



Bas Cleary
Director
Environmental Assessment Division
Department of Environment and Conservation
Government of Newfoundland and Labrador
File Ref No. 200.20.2352

Dear Mr. Cleary,

Please accept our application for registration of our undertaking for the above referenced file number.

We have included in this proposal, what we hope is all the relevant information relating to our particular undertaking, in order to assist in the completion of this process.

While we have endeavoured to provide all the information requested, should something be missing or should you have any questions regarding our submittal or any other issue, please feel free to contact me at your convenience.

Stephen Crane
President, C&W Offshore

c.c Mr. Christopher Hardy, City of Mount Pearl
Mr. Paul Carter, Dept. of Environment and Conservation



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SECTION 1

REGISTRATION FORM

REGISTRATION FORM

Pursuant to Part cE-14.2 of the Environmental Protection Act

NAME OF UNDERSTANDING: Commercial Spray Painting Booth

C&W Offshore Ltd.
16 Lintrose Pl.
Donovan's Industrial Park
Mount Pearl, NL

PROPONENT:

- (i) Name of Corporate Body: C&W Offshore Ltd.
- (ii) Address: 16 Lintrose Pl.
Mount Pearl, NL
A1N-5K2
- (iii) Chief Executive Officer: Stephen Crane
President
16 Lintrose Pl.
Mount Pearl, NL
A1N-5K2
- (iv) Principal Contact: Stephen Crane
President
16 Lintrose Pl.
Mount Pearl, NL
A1N-5K2
scrane@cwoffshore.ca

1.0 The Undertaking:

1.1 Background:

C&W Offshore has been operating a fabrication facility at 16 Lintrose Place since April 2011, and in Donovan's Industrial Park since May 2005. Since that time, we have been subcontracting painting services to various local companies, often, at cost to our own company. Recently, C&W was awarded two large projects for the Hebron Project, much larger and complex than what our regular painting subcontractors could take on. For this reason, C&W Offshore set out to build the most advanced, safest, and environmentally friendly paint facility in the province, converting an existing warehouse at its Mount Pearl location.

1.2 Nature of the undertaking:

C&W Offshore has recently converted an existing warehouse at their facility on Lintrose Place, and has developed that building into a painting facility. The building is a completely explosion proof, fireproofed and fire suppressed facility with state of the art blast and paint equipment which can take large fabricated items and perform a complete surface protection system in a temperature and environmentally controlled indoor climate.

1.3 Purpose / Rationale / Need for the Undertaking:

C&W Offshore requires building a blast and paint facility for the following reasons:

- Current painting subcontractors cannot physically fit the units we are currently building into their existing blast and paint facilities.
- Our existing subcontractors cannot meet the quality requirements of our client..
- Safety is a number one priority to us as a company. Our current subcontractors cannot meet the safety requirements of our ongoing projects.
- For years C&W has been at the mercy of subcontractors when it comes to scheduling for paint etc.
- Also as we could not control the price of our painting for jobs and therefore lost countless jobs because our pricing was too high.
- We have also had many requests from customers for us to re-furbish some of their existing equipment and at times have not been able to accommodate.

2.0 Description of the Undertaking:

2.1 Geographical Location:

The civic address of the proposed facility is 16 Lintrose Pl, Donovan's Industrial Park, Mount Pearl. (See Figures 1 – 3 for additional location information).

2.2 Physical Features:

- The physical features of the existing building are pretty much unchanged with the exception of a few additions in order to accommodate the specialized equipment.
- The nearest residential home to 16 Lintrose Pl is approximately 1km, straight line distance.
- The adjacent buildings (looking from the road) are:
 - East Side – Strongco Equipment and the JMP building on Glencoe Dr.
 - North Side – Urban Flooring

Donovan's Industrial, where the site is located, is zoned by the city as "Industrial Light Use". The definition as the city defines it is:

"Light industry, service station, restaurant, take-out food service, recreational open space, general garage, educational and shop use in association with light industrial use, office, general service, communications, taxi stand, police station, indoor market (auction hall), automotive sales, and health club, furniture and appliance showroom, existing dwellings, and civic use."

This definition is far from accurate, as there are numerous industrial and heavy industrial facilities operating in the park. There are three other blasting and painting facilities within a 1 km Radius of 16 Lintrose Place, along with companies performing high pressure testing, storage of radioactive materials, toxic and hazardous chemicals and storage of explosives.

2.3 Construction:

The blast and paint facility has been installed in a previously built warehouse. The installation of the equipment has been completed and commissioned.

2.4 Operation:

2.4.1 Description of Operation

The operation at this facility will typically involve sandblasting, painting and packaging for shipment. Items being processed will include structural steel frames, stairs, shipping containers etc. The hours of operation are Monday to Friday, 8:00 am to 4:30 pm. We have two large filter banks built into the facility which capture 99% of air borne particles over 20 microns. It has been sized at approximately 100,000 CFM for our requirements by Professional Engineers licensed to practice here in Newfoundland and Labrador.

Painting will be occurring in the same space as sandblasting, all be it at different times. A complete PLC control system has been installed as well as explosion proof equipment to ensure that both operations are as safe as possible and also can't be done concurrently. Please see the attached engineers report for additional information on the design philosophy and equipment being used.

The development of this facility is subject to a discretionary use permit from the City of Mount Pearl as well as this environmental assessment.

2.4.2 Estimated Period of Operation

This facility will be a permanent operation used to support the fabrication work of our main facility on Lintrose Place.

2.4.3 Potential Source of Pollution

The paints we use are typically epoxy and urethane based. These are standard in the industry and used in various paint shops in the area. We will have our paint booth fitted with filters which can remove up to 99.84% of particulates in the air. The particulates will then be collected in a dedicated container and collected by a certified waste management company. All paint will be stored in accordance with government policies for similar materials.

We have two makeup air units which help cure the paint and also provide clean air to our painters. Combined they change the air at 100,000 cubic feet per minute and have a total of approximately 8.2 million BTU's of heat for ventilation during painting and heating the air during the curing cycle. The system has been designed to ensure any fumes are dispersed with enough velocity so as to not be noticeable to the surrounding area. For more information on this, please see the attached Engineers Design Report.

The blast media we will be using is steel shot, and not a silica based product. All blast media will be recycled using a blast recovery system. Steel shot is re-useable, and can be used up to 100 times. Most of our competitors and current subcontractors currently use a copper slag or similar product, which is not re-useable. As previously mentioned, dust will be collected by a bank of dust collectors operating at 45,000 cubic feet per minute of air flow.

Because of the industry we are in and our concern for the environment in general, we aim to have ZERO discharge. Being in the offshore industry, our clients hold us and we hold ourselves to the highest of standards. Being safe and non threatening to the environment are two of our priorities. All waste, including old paint, dust and used filters will be disposed of in a manner suitable to the application. All equipment has been procured in a manner as to assure the most efficient and quiet operation. It is our goal for our neighbors not to know we are operating. During testing, it was noted that with all the equipment running, the overall noise produced from the facility is less than that of the ambient road noise from the adjacent highway.

2.4.4 Occupants and Job Creation

There will be a total of approximately 4 persons working at the 16 Lintrose Place facility. Two sandblaster / painters and two laborers. All administrative and management will be run from our main office. These 4 positions will be new. The NOC identifiers for the positions would be NOC 9496-C for the Painters and Blaster, and NOC 9612 for the Labours.

3.0 Project Related Documents:

The following documents accompany this submission:

- Design report from Rowsell-Appleby-Newton Engineering Inc., the third party tasked to ensure all the relevant regulatory requirements were met or exceeded.
- Facility drawings
- Propane system engineering drawings and permit
- Compressed air system engineering drawings and permits

There are no environmental related documents to accompany this application.

4.0 Schedule:

- An application was filed with the City of Mount Pearl on November 10th, 2014.
- November 12th a letter went in the paper seeking input from concerned parties:

- There were two inquiries. Both parties submitted written questions and indicated they would be attending the briefing session.
- A briefing session was held December 2nd to answer questions of any surrounding business'.
- This application was submitted on December 18th.
- A response to this application is expected 45 calendar days after submittal.

The facility is fully constructed and certified. Commissioning has been completed and we are ready to commence operations.

5.0 Funding:

There has been no funding for this project from any government body. We have invested all funds from our own coffers. The estimated total investment for this project is in the range of \$2,000,000.00

We would like to thank the director in advance for his time and for the consideration of this application. We have endeavored design the safest, sandblasting and painting facility possible, and to provide all the relative information required for this submittal. Should there be any additional information required, by all means, please contact me at your earliest convenience,

Kindest regards,

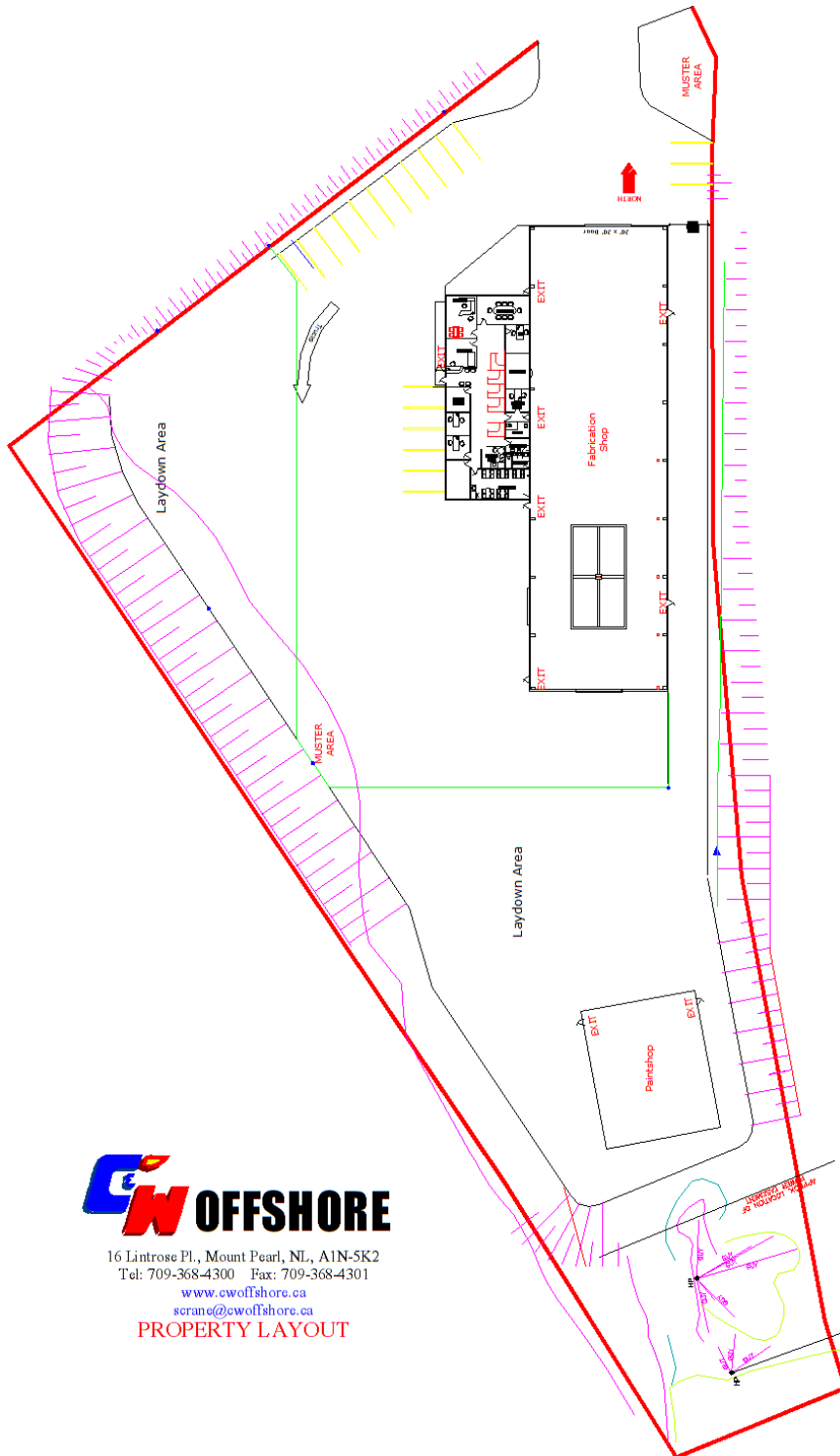


Stephen Crane
President
C&W Offshore
June 13, 2011

Figure 1 – Map of 16 Lintrose Place



Figure 2 – 16 Lintrose Place Site Plan



16 Lintrose Pl., Mount Pearl, NL, A1N-5K2
Tel: 709-368-4300 Fax: 709-368-4301
www.cwoffshore.ca
scran@cwloffshore.ca
PROPERTY LAYOUT

Figure 3 – 16 Lintrose Place Street View



SECTION 2

ENGINEERS REPORT



Abrasive Blasting and Paint Hall

Mechanical and Electrical

Design Report



**ROWSELL APPLEBY NEWTON
ENGINEERING INC**

1.0 Mechanical Overview

1.0.1 Fire Protection

Design Codes:

- NFPA 10 - Portable Fire Extinguishers, Latest Edition
- NFPA 13 - Installation of Sprinkler Systems, Latest Edition
- NFPA 33 - Standard for Spray Application Using Flammable or Combustible Materials.
- NFPA 91 - Standard for Exhaust Systems for Air Conveying of Vapors, Gases, Mists, and Noncombustible Particulate Solids
- The National Fire Code of Canada, Latest Edition

Materials and Equipment:

Extinguishing agents located in general areas will be ABC rated multipurpose dry chemical (MPDC).

