross	Back-45
0	559	559	559	559
5	551	558	560	558
15	531	541	545	541
25	490	504	512	504
35	432	452	463	452
45	359	386	401	386
55	278	312	330	312
65	190	233	254	233
75	100	153	176	153
85	23	77	103	77

Comparative yearly lighting energy cost per 1000 lumens – \$2.09 based on 3000 hrs. and \$.08 pwr KWH.

The photometric results were obtained in the Philips Day-Brite laboratory which is NVLAP accredited by the National Institute of Standards and Technology.

Photometric values based on test performed in compliance with LM-79.

#### Light Distribution

Degrees	Lumens	% Luminaire
0-30	437	22.9
0-40	718	37.7
0-60	1291	67.7
0-90	1754	92
90-180	153	8.0
0-180	1906	100

#### Average Luminance

Zone	End	45'	Cross
45	8732	7352	7212
55	8094	6557	6466
65	7141	5657	5641
75	5584	4560	4685
85	2667	3099	3553

#### Coefficients of Utilization

EFFECTIVE FLOOR CAVITY REFLECTANCE 20 PER (pfc=0.20)									
pfc =	20	80	70	50	30	50	30	50	30
Cell	70	50	30	70	50	30	50	30	70
RCR	70	50	30	70	50	30	50	30	70
0	116	116	116	112	112	112	107	107	107
1	106	100	95	102	96	93	91	88	88
2	94	86	79	92	83	77	79	73	73
3	86	76	67	83	72	66	68	63	63
4	79	67	57	76	65	56	60	54	54
5	72	58	50	69	57	48	55	46	46
6	67	53	44	65	52	42	48	41	41
7	61	47	39	59	46	39	45	36	36
8	57	44	34	56	42	34	40	34	34
9	54	40	32	52	39	32	38	30	30
10	50	36	28	48	35	28	34	28	28

### 2' FluxStream LED wraparound, 3000 nominal delivered lumens

LER - 104

Catalog No. FSW230L840-UNV-DIM  
Test No. 37662  
S/MH 1.3  
Lamp Type LED  
Lumens 3028  
Input Watts 29

#### Candlepower

Angle	End	45	Cross	Back-45
0	912	912	912	912
5	899	910	914	910
15	866	882	890	882
25	800	824	836	824
35	706	740	756	740
45	587	633	656	633
55	425	478	523	478
65	290	358	388	358
75	153	235	270	235
85	36	119	158	119

Comparative yearly lighting energy cost per 1000 lumens – \$2.29 based on 3000 hrs. and \$.08 pwr KWH.

The photometric results were obtained in the Philips Day-Brite laboratory which is NVLAP accredited by the National Institute of Standards and Technology.

Photometric values based on test performed in compliance with LM-79.

#### Light Distribution

Degrees	Lumens	% Luminaire
0-30	713	23.5
0-40	1174	38.7
0-60	2085	68.8
0-90	2794	92.2
90-180	238	7.8
0-180	3032	100

#### Average Luminance

Zone	End	45'	Cross
45	14277	12051	11797
55	12361	10058	10244
65	10928	8693	8623
75	8566	7007	7172
85	4110	4810	5437

#### Coefficients of Utilization

EFFECTIVE FLOOR CAVITY REFLECTANCE 20 PER (pfc=0.20)									
pfc =	20	80	70	50	30	50	30	50	30
Cell	70	50	30	70	50	30	50	30	70
RCR	70	50	30	70	50	30	50	30	70
0	116	116	116	113	113	113	107	107	107
1	106	101	95	102	96	93	92	88	88
2	95	86	80	92	83	78	80	73	73
3	86	76	68	83	73	66	69	63	63
4	80	67	57	77	65	56	61	55	55
5	72	59	51	69	57	50	55	47	47
6	67	54	45	65	53	44	50	41	41
7	63	48	40	59	47	39	45	38	38
8	57	44	35	56	42	34	40	34	34
9	54	40	33	52	40	32	38	30	30
10	51	38	29	48	36	28	34	28	28

# FSW FluxStream LED wraparound

2', 4' and 8'

## Photometry

### 4' FluxStream LED wraparound, 4000 nominal delivered lumens

LER - 122

Catalog No. FSW440L840-UNV-DIM  
Test No. 37656  
S/MH 1.3  
Lamp Type LED  
Lumens 3856  
Input Watts 31

#### Candlepower

Angle	End	45	Cross	Back-45
0	1123	1123	1123	1123
5	1107	1117	1124	1117
15	1067	1085	1096	1085
25	987	1014	1033	1014
35	871	913	934	913
45	728	790	813	790
55	557	642	674	642
65	360	451	505	451
75	190	297	341	297
85	43	155	206	155

Comparative yearly lighting energy cost per 1000 lumens – \$1.95 based on 3000 hrs. and \$.08 pwr KWH.

The photometric results were obtained in the Philips Day-Brite laboratory which is NVLAP accredited by the National Institute of Standards and Technology.

Photometric values based on test performed in compliance with LM-79.

#### Light Distribution

Degrees	Lumens	% Luminaire
0-30	880	22.8
0-40	1449	37.5
0-60	2612	67.6
0-90	3514	91
90-180	348	9.0
0-180	3862	100

#### Average Luminance

Zone	End	45'	Cross
45	9388	7848	7492
55	8718	7090	6755
65	7439	5791	5742
75	6070	4741	4639
85	3243	3385	3631

#### Coefficients of Utilization

EFFECTIVE FLOOR CAVITY REFLECTANCE 20 PER (pfc=0.20)									
pfc =	20	80			70			50	
Cell									
Wall	70	50	30	70	50	30	50	30	
RCR									
0	116	116	116	112	112	112	106	106	
1	105	100	94	102	96	93	91	88	
2	94	86	79	92	83	77	79	72	
3	86	76	67	82	72	66	68	63	
4	79	67	57	76	65	56	60	54	
5	72	59	50	69	57	48	55	46	
6	67	53	44	65	52	44	48	41	
7	61	47	40	59	46	39	45	36	
8	57	44	34	56	42	34	40	34	
9	54	40	32	52	39	32	38	30	
10	50	36	28	48	35	28	34	28	

### 4' FluxStream LED wraparound, 5500 nominal delivered lumens

LER - 119

Catalog No. FSW455L840-UNV-DIM  
Test No. 376555  
S/MH 1.3  
Lamp Type LED  
Lumens 5339  
Input Watts 45

#### Candlepower

Angle	End	45	Cross	Back-45
0	1546	1546	1546	1546
5	1523	1538	1549	1538
15	1468	1493	1511	1493
25	1357	1396	1423	1396
35	1199	1256	1286	1256
45	1002	1086	1119	1086
55	776	883	927	883
65	495	663	716	663
75	261	408	468	408
85	60	211	279	211

Comparative yearly lighting energy cost per 1000 lumens – \$2.00 based on 3000 hrs. and \$.08 pwr KWH.

The photometric results were obtained in the Philips Day-Brite laboratory which is NVLAP accredited by the National Institute of Standards and Technology.

Photometric values based on test performed in compliance with LM-79.

#### Light Distribution

Degrees	Lumens	% Luminaire
0-30	1211	22.7
0-40	1995	37.3
0-60	3602	67.4
0-90	4871	91.1
90-180	477	8.9
0-180	3862	100

#### Average Luminance

Zone	End	45'	Cross
45	12919	10790	10317
55	12142	9742	9297
65	10244	8513	8138
75	8365	6504	6366
85	4505	4608	4912

#### Coefficients of Utilization

EFFECTIVE FLOOR CAVITY REFLECTANCE 20 PER (pfc=0.20)									
pfc =	20	80			70			50	
Cell									
Wall	70	50	30	70	50	30	50	30	
RCR									
0	116	116	116	112	112	112	106	106	
1	105	100	95	102	96	93	91	88	
2	94	86	79	92	83	77	79	72	
3	86	76	67	82	72	66	68	61	
4	79	67	57	76	65	56	60	54	
5	72	58	50	69	57	48	55	46	
6	67	53	44	64	52	42	48	41	
7	61	47	39	59	46	39	45	36	
8	57	44	34	56	42	34	40	34	
9	54	40	32	52	39	30	36	29	
10	50	36	28	48	35	28	34	28	



# FSW FluxStream LED wraparound

2', 4' and 8'

## Photometry

4' FluxStream LED wraparound, 7000 nominal delivered lumens

LER - 114

Catalog No.	FSW470L840-UNV-DIM
Test No.	37654
S/MH	1.3
Lamp Type	LED
Lumens	6712
Input Watts	58

Comparative yearly lighting energy cost per 1000 lumens – \$2.07 based on 3000 hrs. and \$.08 pwr KWH.

The photometric results were obtained in the Philips Day-Brite laboratory which is NVLAP accredited by the National Institute of Standards and Technology.

Photometric values based on test performed in compliance with LM-79.

### Candlepower

Angle	End	45	Cross	Back-45
0	1941	1941	1941	1941
5	1914	1930	1941	1930
15	1845	1875	1893	1875
25	1706	1753	1784	1753
35	1506	1576	1611	1576
45	1259	1362	1402	1362
55	975	1106	1161	1106
65	665	830	895	830
75	327	531	608	531
85	75	264	350	264

### Light Distribution

Degrees	Lumens	% Luminaire
0-30	1520	22.6
0-40	2503	37.2
0-60	4518	67.2
0-90	6130	91.2
90-180	593	8.8
0-180	6723	100

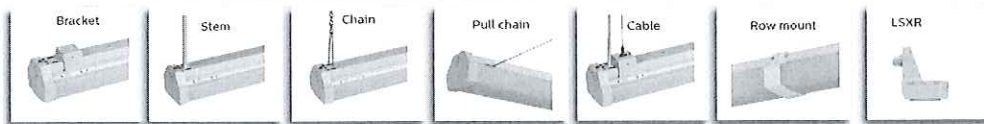
### Average Luminance

Zone	End	45°	Cross
45	16224	13532	12918
55	15244	12210	11640
65	13762	10665	10181
75	10461	8469	8275
85	5654	5775	6164

### Coefficients of Utilization

EFFECTIVE FLOOR CAVITY REFLECTANCE 20 PER (pfc=0.20)									
pfc *	20	30	40	50	60	70	80	90	100
Cell	70	50	30	70	50	30	50	30	
Wall	70	50	30	70	50	30	50	30	
RCR	116	116	116	112	112	112	106	106	
0	116	116	116	112	112	112	106	106	
1	105	100	94	102	96	93	91	88	
2	94	86	79	92	83	77	79	72	
3	86	76	67	82	72	65	68	61	
4	79	67	57	76	65	56	60	54	
5	72	58	50	69	57	48	55	46	
6	67	53	44	64	52	42	48	41	
7	61	47	39	59	46	39	45	36	
8	57	44	34	56	42	34	40	33	
9	54	40	32	52	39	30	36	29	
10	50	36	28	48	35	28	34	28	

## Accessories



Accessory Catalog Code	Description	
FSTH	Sliding hanger bracket (pair)	
SV5F12	12" Stem and canopy kit	White stem and canopy kit, 1/4" trade size (1/2" O.D.) locknuts included. Works with 9/16" k.O. on base of housing.
SV5F18	18" Stem and canopy kit	
SV5F24	24" Stem and canopy kit	
SV5F36	36" Stem and canopy kit	
SV5F48	48" Stem and canopy kit	
FKR-126	Chain hanger set (pair)	Includes two 5' heavy duty link chains with "V" hooks. Attaches to base of housing.
DACHxx	Adjustable cable hanger kit (single)	Works with 1/4" hole on base of housing or FSTH hanger bracket. xx=cable length in inches, enter 48" to 180" lengths in 12" increments
DACHxx-1-SC	Adjustable cable hanger kit with white straight 18/3 cord (single)	
DACHxx-1-CC	Adjustable cable hanger kit with white coiled 18/3 cord (single)	
DACHxx-2-SC	Adjustable cable hanger kit with white straight 18/4 cord (single)	
DACHxx-2-CC	Adjustable cable hanger kit with white coiled 18/4 cord (single)	
DACHxx-1D-SC	Adjustable cable hanger kit with white straight 18/5 cord with dimming leads (single)	
FSWJ	External continuous row joiner (one per joint).	FSJW accessory required for continuous row mounting
LSXR10	Low bay pir motion sensor (120-277v)	
LSXR10ADC	Low bay pir motion sensor with photocell and hi/lo trim dimming (120-277v)	
FSWD2L	2' Diffuse replacement lens	
FSWD4L	4' Diffuse replacement lens (order two for 8' models)	

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Philips Lighting North America Corporation  
200 Franklin Square Drive, Somerset, NJ 08873  
Tel. 855-486-2216

Philips Lighting Canada Ltd.  
281 Hillmount Rd, Markham, ON, Canada L6C 2S3  
Tel. 800-668-9008

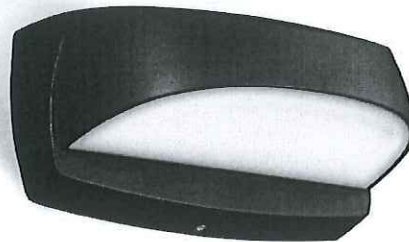


**PHILIPS**  
**Stonco**

Wall mount

LytePro LED Sconce

LPW7



Project: \_\_\_\_\_  
Location: \_\_\_\_\_  
Cat.No: \_\_\_\_\_  
Type: \_\_\_\_\_  
Quantity: \_\_\_\_\_  
Notes: \_\_\_\_\_

The Philips Stonco LytePro LED Small Wall Sconce LPW7 features outstanding value in a compact, architectural design. This wall sconce offers chip-on-board (COB) LED technology for outstanding energy savings with good photometric performance. LPW7 is ideal for entryways, corridors, facade and other wall/surface lighting applications.

#### Stocked luminaires – Ordering guide<sup>1</sup>

Catalog Number	Description	Master Pack, Qty	UPC Code
LPW7-8BZ	LPW7, 14W COB LED, 350mA, 4000K, 120-277V, Bronze textured paint	6	786034960441
LPW7-8DGY	LPW7, 14W COB LED, 350mA, 4000K, 120-277V, Dark gray textured paint	6	786034960458
LPW7-1BZPCB	LPW7, 14W COB LED, 350mA, 4000K, 120V, Bronze textured paint, w/button photocell	6	786034960472

#### Stocked accessories – Ordering guide (Must be ordered separately)

Catalog Number	Description	Master Pack, Qty	UPC Code
LPWCVRPLT-BZ	LPW Universal wall cover mounting plate, Bronze textured paint	(none)	786034960618

#### Description of catalog codes

Family	Drive current	Voltage	Finish	Options
LPW7 = LytePro 7 LED Small Wall Sconce	(Blank – standard 350mA drive current)	8 = 120-277V 1 = 120V	BZ = Bronze textured paint DGY = Dark gray textured paint	PCB = Button photocontrol

1. Color availability and options vary by model; consult stock luminaires ordering guide above.

# LPW7 LytePro LED Small Wall Sconce

## Features

- LPW7 wall sconce delivers 1,154 lumens at 14W, with an efficacy of 82 lumens per watt.
- 14W LED may effectively replace 60-200W incandescent, 26-42W compact fluorescent and 35-39W HID luminaires.<sup>2</sup>
- 4000K neutral white at 70 CRI (minimum) is standard.
- Offers two in-stock colors on standard units.\*
- 5-year limited warranty; see philips.com/warranties for specific details.

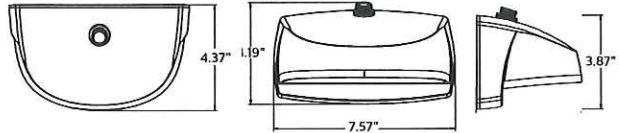
## Performance/Specifications

Distribution	Type 2
Initial Lumens (4000K)*	1,154
Average Wattage*	14
Lumens/Watt	82
BUG Rating*	B1/U0/G1
Luminaire Weight	~4lbs (1.8Kg)

## Ratings/Approbations/Certifications

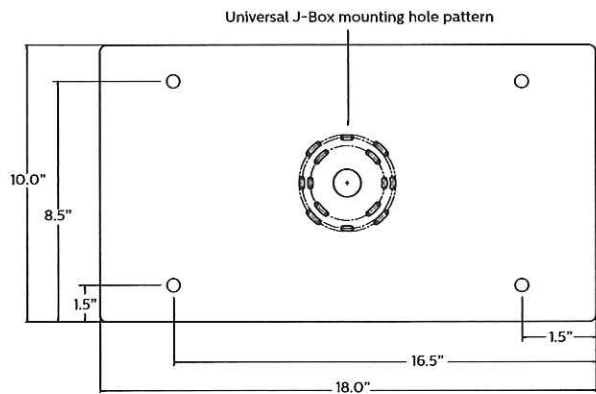
Ingress Protection	IP65 Optical
cETLus	Certified for use in wet locations
Rated Ambient Temperature	-30°C (-22°F) to 40°C (104°F)

## Fixture Dimensions<sup>3</sup>



## Accessory Dimensions (ordered separately)

LPWCVRPLT-BZ LPW Universal wall cover mounting plate, 0.08" aluminum, bronze textured paint (used to cover larger pre-existing opening or surfaces, field installed). Offers same J-Box pattern as luminaire or may lagged to wall using (4) knockouts.

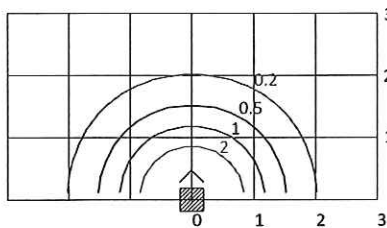


2. Comparable equivalency to HID and other lamp sources depends on multiple criteria including mounting height, fixture spacing, efficiency, performance and classification of the luminaire being replaced and application lighting criteria required for the given project.
3. PCB shown for placement only, available on specific models only (see ordering guide).

## Distribution Pattern

LPW7 - 8" MOUNTING HEIGHT			
MOUNTING HEIGHT	6'	8'	10'
MULTIPLIER	1.78	1.0	0.64

- 4. Isolines shown at 2.0, 1.0, 0.5, & 0.2 FC.
- 5. Choose mounting height. Use MULTIPLIER (X) EXISTING FC VALUE = NEW FC VALUE.
- 6. FC values are based on initial lumen output.
- 7. Gridline spacing is in units of chosen mounting height.



# LPW7 LytePro LED Small Wall Sconce

## General Description

The Philips Stonco LytePro LED Small Wall Sconce LPW7 combines excellent performance, design and value to meet the needs of the energy and budget conscious. The LPW7 is available for use in downward facing, surface wall mount applications, over recessed j-boxes or where power can be directly fed through back surface, whereby connections splices can be made inside the luminaire housing. Three SKU's are available as in-stock configurations (2-day quick ship). Two standard finishes. 120V button photocell is available in bronze only.

## Housing

Die-cast housing houses both the LED and driver assemblies. Design incorporates an integrated heat sink to maximize thermal performance and reliability. Backplate is corrosion free, composite polycarbonate, with built-in level bubble, offers integral interlocking hook and mount design for easy installation.

## Mounting

Easy interlocking hook and mount housing/backplate design for easy installation. Mounts over 3.5", 4" octagonal j-boxes and single gang switch boxes (mounted horizontally) or can be directly lagged to surface. Ensure proper steps for gasket/sealing luminaire to surface.

## IP Rating

Optical compartment is IP65 rated.

## LED Board and Array

Provides up to 82 lm/W at the system level. Standard color temp is 4000K +/- 250K, minimum 70 CRI.

## Electrical

Driver efficiency (>90% standard). 120-277V. Temp range: -30°C (-22°F) to 40°C (104°F). Open/short circuit protection. RoHS compliant.

## Listings

Product is cETLus listed suitable for Wet Locations. Suitable for use in ambients from -30°C to 40°C (-22°F to 104°F).

## Finish

Each luminaire receives a fade and abrasion resistant, electrostatically applied, thermally cured, triglycidal isocyanurate (TGIC) textured polyester powdercoat finish. Two standard colors are available: Dark Grey, and Bronze. Specific options are only available in bronze.

## Warranty

LPW7 luminaires, the LED arrays, and the drivers are all covered by a 5-year limited warranty. See [philips.com/warranties](http://philips.com/warranties) for details.

## LED Performance:

### PREDICTED LUMEN DEPRECIATION DATA<sup>4,6</sup>

Ambient Temp. °C	Calculated L70 hrs <sup>5</sup>	Reported L70 Per TM-21 <sup>5,6</sup>	Calculated Lumen Maint. % @60,000 hrs
up to 40°C	>200,000 hrs	>36,000 hrs	97%

4. Calculated performance derived from LED manufacturer's data and engineering design estimates, based on IESNA LM-80 methodology. Actual experience may vary due to field application conditions.

5. L70 is the predicted time when LED performance depreciates to 70% of initial lumen output.

6. Reported per IESNA TM21-11. Published L70 hours limited to 6 times actual LED test hours.



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Philips Lighting North America Corporation  
200 Franklin Square Drive, Somerset, NJ 08873  
Tel. 855-486-2216

Philips Lighting Canada Ltd.  
281 Hillmount Rd, Markham, ON, Canada L6C 2S3  
Tel. 800-668-9008



**PHILIPS**  
**Stonco**

Wall mount

LytePro LED Sconce

LPW16



Project:

Location:

Cat.No:

Type:

Quantity:

Notes:

The Philips Stonco LytePro LED Small Wall Sconce LPW16 features outstanding value in a compact, architectural design. This wall sconce features state-of-the-art, long-life and maintenance savings, in a combined discreet LED package with high precision over-optic design. This powerful and precise combination offers outstanding energy savings with excellent photometric performance. LPW16 is ideal for entryways and corridors in addition to wall lighting applications requiring strong lateral spacing and forward pattern projection.

**Stocked luminaires – Ordering guide** (LPW16 products are only available in the following stock luminaire configurations shown)

Catalog Number	Description	Master Pack, Qty	UPC Code
<b>LPW16-58BZ</b>	LPW16, 30W, 530mA, 4000K, 120-277V, Bronze textured paint	6	786034960540
<b>LPW16-51BZPCB</b>	LPW16, 30W, 530mA, 4000K, 120V, Bronze textured paint, w/button photocell	6	786034960557
<b>LPW16-78BZ</b>	LPW16, 40W, 700mA, 4000K, 120-277V, Bronze textured paint	6	786034960502
<b>LPW16-78DGY</b>	LPW16, 40W, 700mA, 4000K, 120-277V, Dark gray textured paint	6	786034960489
<b>LPW16-71BZPCB</b>	LPW16, 40W, 700mA, 4000K, 120V, Bronze textured paint, w/button photocell	6	786034960519

**Stocked accessories – Ordering guide** (Must be ordered separately)

Catalog Number	Description	Master Pack, Qty	UPC Code
<b>LPWCVRPLT-BZ</b>	LPW Universal wall cover mounting plate, Bronze textured paint	(none)	786034960618

# LPW16 LytePro LED Small Wall Sconce

## Features

LPW16 wall sconce delivers 3,374 lumens at 36W, with an efficacy of 93 lumens per watt. Other wattages available per charts noted below--.

