

# Christie Paterson Redevelopment

## RDD – Strobic Fan Technical Submission

06<sup>th</sup> May 2021

| Compiled | Checked | Revision | Date       | Notes       |
|----------|---------|----------|------------|-------------|
| AL       | AA      | R00      | 06.05.2021 | First Issue |
|          |         |          |            |             |
|          |         |          |            |             |
|          |         |          |            |             |

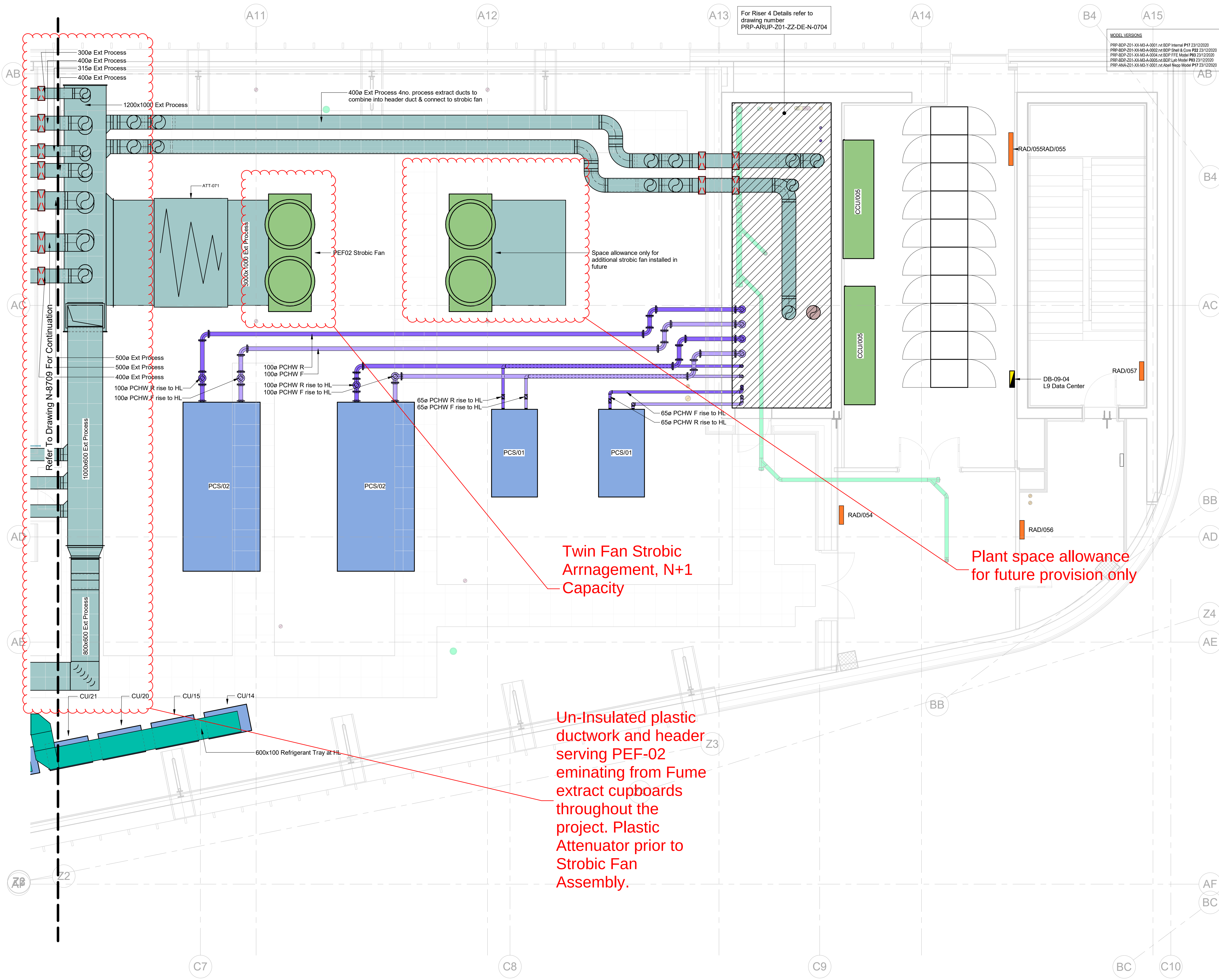
## Stage 4 RDD Drawing/ Document List

| Document Number / Series | Title                                                                    | Elements Illustrated                     |
|--------------------------|--------------------------------------------------------------------------|------------------------------------------|
| 1                        | Marked Up Roof Services Drawing (PRP-ARUP-Z01-09-DE-N-8708 P01) (1 page) | Location and services surrounding PEF-01 |
| 2                        | Marked Up Roof Services Drawing (PRP-ARUP-Z01-09-DE-N-8710 P01) (1 page) | Location and services surrounding PEF-02 |
| 3                        | PEF-01 Technical details and arrangement drawings (4 pages)              | Technical Details of PEF001              |
| 4                        | PEF-02 Technical details and arrangement drawings (4 pages)              | Technical Details of PEF002              |

This RDD Submission is compliant with the following supporting documents:

- GMP Design Report
- ARUP Ventilation speciation





For Riser 4 Details refer to drawing number PRP-ARUP-Z01-ZZ-DE-N-0704

MODEL VERSIONS  
PRP-BDP-Z01-XX-M3-A-0001 nrt BDP Internal P17 23/12/2020  
PRP-BDP-Z01-XX-M3-A-0002 nrt BDP Shell & Core P22 23/12/2020  
PRP-BDP-Z01-XX-M3-A-0004 nrt BDP FFE Model P63 23/12/2020  
PRP-BDP-Z01-XX-M3-A-0005 nrt BDP Lab Model P63 23/12/2020  
PRP-ANA-Z01-XX-M3-Y-0001 nrt Abell Nepp Model P17 23/12/2020

This drawing shall be read in conjunction with all other relevant Arup drawings, details, specifications and reports.  
All dimensions are illustrated in mm, unless noted otherwise.  
Do not scale from this drawing.  
Indicates Hazard: Hazards are described in greater detail on the Arup Hazard Risk Register.

**NOTES**

- Refer to the following Riser Detail drawings for details of services within risers:  
PRP-ARUP-Z01-ZZ-DE-N-0701  
PRP-ARUP-Z01-ZZ-DE-N-0702  
PRP-ARUP-Z01-ZZ-DE-N-0703  
PRP-ARUP-Z01-ZZ-DE-N-0704
- Refer to the following Primary LV Distribution drawings for details of plantroom electrical services:  
PRP-ARUP-Z01-00-DE-E-1505  
PRP-ARUP-Z01-02-DE-E-1509  
PRP-ARUP-Z01-02-DE-E-1510  
PRP-ARUP-Z01-08-DE-E-1521  
PRP-ARUP-Z01-08-DE-E-1522  
PRP-ARUP-Z01-09-DE-E-1523  
PRP-ARUP-Z01-09-DE-E-1524
- Refer to the following Arup MEP model for 3D and section takeoffs:  
PRP-ARUP-Z01-ZZ-M3-N-0001 (22/01/2021)
- Above ground drainage pipework has been shown for information only. Refer to Public Health drawings for full system details.
- External services at roof level to be coordinated with free standing architectural balustrade.