Portable fire extinguishers are multi-purpose dry chemical type “BC” for electrical room locations

Other Design Contributions:

Fire protection system has been designed by Martin’s Fire Safety Ltd located in Mount Pearl, NL. The system is a dry chemical system and is integrated into ventilation systems in accordance with NFPA.

1.0.2 Ventilation

Design Codes

- The Regulations of the Province of Newfoundland.
- The National Building Code of Canada, 2010
- The National Energy Code of Canada for Buildings, 2005
- Industrial Ventilation: A Manual of Recommended Practice, 27th Edition
- CSA B149.1-10 Natural Gas and Propane Installation Code, 2010
- SMACNA, HVAC Duct Construction Standards - Metal and Flexible, 1985.
- NFPA 33 – Standard for Spray Application Using Flammable or Combustible Materials.
- NFPA 91 – Standard for Exhaust Systems for Air Conveying of Vapors, Gases, Mists, and Noncombustible Particulate Solids
- ANSI Z9.4-1985, "Abrasive Blasting Operations–Ventilation and Safe Practices."
- Province of Newfoundland and Labrador Boiler, Pressure Vessel and Compressed Gas Regulations.
- ASME B 31.3

Mechanical Overview

This facility is an abrasive blasting and industrial painting shop. Each operation is controlled through an industrial control system which is located in an adjacent control area. Each system is interlocked so that they cannot operate simultaneously or with the doors open. Devices will be suitable for Explosion Proof usage (Division 1, Class 1) where required.

Painting/Blasting Area

The entire paint/blasting area is rated for explosion proof operation and each door is equipped with an explosion proof door contact. An explosion proof emergency vehicle exhaust system is installed so material can be loaded and off loaded safely.

Painting Operation

In accordance with NFPA 33 the mechanical ventilation system is designed to collect overspray with paint arrestance filters and to remove vapors associated with painting. The vapors are discharged to a safe location 1830mm above the roof line and the concentration of vapors in the exhaust air stream are kept lower than twenty five percent of their flammable limit. There are explosion proof differential pressure switches which monitor filter cleanliness to ensure safe operation and the least amount of impact on the environment as possible. Paint area differential pressure is monitored as well to detect any possible issues with the ventilation system.

Painting Ventilation Equipment

Six roof mounted paint exhaust fans (EF-1 to 6) discharge 46525L/s of air and two propane fired makeup units (MUA-1/2) provide 42965L/s to provide a cross sectional spray area velocity of 0.508m/s (Cross sectional area of building is 91m²).

Painting Sequence of Operation

1. System shall only start up if filter differential pressure, booth pressure, door contacts and all other safeties are within safe parameters. Solenoid valve controlling compressed air to shop shall close when system is started. If any safeties are outside of safe parameters alarm shall display at panel to identify unsafe condition.
2. When paint mode is enabled with safe conditions the fresh air dampers on makeup air units (MUA-1,2) shall open. End switch required to confirm damper is open.
3. After paint mode is enabled all paint exhaust fans (EF-1,2,3,4,5,6) shall be enabled. Airflow: 46525l/s.

4. Once exhaust air flow has been confirmed all makeup air units to be enabled (MUA-1,2). Airflow: 42965l/s. When all units are confirmed enabled, solenoid valve may now open and the exterior light shall indicate operation in process.
5. Control panel shall have supply air temperature adjustment.
6. Once painting is complete and operator shuts down system solenoid valve shall close and system shall continue in purge cycle for a minimum of five minutes at full system flow. Purge shall be adjustable to higher purge times.
7. Once purge cycle has ended operator has the option of selecting cure cycle. During cure cycle mua-2 shall operate at full flow (16525l/s) and fans EF-3,4,5,6 shall operate at full flow (18200l/s). There shall be a timer to allow the curing to run up to twelve hours.
8. After purge and cure cycles have ended compressed air solenoid may open.
9. When paint, purge, and/or cure cycle is enabled all blasting equipment shall be locked out so they cannot function.
10. Opening the exterior doors shall shut down the system.

Blasting Operation

In accordance with ANSI Z9.4 Abrasive Blasting the system is designed to provide safe blasting operation. There is a blast curtain installed to reduce the area of the building so that such velocities can be maintained. The blasting medium is metal shot and only low-toxicity materials such as abrasives of steel oxide and contaminants such as iron oxide scale having permissible exposure limits of $5\text{mg}/\text{m}^3$.

Blasting Equipment

Four cartridge filter booths (DC-2 to 5) filter 17240L/s to provide a cross sectional velocity of 0.305m/s in accordance with ANSI Z9.4-1985. All air is recirculated within the space through the ProTura Nanofiber medium and dust is collected from the unit by the user. Ductwork has been added to the discharge of the booths to provide enhanced recirculation range.

Blasting Sequence of Operation

1. System shall only start up if door contacts and all other safeties are within safe parameters. Solenoid valve controlling compressed air to shop shall close when system is started. If any safeties are outside of safe parameters alarm shall display at panel to identify unsafe condition.
2. Cartridge dust collectors shall be enabled from control panel.
3. Solenoid valve to supply shop air shall open.
4. Opening the exterior doors shall shut down the system.

Blasting Recovery Equipment

After blasting, abrasive that is found on the floor can be swept into the floor hopper. The high efficiency fan will carry the abrasive to the cyclonic system. The cyclonic system will separate the dust from good abrasive. The dust will then be transferred to the dust collector (DC-1). The good abrasive is retained in the storage hopper until the pressure vessel requires filling.

Ventilation Pressurization System

The non-explosion proof electrical/controls area is provided with a pressurization fan (SF-1) which will pressurize the area anytime the painting process is engaged. Since the Paint Hall is negatively pressurized this system provides a secondary safety feature.

Vehicle Exhaust System

The building is provided with two fans (EF-7,8) and fresh air intakes which will be activated by Nitrogen Oxide and Carbon Monoxide sensors/transmitters. Once activated the system will remove 2080L/s of air and replace it with fresh air until gas levels are within safe operating parameters. This allows safe offloading of material and the complete system is explosion proof.

Breathing Air System

The system is designed to provide Grade "D" Breathable air for compliance with OSHA 29 CFR 1910.134. The system effectively removes liquid water, oily gaseous hydrocarbons, dirt, rust, scale and other potentially dangerous contaminants, to provide safe compressed breathing air. The onboard carbon monoxide monitor continuously samples the air supplied for compliance with current OSHA standards. A complete Quality Air Breathing System consists of four stage filtration, automatic float drain, broad band monitor, audible and visual alarms, self relieving regulator with gauge, and quick connects, all panel mounted. Operators will wear self contained pressurized breathing suits when painting or blasting

Compressed Air

A variable speed compressor (COMP-1) provides 895kPa compressed air to a 500 gallon receiver (T-1) for facility requirements. The cartridge filter booths (DC-2 to 5) and recovery system dust collectors (DC-1) utilize compressed air for pulse cleaning of the filter cartridges, paint spray pumps use air as the propellant, the breathing air system converts compressed air to breathing air. The compressed air system is provided with an 4400L/s ventilation system (SF-2) to prevent overheating.

Miscellaneous Design Requirements

- Galvanized steel for general ventilation systems.
- Exterior ductwork to be insulated with 50mm rigid insulation and wrapped with weather guard ductwork covering.
- Ducts will be routed to permit reasonable access for cleaning.
- Ductwork diffusers and air moving equipment will be designed to provide maximum air coverage over entire length of building while meeting owners space requirements.
- Propane system has been designed and installed by Superior Propane
- Compressed air piping will be threaded steel pipe to ASTM A53.

1.0.3 Controls

Painting System

Programmable Logic Controller will provide the control logic to operate the paint system sequence of operation and safety interlocks. Sensors, transmitters and similar devices will use industry standard protocol and be explosion proof design where required.

Blasting System

The blasting and blasting recovery system have manufacturer provided line voltage control panels which allow enabling and disabling of the equipment. There is a pneumatically operated kill switch on the blasting system in case of emergency

Breathing Air System

Manufacturer supplied controls will indicate when dangerous breathing conditions exist and alert the worker.

Vehicle Exhaust System

Programmable Logic Controller will provide the control logic to operate system.

2.0 Electrical

2.0.1 Life Safety

Fire Alarm

The building will be provided with a fire alarm system to the requirements of the National Building Code of Canada. The system will be single stage and will include thermal and smoke detectors, manual pull stations, alarm horns and strobe lights, where required. The system alarms will be visible and audible throughout the building, taking into consideration occupants who may be hearing impaired. The control panel shall be microprocessor-based, supervised, with space for future expansion. Bypass switches will be provided on the panel to allow testing of bells, fan shut down or remote station notification. All fire alarm field initiating devices will be addressable including heat and smoke detectors. A passive graphic will be located in the main lobby displaying the layout and zoning for fire department officials. Devices will be suitable for Class 1, Division 1 usage where required.

Exit Lighting Systems

Exits and means of egress will be marked by electrically illuminated exit signs. Exit signs will use energy efficient LED lamps, be self powered through internal batteries and meet the requirements of the National Building Code of Canada and Life Safety Code. "Running Man" type exit signs will be used. Where required, signs will be suitable for Class 1, Division 1 installation.

Emergency Lighting Systems

Emergency lighting will be provided throughout the building in accordance with the requirements of the National Building Code of Canada and the Life Safety Code (NFPA 101). Emergency Lighting will be provided throughout the entire building. Lighting units will use batteries as power supply and shall have capacity sufficient to provide illumination for 90 minutes. Conventional battery packs will be used as appropriate. Fixtures installed in Class 1, Division 1 locations will be rated for Class 1, Division 1 use.

2.0.2 Electrical Service

Electrical Distribution Overview

Based on the size of the building and our past experience with similar projects, the expected demand load is in the order of 364kW. We expect the electrical service shall be sized 600A, 347/600V. Generally, mechanical, lighting, heating, and other large loads will be supplied at 347/600V while receptacles and general power will be supplied at 120/208V.

Exterior Load Break Switches

A set of pole-mounted exterior load break switches will be supplied and installed by the electric power utility. The electrical consultant will coordinate with the utility to provide any required information.

Interior Switchgear

Distribution equipment shall consist primarily of moulded-case style distribution and panel boards.