- LP16W-5, 30W LED may effectively replace 70-100W HID luminaires<sup>2</sup>
- LP16W-7, 40W LED may effectively replace 100-150W HID luminaires<sup>1</sup>
- 4000K neutral white at 70 CRI (minimum) is standard
- Button photocell available in 120V, bronze luminaires only
- 5-year limited warranty, see [philips.com/warranties](http://philips.com/warranties) for specific details

## Performance/Specifications (LP16W-7)

Distribution	Type 3
Initial Lumens	3,374
Average Wattage	36
Lumens/Watt	93
BUG Rating*	B1/U0/G1
Luminaire Weight	~6lbs (2.7Kg)

## Performance/Specifications (LP16W-5)

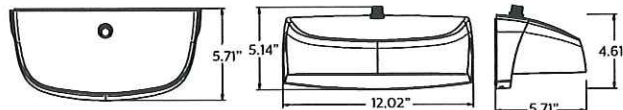
Distribution	Type 3
Initial Lumens	2,698
Average Wattage	28
Lumens/Watt	96
BUG Rating	B1/U0/G1
Luminaire Weight	~6lbs (2.7Kg)

## Ratings/Approbations/Certifications

Ingress Protection	IP65 Optical
DLC Listed	DLC QPL
cETLus	Certified for use in wet locations
Rated Ambient Temperature	-40°C (-40°F) to 40°C (104°F)

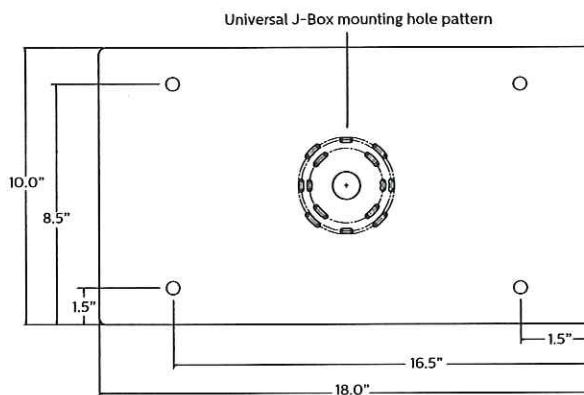
2. Comparable equivalency to HID and other lamp sources depends on multiple criteria including mounting height, fixture spacing, efficiency, performance and classification of the luminaire being replaced and application lighting criteria required for the given project.
3. PCB shown for placement only, available on specific models only (see ordering guide).

## Fixture Dimensions<sup>3</sup>



## Accessory Dimensions (ordered separately)

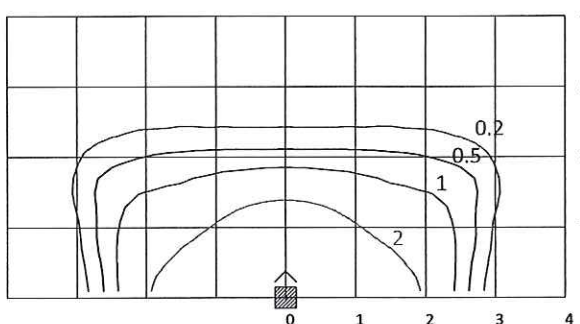
LPWCVRPLT-BZ LPW Universal wall cover mounting plate, 0.08" aluminum, bronze textured paint (used to cover larger pre-existing opening or surfaces, field installed). Offers same J-Box pattern as luminaire or may be tagged to wall using (4) knockouts.



## Distribution Pattern

LPW16-7 10' MOUNTING HEIGHT			
MOUNTING HEIGHT	8'	10'	12'
MULTIPLIER	1.60	1.0	0.70

- Isolines shown at 2.0, 1.0, 0.5, & 0.2 FC.
- Choose mounting height. Use MULTIPLIER (X) EXISTING FC VALUE = NEW FC VALUE.
- FC values are based on initial lumen output.
- Gridline spacing is in units of chosen mounting height
- For LPW16-5 configuration, scale down by 29%.



# LPW16 LytePro LED Small Wall Sconce

## General Description

The Philips Stonco LytePro LED Small Wall Sconce LPW16 combines excellent performance, design and value to meet the needs of the energy and budget conscious. The LPW16 is available for use in downward facing, surface wall mount applications, over recessed j-boxes or where power can be directly fed through back surface, whereby connections splices can be made inside the luminaire housing. Five SKU's are available as in-stock configurations only (2-day quick ship).

40W Model: Two standard units are available in two different finishes. 120V button photocell is available in bronze only. 30W Model: Standard units available in bronze only, with and without photocell. 30W model is California Title 24 compliant.

## Housing

Die-cast housing houses both the LED and driver assemblies. Design incorporates an integrated heat sink to maximize thermal performance and reliability. Backplate is corrosion free, composite polycarbonate, with built-in level bubble, offers integral interlocking hook and mount design for easy installation.

## Mounting

Easy interlocking hook and mount housing/backplate design for easy installation. Mounts over 3.5", 4" octagonal j-boxes and single gang switch boxes or can be directly lagged to surface. Ensure proper steps for gasket/sealing luminaire to surface.

## IP Rating

Optical compartment is IP65 rated.

## LED Board and Array

Provides up to 93 lm/W in LPW16-7 and 96 lm/W in LPW16-5 at the system level. Standard color temp is 4000K +/- 250K, minimum 70 CRI.

## Electrical

Driver efficiency (>90% standard). 120-277V. Temp range: -40°C (-40°F) to 40°C (104°F). Open/short circuit protection. Inherent surge protection up to (4KVA). RoHS compliant.

## Listings

Product is cETLus listed suitable for Wet Locations. Suitable for use in ambients from -40°C to 40°C (-40°F to 104°F). DesignLights Consortium® qualified. Stocked SKUs of the LPW family are made in China.

## Finish

Each luminaire receives a fade and abrasion resistant, electrostatically applied, thermally cured, triglycidal isocyanurate (TGIC) textured polyester powdercoat finish.

## Warranty

LPW16 luminaires, the LED arrays, and the drivers are all covered by a 5-year limited warranty. See [philips.com/warranties](http://philips.com/warranties) for details.

## LED Performance:

### PREDICTED LUMEN DEPRECIATION DATA<sup>4,6</sup>

Ambient Temp. °C	Calculated L70 hrs <sup>5</sup>	Reported L70 Per TM-21 <sup>5,6</sup>	Calculated Lumen Maint. % @60,000 hrs
up to 40°C	>200,000 hrs	>60,000 hrs	94.0%

4. Calculated performance derived from LED manufacturer's data and engineering design estimates, based on IESNA LM-80 methodology. Actual experience may vary due to field application conditions.

5. L70 is the predicted time when LED performance depreciates to 70% of initial lumen output.

6. Reported per IESNA TM21-11. Published L70 hours limited to 6 times actual LED test hours.



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Philips Lighting North America Corporation  
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Tel. 855-486-2216

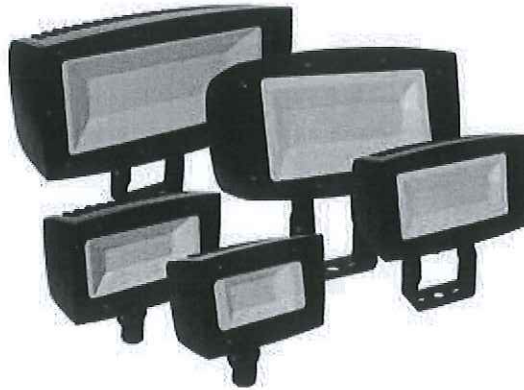
Philips Lighting Canada Ltd.  
281 Hillmount Rd, Markham, ON, Canada L6C 2S3  
Tel. 800-668-9008



# PHILIPS Stonco

## Floodlights

General  
purpose flood



Project: \_\_\_\_\_  
Location: \_\_\_\_\_  
Cat.No: \_\_\_\_\_  
Type: \_\_\_\_\_  
Qty: \_\_\_\_\_  
Notes: \_\_\_\_\_

The Philips Stonco LED Floodlights offer energy saving LED technology for long life and reduced maintenance. Versatile and stylish with five different sizes to choose from provides application flexibility for ground mount, wall mount, or pole mount installations. Ideal for sign lighting, building facades, security lighting, and general purpose floodlighting applications.

### Ordering guide

example: FL150-NW-G1-T-FL-8-BZ

Luminaire	LED Color	Generation	Mounting	Distribution	Voltage	Finish
<input type="text"/>	<input type="text" value="NW"/>	<input type="text" value="G1"/>	<input type="text"/>	<input type="text" value="FL"/>	<input type="text" value="8"/>	<input type="text" value="BZ"/>
<b>FL20</b> LED Floodlight 20W	<b>NW</b> Neutral White 4000K, 80CRI	<b>G1</b> Generation 1	<b>K<sup>1</sup></b> Knuckle Mount ½" NPS male	<b>FL</b> Flood	<b>8</b> 120-277VAC	<b>BZ</b> Bronze
<b>FL40</b> LED Floodlight 40W						
<b>FL80</b> LED Floodlight 80W			<b>T<sup>2</sup></b> Trunnion Mount			
<b>FL150</b> LED Floodlight 150W						
<b>FL300</b> LED Floodlight 300W						

1. K Knuckle Mount only available with FL20 and FL40.
2. T Trunnion Mount only available with FL80, FL150 and FL300.

### LED Wattage and Lumen Values

Neutral White Ordering Codes	Total LEDs	LED Current (mA)	Color Temp. (K)	Average System Wattage <sup>1</sup>	Lumen Output <sup>1,2</sup>	Efficacy (LPW)
FL20-NW-G1-K-FL-8-BZ	32	500	4000	20	2122	109
FL40-NW-G1-K-FL-8-BZ	64	1100	4000	39	4433	113
FL80-NW-G1-T-FL-8-BZ	128	2450	4000	79	8856	113
FL150-NW-G1-T-FL-8-BZ	248	4200	4000	146	16,325	112
FL300-NW-G1-T-FL-8-BZ	544	2100	4000	301	34,025	113

1. Wattage and lumen output may vary by +/- 8% due to LED manufacturer forward volt specification and ambient temperature. Wattage shown is average for 120V through 277V input. Actual wattage may vary by an additional +/- 10% due to actual input voltage.
2. Lumen values based on photometric tests performed in compliance with IESNA LM-79.

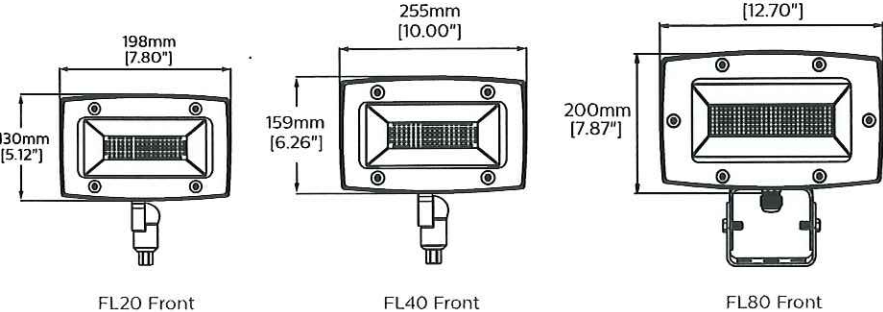
NOTE: Contact outdoorlighting.applications@philips.com for additional photometric tests or information.



# General purpose flood LED

FL20/40/80/150/300

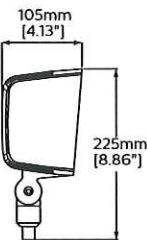
## Dimensions



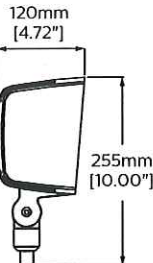
FL20 Front

FL40 Front

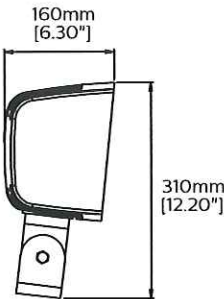
FL80 Front



FL20 Side

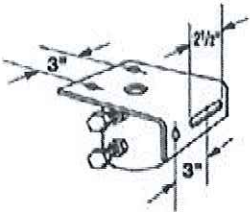


FL40 Side



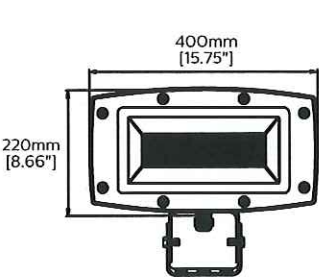
FL80 Side

Accessory  
(ordered separately,  
field installed)

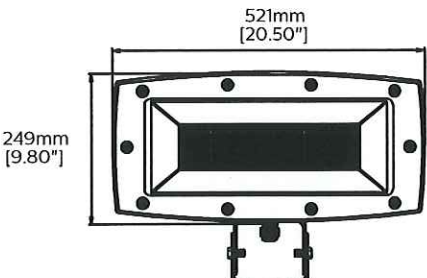


USF10BRZ

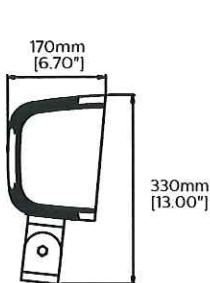
Mounting adapter for trunnion, fits  
2-3/8" O.D. tenon, bronze finish.



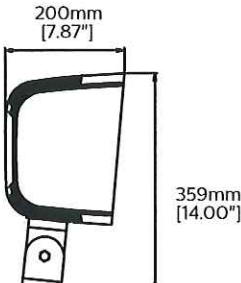
FL150 Front



FL300 Front



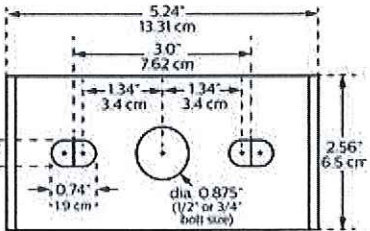
FL150 Side



FL300 Side

## EPA and Weight

Product	Effective Projected Area (EPA-ft <sup>2</sup> )			Weight
	0° Aim	45° Aim	90° Aim	
FL20	0.238	0.271	0.316	4.6lbs (2.09kg)
FL40	0.351	0.415	0.500	6.6lbs (2.99kg)
FL80	0.595	0.680	0.798	15lbs (6.8kg)
FL150	0.784	0.915	1.089	20lbs (9.1kg)
FL300	1.199	1.369	1.604	33lbs (14.9kg)



Trunnion Mount Bolt Pattern



# General purpose flood LED

FL20/40/80/150/300

## Specifications

### Housing and Heat Sink

Single piece die cast aluminum alloy. Housing also acts as a heat sink, designed to ensure high efficacy and superior cooling by natural convection. Air flow pattern always close to LEDs and driver optimizing their efficiency and life. Product does not use any cooling device with moving parts (only passive cooling).

### Mounting

**Suitable for mounting within 4' (1.2m) of the ground.**

**Knuckle (K, see Ordering guide):** Integral die cast Aluminum adjustable knuckle (K) with 1/2" NPS male threads, made of a lower copper alloy for resistance to corrosion, with locking teeth and bolt to lock in aiming angle. Ships fully assembled, ready to install. Six inch (6" or 152mm) leads exit out of Knuckle for connection by others.

**Trunnion (T, see Ordering guide):** Integral structural steel adjustable trunnion (T) for direct surface mounting, painted for resistance to corrosion, with bolt to lock in aiming angle. Ships fully assembled, ready to install. Six foot (6' or 1.83m) watertight STW 16 gauge cord exits out of Housing for connection by others, IP66 liquid tight connector to seal cord exit point.

### Lens

Heat and impact resistant tempered glass lens with one piece silicone gasket surrounding the entire perimeter of the LED light engine and electronics compartment providing an IP66 seal. Lens secured with screws and recessed sleeve washers outside of gasket perimeter. Lens includes silk screen to help reduce glare and for aesthetic purposes.

### Light Engine

Composed of 3 main components: LED Module / Optical System / Driver. Electrical components are RoHS compliant. LEDs tested by ISO 17025-2005 accredited lab in accordance with IESNA LM-80 guidelines extrapolations in accordance with IESNA TM-21. Metal core substrate ensures greater heat transfer and longer lifespan.

### Predicted Lumen Depreciation Data

Ambient Temperature °C	System Current	L <sub>70</sub> per TM21 <sup>1,2</sup>	Lumen Maintenance @ 42,000hrs
25°C	4200 mA	>42,000	85%

1. L<sub>70</sub> is the predicted time when LED performance depreciates to 70% of initial lumen output.
2. Calculated per IESNA TM 21-11. Published L<sub>70</sub> hours limited to 6 times actual LED test hours.

### LED Module

Composed of mid-power performance white LEDs. Color temperature as per ANSI/NEMA bin Neutral White, 4000 Kelvin nominal (3985 +/- 275K or 3710K to 4260K), CRI 80 Min.

### Optical System

Flood distribution, optimized for target lumens and a superior lighting uniformity. Photometric performance shall be tested per LM-79 (IESNA) certifying its photometric performance and published in accordance with LM-63.

### Driver

High power factor of 90% min. Electronic driver, operating range 50/60 Hz, Class 1 or Class 2.

### Other Integrated Features

**Surge Protection:** Each luminaire is provided as standard with surge protector (Philips designed SP1 or SP1HV) tested in accordance with ANSI/IEEE C62.45 per ANSI/IEEE C62.41.2 Scenario I Category C High Exposure 10kV/10kA waveforms for Line Ground, Line Neutral and Neutral Ground.

### Wiring

Insulated internal wiring located inside the housing, silicone seals all places where wiring passes through openings including sealed going into the knuckle or exiting the luminaire for trunnion mount. Due to the inrush current that occurs with electronic drivers, recommend using a time delay or slow blow fuse to avoid unnecessary and unwanted fuse blowing that can occur with fast acting fuses.

### Hardware

All exposed screws shall be stainless steel and/or corrosion resistant and captive. All seals and sealing devices are made and/or lined with EPDM and/or silicone and/or rubber.

### Finish

Fade and abrasion resistant, electrostatically applied, thermally cured, triglycidal isocyanurate (TGIC) polyester powdercoat textured bronze finish.

### LED Products Manufacturing Standard

The electronic components sensitive to electrostatic discharge (ESD) such as light emitting diodes (LEDs) are assembled in compliance with EC61340-5-1 and ANSI/ESD S20.20 standards so as to eliminate ESD events that could decrease the useful life of the product.

### Vibration Resistance

Knuckle mounts meet the ANSI C136.31 Luminaire vibration specifications for normal applications (1.5G).

### Certifications and Compliance

cULus Listed for Canada and USA. DesignLights Consortium qualified. Entire luminaire is rated for operation in ambient temperature of -30°C (-22°F) up to +40°C (+104°F).

### IP66 Rating

Entire luminaire including light engine and driver/electrical compartment IP66 rated in all aiming positions including upward aiming floodlighting applications.

### Limited Warranty

5-year limited warranty. See philips.com/warranties for details and restrictions. Visit our eCatalog or contact your local sales representative for more information.

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Philips Lighting North America Corporation  
200 Franklin Square Drive, Somerset, NJ 08873  
Tel. 855-486-2216

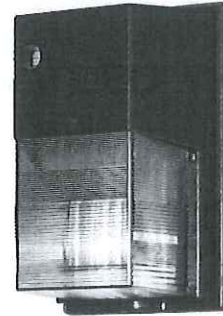
Philips Lighting Canada Ltd.  
281 Hillmount Rd, Markham, ON, Canada L6C 2S3  
Tel. 800-668-9008



CATALOG NO. \_\_\_\_\_

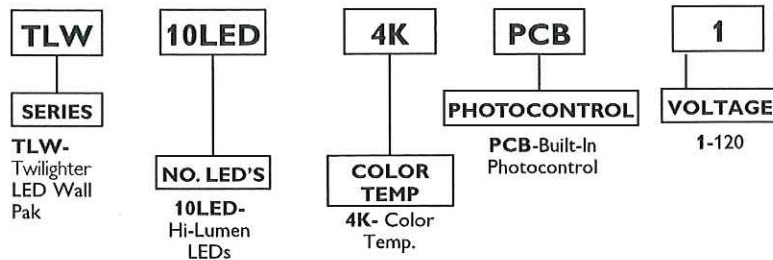
TYPE NO. \_\_\_\_\_ JOB NAME \_\_\_\_\_

## Twilighter LED Wall Pak



### ORDERING INFORMATION

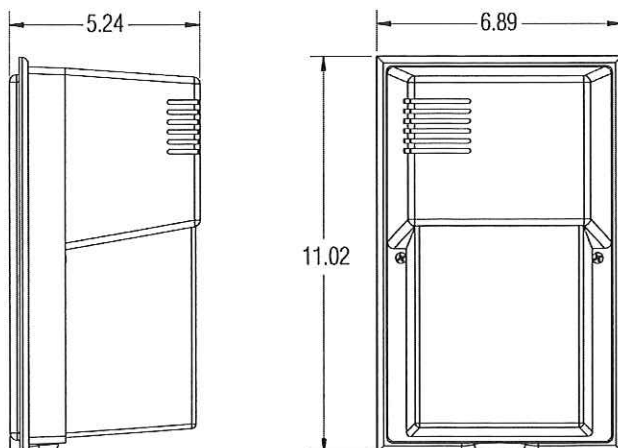
Catalog Number: Example: TLW10LED4KPCB-1



### PRODUCT SPECIFICATIONS

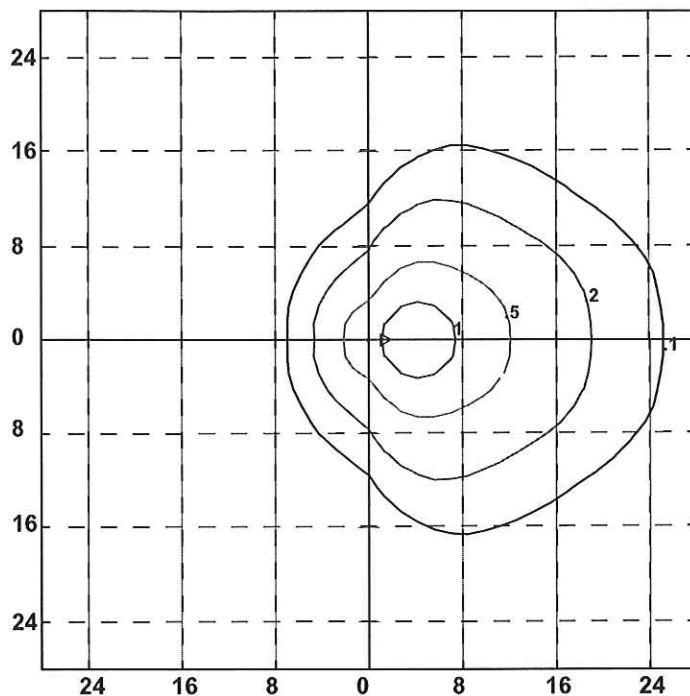
- 13.9 watt high-powered LED array
- 50,000 hour life
- Lightweight, compact design
- Sturdy die-cast aluminum housing
- Architectural bronze UV resistant powder coat finish
- UV stabilized polycarbonate lens/refractor
- UV stabilized polycarbonate front housing
- Continuous silicone rubber gasket between housing and lens/cover
- Energy-efficient, high-powered LED Array
- Provides 707 delivered lumens, LM79
- Excellent heat management for long life
- Efficacy: 50.9 lumens per watt (LPW)
- CRI: 86
- 4386 CCT
- Operating temperature: -25°C (-13°F) to 35°C (95°F)
- Voltage: 120V 50/60Hz
- Factory-installed photocontrol
- UL Listed for wet locations
- 5-year warranty

### TECHNICAL INFORMATION



# Twilighter LED Wall Pak

## PHOTOMETRIC DATA



Philips Stonco LED Twilighter Wall Pak  
Photometric Filename: TLW10LED4K.IES

### Characteristics

Horizontal Footcandles  
Mounting Height = 8 Ft.  
Light Loss Factor = 1.00  
Lumens Per Lamp = N.A. (absolute photometry)  
Luminaire Lumens = 710  
Mounting Height = 8.00 Ft  
Maximum Calculated Value = 1.39 Fc  
Arrangement: Single

### Footcandle Correction

Multiply the following factors times the footcandle values for changes in mounting height.

To change from 8'

New Height	6'	7'	8'	9'	10'	12'
Factor	1.78	1.31	1.00	.79	.64	.44



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Specifications are subject to change without notice.  
[www.philips.com/luminaires](http://www.philips.com/luminaires)

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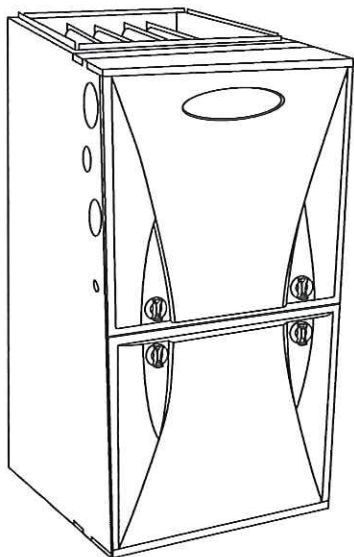
Philips Lighting Company  
200 Franklin Square Drive  
Somerset, NJ 08873  
Phone: 855-486-2216

Philips Lighting Company  
281 Hillmount Road  
Markham ON, Canada L6C 2S3  
Phone: 800-668-9008

**59SP5A**  
**Performance™ Boost, Single-Stage**  
**4-Way Multipoise**  
**Condensing Gas Furnace**  
**Series 100**



## Product Data



A11263

The 59SP5A Multipoise Performance™ Boost Condensing Gas Furnace features SEER-boosting year-round electrical efficiency when paired with a compatible condensing unit. Energy efficiency is at the heart of this furnace with up to 96.5% AFUE gas efficiency and the electrically-efficient basic ECM blower motor. This gas furnace also features 4-way multipoise installation flexibility, and is available in six model sizes. The 59SP5A can be vented for direct vent/two-pipe, ventilated combustion air, or single-pipe applications. All units meet California Air Quality Management District emission requirements, are design certified in Canada, and are certified for mobile/manufactured home use.