**LEGEND**

SA Gen General supply air duct  
RA Gen General return air duct  
Ext Extract duct  
CHW F Chilled water flow  
CHW R Chilled water return  
PCHW F Process chilled water flow  
PCHW R Process chilled water return  
LTHW CT F Low temperature hot water constant temperature flow  
LTHW CT R Low temperature hot water constant temperature return  
SDX Specialist direct expansion unit (Space allocation only)  
NG Natural Gas  
CA Compressed Air  
DHWS F Domestic hot water flow  
DHWS R Domestic hot water return  
BCWS (P) Boosted cold water service - potable  
LCWS Lab cold water service  
TWS F Treated water system flow  
TWS R Treated water system return  
HUBT Hose union bib tap

| REV | DESCRIPTION | DRW'N | CHK'D | APPR'D | DATE     |
|-----|-------------|-------|-------|--------|----------|
| P01 | WS4 Issue   |       |       |        | 22/01/21 |

**APPROVAL**

Status: \_\_\_\_\_  
Date: \_\_\_\_\_  
Signed: \_\_\_\_\_

**NOTE:**  
Status A - Signed off / No comment  
Status B - Signed off to proceed subject to comments  
Status C - For submit

Client: **MANCHESTER CANCER RESEARCH CENTRE**  
Founded by: **MANCHESTER 1824**  
The University of Manchester  
**CANCER RESEARCH UK**  
**NHS The Christie NHS Foundation Trust**

**IHP ARUP**  
6th Floor, 3 Piccadilly Place  
Manchester M1 3BN  
Tel: +44(0)161 228 2331  
Fax: +44(0)161 228 6879  
www.arup.com

PROJECT TITLE: Paterson Redevelopment Project  
DRAWING TITLE: Mechanical Plant Room Details  
Level 09  
Sheet 3  
DRAWING NO: PRP-ARUP-Z01-09-DE-N-8710  
REVISION: P01

SCALE: S2  
@ A1  
1:50  
DATE: 22/01/21

Strobic Air Corporation  
A Cincinnati Fan Company  
140 W Orvilla Rd.  
Lansdale, PA 19446  
Phone: (215) 723-4700 | Fax: (215) 723-7401  
www.choosetrystack.com | www.strobicair.com

**Project: PRP - Fan Reference: PEF-01 Mar2021**  
**Fans: 2 (operating) / 1 (redundant)**

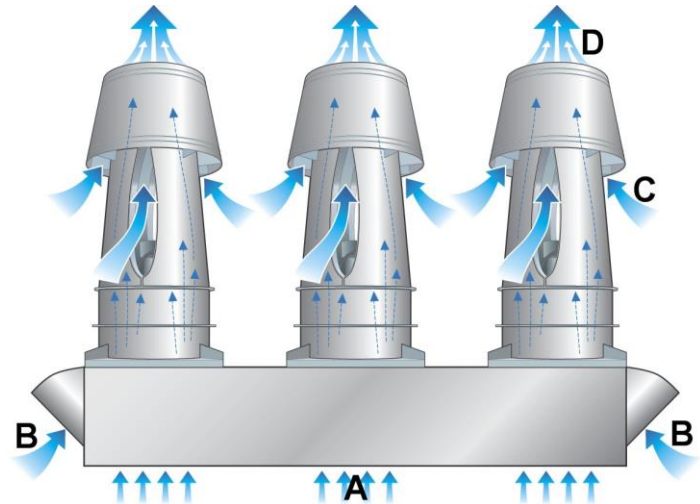
**Tri-Stack™**

A: Inlet Flow  
15.42 m³/s

B: Bypass Flow  
0.218 m³/s

C: Entrained Flow  
6.256 m³/s

D: Total System Flow  
21.894 m³/s



Operating Conditions

Inlet Static Pressure: 660 Pa  
Inlet Air Temperature: 21 deg C  
Inlet Air Density: 1.201 kg/m³

Inlet Flow per Fan: 7.71 m³/s  
Ambient Air Temp.: 21 deg C  
Ambient Air Dens: 1.201 kg/m³

Inlet Flow Total: 15.42 m³/s  
Altitude at Site: 0 m  
Operating Frequency: 44 Hz

Fan Performance Data - (single fan)

Fan Model: TS2L220C15M

Fan Flow Rate: 7.819 m³/s  
Total Flow: 10.947 m³/s  
Operating Speed: 1298 rpm  
Dilution Ratio: 142 %

Nozzle Velocity: 30 m/s  
Wind Band Area: 0.9 sq. m  
Min. Motor Hp: 22 kW  
Corrected BHP: 13.02 kW