Distribution Transformers

Pole-mounted transformers will be supplied and installed by the electric power utility. The electrical consultant will coordinate with the utility to provide any required information. The transformers will be installed on the existing service pole and replace the existing transformer bank. The new owner supplied drop pole will be located as close as possible to the building while maintaining the required clearances. Underground transformer duct bank location will also be selected to be lower than the main electrical room in order to prevent water entry through the service conduits. A cash allowance shall be used to cover any contribution in aid of construction.

Underground Service

Underground ducts will be installed on the low voltage side of the transformers.

Service Entrance Equipment

The main service entrance will consist of two sections a switchboard incorporating a main breaker rated at 600A complete with a utility metering compartment and a circuit breaker style distribution section

2.0.2 Electrical Equipment

Conductors

Wire size for power or lighting circuits will be minimum No. 12 AWG with bonding conductors a minimum of No. 14 AWG. In general, wire type will be copper with RW90 XLPE insulation. Insulation ratings will be a minimum of 600V. Aluminum alloy conductors will be acceptable for feeders and branch circuits #6AWG and larger, in order to achieve cost savings.

Conductors running exposed through the paint hall shall be of a type acceptable for installation in Class 1, Division 1 explosion-proof environments. Generally this shall be Teck cable. Rigid galvanized conduit will also be acceptable.

Dry-Type Transformers

Transformers will have high efficiency at low loads and have a minimum K7 harmonic current capacity. Transformers will be equipped with hinged doors to decrease shock and arcing hazards during maintenance.

Disconnect/Safety Switches

Fused and non-fused disconnect switches will be required for code compliance in association with mechanical systems. Disconnects shall be capable of being locked in either position, with mechanically interlocked doors.

Equipment Enclosure

Equipment enclosures shall be rated NEMA 1 and will be equipped with sprinkler shields and water-tight connections.

All equipment located in the paint hall shall be equipped with Class 1, Division 1 rated explosion-proof enclosures.

Junction Boxes

Junction boxes shall meet the requirements of the Department of Transportation and Works master specification. Where junction boxes are installed in the paint hall they shall be rated for a Class 1, Division 1 explosion-proof environment.

Wiring Devices

Generally, receptacles, switches, and other wiring devices shall be ivory in colour, specification grade, with stainless steel cover plates. Circuit tags shall be affixed to wiring devices to aid in future maintenance. All wiring devices installed in the paint hall shall be rated for a Class 1, Division 1 explosion-proof environment.

Circuit Breakers

All moulded case circuit breakers shall be bolt-on type.

Conduits

All interior conduits installed above ground shall be thin wall EMT, except in the paint hall where they shall be rigid galvanized conduit. Underground and in-slab conduit will be PVC. All exterior conduits installed above ground shall be epoxy coated rigid galvanized.

Motor Starters

Where possible, motor starters shall act as both actuating devices and physical disconnects. Hand-Off-Auto operation will be typical of most starters.

Grounding

All ground conductors will be copper. The ground system shall consist of rod-type electrodes connected with a bare, stranded grounding conductor. The water entrance pipe shall not be used as the main electrode, though it may be connected to the ground bus in order to improve the system ground.

Contactors

Contactors shall be installed for the control of exterior lights and other systems on automatic time control.

Electric Heating

Backup electric heating will be provided to the mechanical heating systems. Unit heaters will be used in most areas. Where heaters are installed in the paint hall they shall be rated for installation in Class 1, Division 1 explosion-proof environments.

Lighting

Lighting systems will use fluorescent lamps. Where lights are installed in the paint hall they shall be rated for installation in Class 1, Division 1 explosion-proof environments.

EQUIPMENT LIST

EQUIPMENT SCHEDULE

TAG NO.	APPLICATION	MODEL NO.	MANUF.	AIR FLOW (L/s)	STATIC (Pa.)	MOTOR KW.	ELECTRICAL		MOUNTING	REMARKS
							VOLTAGE	PH. HZ.		
EF-1	OWNER SUPPLIED PAINT EXHAUST	JTEBC605E8363	COOLAIR	14165	250	7.46	208	3 60	STRUCTURAL STAND	c/w DUCT CONNECTOR, DISCONNECT
EF-2	OWNER SUPPLIED PAINT EXHAUST	JTEBC605E8363	COOLAIR	14165	250	7.46	208	3 60	STRUCTURAL STAND	c/w DUCT CONNECTOR, DISCONNECT
EF-3	OWNER SUPPLIED PAINT EXHAUST	7F841	COOLAIR	4250	125	1.5	208	3 60	ROOF	c/w DUCT CONNECTOR, DISCONNECT
EF-4	OWNER SUPPLIED PAINT EXHAUST	7F841	COOLAIR	4250	125	1.5	208	3 60	ROOF	c/w DUCT CONNECTOR, DISCONNECT
EF-5	OWNER SUPPLIED PAINT EXHAUST	7F841	COOLAIR	4250	125	1.5	208	3 60	STRUCTURAL STAND	c/w DUCT CONNECTOR, DISCONNECT
EF-6	OWNER SUPPLIED PAINT EXHAUST	7F841	COOLAIR	4250	125	1.5	208	3 60	STRUCTURAL STAND	c/w DUCT CONNECTOR, DISCONNECT
EF-7	VEHICLE EXHAUST SYSTEM	CWB-161-5	GREENHECK	1040	125	0.373	208	3 60	WALL	c/w DUCT CONNECTOR, EXPLOSION PROOF DISCONNECT AND MOTOR, WALL COLAR, GRAVITY DAMPER, NO SPARK CONSTRUCTION, ALUMINUM DAMPER GUARD,
EF-8	VEHICLE EXHAUST SYSTEM	CWB-161-5	GREENHECK	1040	125	0.373	208	3 60	WALL	c/w DUCT CONNECTOR, EXPLOSION PROOF DISCONNECT AND MOTOR, WALL COLAR, GRAVITY DAMPER, NO SPARK CONSTRUCTION, ALUMINUM DAMPER GUARD,
DC-1	BLASTING RECOVERY SYSTEM	DCM-200	ECOBLAST	-	-	7.46	600	3 60	FLOOR	REQUIRES 120/1/60 CIRCUIT FOR PRESSURE VESSEL CONTROLS
DC-2	DUST COLLECTION SYSTEM	MGB-09-01-H	UNITED AIR SPECIALISTS	5760	500	7.46	600	3 60	FLOOR	REQUIRES 120/1/60 CIRCUIT FOR SOLENOID FOR FILTER CLEANING OF UNITS
DC-3 DC-4 DC-5	DUST COLLECTION SYSTEM	MGB-06-01-H	UNITED AIR SPECIALISTS	3825	500	5.6	600	3 60	FLOOR	REQUIRES 120/1/60 CIRCUIT FOR SOLENOID FOR FILTER CLEANING OF UNITS
COMP-1	AIR COMPRESSOR	GA90VSD-FF	ATLAS COPCO	292	910	112	600	3 60	FLOOR	946L, 860HPg, CRN FOR NFLD:
T-1	AIR COMPRESSOR RECEIVER	C-100950	STEEL FAB	-	-	-	-	-	FLOOR	PLUG IN POWER, TOTAL OF TWO SYSTEMS
-	BREATHING SYSTEMS	MODEL 50	ECOBLAST	-	-	-	120	1 60	WALL	
MUA-1	MAKEUP AIR UNIT	TMC-230	TEMPRITE	26440	125	30	600	3 60	STRUCTURAL STAND	1407KW OF PROPANE FIRED HEAT
MUA-2	OWNER SUPPLIED MAKE UP AIR UNIT	B-3000	BANANZA	16525	250	7.46	208	3 60	STRUCTURAL STAND	867KW OF PROPANE FIRED HEAT

**BLASTING EQUIPMENT
DATA SHEETS**

PNEUMATIC RECOVERY SYSTEM FOR BLAST ROOMS



ECO is a leader in its field in the design, fabrication and installation of sandblasting rooms. Depending on your surface treatment requirements, we can provide a complete turn-key solution including a new room, or provide the necessary equipment and technical support to guide you in the self manufacturing of your room. This option makes it possible to save substantially on your construction expenses.

With minimal to no maintenance required, the ECO Pneumatic System will provide a safe and efficient indoor surface treatment environment, independent of outdoor weather conditions. The result is a safer environment for the operators as well as providing protection against harmful sandblasting dust.

The ECO pneumatic recovery system feature the safest and most effective process in surface treatment while recycling the most popular abrasives such as glass bead, aluminum oxide, steel shot, and steel grit. Manufacturers achieve substantial consumption savings of abrasives (recycling rates of 95% and more can be realized).

FEATURES

Technical

ECO offers various types of recovery floor configurations which can be adapted according to your space and production requirements. Mounted on the surface or excavated, dimensions can vary from 4 feet in length for compact installations, to more than 40 feet for high output industrial facilities. The configurations are practically infinite.

Our shallow and space saving recovery design is easy to install and requires limited maintenance. Most excavated installations only require a 17" excavation. Our recovery systems can utilize your existing blast and safety equipment. The fundamentals behind an effective Recovery Systems are to recover, recycle and re-use the abrasive.

R.O.I. (Return on investment)

Recycling abrasives will enable the user to achieve considerable savings in abrasives consumption while protecting the environment from harmful sandblast dust.

Steel grit abrasives can be recycled and used up to 100 times compared to only on use with the non-recyclable media. The non-recyclable sandblasting abrasives are low in cost but they can only be used for one sandblasting cycle. Because of their fragile molecular structure, they deteriorate quickly while generating harmful sandblasting dust and significantly reduce the visibility of the operators.

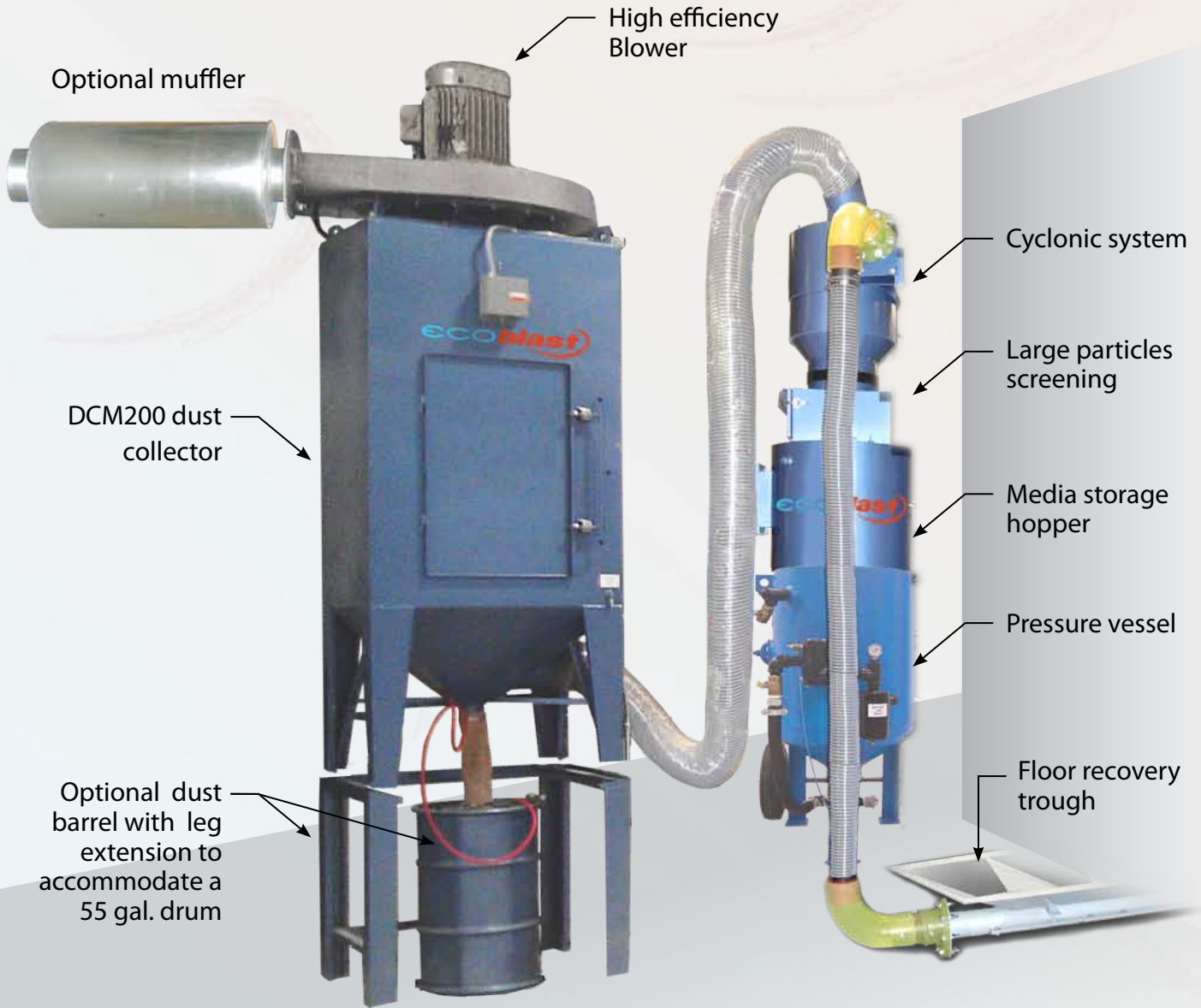
Recyclable Abrasives vs Non-Recyclable Abrasives (consumption @ 4 000 lbs / day)