### STANDARD FEATURES

- Humidistat™ Control compatible; dehumidification input for better comfort.
- SmartEvap™ technology helps control humidity levels in the home when used with a compatible humidity control system.
- ComfortFan™ technology allows control of continuous fan speed from a compatible thermostat.
- Ideal height 35" (889 mm) cabinet: short enough for taller coils, but still allows enough room for service.
- Silicon Nitride Power Heat™ Hot Surface Igniter.
- External Media Filter Cabinet included.
- 4-way multipoise design for upflow, downflow or horizontal installation, with unique vent elbow and optional venting through-the-cabinet downflow venting capability.
- Single-speed inducer motor, and single-stage gas valve.
- Self diagnostics with SuperBrite LED.
- Approved for Twinning applications with accessory kit (60-14 through 120-22 models, only).
- Approved for Manufactured Housing/Mobile Home applications with MH accessory kit.
- Adjustable blower speed for heating, cooling and continuous fan
- Aluminized-steel primary heat exchanger.
- Stainless-steel condensing secondary heat exchanger.
- Propane convertible (see Accessory list).
- Factory-configured ready for upflow applications.
- Fully-insulated casing including blower section.
- Convenient Air Purifier and Humidifier connections.
- Direct-vent/sealed combustion, single-pipe venting or ventilated combustion air.
- Installation flexibility: (sidewall or vertical vent).
- Residential installations may be eligible for consumer financing through the Retail Credit Program.
- Certified to leak 2% or less of nominal air conditioning CFM delivered when pressurized to 1-in. water column with all present air inlets, air outlets, and condensate drain port(s) sealed.

Performance  
 SERIES



Select Models





SAP ORDERING NO.	CASING DIMENSIONS (IN.)			RATED HEATING OUTPUT†			HEATING AIRFLOW		COOLING CFM @ 0.5 ESP (In. W.C.)	MOTOR HP SPEED	MEDIA CABINET SUPPLIED (IN.)
	H	D	W	BTUH	AFUE	ENERGY STAR	HEATING CFM	HEATING ESP (In. W.C.)			
59SP5A040E14--10	35	29.5	14.2	39,000	96.5%	✓	695	0.1	925	1/2 - 5	16
59SP5A040E17--12	35	29.5	17.5	39,000	96.5%	✓	705	0.1	1085	1/2 - 5	16
59SP5A060E14--12	35	29.5	14.2	58,000	95.5%	✓	940	0.12	1090	1/2 - 5	16
59SP5A060E17--14	35	29.5	17.5	58,000	96.5%	✓	1000	0.12	1505	3/4 - 5	16
59SP5A080E17--16	35	29.5	17.5	78,000	96.5%	✓	1360	0.15	1610	3/4 - 5	16
59SP5A080E21--20	35	29.5	21.0	78,000	96.5%	✓	1360	0.15	2015	1 - 5	20
59SP5A100E21--20	35	29.5	21.0	97,000	96.3%	-	1700	0.2	2110	1 - 5	20
59SP5A120E24--22	35	29.5	24.0	117,000	96.5%	-	2125	0.2	2055	1 - 5	24

† Capacity in accordance with DOE test procedures. Ratings are position dependent. See rating plate.

‡ Heating CFM at factory default blower motor heating tap settings.

ESP — External Static Pressure

✓ Meets ENERGY STAR criteria

## FEATURES AND BENEFITS

**SmartEvap™ Technology** — When paired with a compatible thermostat, this dehumidification feature overrides the cooling blower off-delay when there is a call for dehumidification. By deactivating the blower off-delay, SmartEvap technology prevents condensate that remains on the coil after a dehumidification cycle from re-humidifying throughout the home. This results in reduced humidity and a more comfortable indoor environment for the homeowner.

Unlike competitive systems, SmartEvap technology only overrides the cooling blower off-delay when humidity control is needed. Once humidity is back in control, SmartEvap re-enables the energy-saving cooling blower off-delay.

**ComfortFan™ Technology** — Sometimes the constant fan setting on a standard furnace system can actually reduce homeowner comfort by providing too much or too little air! Comfort Fan technology improves comfort all year long by allowing the homeowner to select the continuous fan speed of their choice using a compatible thermostat.

**HYBRID HEAT® Dual Fuel System** — This system can provide more control over your monthly energy bills by automatically selecting the most economical method of heating. With HYBRID HEAT components, our system automatically switches between the gas furnace and the electric heat pump as outside temperatures change to maintain greater efficiency and comfort than with any traditional single-source heating system. The heat pump also delivers high-efficiency cooling in the summer.

**Power Heat™ Igniter** — Carrier's unique SiN igniter is not only physically robust but it is also electrically robust. It is capable of running at line voltage and does not require complex voltage regulators as do other brands. This unique feature further enhances the gas furnace reliability and continues Carrier's tradition of technology leadership and innovation in providing a reliable and durable product.

**Performance™ ECM Blower Motor** — This basic ECM, or electronically commutated motor, can provide an efficiency enhancement for select Carrier air conditioner or heat pump systems. It uses less electrical power than its PSC counterpart and also has a wider range of speeds.

**Reliable Heat Exchanger Design** — The aluminized steel, clam shell primary heat exchanger was re-engineered to achieve greater efficiency out of a smaller size. The first two passes of the heat exchanger are based on the current 80% product, a design with more than ten years of field-proven performance and success. These innovations, paired with the continuation of a crimped, no-weld seam create an efficient, robust design for this essential component.

The condensing heat exchanger, a stainless steel fin and tube design, is positioned in the furnace to extract additional heat. Stainless steel coupling box componentry between heat exchangers has exceptional corrosion resistance in both natural gas and propane applications.

**Media Filter Cabinet** — Enhanced indoor air quality in the home is made easier with our media filter cabinet—a standard accessory on all deluxe furnaces. When installed as a part of the system, this cabinet allows for easy and convenient addition of a Carrier high efficiency air filter.

**4-Way Multipoise Design** — One model for all applications — there is no need to stock special downflow or horizontal models when one unit will do it all. The new heat exchanger design allows these units to achieve the certified AFUE in all positions.

**Direct or Single-pipe Venting, or Optional Ventilated Combustion Air** — This furnace can be installed as a 2-pipe (Direct Vent) furnace, in an optional ventilated combustion air application, or in single-pipe, non-direct vent applications. This provides added flexibility to meet diverse installation needs.

**Sealed Combustion System** — This furnace brings in combustion air from outside the furnace, which results in especially quiet operation. By sealing the entire combustion vestibule, the entire furnace can be made quieter, not just the burners.

**Insulated Casing** — Foil-faced insulation in the heat exchanger section of the casing minimizes heat loss. The acoustical insulation in the blower compartment reduces air and motor noise for quiet operation.

**Monoport Burners** — The burners are specially designed and finely tuned for smooth, quiet combustion and economical operation.

**Bottom Closure** — Factory-installed for side return; easily removable for bottom return. The multi-use bottom closure can also serve for roll-out protection in horizontal applications, and act as the bottom closure for the optional return air base accessory.

**Blower Access Panel Switch** — Automatically shuts off 115-v power to furnace whenever blower access panel is opened.

**Quality Registration** — Our furnaces are engineered and manufactured under an ISO 9001 registered quality system.

**Certifications** — This furnace is CSA (AGA and CGA) design certified for use with natural and propane gases. The furnace is factory-shipped for use with natural gas. A CSA listed gas conversion kit is required to convert furnace for use with propane gas. The efficiency is AHRI efficiency rating certified. This furnace meets California Air Quality Management District emission requirements.



## SPECIFICATIONS

Heating Capacity and Efficiency		040-10	040-12	060-12	060-14	080-16	080-20	100-20	120-22
Input	High Heat (BTUH)	40,000	40,000	60,000	60,000	80,000	80,000	100,000	120,000
Output									117,000
Certified Temperature Rise Range °F (°C)	High Heat	40 - 70 (22 - 39)	40 - 70 (22 - 39)	45 - 75 (25 - 42)	40 - 70 (22 - 39)	40 - 70 (22 - 39)	40 - 70 (22 - 39)	40 - 70 (22 - 39)	40 - 70 (22 - 39)
Airflow Capacity and Blower Data		040-10	040-12	060-12	060-14	080-16	080-20	100-20	120-22
Rated External Static Pressure (in. w.c.)	Heating	0.10	0.10	0.12	0.12	0.15	0.15	0.20	0.20
	Cooling	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Airflow Delivery @ Rated ESP (CFM)	High Heat	695	705	940	1000	1360	1360	1700	2125
	Cooling	925	1085	1090	1505	1610	2015	2110	2055
Cooling Capacity (tons) @ 400, 350 CFM/ton	CFM/ton	2	2.5	2.5	3.5	4	5	5	5
	CFM/ton	2.5	3	3	4	4.5	5.5	6	6
Direct-Drive Motor Type		Electronically Commutated Motor (ECM)							
Direct-Drive Motor HP		1/2	1/2	1/2	3/4	3/4	1	1	1
Motor Full Load Amps		6.8	6.8	6.8	8.4	8.4	10.9	10.9	10.9
RPM Range		600 - 1200							
Speed Selections		5							
Blower Wheel Dia x Width	in.	11 x 7	11 x 8	11 x 7	11 x 8	11 x 8	11 x 10	11 x 10	11 x 11
Air Filtration System		Factory Supplied Media Cabinet Field Supplied Filter							
Filter Used for Certified Watt Data		KGAWF1506UFR							
Electrical Data		040-10	040-12	060-12	060-14	080-16	080-20	100-20	120-22
Input Voltage	Volts-Hertz-Phase	115-60-1							
Operating Voltage Range	Min-Max	104-127							
Maximum Input Amps	Amps	7.4	7.4	7.5	9.1	9.1	11.6	11.7	11.7
Unit Ampacity	Amps	10.3	10.3	10.4	12.4	12.4	15.5	15.6	15.6
Minimum Wire Size	AWG	14	14	14	14	14	12	12	12
Maximum Wire Length @ Minimum Wire Size	Feet	36	36	35	30	30	37	36	36
	(M)	(11.0)	(11.0)	(10.7)	(9.1)	(9.1)	(11.3)	(11.0)	(11.0)
Maximum Fuse/Ckt Bkr (Time-Delay Type Recommended)	Amps	15	15	15	15	15	20	20	20
Transformer Capacity (24vac output)		40 VA							
External Control Power Available	Heating	27.9 VA							
	Cooling	34.6 VA							
Controls		040-10	040-12	060-12	060-14	080-16	080-20	100-20	120-22
Gas Connection Size		1/2" - NPT							
Burners (Monoport)		2	2	3	3	4	4	5	6
Gas Valve (Redundant)	Manufacturer	White Rodgers							
Minimum Inlet Gas pressure (in. wc)		4.5							
Maximum Inlet Gas pressure (in. wc)		13.6							
Gas Conversion Kit - Natural to Propane		KGANP50011SP							
Gas Conversion Kit - Propane to Natural		KGAPN42011SP							
Manufactured (Mobile) Home Kit		KGAMH0601KIT							
Ignition Device		Silicon Nitride							
Limit Control		165	180	165	180	170	200	180	160
Heating Blower Control (Heating Off-Delay)		Adjustable: 90, 120, 150, 180 seconds							
Cooling Blower Control (Time Delay Relay)		90 seconds							
Communication System		none							
Thermostat Connections		Com 24V, R, W, G, Y/Y2, DHUM, Y1							
Accessory Connections		EAC (115vac); HUM (24vac); 1-stg AC (via Y/Y2)							

\* See Accessory List for part numbers available.

59SP5A

## MODEL NUMBER NOMENCLATURE

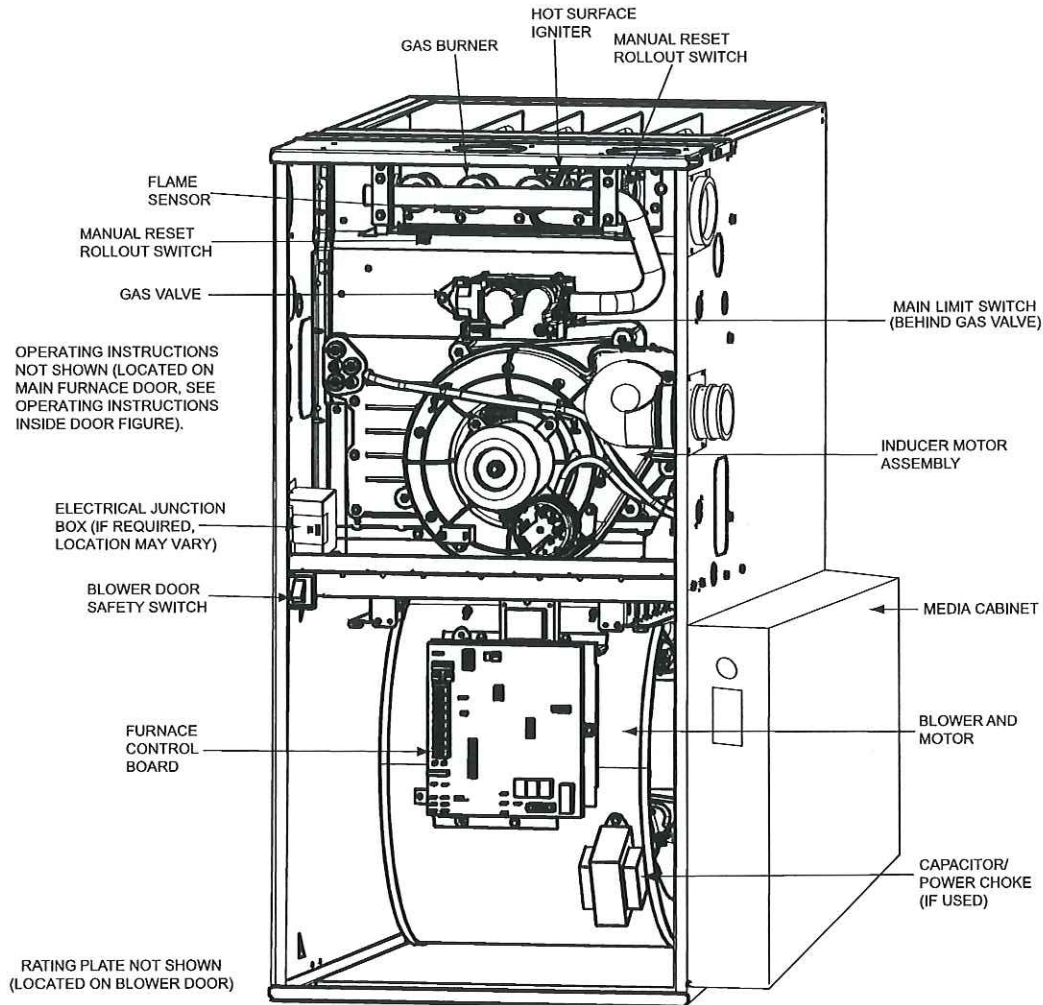
Example of Model Number

1 - 2 Family 59	3 Htg. Stages T	4 Tier N	5 Base Effy. 6	6 Major Series A	7 - 9 Htg. Cap. 060	10 Motor V	11 - 12 Width 17	13 Voltage —	14 Minor Series —	15 - 16 Airflow 14
Family S - Single Stage T - Two Stage M - Modulating		C - Comfort P - Performance N - Infinity	0 - +90 AFUE 2 - +92 AFUE 3 - +93 AFUE 5 - +95 AFUE 6 - +96 AFUE 7 - +97 AFUE		040=40,000 BTU 060=60,000 BTU 080=80,000 BTU 100=100,000 BTU 120=120,000 BTU 140=140,000 BTU	S - Standard E - Energy Efficient V - Variable Speed	14 - 14.2" 17 - 17.5" 21 - 21.0" 24 - 24.5"	Voltage	Minor Series	08 - 800 CFM 10 - 1000 CFM 12 - 1200 CFM 14 - 1400 CFM 16 - 1600 CFM 18 - 1800 CFM 20 - 2000 CFM 22 - 2200 CFM

Not all families have these models.

A12373

## FURNACE COMPONENTS



REPRESENTATIVE DRAWING ONLY, SOME MODELS MAY VARY IN APPEARANCE.

A11408



## ACCESSORIES

DESCRIPTION	PART NUMBER	040-10	060-12	040-12	060-14	080-16	080-20	100-20	120-22
<b>Venting Accessories</b>									
Vent Kit - Through the Cabinet	KGADC0101BVC	•	•	•	•	•	•	•	•
Vent Terminal - Concentric - 2" (51 mm)	KGAVT0701CVT	See Venting Tables							
Vent Terminal - Concentric - 3" (76 mm)	KGAVT0801CVT								
Vent Terminal Bracket - 2" (51 mm)	KGAVT0101BRA								
Vent Terminal Bracket - 3" (76 mm)	KGAVT0201BRA								
Vent Kit – Rubber Coupling	KGAAC0101RVC	See Venting Tables							
<b>Condensate Drainage Accessories</b>									
Freeze Protect Kit - Heat Tape	KGAHT0101CFP	•	•	•	•	•	•	•	•
CPVC to PVC Drain Adapters - 1/2" CPVC to 3/4" PVC	KGAAD0110PVC	•	•	•	•	•	•	•	•
Horizontal Trap Grommet - Direct Vent	KGACK0101HCK	All DV Horizontal							
Condensate Neutralizer Kit	P908-0001	•	•	•	•	•	•	•	•
External Trap Kit	KGAET0201ETK	•	•	•	•	•	•	•	•
<b>Ductwork Adapter Accessories</b>									
Furnace Base Kit for Combustible Floors	KGASB0201ALL	•	•	•	•	•	•	•	•
Coil Adapter Kits – No Offset	KGADA0101ALL	•	•	•	•	•	•	•	•
Coil Adapter Kits – Single Offset	KGADA0201ALL	•	•	•	•	•	•	•	•
Coil Adapter Kits – Double Offset	KGADA0301ALL	•	•	•	•	•	•	•	•
Return Air Base (Upflow Applications) 14.0–in. wide	KGARP0301B14	•	•						
Return Air Base (Upflow Applications) 17.5–in. wide	KGARP0301B17			•	•	•			
Return Air Base (Upflow Applications) 21.0–in. wide	KGARP0301B21						•	•	
Return Air Base (Upflow Applications) 24.5–in. wide	KGARP0301B24								•
IAQ Device Duct Adapters 20.0–in. IAQ to 16 in. Side Return	KGAAD0101MEC	20"x25" IAQ Devices							
IAQ Device Duct Adapters 24.0–in. IAQ to 16 in. Side Return	KGAAD0201MEC	24"x25" IAQ Devices							
<b>Gas Conversion Accessories</b>									
Mobile Home Kit	KGAMH0601KIT	•	•	•	•	•	•	•	•
Gas Conversion Kit - Nat to LP	KGANP50011SP	•	•	•	•	•	•	•	•
Gas Conversion Kit - LP to Nat	KGAPN42011SP	•	•	•	•	•	•	•	•
Gas Orifice Kit - #42 (Nat Gas)	LH32DB207	•	•	•	•	•	•	•	•
Gas Orifice Kit - #43 (Nat Gas)	LH32DB202	•	•	•	•	•	•	•	•
Gas Orifice Kit - #44 (Nat Gas)	LH32DB200	•	•	•	•	•	•	•	•
Gas Orifice Kit - #45 (Nat Gas)	LH32DB205	•	•	•	•	•	•	•	•
Gas Orifice Kit - #46 (Nat Gas)	LH32DB208	•	•	•	•	•	•	•	•
Gas Orifice Kit - #47 (Nat Gas)	LH32DB078	•	•	•	•	•	•	•	•
Gas Orifice Kit - #48 (Nat Gas)	LH32DB076	•	•	•	•	•	•	•	•
Gas Orifice Kit - #54 (LP)	LH32DB203	•	•	•	•	•	•	•	•
Gas Orifice Kit - #55 (LP)	LH32DB201	•	•	•	•	•	•	•	•
Gas Orifice Kit - #56 (LP)	LH32DB206	•	•	•	•	•	•	•	•
Gas Orifice Kit - 1.25mm (LP)	LH32DB209	•	•	•	•	•	•	•	•
Gas Orifice Kit - 1.30mm (LP)	LH32DB210	•	•	•	•	•	•	•	•
<b>Control Accessories</b>									
Twinning Kit	KGATW0701HSI				•	•	•	•	•
<b>IAQ Accessories</b>									
Filter Pack (6 pack) – Washable - 16x25x1 (406x635x25 mm)	KGAWF1306UFR	•	•	•	•	•	•	•	•
Filter Pack (6 pack) – Washable - 24x25x1 (610x635x25 mm)	KGAWF1506UFR	•	•	•	•	•	•	•	•
EZ-Flex Filter - 16" (406 mm)	EXPXXFIL0016	Use with EZXCAB – 1016							
EZ-Flex Filter - 20" (508 mm)	EXPXXFIL0020	Use with EZXCAB – 1020							
EZ-Flex Filter - 24" (610 mm)	EXPXXFIL0024	Use with EZXCAB – 1024							
EZ-Flex Filter with End Caps - 16" (406 mm)	EXPXXUNV0016	Use with EZXCAB – 1016							
EZ-Flex Filter with End Caps - 20" (508 mm)	EXPXXUNV0020	Use with EZXCAB – 1020							
EZ-Flex Filter with End Caps - 24" (610 mm)	EXPXXUNV0024	Use with EZXCAB – 1024							
Cartridge Media Filter - 16" (406 mm)	FILXXCAR0016	Use with FILCABXL – 1016							
Cartridge Media Filter - 20" (508 mm)	FILXXCAR0020	Use with FILCABXL – 1020							
Cartridge Media Filter - 24" (610 mm)	FILXXCAR0024	Use with FILCABXL – 1024							
Carrier Performance Air Purifier - 16x25 (508x635 mm)	PGAPXX1625	Up to 1600 CFM							
Carrier Performance Air Purifier - 20x25 (508x635 mm)	PGAPXX2025	Up to 2000 CFM							
Carrier Performance Air Purifier Repl Filter - 16x25 (406x635 mm)	PGAPAXXCAR1625	GAPAXXC1625							
Carrier Performance Air Purifier Repl. Filter - 20x25 (508x635 mm)	PGAPAXXCAR2025	GAPAXXC2025							

• = Used with the model furnace

59SP5A

## AIR DELIVERY - CFM (BOTTOM RETURN WITH FILTER)

UNIT SIZE	RETURN-AIR CONNECTION	SPEED TAPS <sup>2, 3</sup>	EXTERNAL STATIC PRESSURE (IN.W.C.)									
			0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
040-10	SIDE/BOTTOM	Gray	1120	1080	1030	980	925	875	820	760	690	630
		Yellow	880	845	810	780	740	710	680	640	615	570
		Blue	695	665	620	575	535	495	455	420	370	280
		Orange	640	595	540	495	460	420	370	310	260	230
		Red	570	525	475	425	385	330	255	220	- <sup>6</sup>	- <sup>6</sup>
040-12	SIDE/BOTTOM	Gray	1255	1220	1175	1130	1085	1040	990	940	880	825
		Yellow	940	905	870	840	805	770	735	695	665	630
		Blue	705	670	630	575	540	500	455	410	380	325
		Orange	580	535	480	425	380	335	290	235	- <sup>6</sup>	- <sup>6</sup>
		Red	555	485	425	375	330	280	215	- <sup>6</sup>	- <sup>6</sup>	- <sup>6</sup>
060-12	SIDE/BOTTOM	Gray	1265	1225	1185	1140	1090	1030	975	920	850	760
		Yellow	1115	1085	1060	1030	1000	970	930	880	810	715
		Orange	1000	970	940	910	880	845	815	770	735	695
		Blue	945	915	885	855	820	785	745	705	675	635
		Red	770	740	700	660	620	575	540	500	455	415
060-14	SIDE/BOTTOM	Gray	1720	1670	1620	1565	1505	1440	1375	1295	1220	1135
		Yellow	1325	1285	1255	1220	1185	1145	1115	1075	1040	1000
		Blue	1010	970	925	875	835	785	745	690	660	620
		Orange	1160	1115	1080	1045	1000	960	920	875	840	785
		Red	785	715	655	595	530	490	435	385	340	285
080-16	SIDE/BOTTOM	Gray	1810	1770	1720	1665	1610	1540	1475	1400	1315	1235
		Yellow	1535	1500	1475	1435	1405	1370	1340	1310	1245	1160
		Blue	1380	1340	1305	1270	1240	1200	1165	1130	1090	1050
		Orange	1180	1130	1095	1060	1015	975	935	895	850	800
		Red	1100	1045	1010	970	920	885	845	790	745	690
080-20	BOTTOM or TWO-SIDES <sup>4, 5</sup>	Gray	2290	2225	2155	2090	2015	1930	1845	1750	1640	1515
		Yellow	1810	1760	1725	1685	1640	1600	1555	1520	1480	1415
		Blue	1385	1340	1285	1240	1200	1140	1090	1050	995	950
		Orange	1560	1520	1475	1430	1385	1335	1295	1240	1200	1150
		Red	1055	985	910	860	795	750	680	615	565	495
100-20	BOTTOM or TWO-SIDES <sup>4, 5</sup>	Gray	2340	2295	2250	2195	2110	2030	1935	1835	1725	1605
		Yellow	1950	1900	1855	1800	1755	1705	1655	1605	1560	1485
		Blue	1750	1700	1650	1605	1555	1500	1455	1395	1350	1300
		Orange	1570	1520	1460	1410	1350	1300	1240	1195	1140	1095
		Red	1350	1280	1225	1155	1105	1045	1000	950	895	830
120-22	BOTTOM or TWO-SIDES <sup>4, 5</sup>	Gray	2275	2230	2185	2130	2055	1950	1825	1710	1610	1500
		Yellow	1875	1820	1770	1720	1660	1600	1550	1505	1450	1390
		Blue	2170	2125	2075	2025	1975	1900	1790	1695	1590	1470
		Orange <sup>3</sup>	1475	1420	1350	1280	1215	1165	1105	1050	995	930
		Red <sup>3</sup>	1625	1565	1505	1445	1385	1325	1275	1225	1170	1130

**NOTE:**

1. A filter is required for each return-air inlet. Airflow performance includes a 3/4-in. (19 mm) washable filter media such as contained in a factory-authorized accessory filter rack. See accessory list. To determine airflow performance without this filter, assume an additional 0.1 in. w.c. available external static pressure.
2. **ADJUST THE BLOWER SPEED TAPS AS NECESSARY FOR THE PROPER AIR TEMPERATURE RISE FOR EACH INSTALLATION.**
3. Shaded areas indicate that this airflow range is **BELOW THE RANGE ALLOWED FOR HEATING OPERATION. THESE AIRFLOW RANGES MAY ONLY BE USED FOR COOLING.**
4. Airflows over 1800 CFM require bottom return, two-side return, or bottom and side return. A minimum filter size of 20" x 25" (508 x 635 mm) is required.
5. For upflow applications, air entering from one side into both the side of the furnace and a return air base counts as a side and bottom return.
6. The "-" entry indicates an unstable operating condition.