Effective Stack Height:  
16 kph Wind: 20 m  
24 kph Wind: 15 m

Altitude and Temperature Corrections

Mixed Air Density:  
1.201 kg/m³

Mixed Air Temperature:  
**21 deg C**

Corrected Static Pressure:  
660 Pa

Comments

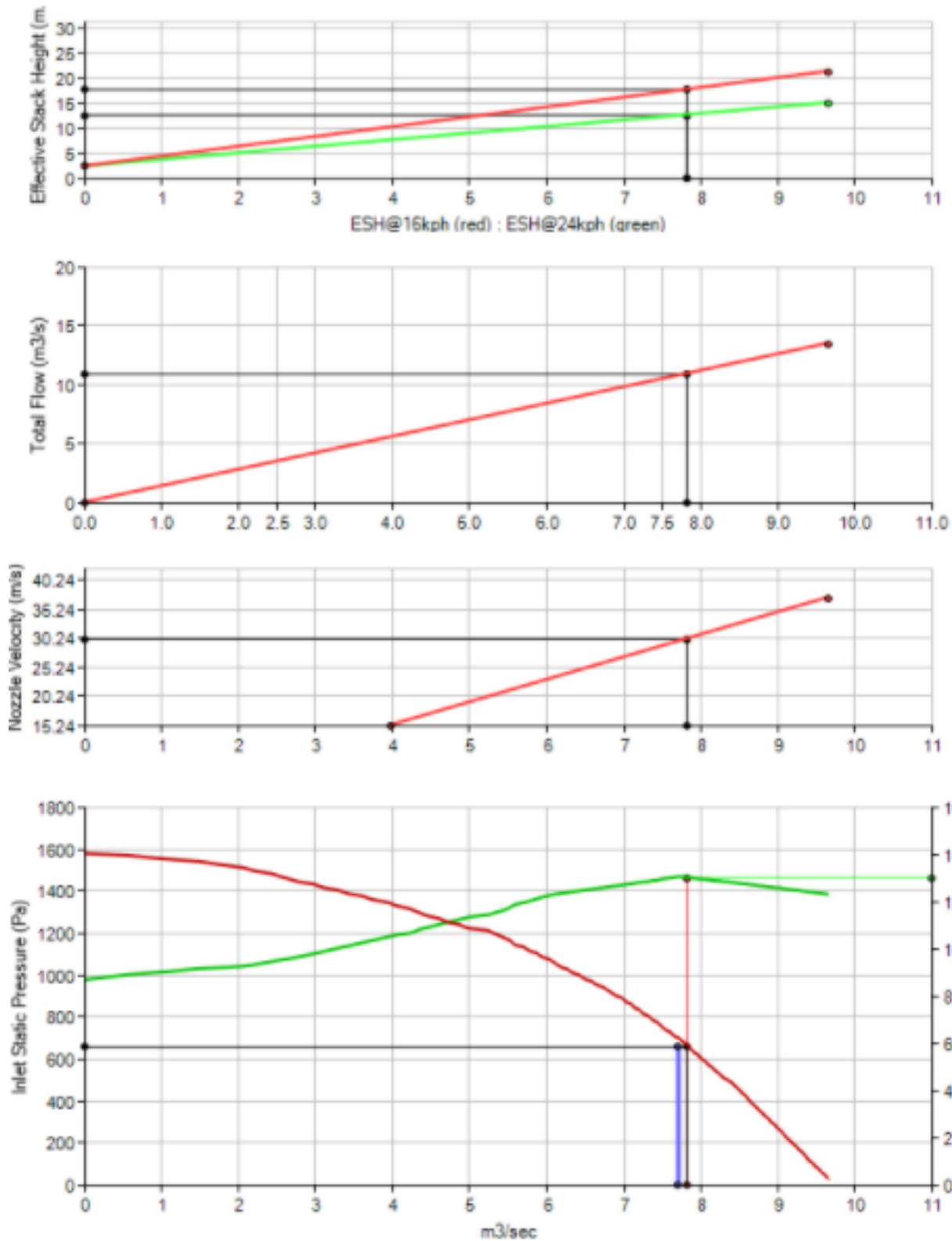
1. Number of fans running does not include redundant fan.
2. Inlet static pressure had been derated for discharge nozzle, windband, airfoil isolation damper, and outlet silencer
3. Inlet static pressure had been derated for system effects through the mixing box, based on the factory-recommended duct configurations.
4. Consult factory for additional derations when duct configurations do not meet factory guidelines.
5. Add an additional 37 pa. static pressure for gravity isolation dampers (usable on single fan mixing boxes only).
6. Effective stack height from roof line is given for fan without a mixing box, mounted on a .5 m high curb.
7. Stack height calculated using Briggs equation, per ASHRAE Fundamentals (1997).



**criticalairflow**

**Fan Model:** TS2L220C15M  
**Reference:** PEF-01 Mar2021

**Speed:** 1298 RPM  
**Mixed Air Density:** 1.201 kg/m<sup>3</sup>



Inlet Static Pressure has been Derated for Discharge Nozzle, Windband, Airfoil Isolation Damper, and Outlet Silencer, as well as System Effects Based on Factory-Recommended Duct Configurations. Add an additional 37 pa. for Gravity Isolation Dampers (On Single Fan Plenums Only). Consult Factory for Additional Deration for Duct Configurations that do not meet Factory Guidelines. Effective Stack Height at Stated Wind Speed from Roof Line for Fan w/o Mixing Box, mounted on a .5 m high curb. Add height of mixing box.

Fan Outlet Sound Data For Fan Model TS2L220C15M.  
Number of Fans Running: 2 - Silencer Nozzle, Plus 2 x 1.3m Outlet Silencer, at 44Hz

| Frequency                                  | 63 Hz | 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | 8000 Hz |
|--------------------------------------------|-------|--------|--------|--------|---------|---------|---------|---------|
| Outlet Sound Power Levels                  | 88    | 93     | 91     | 89     | 87      | 83      | 76      | 69      |
| Corrections for 2 Fans Running             | 3     | 3      | 3      | 3      | 3       | 3       | 3       | 3       |
| Dynamic Insertion Loss for nozzle silencer | 0     | -4     | -9     | -11    | -12     | -13     | -9      | -4      |
| Dynamic Insertion Loss for outlet silencer | -4    | -4     | -4     | -4     | -4      | -4      | -4      | -4      |
| Attenuations - Additional Outlet Silencer  | --4   | --4    | --4    | --4    | --4     | --4     | --4     | --4     |
| Corrected Outlet Sound Power Levels        | 83    | 84     | 77     | 73     | 70      | 65      | 62      | 60      |

|                              |     |     |     |     |     |     |     |     |
|------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| Corrections for 3 m Distance | -17 | -17 | -17 | -17 | -17 | -17 | -17 | -17 |
| Sound Levels (3 m)           | 66  | 67  | 60  | 56  | 53  | 48  | 45  | 43  |
| 'A' Scale Corrections        | -26 | -16 | -9  | -3  | 0   | 1   | 1   | -1  |
| dB'A' Spectrum (3 m)         | 40  | 51  | 51  | 53  | 53  | 49  | 46  | 42  |

Net Sound Level at 3 m: 59dB'A' (at 50Hz) / 56dB'A' (at 44Hz)

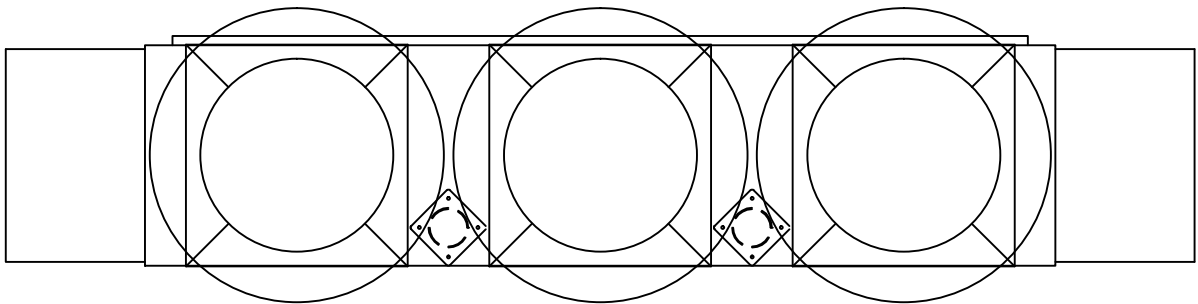
| Frequency                                  | 63 Hz | 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | 8000 Hz |
|--------------------------------------------|-------|--------|--------|--------|---------|---------|---------|---------|
| Outlet Sound Power Levels                  | 88    | 93     | 91     | 89     | 87      | 83      | 76      | 69      |
| Corrections for 2 Fans Running             | 3     | 3      | 3      | 3      | 3       | 3       | 3       | 3       |
| Dynamic Insertion Loss for nozzle silencer | 0     | -4     | -9     | -11    | -12     | -13     | -9      | -4      |
| Dynamic Insertion Loss for outlet silencer | -4    | -4     | -4     | -4     | -4      | -4      | -4      | -4      |
| Attenuations - Additional Outlet Silencer  | --4   | --4    | --4    | --4    | --4     | --4     | --4     | --4     |
| Corrected Outlet Sound Power Levels        | 83    | 84     | 77     | 73     | 70      | 65      | 62      | 60      |