DESCRIPTION	SILICA SAND	STEEL GRIT	SAVINGS \$/ DAY
lbs. per day	4 000	4 000	--/--
Abrasive (price/lbs) x % breakdown	(\$0.12 x 4000) x100 % = \$ 480	(\$0.75 x 4000) x 5 % = \$ 150	\$ 330.00
Cleaning	4h x \$ 25	2h x \$ 25	\$ 50.00
Abrasive disposal cost	\$8 / day	\$0.40 / day	\$ 7.60
Additional electrical cost (600V - 8A)	\$0.00 / day	\$6.00 / day	- \$ 6.00

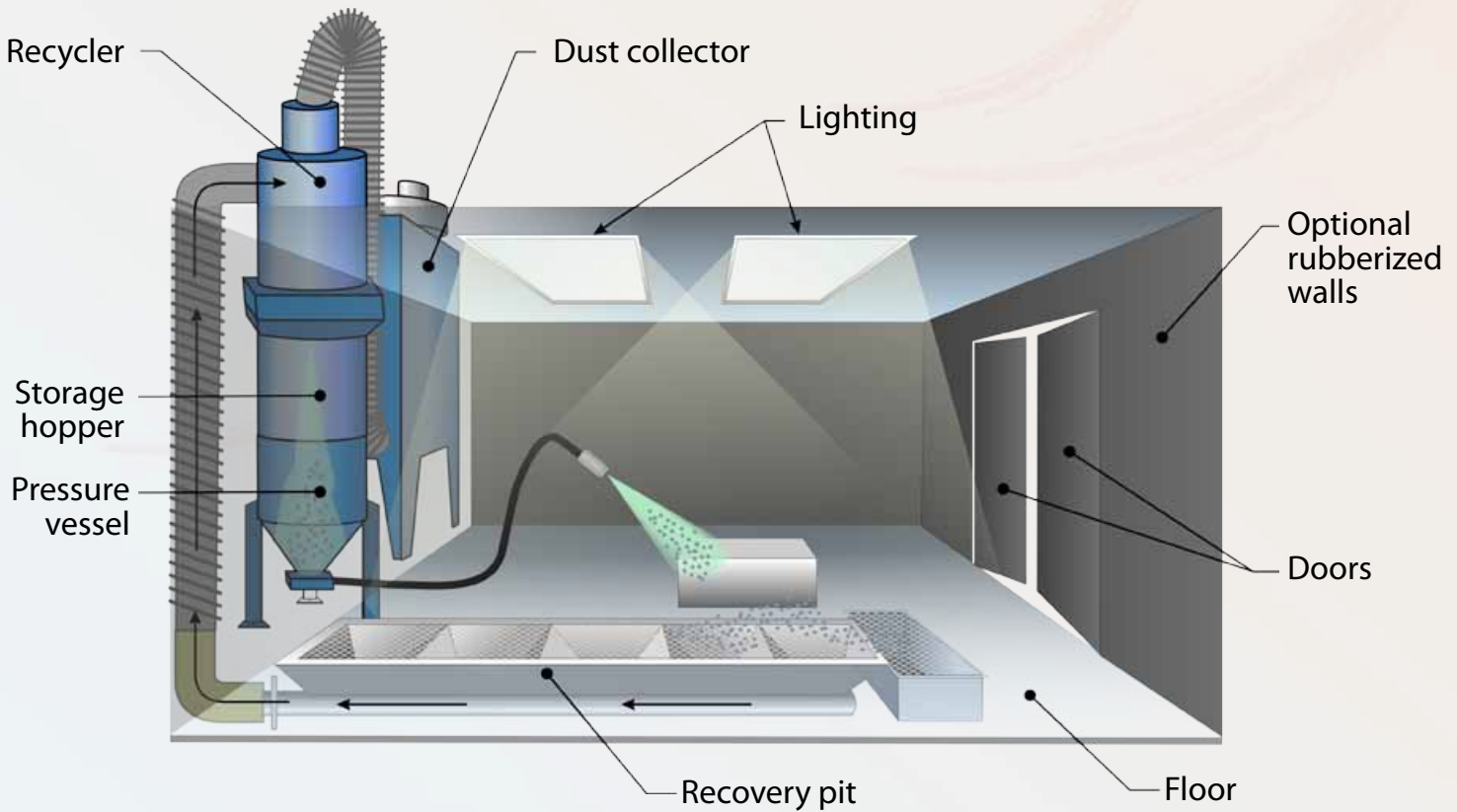
Total savings per day : \$ 381.60

Please contact one of our specialists in surface treatment. They will be able to analyze your needs and evaluate all the technical and financial benefits associated with our recovery and recycling systems.

MRS200 RECOVERY SYSTEM WITH OPTIONS



HOW IT WORKS



The operation of a pneumatic recovery system is very simple. Following the blasting process, the residual abrasives accumulated on the floor can be manually or mechanically swept into the recovery pit.

The pneumatic recovery system collects and conveys the used abrasive to the recycler to be cleaned and recycled. The clean abrasive is then deposited in the pressure vessel to be used again for disposal blasting process, while the dust is conveyed to the filtration system.

RECYCLABLE ABRASIVES

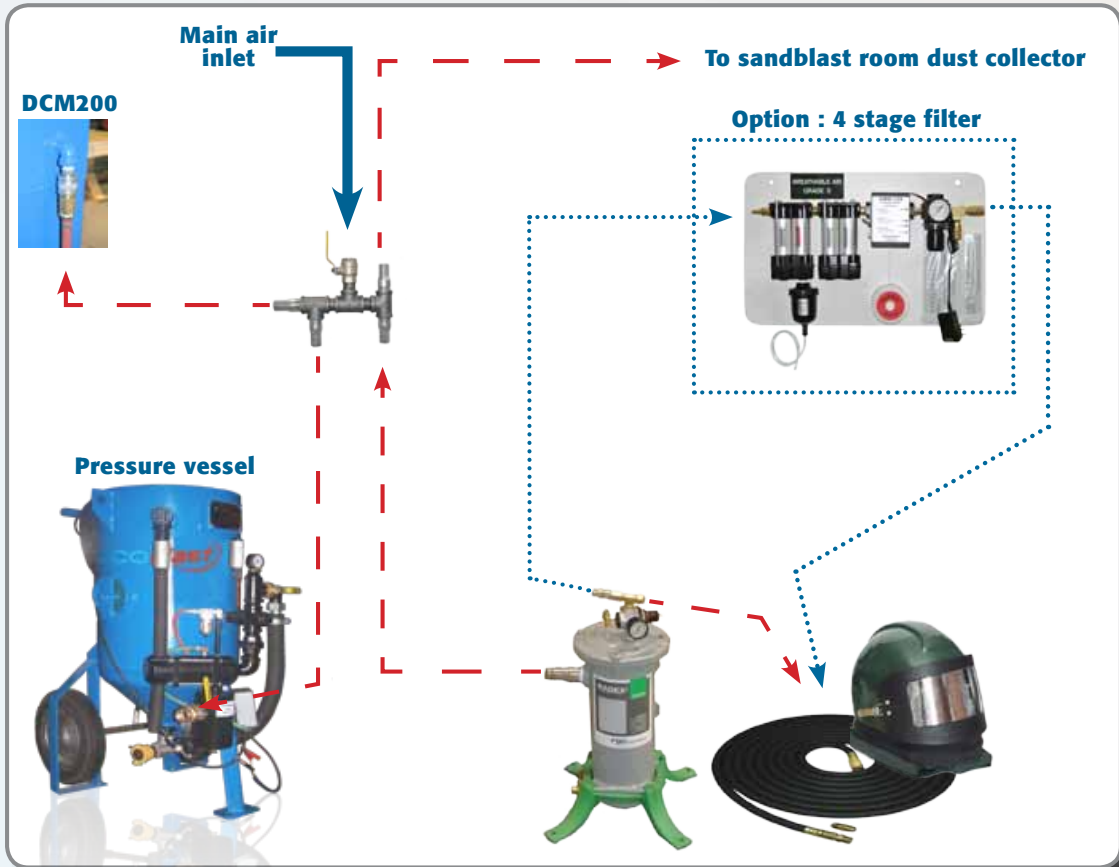
TYPE OF ABRASIVE	HARDNESS	DURABILITY	DENSITY
Glass Beads	50-60 Rc (5-7 Mohs)	5-8 cycles	2.6 g/cc
SAE Steel Shot	42-65 Rc (6-8 Mohs)	100-200 cycles	7.4 g/cc
Stainless Steel Shot	20 Rc (work hardens to 60 Rc)	3500-4500 cycles	7.0 g/cc
Plastic Media	3-4 Mohs	4-6 cycles	1.5 g/cc
Aluminium oxide	50-65 Rc (5-7 Mohs)	25-40 cycles	3.7 g/cc
Ultra Soft Shot	3-3.5 Mohs	100-200 cycles	7.4 g/cc

OPERATOR'S AIR FILTRATION SYSTEM

ECO provide a 4 stages filtration system for operator's breathable air fed hood.

System will remove moisture, oil vapors, gaseous hydro carbons, dirt rust scale and other potentially dangerous contaminants to provide clean sorte compressed breathing quality air.

The onboard carbon monoxide monitor constantly samples the supplied air for compliance with OSHA standards.



CHOICES OF PRESSURE VESSEL

We have a large range of heavy duty portable and stationary sandblast pots.