# MAXIMUM EQUIVALENT VENT LENGTH - FT. (M)

Table 1 – Maximum Equivalent Vent Length - Ft. (M)

0 to 4500 Ft. (0 to 1370 M) Altitude

**NOTE:** Maximum Equivalent Vent Length (MEVL) includes standard and concentric vent termination and does NOT include elbows.

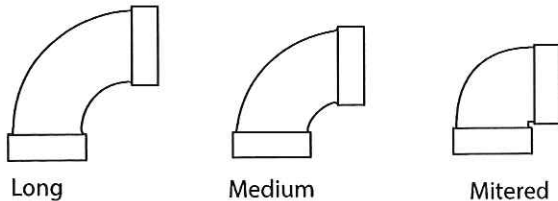
Use Table 2 - Deductions from Maximum Equivalent Vent Length to determine allowable vent length for each application.

Altitude FT (M)	Unit Size BTU/Hr	DIRECT VENT (2-PIPE) AND NON-DIRECT VENT (1-PIPE)									
		Vent Pipe Diameter (in.) <sup>1</sup>									
		1-1/2		2		2-1/2		3		4	
0 to 2000 (0 to 610)	40,000 <sup>3</sup>	50	(15.2)	210	(64.0)	250	(76.2)	NA <sup>2</sup>		NA	
	60,000	30	(9.1)	135	(41.1)	235	(71.6)	265	(80.8)	NA	
	80,000	20	(6.1)	70	(21.3)	175	(53.3)	235	(71.6)	265	(80.8)
	100,000	NA		25	(7.6)	110	(33.5)	235	(71.6)	265	(80.8)
	120,000	NA		NA		15	(4.6)	100	(30.5)	250	(76.2)
	140,000 <sup>4</sup>	NA		NA		10	(3.0)	90	(27.4)	210	(64.0)
2001 to 3000 (610 to 914)	40,000	45	(13.7)	198	(60.4)	232	(70.7)	NA		NA	
	60,000	27	(8.2)	127	(38.7)	222	(67.7)	250	(76.2)	NA	
	80,000	17	(5.2)	64	(19.5)	165	(50.3)	222	(67.7)	249	(75.9)
	100,000	NA		22	(6.7)	104	(31.7)	223	(68.0)	250	(76.2)
	120,000	NA		NA		11	(3.4)	93	(28.3)	237	(72.2)
	140,000 <sup>4</sup>	NA		NA		NA		80	(24.4)	185	(56.4)
3001 to 4000 (914 to 1219)	40,000	39	(11.9)	184	(56.1)	214	(65.2)	NA		NA	
	60,000	23	(7.0)	119	(36.3)	210	(64.0)	235	(71.6)	NA	
	80,000	15	(4.6)	59	(18.0)	155	(47.2)	210	(64.0)	232	(70.7)
	100,000	NA		19	(5.8)	98	(29.9)	211	(64.3)	236	(71.9)
	120,000	NA		NA		8	(2.4)	86	(26.2)	224	(68.3)
	140,000 <sup>4</sup>	NA		NA		NA		79	(24.1)	158	(48.2)
4001 to 4500 (1219 to 1370)	40,000	36	(11.0)	177	(53.9)	205	(62.5)	NA		NA	
	60,000	21	(6.4)	115	(35.1)	204	(62.2)	228	(69.5)	NA	
	80,000	14	(4.3)	56	(17.1)	150	(45.7)	202	(61.6)	224	(68.3)
	100,000	NA		17	(5.2)	94	(28.7)	205	(62.5)	229	(69.8)
	120,000	NA		NA		NA		83	(25.3)	217	(66.1)
	140,000 <sup>4</sup>	NA		NA		NA		69	(21.0)	146	(44.5)

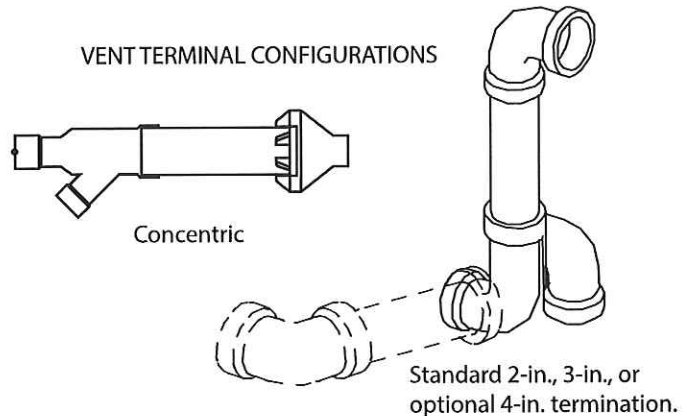
NOTES: See notes at end of venting tables.

See Table 3 for altitudes over 4500 ft. (1370 M)

ELBOW CONFIGURATIONS



VENT TERMINAL CONFIGURATIONS



A13110

Table 2 – Deductions from Maximum Equivalent Vent Length - Ft. (M)

Pipe Diameter (in):	1-1/2		2		2-1/2		3		4	
Mitered 90° Elbow	8	(2.4)	8	(2.4)	8	(2.4)	8	(2.4)	8	(2.4)
Medium Radius 90° Elbow	5	(1.5)	5	(1.5)	5	(1.5)	5	(1.5)	5	(1.5)
Long Radius 90° Elbow	3	(0.9)	3	(0.9)	3	(0.9)	3	(0.9)	3	(0.9)
Mitered 45° Elbow	4	(1.2)	4	(1.2)	4	(1.2)	4	(1.2)	4	(1.2)
Medium Radius 45° Elbow	2.5	(0.8)	2.5	(0.8)	2.5	(0.8)	2.5	(0.8)	2.5	(0.8)
Long Radius 45° Elbow	1.5	(0.5)	1.5	(0.5)	1.5	(0.5)	1.5	(0.5)	1.5	(0.5)
Tee	16	(4.9)	16	(4.9)	16	(4.9)	16	(4.9)	16	(4.9)
Concentric Vent Termination	NA		0	(0.0)	NA		0	(0.0)	NA	
Standard Vent Termination	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)	0	(0.0)



## Venting System Length Calculations

The Total Equivalent Vent Length (TEVL) for **EACH** combustion air or vent pipe equals the length of the venting system, plus the equivalent length of elbows used in the venting system from Table 2.

Standard vent terminations or factory accessory concentric vent terminations count for zero deduction.

See vent system manufacturer's data for equivalent lengths of flexible vent pipe or other termination systems. **DO NOT ASSUME** that one foot of flexible vent pipe equals one foot of straight PVC/ABS DWV vent pipe.

Compare the Total Equivalent Vent Length to the Maximum Equivalent Vent Lengths in Tables 1 and 3.

### Example 1

A direct-vent 60,000 Btuh furnace installed at 2100 ft. (640 M). Venting system includes, **FOR EACH PIPE**, 100 feet (30 M) of vent pipe, 95 feet (28 M) of combustion air inlet pipe, (3) 90° long radius elbows, (2) 45° long radius elbows and a factory accessory concentric vent kit.

Can this application use 2-in. (50 mm ND) PVC/ABS DWV vent piping?

Measure the required linear length of air inlet and vent pipe; insert the longest of the two here:	100 ft	Use length of the longer of the vent or air inlet piping system
Add equiv length of (3) 90° long-radius elbows (use the highest number of elbows for either the vent or inlet pipe)	3 x 3 ft = 9 ft.	From Table 2
Add equiv length of (2) 45° long-radius elbows (use the highest number of elbows for either the vent or inlet pipe)	2 x 1.5 ft = 3 ft.	From Table 2
Add equiv length of vent termination	0 ft.	From Table 2
Add correction for flexible vent pipe, if any	0 ft.	From Vent Manufacturer's instructions; zero for PVC/ABS DWV
Total Equivalent Vent Length (TEVL)	112 ft.	Add all of the above lines
Maximum Equivalent Vent Length (MEVL)	127 ft.	For 2" pipe from Table 1
Is TEVL less than MEVL?	YES	Therefore, 2" pipe may be used

### Example 2

A direct-vent 60,000 Btuh furnace installed at 2100 ft. (640 M) Venting system includes, **FOR EACH PIPE**, 100 feet (30 M) of vent pipe, 95 feet (28 M) of combustion air inlet pipe, (3) 90° long radius elbows, and a polypropylene concentric vent kit. Also includes 20 feet (6.1 M) of flexible polypropylene vent pipe, included within the 100 feet (30 M) of vent pipe.

Assume that one meter of flexible 60 mm or 80 mm polypropylene pipe equals 1.8 meters of PVC/ABS pipe. **VERIFY FROM VENT MANUFACTURER'S INSTRUCTIONS.**

Can this application use 60 mm (O.D.) polypropylene vent piping? If not what size piping can be used?

Measure the required linear length of air inlet and vent pipe; insert the longest of the two here:	100 ft	Use length of the longer of the vent or air inlet piping system
Add equiv length of (3) 90° long-radius elbows (use the highest number of elbows for either the vent or inlet pipe)	3 x 3 ft = 9 ft.	From Vent Manufacturer's instructions
Add equiv length of (2) 45° long-radius elbows (use the highest number of elbows for either the vent or inlet pipe)	0 x = 0 ft.	From Vent Manufacturer's instructions
Add equiv length of vent termination	9 M x 3 ft/M = 18 ft.	From Vent Manufacturer's instructions
Add correction for flexible vent pipe, if any	1.8 x 20 ft = 36 ft.	From Vent Manufacturer's instructions
Total Equivalent Vent Length (TEVL)	163 ft.	Add all of the above lines
Maximum Equivalent Vent Length (MEVL)	127 ft.	For 2" pipe from Table 1
Is TEVL less than MEVL?	NO	Therefore, 60mm pipe may NOT be used; try 80 mm
Maximum Equivalent Vent Length (MEVL)	250 ft.	For 3" pipe from Table 1
Is TEVL less than MEVL?	YES	Therefore, 80 mm pipe may be used

## MAXIMUM EQUIVALENT VENT LENGTH - FT. (M) (CONTINUED)

**Table 3 – Maximum Equivalent Vent Length - Ft. (M)**

**4501 to 10,000 Ft. (0 to 1370 M) Altitude**

**NOTE:** Maximum Equivalent Vent Length (MEVL) includes standard and concentric vent termination and does NOT include elbows.

Use Table 2 - Deductions from Maximum Equivalent Vent Length to determine allowable vent length for each application.

Altitude FT (M) <sup>5</sup>	Unit Size	DIRECT VENT (2-PIPE) AND SINGLE-PIPE									
		Vent Pipe Diameter (in.) <sup>1</sup>									
		1-1/2		2		2-1/2		3		4	
<b>4501 to 5000 (1370 to 1524)</b>	40,000	33	(10.1)	171	(52.1)	196	(59.7)	NA <sup>2</sup>		NA	
	60,000	20	(6.1)	111	(33.8)	198	(60.4)	221	(67.4)	NA	
	80,000	13	(4.0)	54	(16.5)	146	(44.5)	195	(59.4)	216	(65.8)
	100,000	NA		16	(4.9)	91	(27.7)	200	(61.0)	222	(67.7)
	120,000	NA		NA		NA		80	(24.4)	211	(64.3)
	140,000 <sup>4</sup>	NA		NA		NA		60	(18.3)	134	(40.8)
<b>5001 to 6000 (1524 to 1829)</b>	40,000	27	(8.2)	158	(48.2)	179	(54.6)	NA		NA	
	60,000	16	(4.9)	103	(31.4)	186	(56.7)	207	(63.1)	NA	
	80,000	11	(3.4)	49	(14.9)	137	(41.8)	183	(55.8)	200	(61.0)
	100,000	NA		12	(3.7)	85	(25.9)	188	(57.3)	208	(63.4)
	120,000	NA		NA		NA		74	(22.6)	199	(60.7)
	140,000 <sup>4</sup>	NA		NA		NA		50	(15.2)	109	(33.2)
<b>6001 to 7000 (1829 to 2134)</b>	40,000	21	(6.4)	145	(44.2)	162	(49.4)	NA		NA	
	60,000	13	(4.0)	96	(29.3)	174	(53.0)	194	(59.1)	NA	
	80,000	NA		44	(13.4)	120	(36.6)	171	(52.1)	185	(56.4)
	100,000	NA		10	(3.0)	79	(24.1)	178	(54.3)	195	(59.4)
	120,000	NA		NA		NA		68	(20.7)	187	(57.0)
	140,000 <sup>4</sup>	NA		NA		NA		41	(12.5)	87	(26.5)
<b>7001 to 8000 (2134 to 2438)</b>	40,000	15	(4.6)	133	(40.5)	146	(44.5)	NA		NA	
	60,000	10	(3.0)	89	(27.1)	163	(49.7)	181	(55.2)	NA	
	80,000	NA		40	(12.2)	120	(36.6)	159	(48.5)	170	(51.8)
	100,000	NA		NA		73	(22.3)	167	(50.9)	182	(55.5)
	120,000	NA		NA		NA		62	(18.9)	175	(53.3)
	140,000 <sup>4</sup>	NA		NA		NA		32	(9.8)	63	(19.2)
<b>8001 to 9000 (2438 to 2743)</b>	40,000	10	(3.0)	121	(36.9)	130	(39.6)	NA		NA	
	60,000	7	(2.1)	82	(25.0)	152	(46.3)	168	(51.2)	NA	
	80,000	NA		35	(10.7)	111	(33.8)	148	(45.1)	156	(47.5)
	100,000	NA		NA		67	(20.4)	157	(47.9)	170	(51.8)
	120,000	NA		NA		NA		56	(17.1)	164	(50.0)
	140,000 <sup>4</sup>	NA		NA		NA		23	(7.0)	42	(12.8)
<b>9001 to 10,000 (2743 to 3048)</b>	40,000	5	(1.5)	110	(33.5)	115	(35.1)	NA		NA	
	60,000	NA		76	(23.2)	142	(43.3)	156	(47.5)	NA	
	80,000	NA		31	(9.4)	103	(31.4)	137	(41.8)	142	(43.3)
	100,000	NA		NA		62	(18.9)	147	(44.8)	157	(47.9)
	120,000	NA		NA		NA		51	(15.5)	153	(46.6)
	140,000 <sup>4</sup>	NA		NA		NA		16	(4.9)	20	(6.1)

**NOTES:**

1. Use only the vent pipe sizes shown for each furnace. It is NOT necessary to choose the smallest diameter pipe possible for venting.
2. NA – Not allowed. Pressure switch will not close, or flame disturbance may result.
3. Total equivalent vent lengths under 10' for 40,000 BTUH furnaces from 0 to 2000 ft. (0 to 610 M) above sea level require use of an outlet choke plate .  
**Failure to use an outlet choke when required may result in flame disturbance or flame sense lockout.**
4. Not all furnace families include 140,000 BTUH input models.
5. Vent sizing for Canadian installations over 4500 ft (1370 M) above sea level are subject to acceptance by local authorities having jurisdiction.
6. Size both the combustion air and vent pipe independently, then use the larger size for both pipes.
7. Assume the two 45° elbows equal one 90° elbow. Wide radius elbows are desirable and may be required in some cases.
8. Elbow and pipe sections within the furnace casing and at the vent termination should not be included in vent length or elbow count.
9. The minimum pipe length is 5 ft. (1.5 M) linear feet (meters) for all applications.
10. Use 3–in. (76 mm) diameter vent termination kit for installations requiring 4–in. (102 mm) diameter pipe.

59SP5A



# MAXIMUM ALLOWABLE EXPOSED VENT LENGTHS INSULATION TABLE - FT. (M)

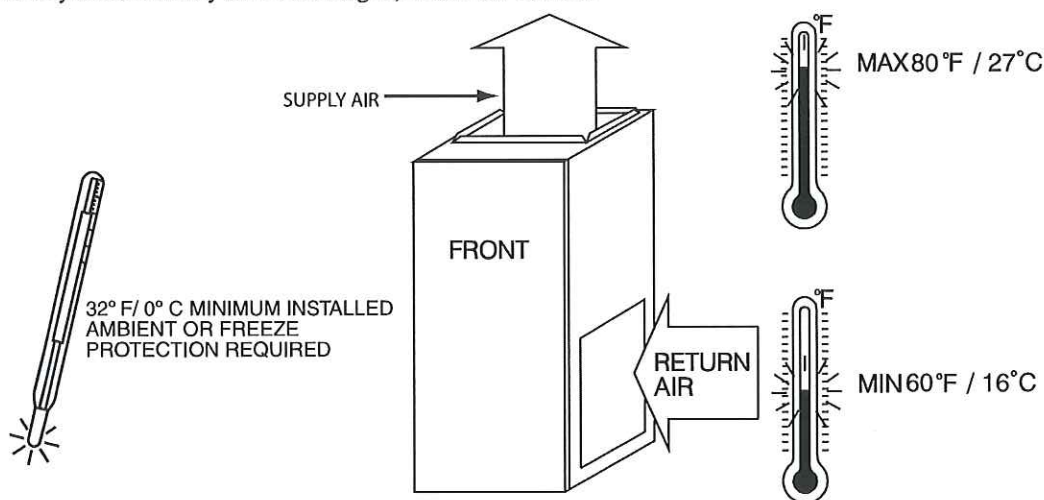
Maximum Length of Uninsulated and Insulated Vent Pipe-Ft (M)																	
Single Stage Furnace Input	Winter Design Temp °F (°C)	Pipe Length in Ft. & M	No Insulation					3/8-in. (9.5 mm) Insulation					1/2-in. (12.7 mm) Insulation				
			Pipe Diameter-inches (mm)					Pipe Diameter-inches (mm)					Pipe Diameter-inches (mm)				
			1 1/2 (38)	2 (51)	2 1/2 (64)	3 (76)	4 (102)	1 1/2 (38)	2 (51)	2 1/2 (64)	3 (76)	4 (102)	1 1/2 (38)	2 (51)	2 1/2 (64)	3 (76)	4 (102)
40000	20 (-10)	Ft.	48	42	42	N/A	N/A	50	122	111	N/A	N/A	50	144	130	N/A	N/A
		M	14.6	12.8	12.8	N/A	N/A	15.2	37.2	33.8	N/A	N/A	15.2	43.9	39.6	N/A	N/A
	0 (-20)	Ft.	25	19	17	N/A	N/A	50	75	66	N/A	N/A	50	90	79	N/A	N/A
		M	7.6	5.8	5.2	N/A	N/A	15.2	22.9	20.1	N/A	N/A	15.2	27.4	24.1	N/A	N/A
	-20 (-30)	Ft.	14	7	5	N/A	N/A	50	52	45	N/A	N/A	50	64	55	N/A	N/A
		M	4.3	2.1	1.5	N/A	N/A	15.2	15.8	13.7	N/A	N/A	15.2	19.5	16.8	N/A	N/A
	-40 (-40)	Ft.	7	0	0	N/A	N/A	50	38	31	N/A	N/A	50	48	40	N/A	N/A
		M	2.1	0.0	0.0	N/A	N/A	15.2	11.6	9.4	N/A	N/A	15.2	14.6	12.2	N/A	N/A
60000	20 (-10)	Ft.	30	61	61	54	N/A	30	135	163	142	N/A	30	135	191	166	N/A
		M	9.1	18.6	18.6	16.5	N/A	9.1	41.1	49.7	43.3	N/A	9.1	41.1	58.2	50.6	N/A
	0 (-20)	Ft.	30	31	30	23	N/A	30	113	100	85	N/A	30	135	120	101	N/A
		M	9.1	9.4	9.1	7.0	N/A	9.1	34.4	30.5	25.9	N/A	9.1	41.1	36.6	30.8	N/A
	-20 (-30)	Ft.	24	17	15	7	N/A	30	81	70	57	N/A	30	98	85	70	N/A
		M	7.3	5.2	4.6	2.1	N/A	9.1	24.7	21.3	17.4	N/A	9.1	29.9	25.9	21.3	N/A
	-40 (-40)	Ft.	15	8	5	0	N/A	30	61	52	40	N/A	30	75	64	51	N/A
		M	4.6	2.4	1.5	0.0	N/A	9.1	18.6	15.8	12.2	N/A	9.1	22.9	19.5	15.5	N/A
80000	20 (-10)	Ft.	20	70	78	70	60	20	70	175	183	154	20	70	175	215	181
		M	6.1	21.3	23.8	21.3	18.3	6.1	21.3	53.3	55.8	46.9	6.1	21.3	53.3	65.5	55.2
	0 (-20)	Ft.	20	42	41	33	21	20	70	132	111	89	20	70	157	133	107
		M	6.1	12.8	12.5	10.1	6.4	6.1	21.3	40.2	33.8	27.1	6.1	21.3	47.9	40.5	32.6
	-20 (-30)	Ft.	20	25	23	14	1	20	70	94	77	57	20	70	113	94	71
		M	6.1	7.6	7.0	4.3	0.3	6.1	21.3	28.7	23.5	17.4	6.1	21.3	34.4	28.7	21.6
	-40 (-40)	Ft.	20	14	12	3	0	20	70	71	56	38	20	70	86	70	50
		M	6.1	4.3	3.7	0.9	0.0	6.1	21.3	21.6	17.1	11.6	6.1	21.3	26.2	21.3	15.2
100000	20 (-10)	Ft.	N/A	25	99	89	78	N/A	25	110	233	265	N/A	25	110	235	229
		M	N/A	7.6	30.2	27.1	23.8	N/A	7.6	33.5	71.0	80.8	N/A	7.6	33.5	71.6	69.8
	0 (-20)	Ft.	N/A	25	55	46	33	N/A	25	110	145	117	N/A	25	110	173	140
		M	N/A	7.6	16.8	14.0	10.1	N/A	7.6	33.5	44.2	35.7	N/A	7.6	33.5	52.7	42.7
	-20 (-30)	Ft.	N/A	25	34	24	11	N/A	25	110	103	79	N/A	25	110	124	97
		M	N/A	7.6	10.4	7.3	3.4	N/A	7.6	33.5	31.4	24.1	N/A	7.6	33.5	37.8	29.6
	-40 (-40)	Ft.	N/A	23	20	11	0	N/A	25	95	77	55	N/A	25	110	94	70
		M	N/A	7.0	6.1	3.4	0.0	N/A	7.6	29.0	23.5	16.8	N/A	7.6	33.5	28.7	21.3
120000	20 (-10)	Ft.	N/A	N/A	15	99	86	N/A	N/A	15	100	219	N/A	N/A	15	100	250
		M	N/A	N/A	4.6	30.2	26.2	N/A	N/A	4.6	30.5	66.8	N/A	N/A	4.6	30.5	76.2
	0 (-20)	Ft.	N/A	N/A	15	51	38	N/A	N/A	15	100	130	N/A	N/A	15	100	156
		M	N/A	N/A	4.6	15.5	11.6	N/A	N/A	4.6	30.5	39.6	N/A	N/A	4.6	30.5	47.5
	-20 (-30)	Ft.	N/A	N/A	15	28	14	N/A	N/A	15	100	88	N/A	N/A	15	100	108
		M	N/A	N/A	4.6	8.5	4.3	N/A	N/A	4.6	30.5	26.8	N/A	N/A	4.6	30.5	32.9
	-40 (-40)	Ft.	N/A	N/A	15	14	0	N/A	N/A	15	85	62	N/A	N/A	15	100	79
		M	N/A	N/A	4.6	4.3	0.0	N/A	N/A	4.6	25.9	18.9	N/A	N/A	4.6	30.5	24.1
140000	20 (-10)	Ft.	N/A	N/A	10	90	99	N/A	N/A	10	90	210	N/A	N/A	10	90	210
		M	N/A	N/A	3.0	27.4	30.2	N/A	N/A	3.0	27.4	64.0	N/A	N/A	3.0	27.4	64.0
	0 (-20)	Ft.	N/A	N/A	10	61	47	N/A	N/A	10	90	153	N/A	N/A	10	90	183
		M	N/A	N/A	3.0	18.6	14.3	N/A	N/A	3.0	27.4	46.6	N/A	N/A	3.0	27.4	55.8
	-20 (-30)	Ft.	N/A	N/A	10	35	21	N/A	N/A	10	90	104	N/A	N/A	10	90	128
		M	N/A	N/A	3.0	10.7	6.4	N/A	N/A	3.0	27.4	31.7	N/A	N/A	3.0	27.4	39.0
	-40 (-40)	Ft.	N/A	N/A	10	20	NA	N/A	N/A	10	90	75	N/A	N/A	10	90	94
		M	N/A	N/A	3.0	6.1	NA	N/A	N/A	3.0	27.4	22.9	N/A	N/A	3.0	27.4	28.7