|                               |     |     |     |     |     |     |     |     |
|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| Corrections for 15 m Distance | -31 | -31 | -31 | -31 | -31 | -31 | -31 | -31 |
| Sound Levels (15 m)           | 52  | 53  | 46  | 42  | 39  | 34  | 31  | 29  |
| 'A' Scale Corrections         | -26 | -16 | -9  | -3  | 0   | 1   | 1   | -1  |
| dB'A' Spectrum (15 m)         | 26  | 37  | 37  | 39  | 39  | 35  | 32  | 28  |

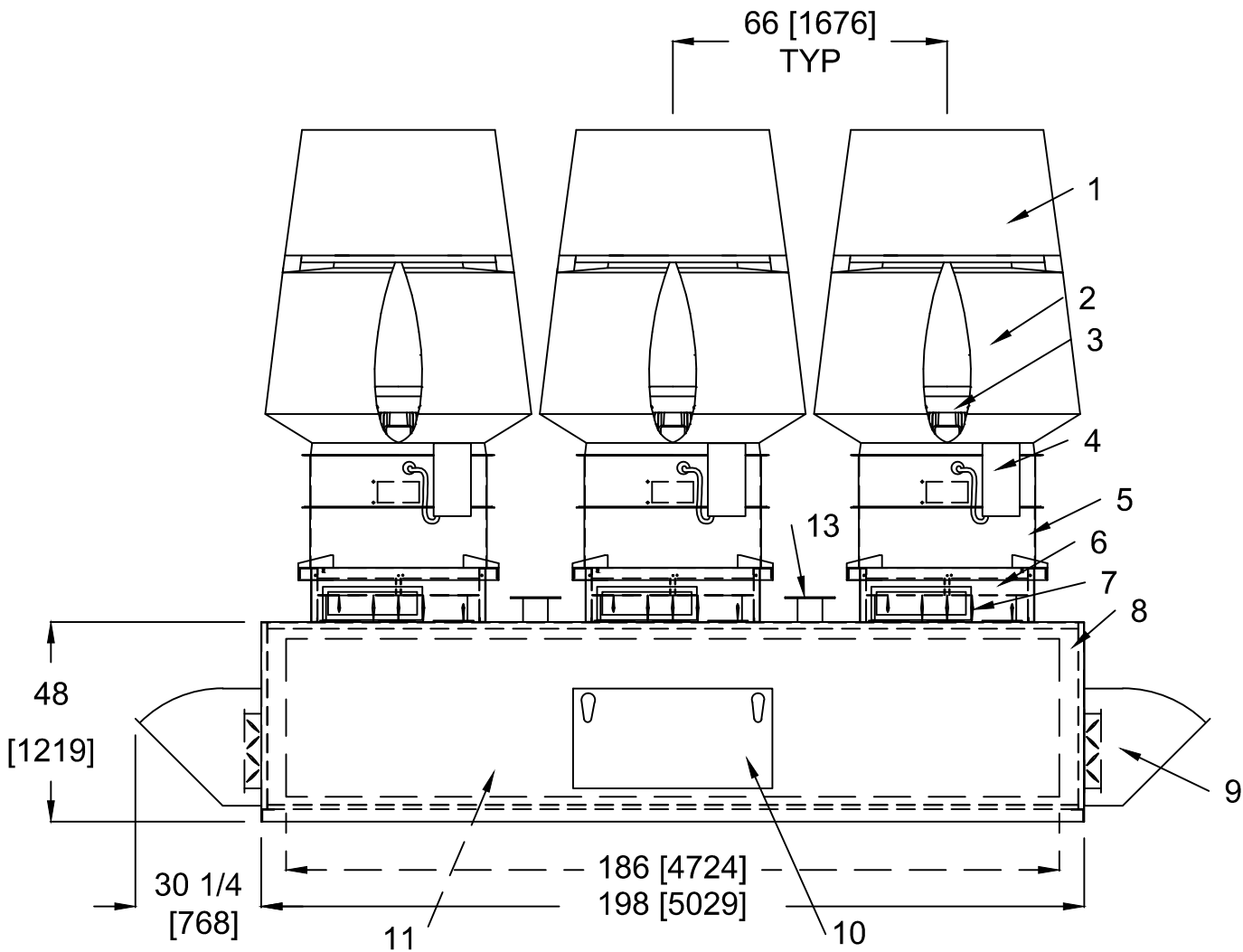
Net Sound Level at 15 m: 45dB'A' (at 50Hz) / 42dB'A' (at 44Hz)

Not all inline and silencer nozzle combinations have been tested in conjunction with each other for sound performance. The results of the additional attenuation of both sets of silencers in this arrangement is conservatively estimated based off of similar applications. Please contact Strobic Air for additional information regarding sound values.