Model 346
3.5 pi³ capacity



Model 646
6.5 pi³ capacity



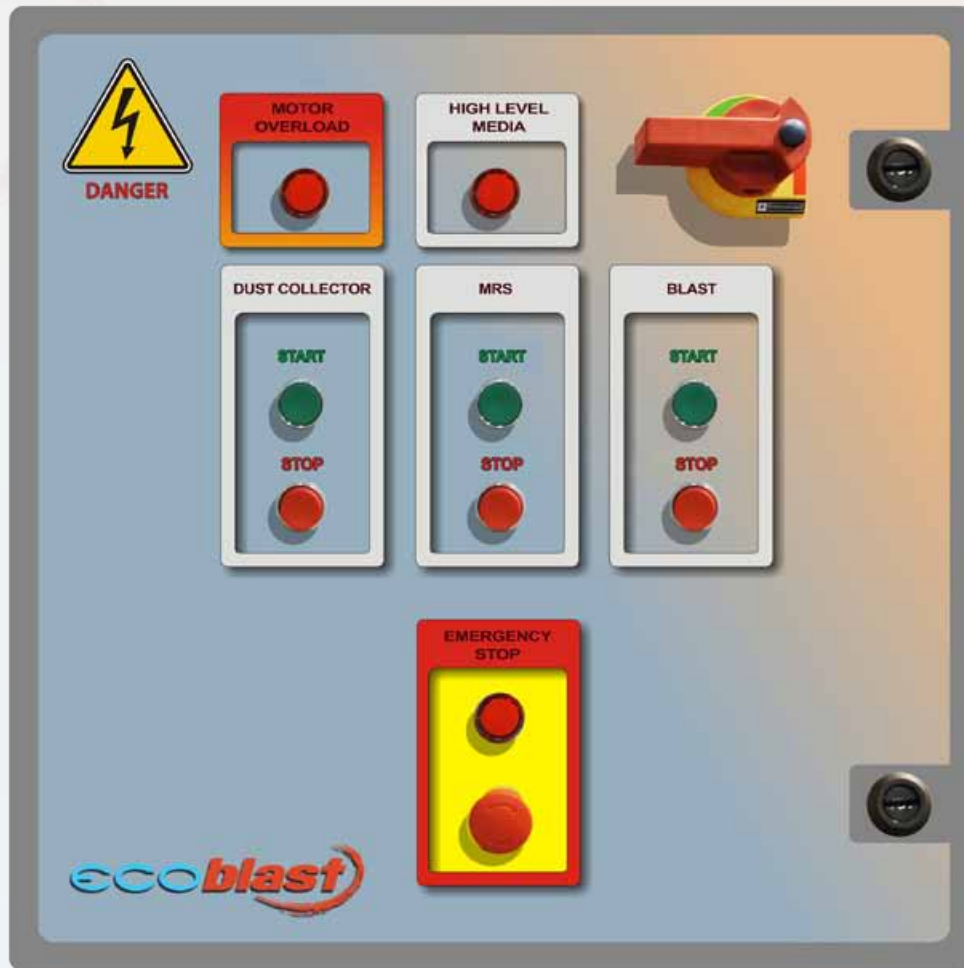
Model 1046
10 pi³ capacity

Pressure hold system

- Reduce abrasive consumption
- Reduce moisture problems
- Lower air consumption
- Less mechanical wear
- Smooth start and stop

BLAST ROOM ELECTRICAL CONTROL PANEL

ECO can supply a prewired main control panel for easy control access to all major components, with motor overload and emergency stop button.



Main Control Panel

BLASTROOM DUST COLLECTOR

A wide selection of models is available, up to 50 000 CFM.

Vertical design of the our cartridges provides more efficient pulsing of dust, eliminating uneven dust loading associated with horizontally mounted cartridges.



Simple and safe cartridge replacement system that does not require any tool.

A warning light indicates when the cartridges must be replaced.



Automatic pulse cartridge cleaner



SAND BLAST ROOM SYSTEMS

We offer a vast choice of customized systems to meet your needs.



SOME EXAMPLES OF SAND BLAST ROOM INTERIORS



Full recovery floor



Triple or dual recovery floor

PRESSURE VESSEL C/W STORAGE HOPPER EXAMPLE





OUR MISSION

Who we are

ECOblast is a leading industrial manufacturer of standard and custom engineered equipment for the surface treatment industry and the solvent recycling industry.

Mission

ECOblast is dedicated to being an innovative and trusted supplier in the conception, fabrication and distribution of surface treatment equipment and recycling equipment.

The success of our mission relies on the following core values :

Innovation

Integrity

Quality

Markets served

The products, technologies and industry expertise of ECOblast are used in a wide range of manufacturing and industrial applications, including but not limited to :

- *General Manufacturing & Construction*
 - *Industrial Equipment*
 - *Aerospace and Military*
 - *Shipyards*
 - *Automotive & Railroads*
 - *Foundry & Forge*
 - *Power & Energy*
 - *Steel Fabrication*

For more details about other options and available accessories, sales, warranties, distribution and service, contact us at :

Tel: **1 877 629-8202** Tel. : **450 963-2200** Fax : **450 963-5122**

Head office : 4160 Industrial Blvd. Laval Quebec Canada H7L 6H1

www.ecoind.com • info@ecoind.com

DUST COLLECTORS

DC-2,3,4,5



United Air Specialists, Inc.

a CLARCOR company

MCB SERIES



CROSS VENTILATION CARTRIDGE DUST COLLECTOR

Clean air. It's what we do.®

MCB SERIES

THE MOST
efficient, quiet
AND
cost-effective
SYSTEM FOR
cleaner factory air.



*...versatile configurations—
available as a single unit
or in combination with a
containment booth.*

When it comes to superior dust collection, there's no better choice than the MCB Series Cross Ventilation Cartridge Dust Collector. Designed by the leading air quality experts at United Air Specialists, this completely self-contained system provides high-filtration efficiency, freedom from source capture obstructions and easy maintenance. Plus, it offers versatile configurations—available as a single unit or in combination with a containment booth.

A WIDE RANGE OF APPLICATIONS

Ideal for applications where source capture is impractical, MCB units remove fine airborne dust resulting from a variety of finishing operations. Because workers benefit from complete freedom of movement, excellent lighting and a clean breathing zone, they can easily perform any type of manufacturing process—from grinding, sanding and welding to abrasive blasting, batch mixing and powder coating.



Clean air. It's what we do.®

ONE COST-EFFECTIVE PACKAGE GIVES YOU ALL THESE VALUABLE FEATURES:

High-Efficiency Dust Filtration

Prevents fine dust from migrating to areas with sensitive electrical and mechanical equipment—reducing facility maintenance.

Internal Pulse Cleaning System

Ensures extremely quiet operation.

High-Efficiency Filters

Provide long filter life for a variety of applications.

Customized Booth Configurations

Available to meet specific requirements, as well as several options for enclosure and wall materials.

Modular Design

Allows for proper sizing for each specific user and customer application.

Cam-action Locking Device

Facilitates fast, simple and tool-free cartridge filter installation and replacement.



Backward-Inclined Airfoil Wheel & Low RPM Motor

Provides the quietest and most efficient operating system in the industry.

Powder Coated Finish

All components have electrostatically applied paint that prevents fading and chalking.

Enlarged Louver Doors

Vertical doors with increased height effectively sweep the operator's breathing zone of potentially harmful contaminants.

Single-Sided Service Access

Makes it easy to back units up against the wall—saving valuable floor space.

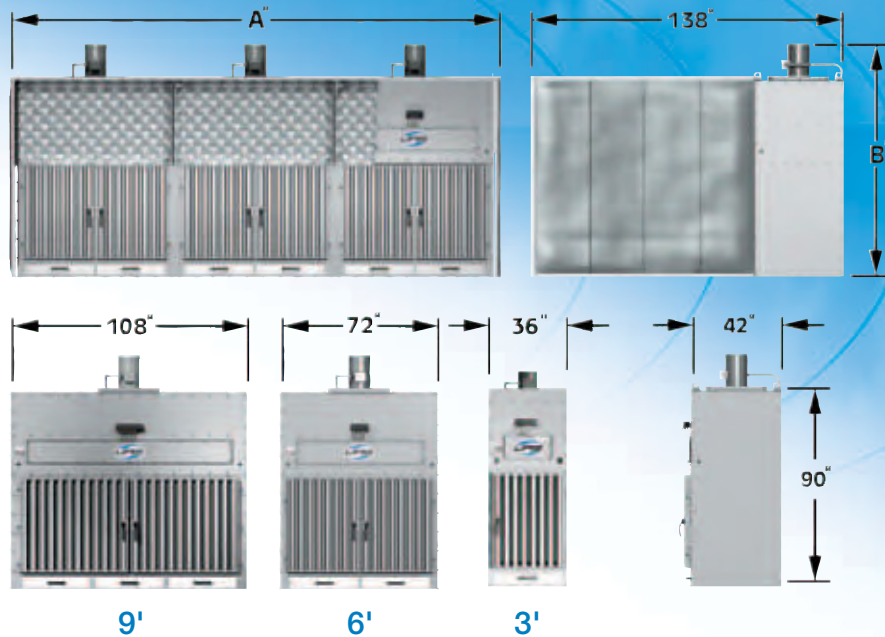
Aluminum Dust Drawers with Dual Handles

Offers large capacity dust storage area with sturdy, yet lightweight construction to allow for easy dust removal.



SIZES AND DIMENSIONS

Versatile configurations and multiple airflow options allow for optimum equipment sizing and selection. Additionally, custom booth sizes and configurations are available to meet unique applications.



Model	A (in)	B (in)		Clean Airflow (cfm)		Average Face Velocity (fpm)		No. of Cartridges	Filter Area (ft ²)
		STD FLOW	HIGH FLOW	STD FLOW	HIGH FLOW	STD FLOW	HIGH FLOW		
MCB-03	36	N/A	97.69	N/A	4,500	N/A	200	4	1,360
MCB-06-01-X	80	104.16	105.66	6,750	9,000	150	200	8	2,720
MCB-09-10-X	116	105.66	106.66	10,125	13,500	150	200	12	4,080
MCB-12-02-X	153	104.16	105.66	13,500	18,000	150	200	16	5,440
MCB-15-11-X	189	105.66	106.66	16,875	22,500	150	200	20	6,800
MCB-18-03-X	226	104.16	105.66	20,250	27,000	150	200	24	8,160
MCB-18-20-X	225	105.66	106.66	20,250	27,000	150	200	24	8,160
MCB-21-12-X	225	105.66	106.66	23,625	31,500	150	200	28	9,520
MCB-24-04-X	298	104.16	105.66	27,000	36,000	150	200	32	10,880
MCB-24-21-X	298	105.66	106.66	27,000	36,000	150	200	32	10,880
MCB-27-30-X	334	105.66	106.66	30,375	40,500	150	200	36	12,240

OPTIONS AND ACCESSORIES

Booth Enclosures

- **Accoustical Metal** provides superior sound absorption and maximum durability.
- **Accoustical Fabric** offers lower cost sound containment alternative.
- **Vinyl Fabric** provides low-cost dust containment option.

Additional Items

- Aluminum Fan Wheel
- Dust-Resistant Light Fixtures
- Sprinkler Couplings
- Photohelic® Gage
- Control Panel
- Motor Starters
- Safety Afterfilter
- Magnehelic® Gage
- Custom Paint Colors
- Dust Drawer Re-entrainment Baffle

Filters

1. Fire retardant (Supra-Net-FR)
2. Half-pleat (Supra-Fibrous)
3. Half-pleat fire retardant (Supra-Fibrous-FR)

IMPROVES WORKER PRODUCTIVITY AND SAFETY

Our MCB Series has been designed with your employees in mind. Helping your factory comply with OSHA regulations, it offers:

The most efficient fume removal

The MCB unit creates cross-draft ventilation that eliminates hazardous contaminants before recirculating clean air. Plus, the MCB prevents fine dust from migrating to areas with sensitive electrical and mechanical equipment—reducing facility maintenance.

Freedom of movement

Since there are no obstructions from source capture devices, workers can perform their jobs without the need for fume arms, hoods or other barriers that can interfere with manufacturing operations and part movement.

The lowest sound levels

Offering the industry's quietest environmental control booth, the MCB unit uses an enclosed pulse cleaning system that limits sound levels up to 50% less than competitive models.



REDUCES SERVICE TIME AND COST

Our MCB units also greatly reduce air cleaning costs. Here's why:

Easy installation and inspection

Requiring no duct work, fewer assembly modules and less electrical hookups and motors, the MCB unit is simple to install. Plus, it requires no rear access—making inspection easy and optimizing floor space.

Fewer cartridge change outs

Using advanced computer modeling, our engineers have developed a superior cleaning system that extends cartridge filter life.

Reduced utility costs

A superior louver door design ensures optimal airflow across your workstation—translating into reduced system losses and energy requirements.