\*Not all families have these models.



## RETURN AIR TEMPERATURE

This furnace is designed for continuous return-air minimum temperature of 60°F (15°C) db or intermittent operation down to 55°F (13°C) db such as when used with a night setback thermometer. Return-air temperature must not exceed 80°F (27°C) db. Failure to follow these return air limits may affect reliability of heat exchangers, motors and controls.



A10490

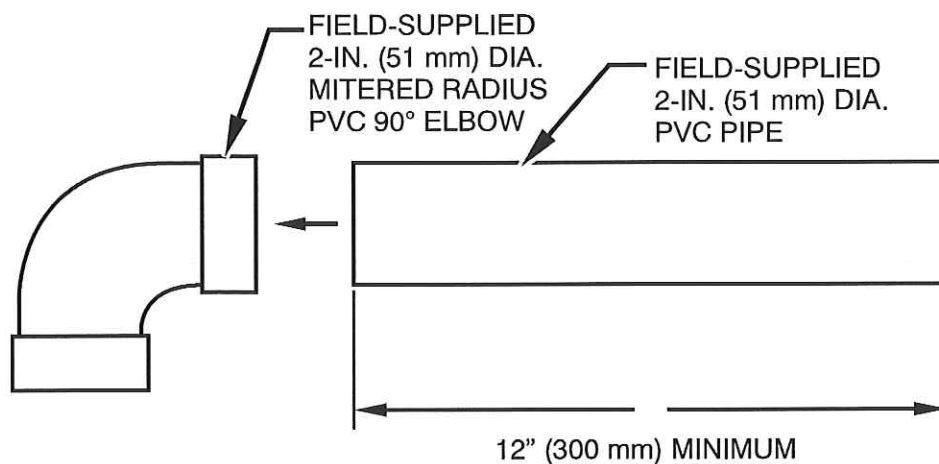
## MINIMUM CLEARANCES TO COMBUSTIBLE MATERIALS

POSITION	CLEARANCE
Rear	0 (0 mm)
Front (Combustion air openings in furnace and in structure)	1 in. (25 mm)
Required for service**	24 in. (610 mm)*
All Sides of Supply Plenum**	1 in. (25 mm)
Sides	0 (0 mm)
Vent	0 (0 mm)
Top of Furnace	1 in. (25 mm)

\* Recommended

\*\*Consult your local building codes

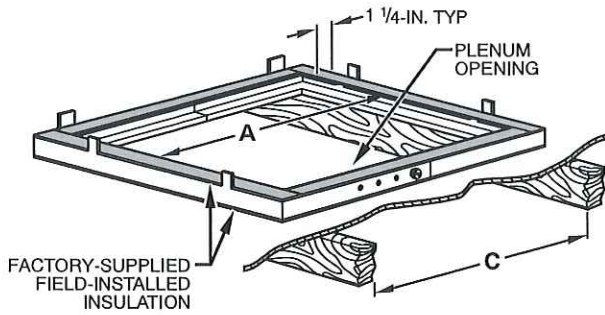
## COMBUSTION-AIR PIPE FOR NON-DIRECT (1-PIPE) VENT APPLICATION



**NOTE:** See Installation Instructions for specific venting configurations.

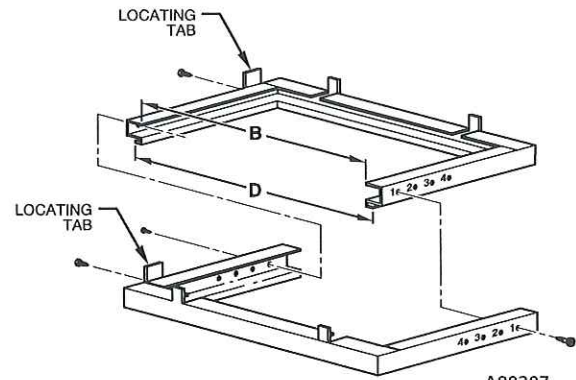
A12376

## DOWNFLOW SUBBASE



A97427

Assembled

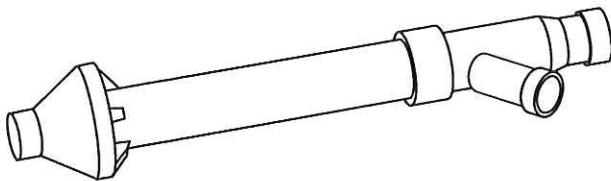


A88207

Disassembled

DIMENSIONS (IN. / MM)						
FURNACE CASING WIDTH	FURNACE IN DOWNFLOW APPLICATION	PLENUM OPENING*		FLOOR OPENING		HOLE NO. FOR WIDTH ADJUSTMENT
		A	B	C	D	
14-3/16 (360)	Furnace with or without Cased Coil Assembly or Coil Box	11-3/16 (322)	19 (483)	13-7/16 (341)	20-5/8 (600)	4
17-1/2 (445)	Furnace with or without Cased Coil Assembly or Coil Box	15-1/8 (384)	19 (483)	16-3/4 (426)	20-5/8 (600)	3
21 (533)	Furnace with or without Cased Coil Assembly or Coil Box	18-5/8 (396)	19 (483)	20-1/4 (514)	20-5/8 (600)	2
24-1/2 (622)	Furnace with or without Cased Coil Assembly or Coil Box	22-1/8 (562)	19 (483)	23-3/4 (603)	20-5/8 (600)	1

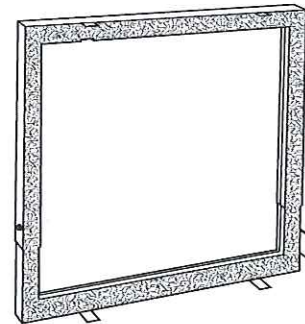
\*The plenum should be constructed 1/4-in. (6 mm) smaller in width and depth than the plenum dimensions shown above.



Concentric Vent Kit

A93086

A concentric vent kit allows vent and combustion-air pipes to terminate through a single exit in a roof or side wall. One pipe runs inside the other allowing venting through the inner pipe and combustion air to be drawn in through the outer pipe.

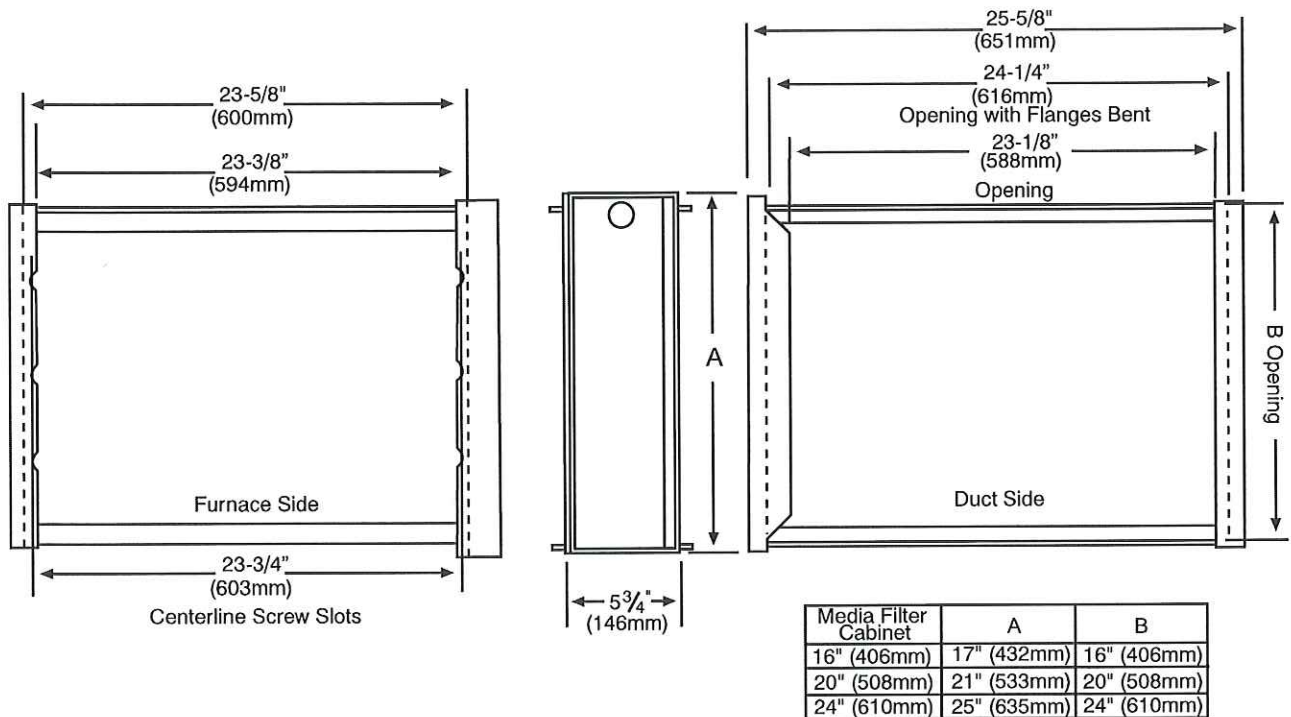


Downflow Subbase

A88202

One base fits all furnace sizes. The base is designed to be installed between the furnace and a combustible floor when no coil box is used or when a coil box other than a Carrier cased coil is used. It is CSA design certified for use with Carrier branded furnaces when installed in downflow applications.

## MEDIA FILTER CABINET

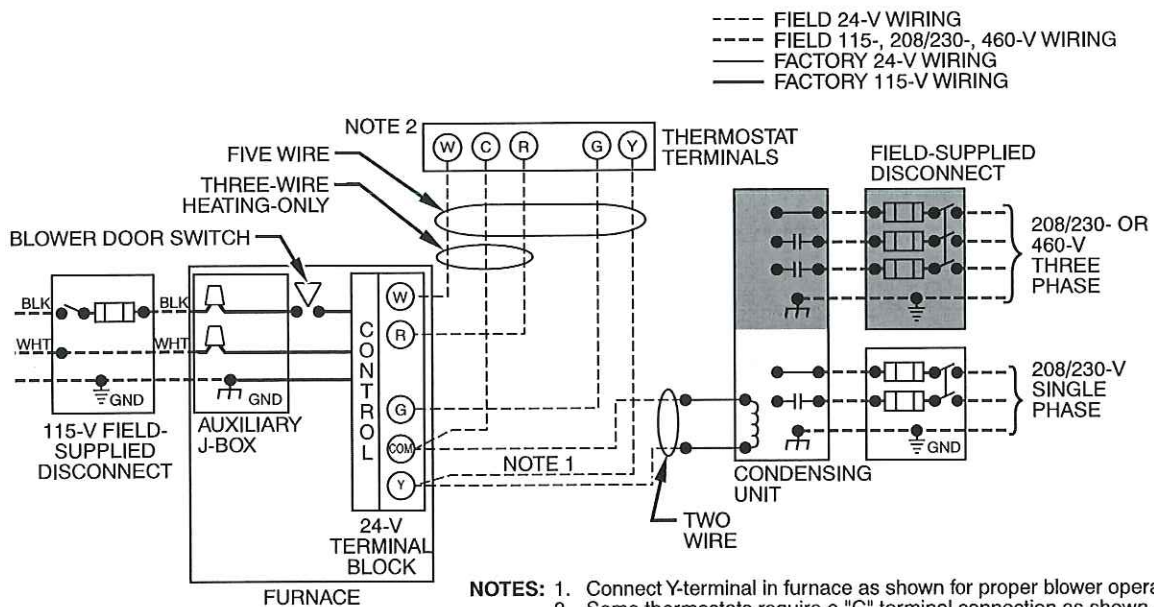


59SP5A

NOTE: Media cabinet is matched to the bottom opening on furnace. May also be used for side return.

A12428

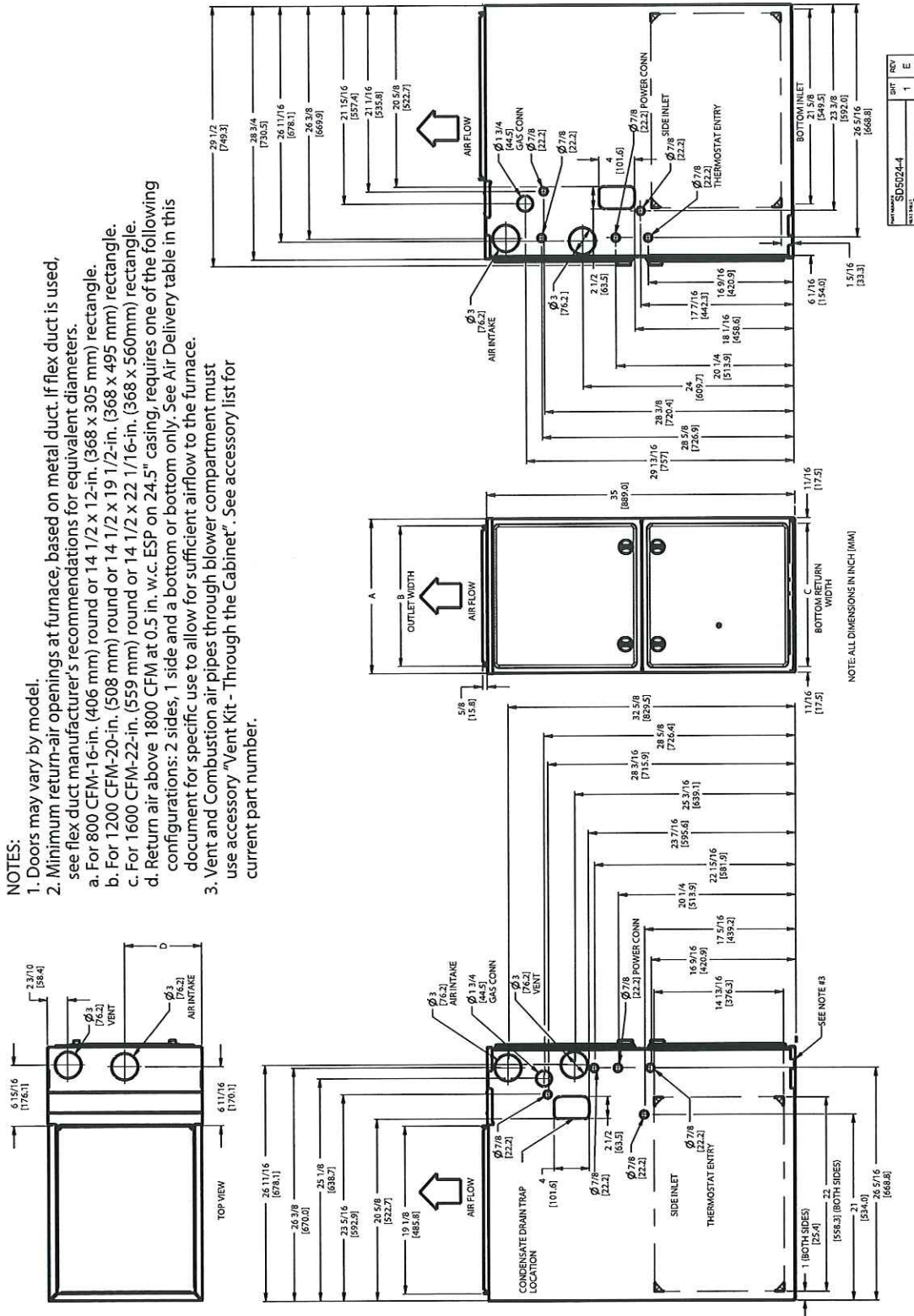
## TYPICAL WIRING SCHEMATIC



A11387



## DIMENSIONAL DRAWING



59SP5 FURNACE SIZE	A	B	C	D	SHIP WT. LB (KG)
	CABINET WIDTH	OUTLET WIDTH	BOTTOM INLET WIDTH	AIR INTAKE	
040-10	14-3/16 (361)	12-1/2 (319)	12-9/16 (322)	7-1/8 (181)	120.0 (54.4)
060-12					130.5 (59.2)
040-12	17-1/2 (445)	15-7/8 (403)	16 (406)	8-3/4 (222)	131.0 (59.4)
060-14					141.0 (64.0)
080-16					145.0 (65.8)
080-20					155.5 (70.5)
100-20	21 (533)	19-3/8 (492)	19-1/2 (495)	10-1/2 (267)	156.5 (71.0)
120-22	24-1/2 (622)	22-7/8 (581)	23 (584)	12-1/4 (311)	189.5 (86.0)

## GUIDE SPECIFICATIONS

### General

#### System Description

Furnish a \_\_\_\_\_ 4-way multipoise gas-fired condensing furnace for use with natural gas or propane (factory-authorized conversion kit required for propane); furnish external media cabinet for use with accessory media filter or standard filter.

#### Quality Assurance

Unit will be designed, tested and constructed to the current ANSI Z 21.47/CSA 2.3 design standard for gas-fired central furnaces.

Unit will be third party certified by CSA to the current ANSI Z 21.47/CSA 2.3 design standard for gas-fired central furnaces. Unit will carry the CSA Blue Star® and Blue Flame® labels. Unit efficiency testing will be performed per the current DOE test procedure as listed in the Federal Register.

Unit will be certified for capacity and efficiency and listed in the latest AHRI Consumer's Directory of Certified Efficiency Ratings.

Unit will carry the current Federal Trade Commission Energy Guide efficiency label.

#### Delivery, Storage, and Handling

Unit will be shipped as single package only and is stored and handled per unit manufacturer's recommendations.

#### Warranty (for inclusion by specifying engineer)

U.S. and Canada only. Warranty certificate available upon request.

#### Equipment

##### Blower Wheel and ECM Blower Motor

Galvanized blower wheel shall be centrifugal type, statically and dynamically balanced. Blower motor of ECM type shall be permanently lubricated with sealed ball bearings, of \_\_\_\_\_ hp, and have multiple speeds from 600-1200 RPM operating only when 24-VAC motor inputs are provided. Blower motor shall be direct drive and soft mounted to the blower housing to reduce vibration transmission.

##### Filters

Furnace shall have reusable-type filters. Filter shall be \_\_\_\_\_ in. (mm) X \_\_\_\_\_ in. (mm). An accessory highly efficient Media Filter is available as an option. \_\_\_\_\_ Media Filter.

##### Casing

Casing shall be of .030 in. thickness minimum, pre-painted galvanized steel.

##### Draft Inducer Motor

Draft inducer motor shall be single-speed PSC design.

#### Primary Heat Exchangers

Primary heat exchangers shall be 3-Pass corrosion-resistant aluminized steel of fold-and-crimp sectional design and applied operating under negative pressure.

#### Secondary Heat Exchangers

Secondary heat exchangers shall be of a stainless steel flow-through of fin-and-tube design and applied operating under negative pressure.

#### Controls

Controls shall include a micro-processor-based integrated electronic control board with at least 16 service troubleshooting codes displayed via diagnostic flashing LED light on the control, a self-test feature that checks all major functions of the furnace, and a replaceable automotive-type circuit protection fuse. Multiple operational settings available, including blower speeds for high heat, low cooling, high cooling and continuous fan. Continuous fan speed may be adjusted from the thermostat. Features will also include temporary reduced airflow in the cooling mode for improved dehumidification when a TP-PRH edge® is selected as the thermostat.

#### Operating Characteristics

Heating capacity shall be \_\_\_\_\_ Btuh input; \_\_\_\_\_ Btuh output capacity.

Fuel Gas Efficiency shall be \_\_\_\_\_ AFUE.

Air delivery shall be \_\_\_\_\_ cfm minimum at 0.50 in. W.C. external static pressure.

Dimensions shall be: depth \_\_\_\_\_ in. (mm); width \_\_\_\_\_ in. (mm); height \_\_\_\_\_ in. (mm) (casing only). Height shall be \_\_\_\_\_ in. (mm) with A/C coil and \_\_\_\_\_ in. (mm) overall with plenum.

#### Electrical Requirements

Electrical supply shall be 115 volts, 60 Hz, single-phase (nominal). Minimum wire size shall be \_\_\_\_\_ AWG; maximum fuse size of HACR-type designated circuit breaker shall be \_\_\_\_\_ amps.

#### Special Features

Refer to section of the product data identifying accessories and descriptions for specific features and available enhancements.