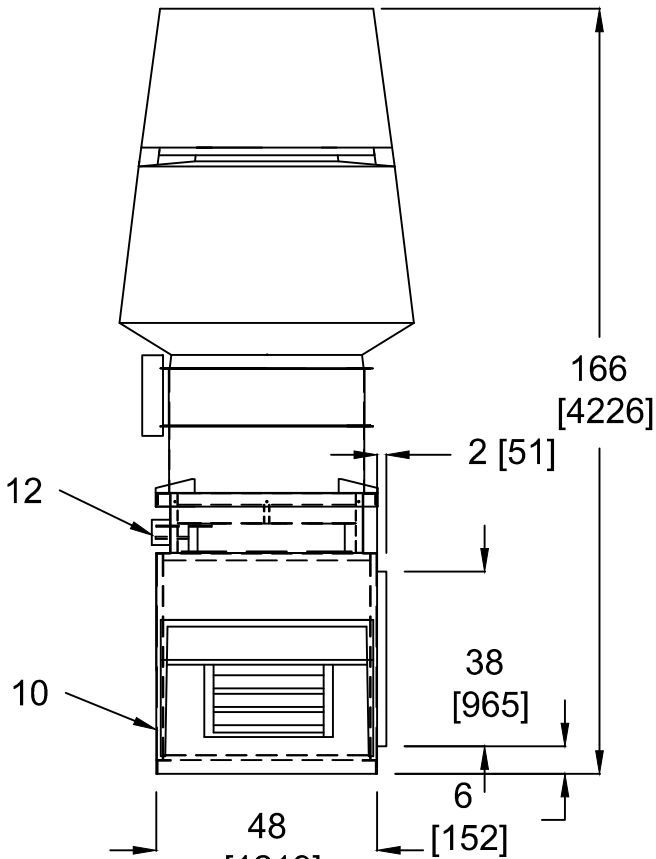
Last revised date October, 2015



PLAN VIEW



FRONT VIEW



SIDE VIEW

- NOTES:
1. ACOUSTICAL WINDBANDÈ ( TYP-3)
  2. TRI-STACK ( TM) SILENCER NOZZLE ( TYP-3)
  3. MOTOR ( TYP-3)
  4. DISCONNECT SWITCH ( TYP-3)
  5. FAN HOUSING ( TYP-3)
  6. VORTEX BREAKER ( TYP-3) ( OPTIONAL)
  7. ISOLATION DAMPER ( TYP-3)
  8. DOUBLE-WALLED MIXING PLENUM
  9. BYPASS DAMPER WITH RAINHOOD ( TYP-2)
  10. ACCESS DOOR
  11. 186"L X 38"H DUCT OPENING
  12. ISOLATION DAMPER ACTUATOR ( TYP-3)
  13. JIB CRANE SOCKET ( OPTIONAL)

TOTAL WEIGHT: 7,482 LBS. [3,394 KG]

DIMENSIONS GIVEN IN INCHES [MILLIMETERS]

NOTE: BECAUSE WE ARE CONSTANTLY STRIVING TO IMPROVE OUR PRODUCTS, WE RESERVE THE RIGHT TO PROVIDE VERSIONS OF THESE PRODUCTS WITH SLIGHT VARIATIONS FROM THOSE ILLUSTRATED HERE.

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- ADDITIONAL NOTES:
- A) A 3" FLANGE IS ADDED TO THE PERIMETER BASE OF THE PLENUM FOR MOUNTING TO A STRUCTURAL BASE ( CONCRETE CURB, STRUCTURAL STEEL, ETC.) .
  - B) STROBIC AIR® RECOMMENDS THAT DUCT INLET CONDITIONS FOLLOW SMACNA GUIDELINES TO MINIMIZE SYSTEM EFFECT.
  - C) WEIGHT CALCULATED USING FAN MODEL TS2L150C12. ACTUAL WEIGHTS MAY VARY FROM THIS VALUE.
  - D) 3/4" COARSE THREAD COUNTERSUNK HOLES PROVIDED FOR LIFTING EYES ( SUPPLIED BY OTHERS) TO LIFT PLENUM IN ACCORDANCE WITH STANDARD RIGGING PROCEDURES.

|                                                                                                                           |                                                                                                                      |         |                                                                   |  |              |
|---------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|---------|-------------------------------------------------------------------|--|--------------|
| UNLESS OTHERWISE<br>SPECIFIED DIMENSIONS<br>ARE IN INCHES<br><br>TOLERANCES ARE<br>= .XX = =<br><br>.XXX=<br><br>MATERIAL | CONTRACT NO.                                                                                                         |         | (3) TS-2 FANS SIDE INLET W/ SILENCER NOZZLE                       |  |              |
|                                                                                                                           | APPROVALS                                                                                                            | DATE    |                                                                   |  |              |
|                                                                                                                           | DRAWN E.C.A.                                                                                                         | 6/17/03 | STROBIC AIR® CORPORATION<br>700 EMLN WAY<br>TELFORD, PA. 18969    |  |              |
|                                                                                                                           | CHECKED                                                                                                              |         |                                                                   |  |              |
|                                                                                                                           | LAYOUT                                                                                                               |         | SIZE CODE IDENT. NO. DRAWING NO.<br>B TS2_3_SI_SN 061703E-6 REV.D |  |              |
| FINISH                                                                                                                    | U.S. PATENT NO. 6,431,974<br>U.S. PATENT NO. 6,112,850<br>U.S. PATENT NO. 4,806,706<br>CANADIAN PATENT NO. 1,277,171 |         |                                                                   |  |              |
|                                                                                                                           |                                                                                                                      |         | SCALE: N.T.S.                                                     |  | SHEET 1 OF 1 |

Strobic Air Corporation  
A Cincinnati Fan Company  
140 W Orvilla Rd.  
Lansdale, PA 19446  
Phone: (215) 723-4700 | Fax: (215) 723-7401  
www.choosetrystack.com | www.strobicair.com

**Project: PRP - Fan Reference: PEF-02. Mar2021**  
**Fans: 1 (operating) / 1 (redundant)**

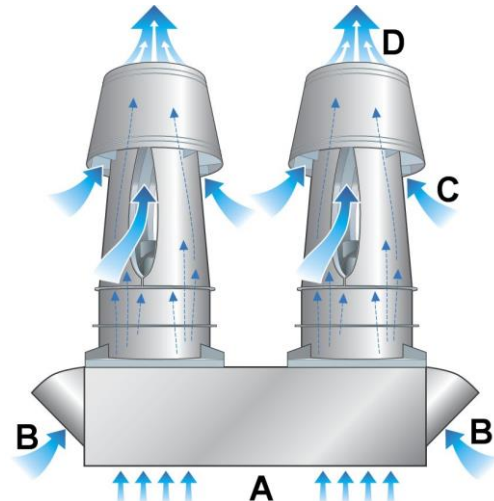
**Tri-Stack™**

A: Inlet Flow  
6.99 m<sup>3</sup>/s

B: Bypass Flow  
0.227 m<sup>3</sup>/s

C: Entrained Flow  
2.887 m<sup>3</sup>/s

D: Total System Flow  
10.104 m<sup>3</sup>/s



Operating Conditions

Inlet Static Pressure: 590 Pa  
Inlet Air Temperature: 21 deg C  
Inlet Air Density: 1.201 kg/m<sup>3</sup>

Inlet Flow per Fan: 6.99 m<sup>3</sup>/s  
Ambient Air Temp.: 21 deg C  
Ambient Air Dens: 1.201 kg/m<sup>3</sup>

Inlet Flow Total: 6.99 m<sup>3</sup>/s  
Altitude at Site: 0 m  
Operating Frequency: 41 Hz