United Air Specialists, Inc.

a CLARCOR company

Cartridge Filters

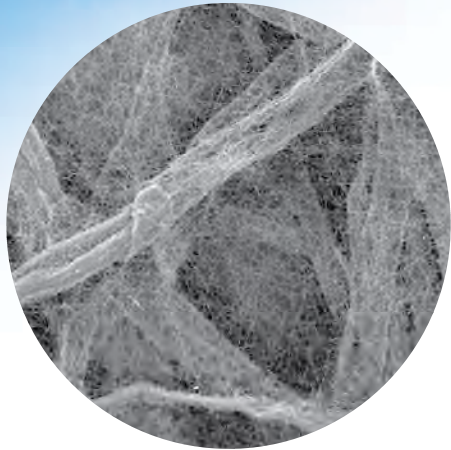
featuring ProTura[®] Nanofiber technology



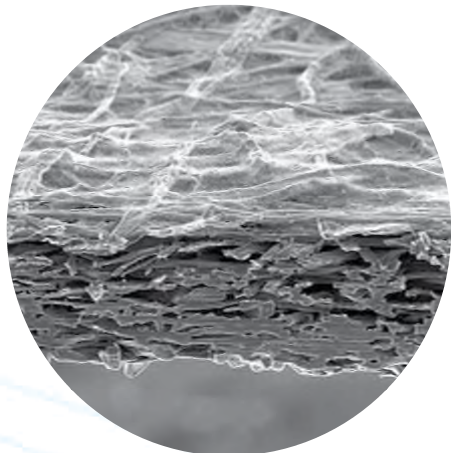
DUST COLLECTOR REPLACEMENT FILTERS

Clean air. It's what we do.[®]

Discover the difference in performance and value



ProTura® Nanofiber surface layer at 600x magnification



ProTura® Nanofiber surface treatment provides an ultra-thin, web-like coating

UAS CARTRIDGE FILTERS— INVEST IN THE BEST

Keep your dust collectors running efficiently and energy smart with high-quality cartridge filters from United Air Specialists. Available in an assortment of media—including ProTura® Nanofiber—UAS cartridge filters lead the industry in performance, efficiency and value. Whether innovating new filtration media, improving cartridge filter performance or designing and manufacturing specialty filters, UAS delivers the highest quality and value-based solution.

Keep in mind that not all cartridge filters are created equal. Low-cost commodity filters typically have a shorter filter life cycle, lower efficiency rating and actually contribute to an increase in the energy demands of a dust collection system. In the long run, use of generic filters drives up operational costs due to the need for more frequent filter replacements, increased compressed air consumption and higher maintenance.

THE NEW STANDARD IN FILTRATION TECHNOLOGY

Nanofiber technology has been independently proven to achieve higher initial efficiency, cleaner air, lower pressure drop and greater energy savings than commodity filter media. This is accomplished by applying an extremely fine web-like coating of fibers onto the surface of UAS' cartridge filter media. The coating, or nanofiber layer, then keeps dust on the filter's surface so it can be easily removed during the compressed air cleaning cycle. As a result, users benefit from several advantages, including:

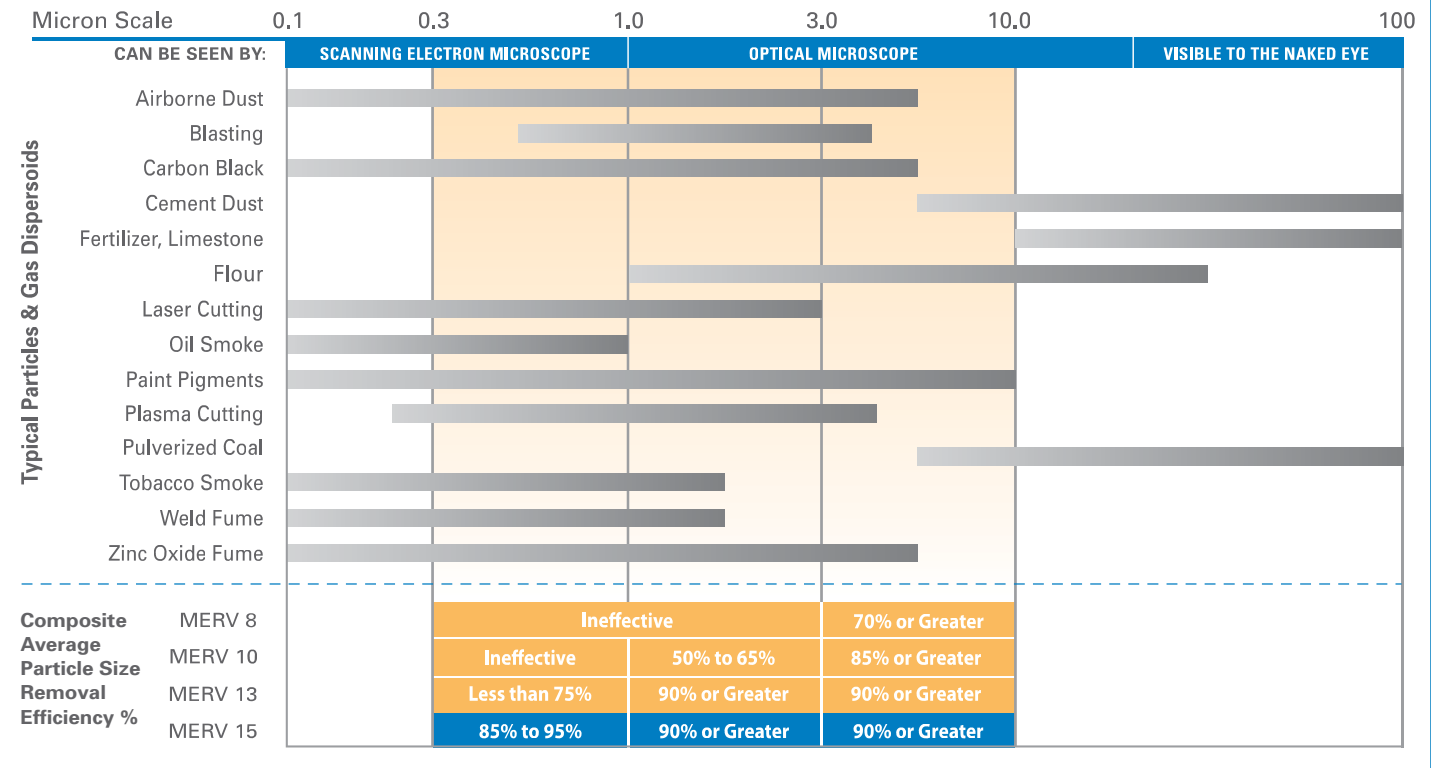
- **Capture of submicron particles** and reduction of dust collector emissions for cleaner and safer workplace air
- **Superior surface-loading technology** to enhance dust cake release, leading to extended filter life
- **Better cleaning efficiency** with fewer pulses and significantly less compressed air usage
- **Lower pressure drop** over the life of the filter and less overall energy cost to operate the system

Nanofiber technology has been independently proven to achieve higher initial efficiency than commodity filter media.



Clean air. It's what we do.®

FILTER EFFICIENCY RATINGS FOR CAPTURE OF COMMON CONTAMINANTS



UNDERSTANDING MERV RATINGS

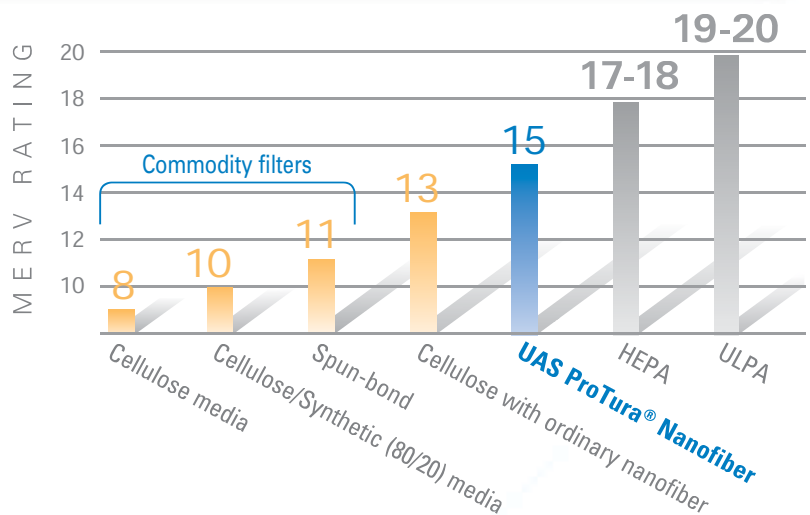
The industry's most accurate test method to measure a cartridge filter's efficiency is ASHRAE 52.2, which is the method for testing general ventilation air-cleaning devices for removal efficiency by particle size. Using this benchmark, filters are assigned a MERV (Minimum Efficiency Reporting Value) rating to determine how well they capture dust based on particle size. The higher the MERV rating, the more efficient the filter is at removing smaller particulate.

Although MERV is important, it can also be misleading. A filter may achieve a high MERV rating but result in higher pressure drop. So be aware of filters that use restrictive surface layers to boost efficiency as they ultimately lead to an increase in pressure and frequent filter replacement.

ProTura® Nanofiber cartridge filters not only offer a MERV 15 rating but also deliver the ultimate combination of high efficiency, low operating costs and longer filter life.

Can MERV Ratings Determine Dust Collector Performance?

MERV ratings are only an indication of a dust collector's filter efficiency while in contrast dust collector performance is measured through total emissions which are the result of ongoing dust accumulation, operating pressure and filter cleaning cycles. Emissions are minimized by retaining dust on the media surface making it easier and less frequent to clean off. Therefore, the best filter for industrial dust collectors will offer high efficiency, low pressure drop and excellent surface-loading capacity to reduce emissions, lower operating costs and ensure longer filter life.



Independent lab testing has certified ProTura® Nanofiber filters at MERV 15, which means they are up to 95% efficient on 0.3 to 1.0 micron size dust.

SELECTING THE RIGHT FILTER MEDIA

Efficiency Rating
Efficiency of the filter as it relates to dust particle size

Surface-Loading Capacity
Ability to form and easily clean a dust cake on the media surface

Pressure Drop
Lower resistance to airflow over the life of the filter uses less energy

Consider these factors to help you choose the best filter media for your industrial process

Environmental Conditions
Ambient air characteristics that may affect the filter

Other Resources
Enhancements to increase efficiency, durability, corrosion resistance and filter life

FILTER OPTIONS

Filter Media	Special Characteristics	U.S. Efficiency Rating (MERV)*	European Efficiency Rating**	Surface-Loading Capacity	Pressure Drop	Washable
ProTura® Nanofiber	High-efficiency ProTura® Nanofiber media provides superior performance on extremely fine dusts < 1 micron. Also provides excellent surface-loading and particle release.	15	BIA M EN 779-F9	Excellent	Lower	No
ProTura® Nanofiber Fire Retardant (FR)	Same as ProTura® Nanofiber media with the added benefit of flame retardant properties	15	BIA M EN 779-F9	Excellent	Lower	No
ProTura® Nanofiber Wide Pleat	Same as ProTura® Nanofiber media with the added benefit of wide pleat spacing which provides excellent surface loading and particle release of fibrous and agglomerative particles	15	BIA M EN 779-F9	Excellent	Lower	No
Cellulose/Polyester Blend Fire Retardant (FR)	Enhanced performance over commodity cellulose media due to unique combination of fiber sizes and polyester blend, with the added benefit of flame retardant properties	10	BIA L EN 779-F5	Poor	Average	No
Spunbond Polyester	High-strength media with average particle release characteristics and wide pleat spacing	11	BIA M EN 779-F6	Average	Higher	Yes
Thermally-fused Spunbond Polyester with High-efficiency ePTFE Membrane	High-strength media with ePTFE membrane provides excellent particle release. Also repels water while allowing air and moisture vapor to pass through the membrane's extremely small spaces.	16	BIA M EN 779-F9	Excellent	Very High	Yes
Thermally-fused Carbon Impregnated Spunbond Polyester with High-efficiency ePTFE Membrane	Same as thermally-fused spunbond polyester with high-efficiency ePTFE membrane with the added benefit of conductive properties	16	BIA M EN 779-F9	Excellent	Very High	Yes

* MERV (Minimum Efficiency Reporting Value) of this cartridge has been determined using ASHRAE 52.2 test standards

** BIA certification based on dust classification DIN EN 60335-2-69

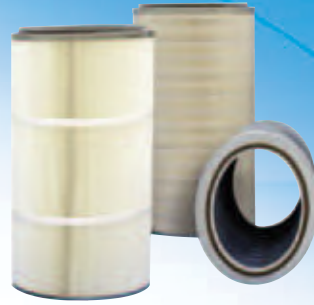


Clean air. It's what we do.®



ROUND CARTRIDGES

Our round cartridge filters rank among the highest in performance, efficiency and value. We stock a wide range of OEM-specified round replacement cartridge filters for use in nearly all major brands of dust collection systems and industry applications. They are available in an assortment of media, including our proprietary ProTura® Nanofiber filters, which are rated at MERV 15 and are up to 95% efficient on .03 to 1.0 micron size dust.