59SP5A

2/1/2018  
CS

Trustee Acct#108200290884

Town of Newmarket  
Capital Reserve  
Buildings and Improvements  
FY 17/18

	<u>Year</u> <u>Replace</u>	<u>Replace</u> <u>Cost</u>	<u>Balance</u> <u>7/1/2017</u>	<u>FY 17/18</u> <u>Additions</u>	<u>Resolution</u> <u>Number</u>	<u>Withdrawals</u> <u>FY 17/18</u> <u>Resolutions</u>	<u>Remaining</u> <u>Balance</u>
<u>Buildings and Facilities</u>			154,850	50,000			204,850
HVAC Town Hall & Recreation Center		0					0
Roof Replacement		150,000			17/18-21	-4,970	-4,970
Exterior Painting of Bldgs(to be considered exp next year)		109,764					0
Flooring		0					0
Town Hall First Floor Bathrooms(Completed)		0					0
Fire Station Second Floor		286,000			15/16-40	1,306	1,306
Windows Community Center							0
Door Rplcmnt & Opnr addtn Sunrise Center					17/18-10	-9,950	-9,950
Surveillance & Control Access System					17/18-14	-23,712	-23,712
Council Chambers Improvements					17/18-15	-27,385	-27,385
Town Hall Improvements					17/18-16	-13,000	-13,000
Town Hall Security					17/18-24	-10,100	-10,100
Security Recreation 1/2 cost					17/18-26	-8,618	-8,618
Interest			36,957	383			37,340
Total		545,764	191,807	50,383		-96,429	145,760



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Centers, Security Systems



**Hunterdon County, NJ**  
**Educational Services Commission**  
**Tax-Exempt Small Ticket Lease Program**  
**#34HUNCCP**

More info and documents &gt;

**2016 - 2017 MLC Exhibit Events & Presentations**

March 29-31, 2017	New York State Government Finance Association Albany Marriott, Albany, NY
May 2017	Tri-State Association of School Business Officials Sheraton, Burlington, VT
June 4-7, 2017	New York State Association for School Business Officials Lake Placid, NY

**MLC Presentations & Documents**

- The Power of Lease-Purchase Financing (PDF)
- New Jersey Lease Program - 2017 Rate Chart
- New Jersey Lease Program - General Info
- Small Ticket Program - Financing Documents

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- Lease Financing and the Tight Credit Market
- MLC - Recent Projects & Deals
- Comments from satisfied customers >

## Simple Loan Calculator

	Enter values
Loan amount	\$ 149,794.00
Annual interest rate	3.98%
Loan period in years	10
Start date of loan	7/1/2018
Monthly payment	\$ 1,515.17
Number of payments	120
Total interest	\$ 32,026.16
Total cost of loan	\$ 181,820.16

No.	Payment Date	Beginning Balance	Payment	Principal	Interest	Ending Balance
1	8/1/2018	\$ 149,794.00	\$ 1,515.17	\$ 1,018.35	\$ 496.82	\$ 148,775.65
2	9/1/2018	\$ 148,775.65	\$ 1,515.17	\$ 1,021.73	\$ 493.44	\$ 147,753.92
3	10/1/2018	\$ 147,753.92	\$ 1,515.17	\$ 1,025.12	\$ 490.05	\$ 146,728.80
4	11/1/2018	\$ 146,728.80	\$ 1,515.17	\$ 1,028.52	\$ 486.65	\$ 145,700.28
5	12/1/2018	\$ 145,700.28	\$ 1,515.17	\$ 1,031.93	\$ 483.24	\$ 144,668.36
6	1/1/2019	\$ 144,668.36	\$ 1,515.17	\$ 1,035.35	\$ 479.82	\$ 143,633.00
7	2/1/2019	\$ 143,633.00	\$ 1,515.17	\$ 1,038.79	\$ 476.38	\$ 142,594.22
8	3/1/2019	\$ 142,594.22	\$ 1,515.17	\$ 1,042.23	\$ 472.94	\$ 141,551.99
9	4/1/2019	\$ 141,551.99	\$ 1,515.17	\$ 1,045.69	\$ 469.48	\$ 140,506.30
10	5/1/2019	\$ 140,506.30	\$ 1,515.17	\$ 1,049.16	\$ 466.01	\$ 139,457.15
11	6/1/2019	\$ 139,457.15	\$ 1,515.17	\$ 1,052.64	\$ 462.53	\$ 138,404.51
12	7/1/2019	\$ 138,404.51	\$ 1,515.17	\$ 1,056.13	\$ 459.04	\$ 137,348.39
13	8/1/2019	\$ 137,348.39	\$ 1,515.17	\$ 1,059.63	\$ 455.54	\$ 136,288.76
14	9/1/2019	\$ 136,288.76	\$ 1,515.17	\$ 1,063.14	\$ 452.02	\$ 135,225.61
15	10/1/2019	\$ 135,225.61	\$ 1,515.17	\$ 1,066.67	\$ 448.50	\$ 134,158.94
16	11/1/2019	\$ 134,158.94	\$ 1,515.17	\$ 1,070.21	\$ 444.96	\$ 133,088.73
17	12/1/2019	\$ 133,088.73	\$ 1,515.17	\$ 1,073.76	\$ 441.41	\$ 132,014.98
18	1/1/2020	\$ 132,014.98	\$ 1,515.17	\$ 1,077.32	\$ 437.85	\$ 130,937.66
19	2/1/2020	\$ 130,937.66	\$ 1,515.17	\$ 1,080.89	\$ 434.28	\$ 129,856.77
20	3/1/2020	\$ 129,856.77	\$ 1,515.17	\$ 1,084.48	\$ 430.69	\$ 128,772.29
21	4/1/2020	\$ 128,772.29	\$ 1,515.17	\$ 1,088.07	\$ 427.09	\$ 127,684.22
22	5/1/2020	\$ 127,684.22	\$ 1,515.17	\$ 1,091.68	\$ 423.49	\$ 126,592.54
23	6/1/2020	\$ 126,592.54	\$ 1,515.17	\$ 1,095.30	\$ 419.87	\$ 125,497.23
24	7/1/2020	\$ 125,497.23	\$ 1,515.17	\$ 1,098.94	\$ 416.23	\$ 124,398.30
25	8/1/2020	\$ 124,398.30	\$ 1,515.17	\$ 1,102.58	\$ 412.59	\$ 123,295.72
26	9/1/2020	\$ 123,295.72	\$ 1,515.17	\$ 1,106.24	\$ 408.93	\$ 122,189.48



No.	Payment Date	Beginning Balance	Payment	Principal	Interest	Ending Balance
27	10/1/2020	\$ 122,189.48	\$ 1,515.17	\$ 1,109.91	\$ 405.26	\$ 121,079.57
28	11/1/2020	\$ 121,079.57	\$ 1,515.17	\$ 1,113.59	\$ 401.58	\$ 119,965.99
29	12/1/2020	\$ 119,965.99	\$ 1,515.17	\$ 1,117.28	\$ 397.89	\$ 118,848.71
30	1/1/2021	\$ 118,848.71	\$ 1,515.17	\$ 1,120.99	\$ 394.18	\$ 117,727.72
31	2/1/2021	\$ 117,727.72	\$ 1,515.17	\$ 1,124.70	\$ 390.46	\$ 116,603.02
32	3/1/2021	\$ 116,603.02	\$ 1,515.17	\$ 1,128.43	\$ 386.73	\$ 115,474.58
33	4/1/2021	\$ 115,474.58	\$ 1,515.17	\$ 1,132.18	\$ 382.99	\$ 114,342.40
34	5/1/2021	\$ 114,342.40	\$ 1,515.17	\$ 1,135.93	\$ 379.24	\$ 113,206.47
35	6/1/2021	\$ 113,206.47	\$ 1,515.17	\$ 1,139.70	\$ 375.47	\$ 112,066.77
36	7/1/2021	\$ 112,066.77	\$ 1,515.17	\$ 1,143.48	\$ 371.69	\$ 110,923.29
37	8/1/2021	\$ 110,923.29	\$ 1,515.17	\$ 1,147.27	\$ 367.90	\$ 109,776.02
38	9/1/2021	\$ 109,776.02	\$ 1,515.17	\$ 1,151.08	\$ 364.09	\$ 108,624.94
39	10/1/2021	\$ 108,624.94	\$ 1,515.17	\$ 1,154.90	\$ 360.27	\$ 107,470.05
40	11/1/2021	\$ 107,470.05	\$ 1,515.17	\$ 1,158.73	\$ 356.44	\$ 106,311.32
41	12/1/2021	\$ 106,311.32	\$ 1,515.17	\$ 1,162.57	\$ 352.60	\$ 105,148.75
42	1/1/2022	\$ 105,148.75	\$ 1,515.17	\$ 1,166.42	\$ 348.74	\$ 103,982.33
43	2/1/2022	\$ 103,982.33	\$ 1,515.17	\$ 1,170.29	\$ 344.87	\$ 102,812.03
44	3/1/2022	\$ 102,812.03	\$ 1,515.17	\$ 1,174.17	\$ 340.99	\$ 101,637.86
45	4/1/2022	\$ 101,637.86	\$ 1,515.17	\$ 1,178.07	\$ 337.10	\$ 100,459.79
46	5/1/2022	\$ 100,459.79	\$ 1,515.17	\$ 1,181.98	\$ 333.19	\$ 99,277.81
47	6/1/2022	\$ 99,277.81	\$ 1,515.17	\$ 1,185.90	\$ 329.27	\$ 98,091.92
48	7/1/2022	\$ 98,091.92	\$ 1,515.17	\$ 1,189.83	\$ 325.34	\$ 96,902.09
49	8/1/2022	\$ 96,902.09	\$ 1,515.17	\$ 1,193.78	\$ 321.39	\$ 95,708.31
50	9/1/2022	\$ 95,708.31	\$ 1,515.17	\$ 1,197.74	\$ 317.43	\$ 94,510.58
51	10/1/2022	\$ 94,510.58	\$ 1,515.17	\$ 1,201.71	\$ 313.46	\$ 93,308.87
52	11/1/2022	\$ 93,308.87	\$ 1,515.17	\$ 1,205.69	\$ 309.47	\$ 92,103.17
53	12/1/2022	\$ 92,103.17	\$ 1,515.17	\$ 1,209.69	\$ 305.48	\$ 90,893.48
54	1/1/2023	\$ 90,893.48	\$ 1,515.17	\$ 1,213.70	\$ 301.46	\$ 89,679.78
55	2/1/2023	\$ 89,679.78	\$ 1,515.17	\$ 1,217.73	\$ 297.44	\$ 88,462.05
56	3/1/2023	\$ 88,462.05	\$ 1,515.17	\$ 1,221.77	\$ 293.40	\$ 87,240.28
57	4/1/2023	\$ 87,240.28	\$ 1,515.17	\$ 1,225.82	\$ 289.35	\$ 86,014.46
58	5/1/2023	\$ 86,014.46	\$ 1,515.17	\$ 1,229.89	\$ 285.28	\$ 84,784.57
59	6/1/2023	\$ 84,784.57	\$ 1,515.17	\$ 1,233.97	\$ 281.20	\$ 83,550.60
60	7/1/2023	\$ 83,550.60	\$ 1,515.17	\$ 1,238.06	\$ 277.11	\$ 82,312.55
61	8/1/2023	\$ 82,312.55	\$ 1,515.17	\$ 1,242.16	\$ 273.00	\$ 81,070.38
62	9/1/2023	\$ 81,070.38	\$ 1,515.17	\$ 1,246.28	\$ 268.88	\$ 79,824.10
63	10/1/2023	\$ 79,824.10	\$ 1,515.17	\$ 1,250.42	\$ 264.75	\$ 78,573.68
64	11/1/2023	\$ 78,573.68	\$ 1,515.17	\$ 1,254.57	\$ 260.60	\$ 77,319.11
65	12/1/2023	\$ 77,319.11	\$ 1,515.17	\$ 1,258.73	\$ 256.44	\$ 76,060.39



No.	Payment Date	Beginning Balance	Payment	Principal	Interest	Ending Balance
66	1/1/2024	\$ 76,060.39	\$ 1,515.17	\$ 1,262.90	\$ 252.27	\$ 74,797.49
67	2/1/2024	\$ 74,797.49	\$ 1,515.17	\$ 1,267.09	\$ 248.08	\$ 73,530.40
68	3/1/2024	\$ 73,530.40	\$ 1,515.17	\$ 1,271.29	\$ 243.88	\$ 72,259.10
69	4/1/2024	\$ 72,259.10	\$ 1,515.17	\$ 1,275.51	\$ 239.66	\$ 70,983.59
70	5/1/2024	\$ 70,983.59	\$ 1,515.17	\$ 1,279.74	\$ 235.43	\$ 69,703.86
71	6/1/2024	\$ 69,703.86	\$ 1,515.17	\$ 1,283.98	\$ 231.18	\$ 68,419.87
72	7/1/2024	\$ 68,419.87	\$ 1,515.17	\$ 1,288.24	\$ 226.93	\$ 67,131.63
73	8/1/2024	\$ 67,131.63	\$ 1,515.17	\$ 1,292.51	\$ 222.65	\$ 65,839.12
74	9/1/2024	\$ 65,839.12	\$ 1,515.17	\$ 1,296.80	\$ 218.37	\$ 64,542.31
75	10/1/2024	\$ 64,542.31	\$ 1,515.17	\$ 1,301.10	\$ 214.07	\$ 63,241.21
76	11/1/2024	\$ 63,241.21	\$ 1,515.17	\$ 1,305.42	\$ 209.75	\$ 61,935.79
77	12/1/2024	\$ 61,935.79	\$ 1,515.17	\$ 1,309.75	\$ 205.42	\$ 60,626.05
78	1/1/2025	\$ 60,626.05	\$ 1,515.17	\$ 1,314.09	\$ 201.08	\$ 59,311.95
79	2/1/2025	\$ 59,311.95	\$ 1,515.17	\$ 1,318.45	\$ 196.72	\$ 57,993.50
80	3/1/2025	\$ 57,993.50	\$ 1,515.17	\$ 1,322.82	\$ 192.35	\$ 56,670.68
81	4/1/2025	\$ 56,670.68	\$ 1,515.17	\$ 1,327.21	\$ 187.96	\$ 55,343.47
82	5/1/2025	\$ 55,343.47	\$ 1,515.17	\$ 1,331.61	\$ 183.56	\$ 54,011.86
83	6/1/2025	\$ 54,011.86	\$ 1,515.17	\$ 1,336.03	\$ 179.14	\$ 52,675.83
84	7/1/2025	\$ 52,675.83	\$ 1,515.17	\$ 1,340.46	\$ 174.71	\$ 51,335.37
85	8/1/2025	\$ 51,335.37	\$ 1,515.17	\$ 1,344.91	\$ 170.26	\$ 49,990.46
86	9/1/2025	\$ 49,990.46	\$ 1,515.17	\$ 1,349.37	\$ 165.80	\$ 48,641.10
87	10/1/2025	\$ 48,641.10	\$ 1,515.17	\$ 1,353.84	\$ 161.33	\$ 47,287.26
88	11/1/2025	\$ 47,287.26	\$ 1,515.17	\$ 1,358.33	\$ 156.84	\$ 45,928.92
89	12/1/2025	\$ 45,928.92	\$ 1,515.17	\$ 1,362.84	\$ 152.33	\$ 44,566.09
90	1/1/2026	\$ 44,566.09	\$ 1,515.17	\$ 1,367.36	\$ 147.81	\$ 43,198.73
91	2/1/2026	\$ 43,198.73	\$ 1,515.17	\$ 1,371.89	\$ 143.28	\$ 41,826.84
92	3/1/2026	\$ 41,826.84	\$ 1,515.17	\$ 1,376.44	\$ 138.73	\$ 40,450.40
93	4/1/2026	\$ 40,450.40	\$ 1,515.17	\$ 1,381.01	\$ 134.16	\$ 39,069.39
94	5/1/2026	\$ 39,069.39	\$ 1,515.17	\$ 1,385.59	\$ 129.58	\$ 37,683.80
95	6/1/2026	\$ 37,683.80	\$ 1,515.17	\$ 1,390.18	\$ 124.98	\$ 36,293.62
96	7/1/2026	\$ 36,293.62	\$ 1,515.17	\$ 1,394.79	\$ 120.37	\$ 34,898.82
97	8/1/2026	\$ 34,898.82	\$ 1,515.17	\$ 1,399.42	\$ 115.75	\$ 33,499.40
98	9/1/2026	\$ 33,499.40	\$ 1,515.17	\$ 1,404.06	\$ 111.11	\$ 32,095.34
99	10/1/2026	\$ 32,095.34	\$ 1,515.17	\$ 1,408.72	\$ 106.45	\$ 30,686.62
100	11/1/2026	\$ 30,686.62	\$ 1,515.17	\$ 1,413.39	\$ 101.78	\$ 29,273.23
101	12/1/2026	\$ 29,273.23	\$ 1,515.17	\$ 1,418.08	\$ 97.09	\$ 27,855.15
102	1/1/2027	\$ 27,855.15	\$ 1,515.17	\$ 1,422.78	\$ 92.39	\$ 26,432.37
103	2/1/2027	\$ 26,432.37	\$ 1,515.17	\$ 1,427.50	\$ 87.67	\$ 25,004.87
104	3/1/2027	\$ 25,004.87	\$ 1,515.17	\$ 1,432.24	\$ 82.93	\$ 23,572.64

No.	Payment Date	Beginning Balance	Payment	Principal	Interest	Ending Balance
105	4/1/2027	\$ 23,572.64	\$ 1,515.17	\$ 1,436.99	\$ 78.18	\$ 22,135.65
106	5/1/2027	\$ 22,135.65	\$ 1,515.17	\$ 1,441.75	\$ 73.42	\$ 20,693.90
107	6/1/2027	\$ 20,693.90	\$ 1,515.17	\$ 1,446.53	\$ 68.63	\$ 19,247.37
108	7/1/2027	\$ 19,247.37	\$ 1,515.17	\$ 1,451.33	\$ 63.84	\$ 17,796.03
109	8/1/2027	\$ 17,796.03	\$ 1,515.17	\$ 1,456.14	\$ 59.02	\$ 16,339.89
110	9/1/2027	\$ 16,339.89	\$ 1,515.17	\$ 1,460.97	\$ 54.19	\$ 14,878.92
111	10/1/2027	\$ 14,878.92	\$ 1,515.17	\$ 1,465.82	\$ 49.35	\$ 13,413.10
112	11/1/2027	\$ 13,413.10	\$ 1,515.17	\$ 1,470.68	\$ 44.49	\$ 11,942.41
113	12/1/2027	\$ 11,942.41	\$ 1,515.17	\$ 1,475.56	\$ 39.61	\$ 10,466.86
114	1/1/2028	\$ 10,466.86	\$ 1,515.17	\$ 1,480.45	\$ 34.72	\$ 8,986.40
115	2/1/2028	\$ 8,986.40	\$ 1,515.17	\$ 1,485.36	\$ 29.80	\$ 7,501.04
116	3/1/2028	\$ 7,501.04	\$ 1,515.17	\$ 1,490.29	\$ 24.88	\$ 6,010.75
117	4/1/2028	\$ 6,010.75	\$ 1,515.17	\$ 1,495.23	\$ 19.94	\$ 4,515.52
118	5/1/2028	\$ 4,515.52	\$ 1,515.17	\$ 1,500.19	\$ 14.98	\$ 3,015.33
119	6/1/2028	\$ 3,015.33	\$ 1,515.17	\$ 1,505.17	\$ 10.00	\$ 1,510.16
120	7/1/2028	\$ 1,510.16	\$ 1,515.17	\$ 1,510.16	\$ 5.01	\$ 0.00

March 1, 2018 (revised)

Steve Fournier  
Town Administrator  
Town of Newmarket  
186 Main Street  
Newmarket, NH 03857

Dear Steve,

Municipal Leasing Consultants, an independent woman-owned business, is pleased to present the following proposal to lease certain capital equipment pursuant to the following terms and conditions:

**LESSOR:** Municipal Leasing Consultants, its Agents or Assignee

**LESSEE:** Town of Newmarket, NH

**EQUIPMENT:** EPC with Energy Efficiency Investments

**EQUIPMENT COST:** \$188,844.00 – (\$14,050 Rebate & \$25,000.00 down payment) = \$149,794.00

**PAYMENT STRUCTURES:** **Tax-Exempt Lease Purchase**  
**Ten (10) Years – Annual/Arrears**  
Ten (10) Annual Payments of \$18,459.05  
First payment of \$20,067.20 due One Year After Acceptance and Annual thereafter  
(i.e. \$149,794.00 x .123230 = \$18,459.05)

**RATE:** **3.99%.**

*As part of the proposal process, we encourage you to contact us to discuss the intricacies of our proposal and your specific goals. There are many variations available to our proposed financing structure, which can be "fine tuned" as our dialog progresses.*

The preceding costs are estimates and thus, the payment amount would be changed in proportion to the actual cost. The Vendor(s) will be paid upon the Lessee's authorization and the execution of mutually acceptable documentation.

THE ABOVE QUOTES ARE FIXED FROM MARCH 1, 2018 TO APRIL 1, 2018 IN ANTICIPATION OF **CLOSING / FUNDING** BY THIS DATE. THEREAFTER, THE RATE WILL FLOAT AND NOT BE LOCKED IN UNTIL DOCUMENTS ARE PREPARED FOR CLOSING AND WILL BE BASED ON THE LIKE TERM SWAP RATES.

**EQUIPMENT ACCEPTANCE DATE:**

This proposal is based on both the assumption and the condition that any and all equipment will be delivered to and accepted by Lessee prior to February 15, 2019.



**OPTION AT LEASE EXPIRATION:**

At the lease expiration, the Lessee shall have the right to purchase the equipment for One dollar (\$1.00), assuming the lease is not in default and all terms and conditions of the lease have been met.

**NET LEASE:**

This lease will be a net lease transaction with maintenance, acceptable insurance coverage, taxes and any legal fees the responsibility of the Lessee.

**LEASE AMORTIZATION SCHEDULE:**

Amortization schedules with separate principal and interest cost breakdown will be provided with the final documentation.

**WARRANTIES:**

Lessor is bidding only as to the provision of lease purchase financing for the purchase cost of the equipment and will have no responsibility to the Lessee or any other person for the selection, furnishing, delivery, servicing or maintaining of the equipment. All equipment manufacturer or vendor warranties will be passed to the Lessee under the agreement.

**NON-APPROPRIATION:**

The lease payments shall be subject to annual appropriation for each fiscal year.

**BANK OR NON-BANK QUALIFICATION:**

Lessee reasonably anticipates the total amount of tax-exempt obligations (other than private activity bonds) to be issued by Lessee during calendar year 2018, will not exceed ten million (\$10,000,000.00) dollars.

**FINANCIAL STATEMENTS:**

*If applicable*, Lessee shall furnish Lessor with its financial statement for the last three (3) fiscal years and its current year fiscal budget.

**AUTHORIZED SIGNORS:**

The Lessee's governing board shall provide MLC with its resolution or ordinance authorizing this Agreement and shall designate the individual(s) to execute all necessary documents used therein.

**LEGAL OPINION:**

The Lessee's counsel shall furnish MLC with an opinion of counsel letter covering this transaction and the documents used herein.

**REIMBURSEMENT:**

If Lessee intends to be reimbursed for any equipment cost associated with this agreement, intent for reimbursement from the proceeds of this Agreement must be evidenced, and must qualify under the Treasury Regulation Section 1.150.2.

**DOCUMENTATION:**

All documentation will be provided by Lessor, its Agents or Assignee, and must be satisfactory to all parties concerned.

**ESCROW FUNDING:**

- *If applicable*, an interest-bearing escrow account will be established to make disbursements. The proceeds of the lease will be deposited into an Escrow Account. The fee on this account will be \$250.00.

We will need the following prior to disbursements from escrow:

1. Payment Request and Acceptance Certificate signed by authorized signer
2. Vendor Invoice with payment instructions (wire or check)
3. W-9 for Vendor
4. Energy Project – Payment and Performance Bonds and an original Dual Obligee Rider listing the bank, signed by all parties
5. Insurance Certificate – Listing the applicable property and liability coverage and listing the lease number, equipment and any serial numbers.

**PREPAYMENT OPTION:**

The Lessee will have the option to prepay on any payment date for 102% of the remaining balance.