Fan Performance Data - (single fan)

Fan Model: TS2L220C15M

Fan Flow Rate: 7.217 m<sup>3</sup>/s  
Total Flow: 10.104 m<sup>3</sup>/s  
Operating Speed: 1210 rpm  
Dilution Ratio: 145 %

Nozzle Velocity: 28 m/s  
Wind Band Area: 0.9 sq. m  
Min. Motor Hp: 22 kW  
Corrected BHP: 10.54 kW

Effective Stack Height:  
16 kph Wind: 19 m  
24 kph Wind: 14 m

Altitude and Temperature Corrections

Mixed Air Density:  
1.201 kg/m<sup>3</sup>

Mixed Air Temperature:  
**21 deg C**

Corrected Static Pressure:  
590 Pa

Comments

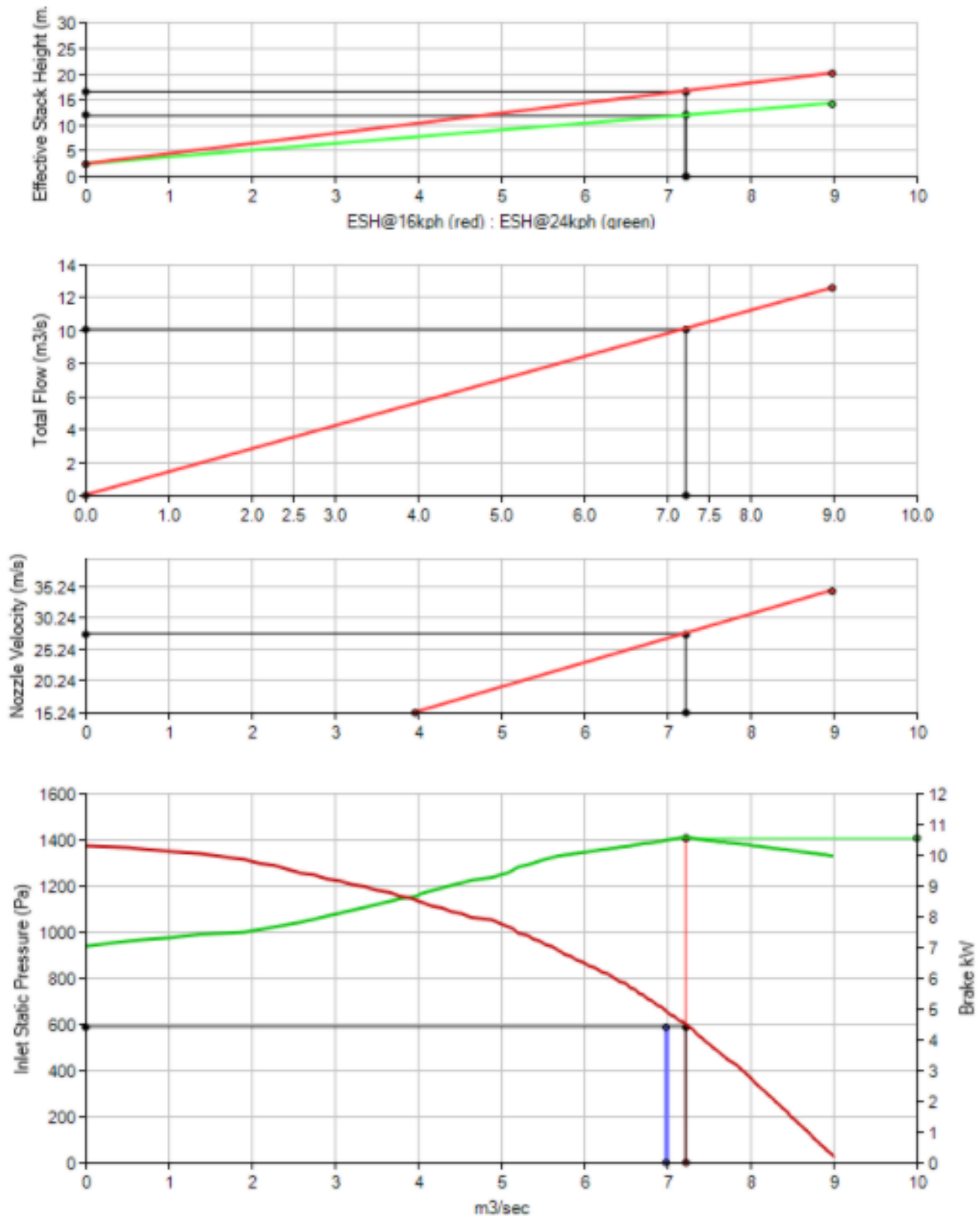
1. Number of fans running does not include redundant fan.
2. Inlet static pressure had been derated for discharge nozzle, windband, airfoil isolation damper, and outlet silencer
3. Inlet static pressure had been derated for system effects through the mixing box, based on the factory-recommended duct configurations.
4. Consult factory for additional derations when duct configurations do not meet factory guidelines.
5. Add an additional 37 pa. static pressure for gravity isolation dampers (usable on single fan mixing boxes only).
6. Effective stack height from roof line is given for fan without a mixing box, mounted on a .5 m high curb.
7. Stack height calculated using Briggs equation, per ASHRAE Fundamentals (1997).



**criticalairflow**

**Fan Model:** TS2L220C15M  
**Reference:** PEF-02, Mar2021

**Speed:** 1210 RPM  
**Mixed Air Density:** 1.201 kg/m<sup>3</sup>



Inlet Static Pressure has been Derated for Discharge Nozzle, Windband, Airfoil Isolation Damper, and Outlet Silencer, as well as System Effects Based on Factory-Recommended Duct Configurations. Add an additional 37 pa. for Gravity Isolation Dampers (On Single Fan Plenums Only).  
Consult Factory for Additional Deration for Duct Configurations that do not meet Factory Guidelines.  
Effective Stack Height at Stated Wind Speed from Roof Line for Fan w/o Mixing Box, mounted on a .5 m high curb. Add height of mixing box.