OVAL CARTRIDGES

Our oval replacement cartridge filters also provide superior filtration due to our advanced proprietary ProTura® Nanofiber filtration technology. This technology is scientifically proven to achieve higher efficiency, cleaner air, lower pressure drop, longer filter life and greater energy savings than any other media used in cartridge filters. Our oval replacement cartridge filters are in stock and ready to ship.



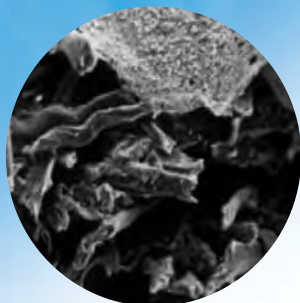
CUSTOM CARTRIDGES

If you require a custom filter to meet a special application need or as a replacement filter for another brand, we can design and manufacture the right filter to meet your specified requirements. Combined with our extensive network of filtration experts who are continually developing new filtration technology, our application specialists will help you select the best media and filter configuration to fit your unique application.

Maximum Operating Temperature	Abrasion Resistance	Chemical Tolerance	Applications	Industries / Dust Types
180° F / 82° C	Good	Average	Most applications with extremely fine and non-fibrous dust and some abrasive dust	Abrasive blasting, Carbon black, Dry chemical processing, General industrial, Metallurgical powders, Pharmaceutical compounds, Powder paint
180° F / 82° C	Good	Average	Applications where thermally-generated fume, including live sparks, could enter dust collector	Dry weld fume, Flame cutting, Laser cutting, Metal grinding dust, Metallic fume, Plasma cutting, Thermal spraying
180° F / 82° C	Good	Average	Applications where larger or irregularly shaped particles enter dust collector	Ceramics, Composite grinding, Cotton, Fiberglass, Food, Grain handling, Leather finishing, Pharmaceutical compounds, Textiles, Tobacco, Woodworking
180° F / 82° C	Good	Average	General applications with dry, coarse particulate and larger thermally-generated fume particles. Can also be used where live sparks could enter dust collector.	Cocoa, Coffee, Detergents, General industrial, Metal grinding, Metal sanding, Milk powder, Salt, Stearates, Sugar, Textiles
180° F / 82° C or 275° F / 135° C	Excellent	Excellent	Applications where high-strength, moisture-resistant media and good release characteristics are necessary. Recommended when product contamination must be minimized.	Cardboard, Cement, Ceramics, Cotton, Fiberglass, Gypsum, Lime, Paper, Polishing, Powder coating, Rubber grinding, Shot blast, Tobacco
180° F / 82° C or 275° F / 135° C	Excellent	Excellent	Applications demanding ultra-high efficiencies or difficult dust cake release. Highly recommended for chemical, food and industrial processing when product contamination must be minimized. Excellent performance on moist, hygroscopic or agglomerative dust.	Agglomerating materials, Asbestos, Chemical processing, Fluidized bed dryers, Food processing (Flour, Starch, Sugar, Whey), Pesticides
180° F / 82° C or 275° F / 135° C	Excellent	Excellent	Applications where conveyed dust may generate static charges that require dissipation. Can be used in explosive dust applications to lessen the risk of ignition sources due to static electricity discharges.	Chemical processing, Coal, Food processing, General industrial, Pharmaceutical, Plastics, Powdered materials

SURFACE LOADING EXCELS OVER DEPTH LOADING

UAS ProTura® Nanofiber filters feature an ultra-thin surface layer of synthetic fibers so extremely fine, they are measured in nanometers, or fractions of a micron. The layer provides excellent surface-loading capabilities due to the nano-size interfiber pores that make up their web-like surface coating. ProTura Nanofiber, therefore, acts as a shield to prevent submicron sized particles from entering and becoming embedded within the filter's substrate media. As a result, dust particles are easily released from the surface layer while the media substrate remains clean leading to fewer cleaning cycles required, lower pressure drop, reduced outlet emissions and increased filter life.



ProTura® Nanofiber surface media loaded with ISO fine test dust



Commodity depth media loaded with ISO fine test dust

Commodity cartridge filters allow particulate to embed deep within the substrate, making them more difficult to clean. Unlike ProTura Nanofiber cartridges, these depth-loading filters have large spaces or pores within their base media fibers which allow particles to penetrate deep within the media substrate increasing pressure drop. Subsequently, they plug at a faster rate requiring more frequent cleaning which leads to increased abrasion, wear and reduced filter life. Some commodity filters include surface treatments but their coatings form layers 100 times or more thicker than ProTura Nanofiber thus creating additional depth-loading layers which further decreases commodity filter life.

THE VALUE OF PROTURA NANOFIBER

UAS ProTura Nanofiber filters deliver outstanding performance and quality to which the results are well documented and time proven. ProTura Nanofiber offers dramatic savings and value compared to commodity or generic blended filters including those with inferior surface coating treatments. ProTura Nanofiber filters help you maximize:

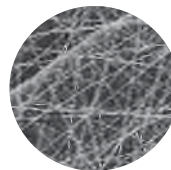
- **Filter Replacement Savings (Longer Filter Life)**— Lower pressure drop and fewer pulse cleaning cycles result in up to double the life and half the replacement costs with nanofiber filters.
- **Compressed Air Savings**—Dust is easily dislodged during cleaning because it remains on the nanofiber surface layer and does not embed within the media base substrate. As a result, the number of compressed air pulse cleaning cycles is significantly less thus dramatically reducing compressed air usage.
- **Energy Savings**—Exceptional surface-loading capability dramatically reduces pressure build up resulting in reduced energy requirements to operate your system.
- **Cleaner Air**—MERV 15 efficiency, reduced pressure drop and fewer cleaning cycles result in significantly reduced outlet emissions from system operation and a healthier work environment.

ADVANTAGES OVER ORDINARY NANOFIBER

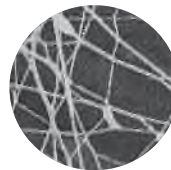
Compared with other dust collection nanofiber technology, ProTura Nanofiber rated MERV 15 is up to 50% more efficient on submicron sized particles than ordinary nanofiber rated MERV 13. UAS ProTura Nanofibers are also up to 70% finer, more durable and superior in adhesion to the media substrate over ordinary nanofibers.

Independent lab results demonstrate that ProTura Nanofiber is able to endure rigorous environmental testing conducted in a test chamber at 140°F and 99.9% relative humidity.

Nanofiber diameter comparison at 5000x



ProTura® Nanofiber
70-150 nanometers
(0.07 to 0.15 micron)



Ordinary Nanofiber
200-300 nanometers
(0.20 to 0.30 micron)



HIGH-QUALITY CARTRIDGE MANUFACTURING

With more than 75 years of expertise in manufacturing cartridge filters, our commitment to quality shows in every filter we make. Our advanced research, design, engineering and testing facilities allow us to remain on the leading edge of innovation.

Utilizing state-of-the-art production processes, we build and inspect every cartridge to ensure the highest quality is achieved to meet the performance requirements of your application. Whether you have a UAS dust collector or another brand, our knowledgeable and experienced application specialists, field-based manufacturer's representatives and customer service associates are ready to assist you to select the right filter.



THE UAS ADVANTAGE

United Air Specialists delivers a unique advantage by designing, manufacturing and selling nearly every aspect of the industrial filtration process to meet our customers' specific needs. Our goal is to provide you with a total filtration solution and it is clear why our customers breathe easy with UAS filters and equipment:

Clean air. It's what we do.®

INNOVATIVE INDUSTRY SOLUTIONS

- Value-engineered expertise
- Customer-driven solutions
- Knowledgeable support

FILTER MEDIA R&D

- Commitment to technology investment
- Proprietary ProTura® Nanofiber filter media
- CLARCOR Filtration Research Center (CFRC)



**Clean Air Solution
Specialists**

HIGH PERFORMANCE EQUIPMENT

- Patented industry-leading designs
- Leverage benefits of media and cartridge design
- Total quality manufacturing



QUALITY CARTRIDGE FILTERS

- Engineered filter cartridges
- State-of-the-art production processes
- Most major brands in stock



EXHAUST FANS

EF-1,2

TAG:

Type JTEBC

Belt Drive Upblast

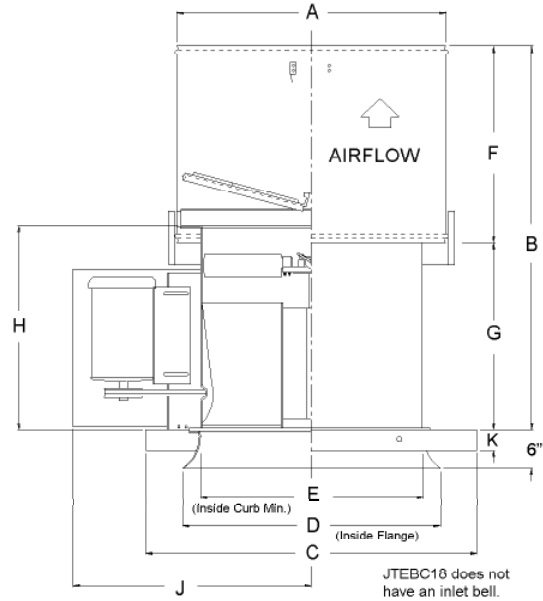
Power Roof Ventilator



Accessories

- DC Duct Connector
- DS Disconnect Switch
- ML Magnetic Latches
- OG Outlet Guard
- AP Access Panel

- Operates reliably in hostile environments
- Motor, belt(s) and bearings are isolated from the air stream
- All weather performance
- Constructed of heavy gauge steel
- Adjustable pitch cast aluminum airfoil blades
- Variable pitch pulleys (most models)
- Heavy duty pillow block ball bearings
- Motor cover
- UL Listed for Standard 705 (most models)



Dimensions in inches unless otherwise noted

A	B	C	D	E	F	G	H	J	K
68	74 3/4	77	65 5/8	61 3/8	44 7/8	29 7/8	31 1/8	55 1/8	3

Weight: 1,308 lbs.