**BASIS OF PROPOSAL:**

This proposal is based upon financing being provided by Lessor and should not be construed nor relied upon as a commitment. Such a commitment is subject to formal credit review, approval and execution of mutually acceptable documentation. The contract, and not the proposal, will set forth the agreement between the parties.

We appreciate the opportunity to provide this proposal and look forward to working with you in the future. If the foregoing meets with the Town's approval, please date and sign the acceptance below and return the signed proposal to the undersigned via email or fax to 802-372-4775 and subsequently remit payment of \$695.00 for the Documentation Fee. Failure to consummate this transaction once credit approval is granted will result in a \$695.00 fee being assessed to the Town. Formal credit approval will be pursued upon receipt of the signed proposal and complete credit package. **Credit approval normally takes ten (10) to fourteen (14) business days.**

If you have any questions or need further information, please do not hesitate to contact me at 802-372-8435.

The foregoing is acknowledged and accepted as of the \_\_\_\_\_ day of \_\_\_\_\_, 2018.

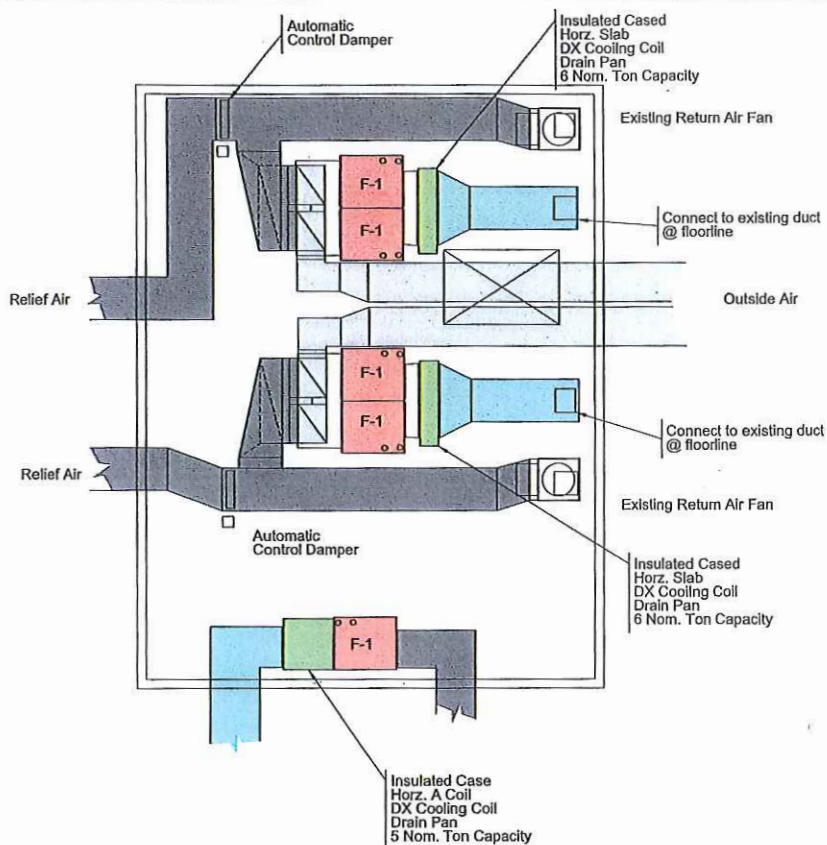
**Town of Newmarket, NH**

By: \_\_\_\_\_

Title: \_\_\_\_\_

Sincerely,  
Reneé Piché

Reneé M. Piché  
President



All duct shall be constructed in accordance with SMACNA standards and seal to class A rating. Ductwork shall be wrapped with R8 foil faced fiberglass insulation with staple sewn seams and foil taped.

Existing equipment shall be demo'd and removed

Reconnect existing fire alarm controls to equipment and interconnect smoke detector shutdown of the equipment

Include necessary gas piping to reconnect new furnaces

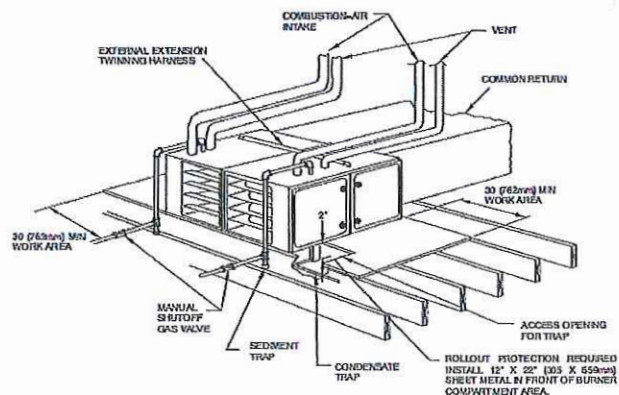
F-1 Carrier Condensing Gas Furnace  
Mod. 59SP5A  
120 MBH 96.6% Eff.  
1,825 CFM @0.7 ESP  
Flat Filter Section  
Mixing Box with Economizer Controls  
Carrier accessory twinning kit

PVC Combustion Air and Vent Exhaust up thru roof

Hang with neoprene vibration isolation

(Not Shown)  
(2) Condensing Unit  
Carrier 38AUZ  
6 ton nominal condensing unit with new refrigerant lines

(1) Condensing Unit  
Carrier  
5 ton nominal condensing unit



Starr Drive  
Merrimack, NH 03054  
603.423.6000

Newmarket Con  
Newmarket, NH  
HVAC Energy U

DRN: JMD  
DATE: Feb. 27, 2  
REV.: 0.1 - Prog



CHARTERED JANUARY 1, 1991

FOUNDED DECEMBER 15, 1727



**TOWN OF NEWMARKET, NEW HAMPSHIRE**  
**By the Newmarket Town Council**

**Resolution #2017/2018 - 36**

**Authorizing the Town Administrator to enter into an agreement with Siemens Industry, Inc. to replace a failed gas fired unit heater in the Police Department:**

- WHEREAS:** it has been determined that the existing unit heater has a cracked heat exchanger located in the Sally Port at the Police Station and requires replacement. The existing unit has been locked out for safety and a temporary electric space heater has been placed in the space, and
- WHEREAS:** the Director of Facilities requested a proposal from our HVAC Services provider to replace the failed unit heater, and
- WHEREAS:** the Police Station Sally Port requires replacement of the unit heater to provide heating to the space, and
- WHEREAS:** the Town Administrator recommends that the Town enters into an agreement with Siemens Industry, Inc. to replace the failed unit heater at a cost \$8,083.00.

**NOW, THEREFORE, BE IT RESOLVED BY THE NEWMARKET TOWN COUNCIL THAT:**

*The Town Council authorizes the Town Administrator to enter into an agreement with Siemens Industry, Inc. to replace the failed unit heater in the amount of \$8,083.00 utilizing funds from the Buildings and Grounds Capital Reserve funds.*

*First Reading: March 7, 2018*

*Second Reading: March 7, 2018*

*Approval:*

Approved: \_\_\_\_\_  
Dale Pike, Chair Town Council

A True Copy Attest: \_\_\_\_\_  
Terri Littlefield, Town Clerk



TOWN HALL  
186 MAIN STREET  
NEWMARKET, NH 03857

TEL: (603) 659-3617  
FAX: (603) 659-8508

FOUNDED DECEMBER 15, 1727  
CHARTERED JANUARY 1, 1991

## TOWN OF NEWMARKET, NEW HAMPSHIRE


# STAFF REPORT

**DATE:** February 23, 2018

**TITLE:** Replacement of failed unit heater in the Police Station  
Resolution: 2017/2018-36

**PREPARED BY:** Greg Marles, Director of Facilities

**TOWN ADMINISTRATOR'S COMMENTS – RECOMMENDATION:**

I recommend its passage and request that rules be suspended to act on it this evening. 

**BACKGROUND:**

The gas fired unit heater in the Sally Port at the Police Department has a cracked heat exchanger and had to be locked off due to products of combustion entering the interior space. We have placed a temporary electric space heater to help protect the space from freezing.

**DISCUSSION:**

Our HVAC Service provider has provided us with a cost to replace this unit and bring the installation up to current gas code as well as disconnecting the old gas fired generator gas line that is connected to the unit heater gas feed. The generator is no longer in use and will be removed from the space at a later date for possible resale.

**FISCAL IMPACT:**

The fiscal impact would be \$8,083.00 with funding being obtained from the Buildings and Grounds Building Capitol Reserve fund.

**RECOMMENDATION:**

We are recommending that Siemens Industry, Inc. be awarded the replacement unit heater as our contract service provider. We are also requesting 1<sup>st</sup> reading approval as the space is only being served by a temporary electric space heater as the space does require heating.

**DOCUMENTS ATTACHED:**

Siemens Industry Inc. proposal submission

STAFF REPORT

# SIEMENS

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## PROPOSAL

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Newmarket Town Office  
Attn: Greg Marles  
186 Main Street  
Newmarket, NH 03857

Date: February 5, 2018  
Limiting Date: 90 Days

**Project: Police station Sterling Unit Heater**

**Proposal:** Siemens Industry, Inc. agrees to provide labor and material per attached scope of work. See the following page for details.

**Project Cost: \$8,083.00**

\*\* Financing is available upon request

by others

No wiring required

Wiring by Siemens Industry, Inc.

Wiring

*The Terms and Conditions of Sale shown on the attached are a part hereof*

**Terms of Payment:**

☒ 25 % in advance

☒ 100 % upon completion

☐ No Retainage

☒ Invoices due Net 30 Days

---

*Proposal Accepted:  
Siemens Industry, Inc.  
Is authorized to proceed with the work as proposed*

*Proposal Submitted:  
Siemens Industry, Inc.*

**Purchaser** \_\_\_\_\_

**Seller** Siemens Industry, Inc

**By** \_\_\_\_\_

**By** Darryl Joudrey

**Title** \_\_\_\_\_

**Title** Sales Account Manager

**Date** \_\_\_\_\_

**Date** 2/6/2018



# SIEMENS

## SCOPE OF WORK

Siemens Industry will provide labor and material to install a customer specified

Remo and Demo Old unit

Hang new unit and rehook venting gas piping and electrical

Add 5 inch b vent wall thimble to bring up to code

- Work to be performed during normal business days (M-F 7am- 5pm).

## EXCEPTIONS

This quote does NOT include:

- Overtime to perform the repair outside of normal business hours.

CHARTERED JANUARY 1, 1991

FOUNDED DECEMBER 15, 1727



**TOWN OF NEWMARKET, NEW HAMPSHIRE**  
**By the Newmarket Town Council**

**Resolution #2017/2018 - 37**

**Authorizing the Town Administrator enter into an agreement with Siemens Industry, Inc.**  
**to replace a failed gas fired unit in the Public Works Garage:**

- WHEREAS:** it has been determined that the existing unit heater has a cracked heat exchanger located in the Public Works Garage and requires replacement. The existing unit has been locked out for safety and the other units in the garage are helping to carry the heating load requirements, and
- WHEREAS:** the Director of Facilities requested a proposal from our HVAC Services provider to replace the failed unit heater, and
- WHEREAS:** the Public Works Garage requires replacement of the unit heater to provide heating to the garage space, and
- WHEREAS:** the Town Administrator recommends that the Town enters into an agreement with Siemens Industry, Inc. to replace the failed unit heater at a cost \$9,685.00.

**NOW, THEREFORE, BE IT RESOLVED BY THE NEWMARKET TOWN COUNCIL THAT:**

The Town Council authorizes the Town Administrator to enter into an agreement with Siemens Industry, Inc. to replace the failed unit heater in the amount of \$9,685.00 utilizing funds from the Buildings and Grounds Capital Reserve funds.

*First Reading:* March 7, 2018

*Second Reading:* March 7, 2018

*Approval:*

Approved: \_\_\_\_\_  
Dale Pike, Chair Town Council

A True Copy Attest: \_\_\_\_\_  
Terri Littlefield, Town Clerk



TOWN HALL  
186 MAIN STREET  
NEWMARKET, NH 03857

TEL: (603) 659-3617  
FAX: (603) 659-8508

FOUNDED DECEMBER 15, 1727  
CHARTERED JANUARY 1, 1991

## TOWN OF NEWMARKET, NEW HAMPSHIRE


# STAFF REPORT

**DATE:** February 23, 2018

**TITLE:** Replacement of failed unit heater in the Public Works Garage  
Resolution: 2017/2018-37

**PREPARED BY:** Greg Marles, Director of Facilities

**TOWN ADMINISTRATOR'S COMMENTS – RECOMMENDATION:**

I recommend passage of this resolution and request that the rules be suspended to act on it this evening. 

**BACKGROUND:**

One of the gas fired unit heaters in the Public Works Garage has a cracked heat exchanger and had to be locked off due to products of combustion entering the garage space. We are utilizing the other gas fired heaters in the garage space to help keep the space from freezing, but we are unable to maintain regular set point temperatures.

**DISCUSSION:**

Our HVAC Service provider has provided us with a cost to replace this unit and bring the installation up to current gas code as well as replacing a broken thermostat. The unit heater is suspended 15 plus feet above the floor and requires additional equipment to lower the old equipment and raise the new equipment into place.

**FISCAL IMPACT:**

The fiscal impact would be \$9,685.00 with funding being obtained from the Buildings and Grounds Building Capital Reserve fund.

**RECOMMENDATION:**

We are recommending that Siemens Industry, Inc. be awarded the replacement unit heater as our contract service provider. We are also requesting 1<sup>st</sup> reading approval as the space temperature is being maintained as best as possible by placing additional loads on other existing equipment.

**DOCUMENTS ATTACHED:**

Siemens Industry Inc. proposal submission



# SIEMENS

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## PROPOSAL

---

Newmarket Town Office  
Attn: Greg Marles  
186 Main Street  
Newmarket, NH 03857

Date: February 5, 2018  
Limiting Date: 90 Days

### Project: Public Works Building Modine Heater

**Proposal:** Siemens Industry, Inc. agrees to provide labor and material per attached scope of work. See the following page for details.

**Project Cost: \$9,685.00**

\*\* Financing is available upon request

by others

No wiring required

Wiring by Siemens Industry, Inc.

Wiring

*The Terms and Conditions of Sale shown on the attached are a part hereof*

### Terms of Payment:

☒

25 % in advance

☒

100 % upon completion

☐

No Retainage

☒

Invoices due Net 30 Days

---

*Proposal Accepted:  
Siemens Industry, Inc.  
Is authorized to proceed with the work as proposed*

*Proposal Submitted:  
Siemens Industry, Inc.*

**Purchaser** \_\_\_\_\_

**Seller** Siemens Industry, Inc

**By** \_\_\_\_\_

**By** Darryl Joudrey

**Title** \_\_\_\_\_

**Title** Sales Account Manager

**Date** \_\_\_\_\_

**Date** 2/6/2018

# SIEMENS

## SCOPE OF WORK

Siemens Industry will provide labor and material to install a customer specified

Remo and Demo Old unit

Hang new unit and rehook venting gas piping and electrical

Includes 19 foot scissor lift to install

- Work to be performed during normal business days (M-F 7am- 5pm).

## EXCEPTIONS

This quote does NOT include:

- Overtime to perform the repair outside of normal business hours.



**TOWN OF NEWMARKET, NEW HAMPSHIRE**  
**By the Newmarket Town Council**

**Resolution #2017/2018 - 38**  
**Fire Department Motorola Mobile Radios**

- WHEREAS,** the existing radios are 15 years old and are no longer supported by Motorola due to their age, and the only fix is to update them with current technology; and
- WHEREAS,** any fire or police agency in Rockingham County is eligible to get mobile radios at 50% off with free installation until July 31, 2018; and
- WHEREAS,** the Fire Department Capital Reserve Fund currently has \$185,086 available for equipment purchases.

**NOW, THEREFORE, BE IT RESOLVED BY THE NEWMARKET TOWN COUNCIL THAT:**

The Town Council authorize the purchase of six (6) Motorola mobile radios from 2-Way Communication Service in the amount of \$16,779.00.

*First Reading:*                      *March 7, 2018*

*Second Reading:*

*Approval:*

Approved: \_\_\_\_\_  
Dale Pike, Chair Newmarket Town Council

A True Copy Attest: \_\_\_\_\_  
Terri Littlefield, Town Clerk





TOWN HALL  
186 MAIN STREET  
NEWMARKET, NH 03857

TEL: (603) 659-3617  
FAX: (603) 659-8508

FOUNDED DECEMBER 15, 1727  
CHARTERED JANUARY 1, 1991

## TOWN OF NEWMARKET, NEW HAMPSHIRE

# STAFF REPORT

**DATE:** March 1, 2018

**TITLE:** Resolution #2017/2018-38 - Motorola Mobile Radios

**PREPARED BY:** Rick Malasky, Fire Chief

**TOWN ADMINISTRATOR'S COMMENTS – RECOMMENDATION:**

I recommend passage of this resolution.

**BACKGROUND:** The existing mobile radios are 15 years old and are no longer supported by Motorola due to their age. There have been recent operational issues with the radios and the only fix is to update them with current technology. The radios were in the capital reserve to be replaced this year.

**DISCUSSION:** Until July 31, 2018, any fire or police agency in Rockingham County is eligible to get mobile radios at 50% off with free installation due to a mistake with Motorola's software update for Rockingham County Dispatch. 2-Way Communications Service has the State bid pricing for the new Motorola radios. I have attached the supporting documentation from Motorola and 2-Way Communications Service.

**FISCAL IMPACT:** The Fire Department capital reserve account currently has \$185,086 available for equipment purchases.

**RECOMMENDATION:** I recommend that the Town Council approve the purchase of six Motorola mobile radios from 2-Way Communication Service in the amount of \$16,779.

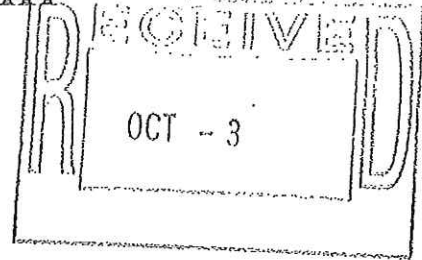
STAFF REPORT



Michael G. Hureau  
High Sheriff

# Office of the Sheriff

Rockingham County



September 28, 2017

Newmarket Fire Department  
Attn: Chief Rick Malasky  
4 Young Lane  
Newmarket, NH 03857

Dear Chief Malasky:

Recently, Rockingham County Sheriff's Office undertook a major project with Motorola to upgrade our radio transmitter sites for better reception when dispatching for fire calls. In doing so, Motorola suggested a changeover to Linear Simulcast Modulation on the digital (police) side to greatly improve coverage throughout the county. This changeover required a software reprogram to the radios. Motorola assured us that the changeover would work with all existing radios. Unfortunately, this was not the case.

Please refer to the attached letter from Motorola for a full explanation of what occurred during the changeover.

Because the modulation change was not possible with older Motorola Astro Spectra mobile radios, Motorola is offering a 50% discount off the retail price on new radios, along with free removal and installation. See the attached radio offers. This offer is being made to all police and fire agencies within Rockingham County. The program begins November 1, 2017 and ends July 31, 2018.

This is an opportunity for any police or fire agency within Rockingham County planning to purchase new mobile radios during this period to receive the discount. Regrettably, the offer does not apply to portable radios. I have been advised that all Motorola vendors are aware of this offer.

**\*\*\*For the police agencies for which Rockingham County dispatches, it is crucial that Motorola Astro Spectra mobile radios be removed from service prior to the modulation changeover. The changeover can only take place when all Motorola Astro Spectra mobile radios have been replaced or removed from service. \*\*\***

Please note that this modulation change only impacts the digital (police) side of the system. It does not affect the Seacoast fire (analog) side.

Please feel free to contact me with any questions or concerns.

Sincerely,

Michael G. Hureau

MGH/indb

Enclosures





## Upgrade Program

### ALL ROCKINGHAM COUNTY AGENCIES USING ASTRO SPECTRA MOBILE RADIOS

September 26<sup>th</sup>, 2017

TO: Rockingham County Municipalities

In Spring of 2017, Motorola Solutions and Rockingham County Sheriff's Department began making preparations to convert the existing radio system to Digital Linear Simulcast, with a goal to increase radio coverage and audio quality throughout the county. Multiple departments were made aware of this change before testing, and were asked by the Sheriff's Dept and Motorola to re-program their existing mobile radios for the new modulation. During testing it was discovered that agencies using the Astro Spectra Mobile Radios were unable to hear the audio when scanning the Rockingham County Sheriff's radio channel. We are aware that the scan feature is critical to the operation of departments that work and communicate with the Rockingham County Sheriff's Department.

Motorola looked into the issue and it was discovered that the scan function is not supported by our legacy Astro Mobiles in Linear Simulcast, as the Astro Spectra's stopped shipping in 2002 and stopped being supported as of 2010. As a result, the system will continue to operate in the old C4FM Modulation until all Astro Spectra mobiles in the county are upgraded.

We understand your frustration, and in an effort to help move this project forward Motorola is offering **50% off MSRP on our latest generation APX Mobile Radios, plus free removal and installation.** Included are spec sheets for the eligible mobiles: APX1500, APX4500, APX6500/II, APX7500 and APX8500.

This program is available 10/1/2017 through 7/31/2018. Signed PO's, or Notice to Proceed Letters must be received within this time period to be eligible for this offer. I encourage you to reach out to your Authorized Manufacturer Representative, or contact me directly, to determine what tier and options best suite your needs. We can provide pricing and lease packages available through Motorola. Only towns within the County and Rockingham County Sheriff's Dept. are eligible.

Sincerely,

A handwritten signature in black ink, appearing to read 'Scott Cruikshank'.