Fan Outlet Sound Data For Fan Model TS2L220C15M.  
Number of Fans Running: 1 - Silencer Nozzle, Plus 2 x 1.3m Outlet Silencer, at 41Hz

| Frequency                                  | 63 Hz | 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | 8000 Hz |
|--------------------------------------------|-------|--------|--------|--------|---------|---------|---------|---------|
| Outlet Sound Power Levels                  | 88    | 93     | 91     | 89     | 87      | 83      | 76      | 69      |
| Dynamic Insertion Loss for nozzle silencer | 0     | -4     | -9     | -11    | -12     | -13     | -9      | -4      |
| Dynamic Insertion Loss for outlet silencer | -4    | -4     | -4     | -4     | -4      | -4      | -4      | -4      |
| Attenuations - Additional Outlet Silencer  | --4   | --4    | --4    | --4    | --4     | --4     | --4     | --4     |
| Corrected Outlet Sound Power Levels        | 80    | 81     | 74     | 70     | 67      | 62      | 59      | 57      |

|                              |     |     |     |     |     |     |     |     |
|------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| Corrections for 3 m Distance | -17 | -17 | -17 | -17 | -17 | -17 | -17 | -17 |
| Sound Levels (3 m)           | 63  | 64  | 57  | 53  | 50  | 45  | 42  | 40  |
| 'A' Scale Corrections        | -26 | -16 | -9  | -3  | 0   | 1   | 1   | -1  |
| dB'A' Spectrum (3 m)         | 37  | 48  | 48  | 50  | 50  | 46  | 43  | 39  |

Net Sound Level at 3 m: 56dB'A' (at 50Hz) / 52dB'A' (at 41Hz)

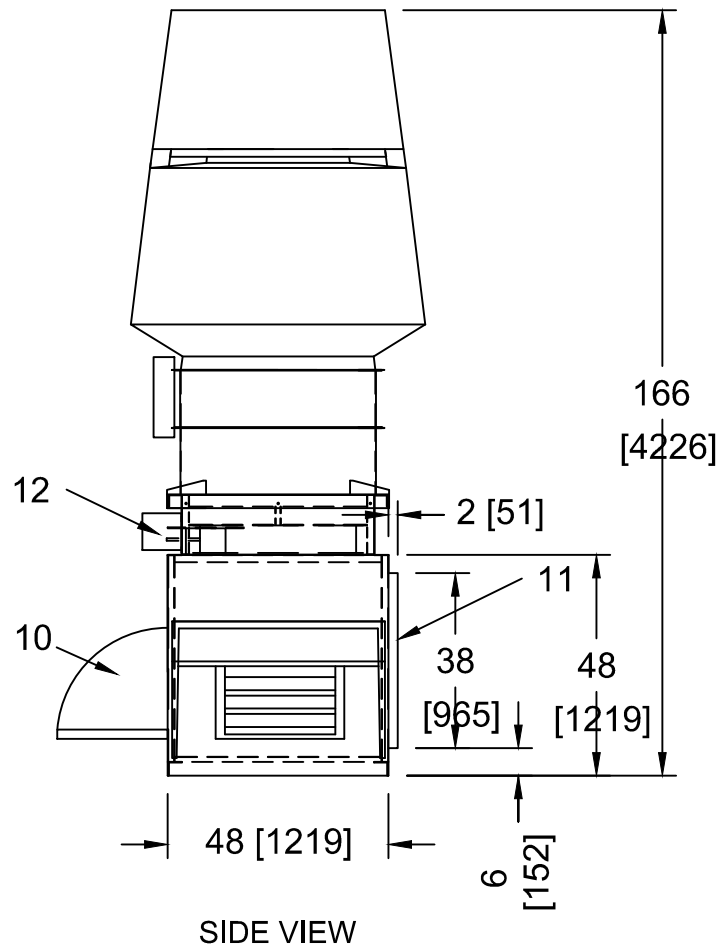
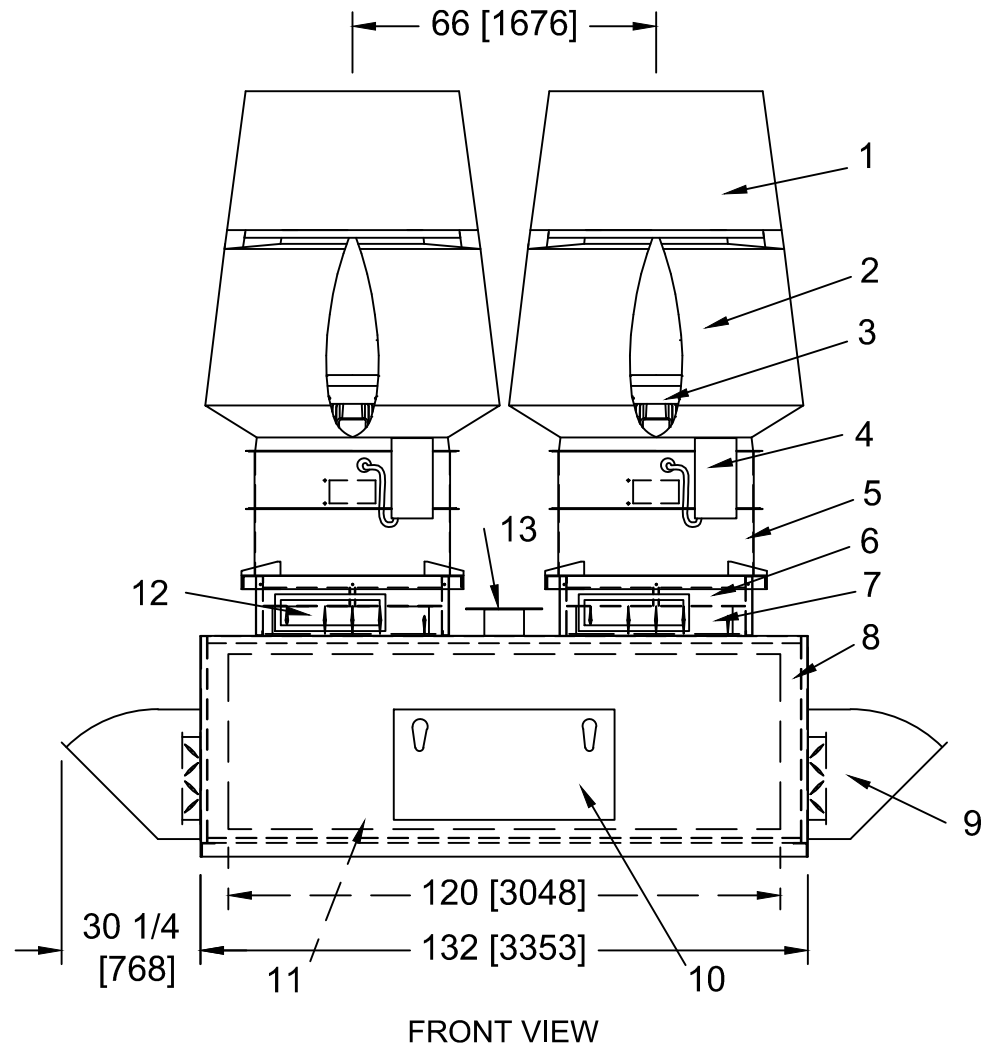
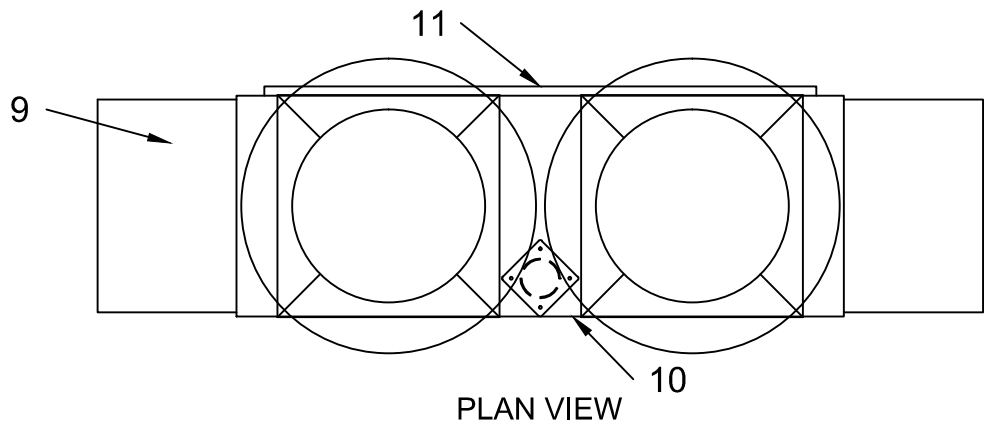
| Frequency                                  | 63 Hz | 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | 8000 Hz |
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| Dynamic Insertion Loss for outlet silencer | -4    | -4     | -4     | -4     | -4      | -4      | -4      | -4      |
| Attenuations - Additional Outlet Silencer  | --4   | --4    | --4    | --4    | --4     | --4     | --4     | --4     |
| Corrected Outlet Sound Power Levels        | 80    | 81     | 74     | 70     | 67      | 62      | 59      | 57      |