Scott Cruikshank  
MOTOROLA SOLUTIONS  
(978) 270-5505  
scott.cruikshank@motorolasolutions.com



**MOTOROLA**

Newmarket Fire Department

Chief Rick Malasky

4 Young Lane

Newmarket, NH 03857

603-436-9441

APX (Mobile Promo - Rock County Only)							
DESCRIPTION	MODEL	APC	QTY	LIST	DCST	D. EXT.	D. TOTAL
APX6500 VHF HIGH POWER	M25KTS9PVI1AN	527	2	\$ 2,984.00	50%	\$ 1,492.00	\$ 2,984.00
ADD: ASTRO CAI	G806	656	2	\$ 515.00	50%	\$ 257.50	\$ 515.00
ADD: CONVENTIONAL	G48	527	2	\$ 500.00	50%	\$ 250.00	\$ 500.00
ADD: APX OS CONTROL HEAD	G442	656	2	\$ 432.00	50%	\$ 216.00	\$ 432.00
APX Control Head Software	G444	656	2	\$ -	50%	\$ -	\$ -
ADD: Standard Palm Mic	W22	471	2	\$ 72.00	50%	\$ 36.00	\$ 72.00
ADD: 15w Water Resistant Speaker	G831	656	2	\$ 60.00	50%	\$ 30.00	\$ 60.00
ADD: 3 YEAR SFS	G24	185	2	\$ 131.00	0%	\$ 131.00	\$ 262.00
ADD: RF PREAMP	W12	656	2	\$ 66.00	50%	\$ 33.00	\$ 66.00
APX6500 VHF HIGH POWER	M25KTS9PVI1AN	527	4	\$ 2,984.00	50%	\$ 1,492.00	\$ 5,968.00
ADD: ASTRO CAI	G806	656	4	\$ 515.00	50%	\$ 257.50	\$ 1,030.00
ADD: CONVENTIONAL	G48	527	4	\$ 500.00	50%	\$ 250.00	\$ 1,000.00
ADD: APX OS CONTROL HEAD	G442	656	4	\$ 432.00	0%	\$ 432.00	\$ 1,728.00
APX Control Head Software	G444	656	4	\$ -	50%	\$ -	\$ -
ADD: DUAL-CONTROL HD HARDWARE	GA00092	565	4	\$ 570.00	50%	\$ 285.00	\$ 1,140.00
ADD: REMOTE MOUNT CBL 30 FEET	G610	G610	8	\$ 25.00	50%	\$ 12.50	\$ 100.00
ADD: Standard Palm Mic	W22	471	8	\$ 72.00	50%	\$ 36.00	\$ 288.00
ADD: 15w Water Resistant Speaker	G831	656	8	\$ 60.00	50%	\$ 30.00	\$ 240.00
ADD: 3 YEAR SFS	G24	185	4	\$ 131.00	50%	\$ 65.50	\$ 262.00
ADD: RF PREAMP	W12	656	4	\$ 66.00	50%	\$ 33.00	\$ 132.00
Installation of APX Radios	INSTALL	185	5	\$ 270.00	100%	\$ -	\$ -
<b>TOTAL</b>							<b>\$ 16,779.00</b>

Single Head

Dual Head

ORDERING

PLEASE CONTACT

Nicholas Hamel

[nhamel@2-way.biz](mailto:nhamel@2-way.biz)

DELIVERY

15-30 DAYS

NASPO Valuepoint

TERMS

NET 30 FROM INVOICE AS SHIPPED

# Newmarket Capital Improvement Program (CIP) Capital Equipment Request Form

Department:		Fire & Rescue	Type of Equipment:		Personal Protective Equipment									
Description of Equipment and Vehicles	Year Acquired	Replacement Cost	Year	Mileage	FY 16/17	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	Total			
1 (24) Scott SCBA	2016	213,940	2028		\$ 75,257.00	\$ 75,257.00	\$ 75,257.00	\$ 17,828.00	\$ 17,828.00	\$ 17,828.00	\$ 279,255.00			
2 (3) Thermal Imagers	2014	39,000	2024		\$ 3,900.00	\$ 3,900.00	\$ 3,900.00	\$ 3,900.00	\$ 3,900.00	\$ 3,900.00	\$ 23,400.00			
3 (8) Mobile Radios	2001	40,000	2017		\$ 40,000.00	\$ 4,000.00	\$ 4,000.00	\$ 4,000.00	\$ 4,000.00	\$ 4,000.00	\$ 60,000.00			
4 (30) Portable Radios	2003	126,000	2018		\$ 42,000.00	\$ 42,000.00	\$ 42,000.00	\$ 14,700.00	\$ 14,700.00	\$ 14,700.00	\$ 170,100.00			
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20														
Balance in Capital Reserve Fund		0	Proposed Funding		161157.00	125157.00	125157.00	40428.00	40428.00	40428.00	532755.00			

Items to be replaced in FY 16/17	Make/Model	Previous Year Repair/Maintenance Cost	Estimated Disposable Value
1 (8) Mobile Radios	Motorola	\$ - 5,249.00	N/A
2 (10) Portable Radios	Motorola	\$ 7,236.00	N/A
3			
4			

2/1/2018

CS

Trustee Acct # 108200290877

Town of Newmarket  
Capital Reserve  
Fire Dept. Equipment & Vehicle Replacement  
FY 17/18

	<u>Year Acquired</u>	<u>Year of Vehicle</u>	<u>Year Replace</u>	<u>Replace Cost</u>	<u>Balance 7/1/2017</u>	<u>FY 17/18 Additions</u>	<u>Resolution Number</u>	<u>Withdrawals FY 17/18 Resolutions</u>	<u>Remaining Balance</u>
<u>Fire Vehicle</u>									
E1 - Freightliner FL70 Pumper	1998/1999	1999	2018/2019	500,000	121,066	50,000			171,066
L2 HME	2009/2010	2009	2029/2030	700,000					0
Tanker 4 Spartan	2005/2006	2006	2025/2026	500,000					0
F1 - Ford F350 (Forestry)	2005	2005/2006	2023/2024	85,000					0
Thermal Imaging Cameras			2017/2018	20,000			17/18-07	-19,550	0
Zodiac Rescue Boat									-19,550
<u>Fire Equipment</u>									
Thermal Imager (3)	2014		2023/2024	39,000					0
24 - Scott SCBA @ 6,000 2nd yr	2016		2027/2028	213,940					0
24 - Scott SCBA @ 6,000 3rd yr									0
8- Mobile Radios	2001		2016/2018	40,000					0
35 - Portable Radios @ 3,900	2003		2017/2018	126,000					0
Interest					33,019	551			33,570
Total				2,223,940	154,085	50,551		-19,550	185,086

Lease purchase Scott SCBA's two more years on lease \$150,513.95 deducted from 15/16 capital reserve not in bank statement





**TOWN OF NEWMARKET, NEW HAMPSHIRE**  
**By the Newmarket Town Council**

**Resolution #2017/2018 - 39**

**Purchase 2018 Ford F350 4X4 Truck with Plow**

- WHEREAS,** Truck 4 is a 2004 Ford 250 4X4 with a plow with 141,978 miles. Repairs to the truck for State inspection this year would exceed \$10,000.00; and
- WHEREAS,** the State Bid Price from Grappone Ford for a 2018 Ford F350 pickup truck with a plow is \$35,389.
- WHEREAS,** the Public Works Capital Reserve Fund currently has \$331,309 available for equipment purchase.

**NOW, THEREFORE, BE IT BE RESOLVED BY THE NEWMARKET TOWN COUNCIL, THAT:**

The Town Council authorize the purchase of the 2018 Ford F350 truck with plow from Grappone Ford for \$35,389.

*First Reading: March 7, 2018*

*Second Reading:*

*Approval:*

Approved: \_\_\_\_\_  
Dale Pike, Chair Newmarket Town Council

A True Copy Attest: \_\_\_\_\_  
Terri Littlefield, Town Clerk



TOWN HALL  
186 MAIN STREET  
NEWMARKET, NH 03857

TEL: (603) 659-3617  
FAX: (603) 659-8508

FOUNDED DECEMBER 15, 1727  
CHARTERED JANUARY 1, 1991

## TOWN OF NEWMARKET, NEW HAMPSHIRE


# STAFF REPORT

**DATE:** March 1, 2018

**TITLE:** Resolution #2017/2018-39 - 2018 Ford F350 4X4 Truck with Plow

**PREPARED BY:** Rick Malasky, Director Public Works

**TOWN ADMINISTRATOR'S COMMENTS – RECOMMENDATION:**

I recommend passage of this resolution 

**BACKGROUND:** Truck 4 is a 2004 Ford F250 4X4 with a plow with 141,978 miles. This truck has been scheduled to be replaced on a 12- year schedule, however we were able to get two more years out of it than expected. Auto Excellence has evaluated the truck and recommends replacing it. Repairs to get the truck to pass inspection this year would exceed \$10,000.

**DISCUSSION:** I received State Bid Price from Grappone Ford for a new Ford F350 pickup truck with a plow for \$35,389. The current 2004 Ford F250 will be sold in the spring at the state auction in Concord. I have attached a letter from Auto Excellence recommending not repairing this truck but replacing it.

**FISCAL IMPACT:** The Public Works Capital Reserve Account currently has \$331,309 available for equipment purchases.

**RECOMMENDATION:** I recommend that the Town Council approves the purchase of the 2018 Ford F350 with plow from Grappone Ford for \$35,389

STAFF REPORT



Grappone Ford  
530 Route 3A, Bow, New Hampshire, 033043104  
Office: 603-224-2501  
Fax: 603-226-8266

Rick Malasky  
Town of Newmarket  
186 Main St  
Newmarket, NH 03857  
Office: 603-765-1106  
Email: rmalasky@newmarketnh.gov

Re: Vehicle Proposal

Hi Rick,

February 20th, 2018

Per your request, quote for 2018 Ford F-350 XL Regular Cab 4x4 Pickup. Quote will include Fisher 8.5' Ft XV2 Stainless Steel plow installed on truck. I have attached a vehicle profile for you to review, let me know if you need anything else. State Bid Pricing. Thank you .

State Bid Price "less Diesel Engine"	\$25,582
All Terrain Tires	165
Electronic-Locking Axle	390
Power Group	915
Trailer Brake Controller	270
Running Boards	320
LED Clearance Lights	95
Spray In Bedliner	540
Upfitter Switches	165
Sync "Bluetooth"	365
Fisher 8.5' XV2 Stainless Steel Plow	6,582

Total Price: \$35,389

Sincerely,

Jeff Harsin  
Fleet Mgr  
603-226-8010  
jharsin@grappone.com



Auto Excellence  
20 North Main Street  
Newmarket, N.H 03857  
603-659-8300

February 21, 2018

To whom it may concern,

In regards to Truck #4- 2004 Ford F-250

Miles: 141,990

Plate: G17141

Auto Excellence recommends that the truck be replaced. It will not pass inspection. We would need to replace the transmission lines and replace the bed due to rusting out. It also needs both front fenders replaced. Also needs floor board repair.

Estimate for repair: \$5,500.00

# Newmarket Capital Improvement Program (CIP) Capital Equipment Request Form

Department:			Type of Equipment:									
	Description of Equipment and Vehicles	Year Acquired	Replacement		Mileage	FY 16/17	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	Total
			Cost	Year								
1	#1 Ford F350 w/plow	2015	35,000	2025/2026	15,235	3500.00	3500.00	3500.00	3500.00	3500.00	3500.00	21000.00
2	#4 Ford F250 w/plow	2004	35,000	2015/2016	126,623	3500.00	3500.00	3500.00	3500.00	3500.00	3500.00	147623.00
3	#10 Ford F450 One Ton w/plow	2008	75,000	2018/2019	48,348	7500.00	7500.00	7500.00	7500.00	7500.00	7500.00	45000.00
4	#20 Ford F450 One Ton w/plow	2003	75,000	2013/2014	76,594	7500.00	7500.00	7500.00	7500.00	7500.00	7500.00	45000.00
5	#14 John Deere Loader	2006	95,000	2017/2018	3,657	9500.00	9500.00	9500.00	9500.00	9500.00	9500.00	57000.00
6	#32 John Deere Backhoe	2013	95,000	2023/2024	632	9500.00	9500.00	9500.00	9500.00	9500.00	9500.00	57000.00
7	#5 Freightliner Dump/Plow/Sander	2005	146,000	2016/2017	42,788	12166.00	12166.00	12166.00	12166.00	12166.00	12166.00	72996.00
8	#6 Intl. Dump/Plow/Sander	2015	146,000	2016/2017	1,530	12166.00	12166.00	12166.00	12166.00	12166.00	12166.00	72996.00
9	#7 Freightliner Dump/Plow/Sander	2008	146,000	2020/2021	24,255	12166.00	12166.00	12166.00	12166.00	12166.00	12166.00	72996.00
10	#9 Intl. Dump/Plow/Sander	2012	146,000	2024/2025	11,652	12166.00	12166.00	12166.00	12166.00	12166.00	12166.00	72996.00
11	#11 Freightliner Dump/Plow/Sander	2005	146,000	2017/2018	46,015	12166.00	12166.00	12166.00	12166.00	12166.00	12166.00	72996.00
12	#17 Johnson Sweeper	1999	160,000	2019/2020	2,064	8000.00	8000.00	8000.00	8000.00	8000.00	8000.00	48000.00
13	#21 Trackless MT-5 Tractor	2013	140,000	2023/2024	582	14000.00	14000.00	14000.00	14000.00	14000.00	14000.00	84000.00
14	#42 Trackless MT-5 Tractor	2010	140,000	2020/2021	1,138	14000.00	14000.00	14000.00	14000.00	14000.00	14000.00	84000.00
15	#16 Mack Roll-off	1993	140,000	2015/2016	364,453	9334.00	9334.00	9334.00	9334.00	9334.00	9334.00	56004.00
16	#24 Mahindra Tractor	2015	30,000	2030/2031	80	1667.00	1667.00	1667.00	1667.00	1667.00	1667.00	10002.00
17	Silverado 1500 Pickup	2015	24,000	2028/2029	160	2000.00	2000.00	2000.00	2000.00	2000.00	2000.00	12000.00
18	#38 Bucket Truck	1993	80,000	2014/2015	116,597	4000.00	4000.00	4000.00	4000.00	4000.00	4000.00	24000.00
19	#15 Ford F150 Pickup	2011	24,000	2023/2024	21,750	2000.00	2000.00	2000.00	2000.00	2000.00	2000.00	12000.00
20	#47 Intl. Vac-Con	2004	88,000	2016/2017	6,692	7334.00	7334.00	7334.00	7334.00	7334.00	7334.00	44004.00
Total Funding						164165.00	164165.00	164165.00	164165.00	164165.00	164165.00	1111613.00
Items to be replaced in FY 16/17			Make/Model		Previous Year Repair/Maintenance Cost		Estimated Disposable Value					
1	#38 Bucket Truck	Chevy 3500		\$ 985.00		\$ 500.00						
2	#16 Mack Roll-off	Mack		\$ 9,188.00		\$ 5,000.00						
3	#4 Ford F250 w/plow	Ford		\$ 1,759		\$ 1,500.00						
4												

2/1/2018  
CS

Town of Newmarket  
Capital Reserve  
Vehicle Replacement  
FY 17/18

Trustee Acct# 108200290876

	<u>Year Acquired</u>	<u>Year of Vehicle</u>	<u>Year Replace</u>	<u>Replace Cost</u>	<u>Balance 7/1/2017</u>	<u>FY 17/18 Additions</u>	<u>Resolution Number</u>	<u>Withdrawals FY 17/18 Resolutions</u>	<u>Remaining Balance</u>
<u>Public Works Vehicle</u>					414,905	50,000			464,905
1 Ford F250 w/plow	2015	2015	2025/2026	35,000					0
4 Ford F250 w/plow	2004	2004	2015/2016	35,000					0
10 Ford F450 One Ton w/plow	2008	2008	2018/2019	75,000					0
20 Ford F450 One Ton w/plow	2003	2003	2013/2014	75,000					0
14 John Deere Loader	2006/2007	2007	2017/2018	95,000					0
32 John Deere Backhoe	2013/2014	2013	2023/2024	95,000					0
5 Freightliner Body/Plow/Sander	2004/2005	2005	2016/2017	146,000					0
Intl. 7400 FA Dump Body/Plow/Sander	2014/2015	2015	2016/2017	146,000					0
7 Freightliner Dump Body/Plow/Sander	2007/2008	2008	2020/2021	146,000					0
9 Intl. Dump Body/Plow/Sander	2011/2012	2012	2024/2025	146,000					0
11 Freightliner Body/Plow/Sander	2004/2005	2005	2017/2018	146,000					0
17 Johnson Sweeper	1998/1999	1999	2019/2020	160,000					0
21 Trackless MT5 Tractor	2013/2014	2013	2023/2024	140,000					0
42 Trackless MT5 Tractor	2009/2010	2010	2020/2021	140,000					0
16 Mack Roll-Off	1993	1993	2015/2016	140,000					0
Mahindra 1538HC Tractor	2014/2015	2015	2030/2031	30,000					0
2015 Chevrolet Silverado	2014/2015	2015	2028/2029	24,000					0
38 Chevy Bucket Truck	1993	1993	2014/2015	80,000					0
15 Ford F150 2-wheel p/u	2011/2012	2012	2023/2024	24,000					0
47 International Vac-Con	2004/2005	2004	2016/2017	88,000					0
John Deere Mini Excavator			2017/2018	55,000					0
Interest					30,756	885			31,641
Total				2,021,000	445,661	50,885		-165,237	331,309





**TOWN OF NEWMARKET, NEW HAMPSHIRE**  
**By the Newmarket Town Council**

**Resolution #2017/2018 - 40**

**Authorizing the Town Administrator to withdraw \$25,000.00 from Buildings and Improvements Capital Reserve fund for required infrastructure repairs/upgrades to the Community Center:**

- WHEREAS:** it has been determined that our HVAC systems have exceeded their life expectancy and currently requires major repairs, our lighting systems are very inefficient, our building envelope needs sealing/insulation, and
- WHEREAS:** the Director of Facilities requested proposals for Performance Contracting Services from Energy Efficient Investments based on Resolution #2017/2018-25 for an energy audit after a major equipment failure, and
- WHEREAS:** the Town Administrator recommends that the Town authorize a withdrawal of \$25,000.00 from the Buildings and Improvements Capital Reserve fund to help offset the costs of needed infrastructure repairs/upgrades requested in Resolution #2017/2018-35, and

**NOW, THEREFORE, BE IT RESOLVED BY THE NEWMARKET TOWN COUNCIL THAT:**

The Town Council authorizes the Town Administrator withdraw \$25,000.00 from the Buildings and Improvements Capital Reserve fund to offset expenses related to necessary infrastructure repairs/upgrades to the Community Center requested under Resolution #2017/2018-35 adjusting the financial impact to \$149,794.00 including rebates. The current Buildings and Improvements Capital Reserve fund balance is \$145,760.00 not including Resolution #2017/2018-36 and #2017/2018-37 requested amounts of \$17,768.00. If all three (3) resolutions are approved the resulting balance will be \$102,992.00.

*First Reading:*        *March 7, 2018*

*Second Reading:*    *March 7, 2018*

*Approval:*

Approved: \_\_\_\_\_  
Dale Pike, Chair Town Council

A True Copy Attest: \_\_\_\_\_  
Terri Littlefield, Town Clerk



TOWN HALL  
186 MAIN STREET  
NEWMARKET, NH 03857

TEL: (603) 659-3617  
FAX: (603) 659-8508

FOUNDED DECEMBER 15, 1727  
CHARTERED JANUARY 1, 1991

## TOWN OF NEWMARKET, NEW HAMPSHIRE

# STAFF REPORT

**DATE:** March 1, 2018

**TITLE:** Community Center repairs/upgrades with Performance contracting  
Resolution: 2017/2018-35, 40 & 41

**PREPARED BY:** Greg Marles, Director of Facilities

**TOWN ADMINISTRATOR'S COMMENTS – RECOMMENDATION:**

I recommend its approval and request to suspend the rules to act on it this evening.

**BACKGROUND:**

We had one (1) of the three (3) warm air furnaces suffer a cracked heater exchanger allowing products of combustion to enter the space. We have shut down and locked out the failed equipment for safety reasons and have been limping along with two units to condition the space. The two units cannot keep up with the demands and several areas of the facility remain cold. We have looked into a replacement heat exchanger for the failed unit which has been currently out of production for the past 10 years. In order to replace the exchanger we would have to have one custom made with a 4 to 6 week delivery period. This unit is 25 years old, with one other matching unit the same age, and the last unit being 27 years old. We are very concerned with the operating condition of the two remaining units given the overall condition and age. All three of these units have been out of production for at least 10 years and have exceeded their life expectancy. This also holds true for two of the three outside condensing units that provide cooling for the building. We are asked Energy Efficient Investments to conduct a full energy audit for the facility looking at ways to use energy efficient upgrades to help offset the costs of replacing the heating and cooling systems within the building. They have provided us with energy saving options to upgrade the lighting, HVAC, and building envelope.

**DISCUSSION:**

Our existing HVAC and lighting systems are out of date, in need of major repairs, and they have exceeded their useful life expectancy. Energy Efficient Investments has provided us with a Performance Contract to upgrade these systems and tighten the building envelope for a total cost of \$188,844.00. These repairs/upgrades would provide us not only with energy savings but provide us with an average life expectancy of 25 years. We would also like to request that this project be approved in a single session as we do have a major equipment failure in the facility which puts us at risk in freezing conditions.



**FISCAL IMPACT:**

We recommend \$25,000.00 in funds to be withdrawn from Buildings and Improvements Capital reserve fund to reduce the impact of the project to \$163,844.00 with an additional projected rebate amount of \$14,050.00 from different agencies or a balance of \$149,794.00. It would be our recommendation that we enter into a municipal lease with Municipal Leasing Consultant for a 10 year period at 3.98%APR creating an annual lease payment of \$18,182.04 with \$3,940.00 of energy savings to be used to reduce the annual payment to \$14,242.04. Energy Efficient Investments will guarantee the energy saving in fuel and electricity operating cost reduction. This allows for these saving to help offset the overall cost impacts of the project. The payment for the \$18,182.04 would come from heating energy reductions, electricity reductions and the remaining from Building and Grounds Operations Budget.

**RECOMMENDATION:**

We recommend that we engage with Energy Efficient Investments to do the necessary repairs/upgrades to our systems and building envelope, drawn \$25,000.00 from our Buildings and Improvements Capital Reserve fund, and enter into a municipal lease with Municipal Leasing Consultants of Grand Isle, Vermont.

**DOCUMENTS ATTACHED:**

EEI Performance agreement and scope of work  
Amortization Schedule  
Buildings and Improvements Capital Fund balance report  
Municipal Leasing Consultants report



**TOWN OF NEWMARKET, NEW HAMPSHIRE**  
**By the Newmarket Town Council**

**Resolution #2017/2018 - 41**

**Authorizing the Town Administrator to enter into an agreement with Municipal Leasing Consultants of Grand Isle, Vermont for a 10 year municipal lease for capital repairs/upgrades to the Community Center:**

- WHEREAS:** it has been determined that our HVAC systems have exceeded their life expectancy and currently requires major repairs, our lighting systems are very inefficient, our building envelope needs sealing/insulation, and
- WHEREAS:** the Director of Facilities requested proposals from Energy Efficient Investments, Inc. for a Performance Contract based on an prior approved Resolution #2017/2018-25 for energy auditing services, and
- WHEREAS:** the Town Administrator recommends that the Town enter into an agreement with Municipal Leasing Consultants for a 10 year lease in the amount of \$149,794.00 based on the cost of infrastructure repairs/upgrades in Resolution #2017/2018-35, and

**NOW, THEREFORE, BE IT RESOLVED BY THE NEWMARKET TOWN COUNCIL THAT:**

The Town Council authorizes the Town Administrator to enter into an agreement with Municipal Leasing Consultant of Grand Isle, Vermont for a 10 year municipal lease for repairs/upgrades to the Community Center with a projected annual payment of \$18,182.04 based on an interest rate of 3.98%APR. The annual payment will be offset by additional energy reduction cost savings of \$3,940.00 providing for an annual net payment of \$14,242.04 for a period of 10 years. The annual payments will be covered by Building and Grounds General Operating Funds. There is a projected additional savings of \$59,100.00 based on a 25 year life expectancy.

*First Reading:*        *March 7, 2018*

*Second Reading:*    *March 7, 2018*

*Approval:*

Approved: \_\_\_\_\_  
Dale Pike, Chair Town Council

A True Copy Attest: \_\_\_\_\_  
Terri Littlefield, Town Clerk





TOWN HALL  
186 MAIN STREET  
NEWMARKET, NH 03857

TEL: (603) 659-3617  
FAX: (603) 659-8508

FOUNDED DECEMBER 15, 1727  
CHARTERED JANUARY 1, 1991

## TOWN OF NEWMARKET, NEW HAMPSHIRE


# STAFF REPORT

**DATE:** March 1, 2018

**TITLE:** Community Center repairs/upgrades with Performance contracting  
Resolution: 2017/2018-35, 40 & 41

**PREPARED BY:** Greg Marles, Director of Facilities

**TOWN ADMINISTRATOR'S COMMENTS – RECOMMENDATION:**

I recommend its approval and request to suspend the rules to act on it this evening. 

**BACKGROUND:**

We had one (1) of the three (3) warm air furnaces suffer a cracked heater exchanger allowing products of combustion to enter the space. We have shut down and locked out the failed equipment for safety reasons and have been limping along with two units to condition the space. The two units cannot keep up with the demands and several areas of the facility remain cold. We have looked into a replacement heat exchanger for the failed unit which has been currently out of production for the past 10 years. In order to replace the exchanger we would have to have one custom made with a 4 to 6 week delivery period. This unit is 25 years old, with one other matching unit the same age, and the last unit being 27 years old. We are very concerned with the operating condition of the two remaining units given the overall condition and age. All three of these units have been out of production for at least 10 years and have exceeded their life expectancy. This also holds true for two of the three outside condensing units that provide cooling for the building. We are asked Energy Efficient Investments to conduct a full energy audit for the facility looking at ways to use energy efficient upgrades to help offset the costs of replacing the heating and cooling systems within the building. They have provided us with energy saving options to upgrade the lighting, HVAC, and building envelope.

**DISCUSSION:**

Our existing HVAC and lighting systems are out of date, in need of major repairs, and they have exceeded their useful life expectancy. Energy Efficient Investments has provided us with a Performance Contract to upgrade these systems and tighten the building envelope for a total cost of \$188,844.00. These repairs/upgrades would provide us not only with energy savings but provide us with an average life expectancy of 25 years. We would also like to request that this project be approved in a single session as we do have a major equipment failure in the facility which puts us at risk in freezing conditions.

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