|                               |     |     |     |     |     |     |     |     |
|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| Corrections for 15 m Distance | -31 | -31 | -31 | -31 | -31 | -31 | -31 | -31 |
| Sound Levels (15 m)           | 49  | 50  | 43  | 39  | 36  | 31  | 28  | 26  |
| 'A' Scale Corrections         | -26 | -16 | -9  | -3  | 0   | 1   | 1   | -1  |
| dB'A' Spectrum (15 m)         | 23  | 34  | 34  | 36  | 36  | 32  | 29  | 25  |

Net Sound Level at 15 m: 42dB'A' (at 50Hz) / 38dB'A' (at 41Hz)

Not all inline and silencer nozzle combinations have been tested in conjunction with each other for sound performance. The results of the additional attenuation of both sets of silencers in this arrangement is conservatively estimated based off of similar applications. Please contact Strobic Air for additional information regarding sound values.

Last revised date October, 2015



| REVISION |                             |         |          |
|----------|-----------------------------|---------|----------|
| LTR.     | DESCRIPTION                 | DATE    | APPROVED |
| A        | NOTE "D" ADDED              | 7/2/04  | ECA      |
| B        | PLENUM DIMS CHANGED         | 3/2/04  | KHM      |
| C        | REVISED DAMPER BOX LOCATION | 4/27/12 | JCN      |
| D        | CHANGED TOTAL WEIGHT        | 2/26/15 | ARM      |

- NOTES:
1. ACOUSTICAL WINDBANDÈ (TYP-2)
  2. TRI-STACK™ SILENCER NOZZLE (TYP-2)
  3. MOTOR (TYP-2)
  4. DISCONNECT SWITCH (TYP-2)
  5. FAN HOUSING (TYP-2)
  6. VORTEX BREAKER (TYP-2) (OPTIONAL)
  7. ISOLATION DAMPER (TYP-2)
  8. DOUBLE-WALLED MIXING PLENUM
  9. BYPASS DAMPER WITH RAINHOOD (TYP-2)
  10. 48"L X 24"H ACCESS DOOR
  11. 120"L X 38"H DUCT OPENING
  12. ISOLATION DAMPER ACTUATOR (TYP-2)
  13. JIB CRANE SOCKET (OPTIONAL)

TOTAL WEIGHT: 5,088 LBS. [2,308 KG]

DIMENSIONS ARE GIVEN IN INCHES [MILLIMETERS]

NOTE: BECAUSE WE ARE CONSTANTLY STRIVING TO IMPROVE OUR PRODUCTS, WE RESERVE THE RIGHT TO PROVIDE VERSIONS OF THESE PRODUCTS WITH SLIGHT VARIATIONS FROM THOSE ILLUSTRATED HERE.

- ADDITIONAL NOTES:
- A) A 3" FLANGE IS ADDED TO THE PERIMETER BASE OF THE PLENUM FOR MOUNTING TO A STRUCTURAL BASE ( CONCRETE CURB, STRUCTURAL STEEL, ETC.) .
- B) STROBIC AIR® RECOMMENDS THAT DUCT INLET CONDITIONS FOLLOW SMACNA GUIDELINES TO MINIMIZE SYSTEM EFFECT.
- C) WEIGHT CALCULATED USING FAN MODEL TS2L150C12. ACTUAL WEIGHTS MAY VARY FROM THIS VALUE.
- D) 3/4" COARSE THREAD COUNTERSUNK HOLES PROVIDED FOR LIFTING EYES ( SUPPLIED BY OTHERS) TO LIFT PLENUM IN ACCORDANCE WITH STANDARD RIGGING PROCEDURES.

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|                                                                                              |                                                                                                                      |         |                                                                |              |  |
|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|---------|----------------------------------------------------------------|--------------|--|
| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES<br>TOLERANCES ARE<br>= .XX = =<br>.XXX = | CONTRACT NO.                                                                                                         |         | ( 2 ) TS-2 FANS SIDE INLET W/ SILENCER NOZZLE                  |              |  |
|                                                                                              | APPROVALS                                                                                                            | DATE    | STROBIC AIR® CORPORATION<br>700 EMLN WAY<br>TELFORD, PA. 18969 |              |  |
|                                                                                              | DRAWN E.C.A.                                                                                                         | 6/17/03 |                                                                |              |  |
|                                                                                              | CHECKED                                                                                                              |         |                                                                |              |  |
| MATERIAL                                                                                     | LAYOUT                                                                                                               |         | SIZE B CODE IDENT. NO. TS2_2_SI_SN DRAWING NO. 061703E-4 REV.C |              |  |
| FINISH                                                                                       | U.S. PATENT NO. 6,431,974<br>U.S. PATENT NO. 6,112,850<br>U.S. PATENT NO. 4,806,076<br>CANADIAN PATENT NO. 1,277,171 |         |                                                                |              |  |
|                                                                                              |                                                                                                                      |         | SCALE: N.T.S.                                                  | SHEET 1 OF 1 |  |