Tip Speed: 14,571 ft/min

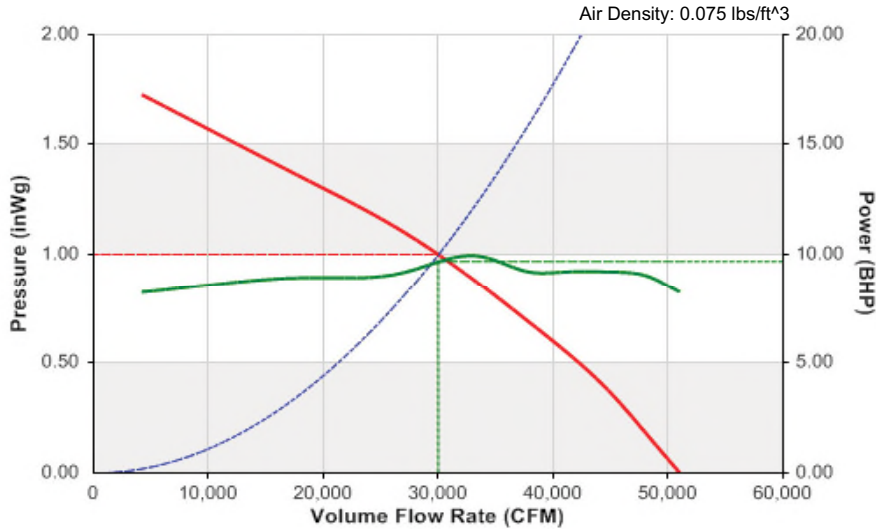
Outlet Velocity: 1,190 ft/min

Qty	Fan Data					Motor Data					Accessories				
	Model No.	CFM	inWg	RPM	BHP	MHP	RPM	Voltage/Ph	Hz	Encl.	AP	DC	DS	ML	OG
2	JTEBC60SE8363	30,000	1.00	916	9.68	10	1,750	208/230/460V 3PH	60	TE					

Sones	LwA	dba @ 5'	dba @ 10'	dba @ 20'	Octave Band Sound Power (LwA)							
					63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
60	100	88	82	76	101	105	103	97	92	90	87	79



American Coolair Corporation certifies that the Type JTEBC units shown herein are licensed to bear the AMCA seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA certified Ratings Program.



AMCA Licensed for Sound and Air Performance
 Power rating (BHP) does not include transmission losses. Bearing losses are included. Performance ratings do not include the effects of appurtenances (accessories). Performance shown is for Installation Type 'A': Free inlet, Free outlet
 The sound ratings shown are loudness values in hemispherical sones at 1.5 m (5 ft.) in a hemispherical free field calculated per AMCA Standard 301.
 Values shown are for Installation Type 'A': Free inlet hemispherical sone levels
 Sound ratings apply to sones only.

Notes:

Project: C&W Offshore

Engineer: _____

Location: _____

Contractor: _____

Submitted By: _____

Date: 6/16/2014

Approved By: _____

Date: _____

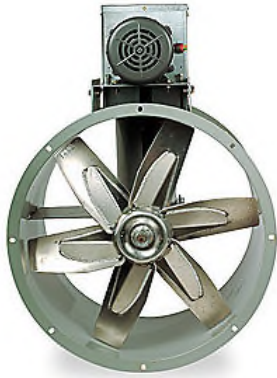
EF-2,3,4,5,6



Home / HVAC and Refrigeration / Tubeaxial Fans and Accessories / Belt-Driven Tubeaxial Fans /

[View Product Family](#)

Fan, Tubeaxial, 30 In



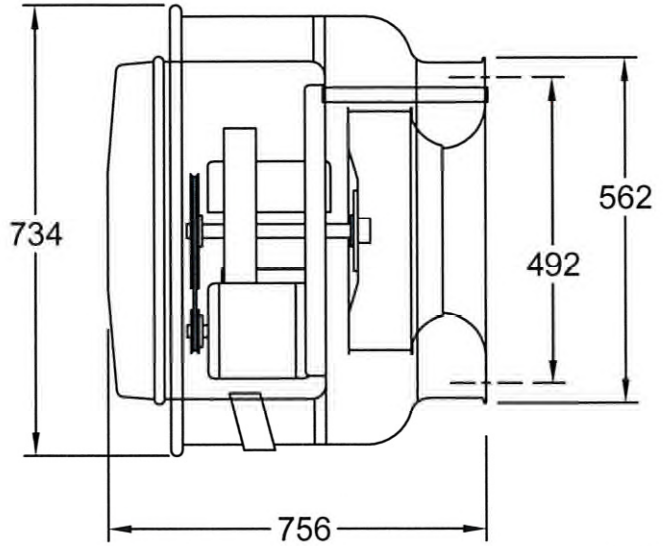
Technical Specs

Item	Tubeaxial Fan
Drive Type	Belt
Blade Dia.	30"
CFM @ 0.000-in. SP	12,190
CFM @ 0.125-in. SP	11,710
CFM @ 0.250-in. SP	11,180
CFM @ 0.500-in. SP	9990
CFM @ 0.750-in. SP	8485
Sones @ 0.250-in. SP @ 5 Ft.	41
Motor HP	2
Max. BHP	1.90
Fan RPM	1146
Motor Enclosure	Totally Enclosed Fan Cooled
Phase	3
Voltage	208-230/460
Max. Motor Height	10"
Shaft Dia.	1-3/16"
Number of Blades	6
Full Load Amps	6.0-5.4/2.7
Motor Type	3-Phase
Max. Inlet Temp.	200 Degrees F
Max. Ambient Temp.	104 Degrees F
Bearing Type	Ball

Mounting Position	Vertical/Horizontal
Housing Material	Steel
Housing Finish	Baked Enamel
Blade Material	Spark Resistant Aluminum
Hz	60
Motor RPM	1735
Height	46-5/8"
Width	33-5/8"
Max. Depth	24"
Housing Dia. w/Mtg. Flange	33-5/8"
Housing Dia. w/o Mtg. Flange	30-1/2"
Inlet Dia.	30-5/8"
Outlet Dia.	30-5/8"
Bolt Circle Dia.	32-1/4"
Replacement Fan Blade Stock No.	3C418
Companion Flange Stock No.	3C440
Standards	AMCA
Includes	Belt guard
Dimension A	33-5/8"
Dimension B	19-1/4"
Dimension C	30-1/2"
Dimension D	24"

Model: CWB-161-5

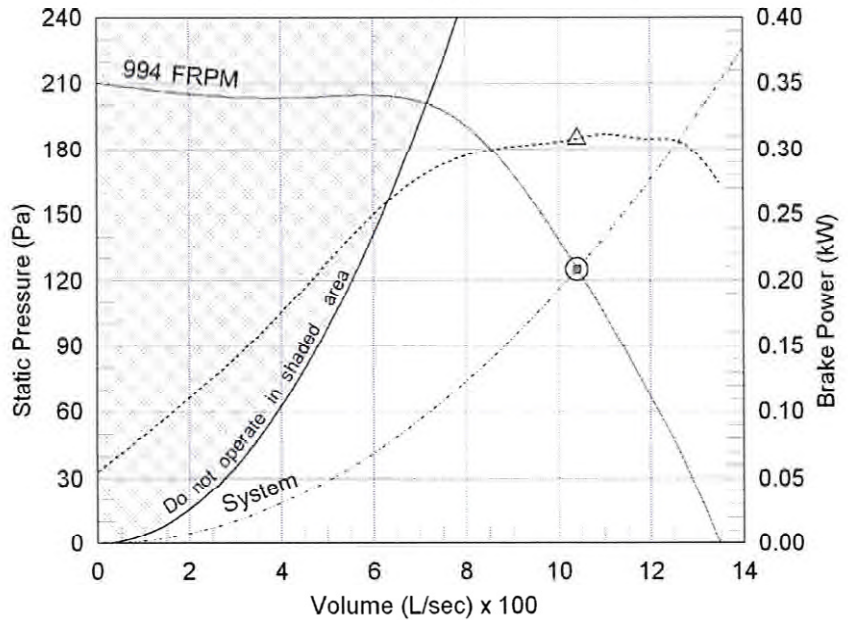
Belt Drive Centrifugal Sidewall Exhaust Fan



Dimensional	
Quantity	2
Weight w/o Acc's (kg)	40
Weight w/ Acc's (kg)	46
Max T Motor Frame Size	145
Optional Damper (mm)	381 x 381
Wall Opening (mm)	394 x 394

Performance	
Requested Volume (L/sec)	1,040
Actual Volume (L/sec)	1,040
External SP (Pa)	125
Total SP (Pa)	125
Fan RPM	994
Operating Power (kW)	0.31
Elevation (m)	141
Airstream Temp.(C)	21
Air Density (m3)	1.181
Drive Loss (%)	9.3
Tip Speed (m/sec)	21.981
Static Eff. (%)	46

Motor	
Motor Mounted	Yes
Size (hp)	1/2
V/C/P	208/60/3
Enclosure	EXP
Motor RPM	1725
Windings	1
NEC FLA* (Amps)	2.4



- △ Operating BkW point
- Operating point at Total SP
- Operating point at External SP
- Fan curve
- - - System curve
- Brake kilowatts curve

Jenkins Power Sheet Metal Inc.

Date: *August-27-2014*

Job Title: *C & W Off Shore*

SHOP DRAWINGS

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	72	78	75	71	68	65	59	55	74	62	11.3

Notes:

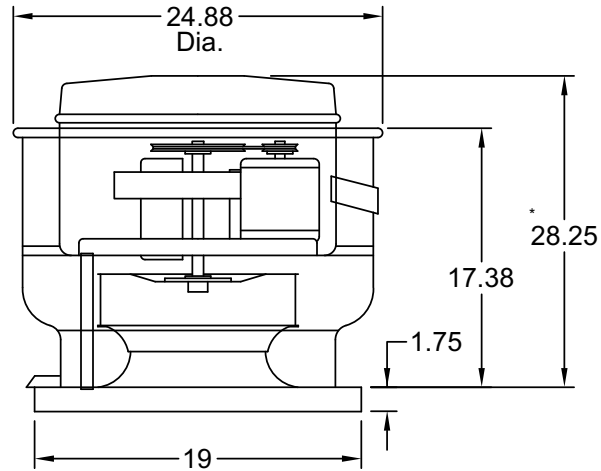
All dimensions shown are in units of mm
 *FLA - based on tables 150 or 148 of National Electrical Code 2002. Actual motor FLA may vary, for sizing thermal overload, consult factory.
 LwA - A weighted sound power level, based on ANSI S1.4
 dBA - A weighted sound pressure level, based on 11.5 dB attenuation per Octave band at 1.52 m - dBA levels are not licensed by AMCA International
 Sones - calculated using AMCA 301 at 1.52 m



Model: CUBE-101HP-4

Belt Drive Upblast Centrifugal Roof Exhaust Fan

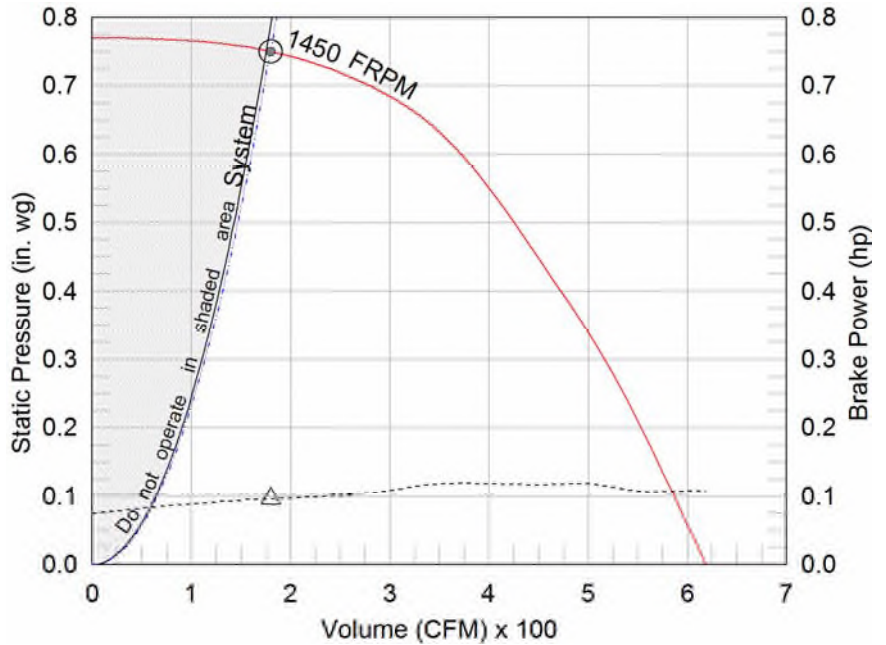
Dimensional	
Quantity	1
Weight w/o Acc's (lb)	70
Weight w/ Acc's (lb)	93
Max T Motor Frame Size	56
Optional Damper (in.)	12 x 12
Roof Opening (in.)	14.5 x 14.5



Reference assembly view drawings for actual dimensions with mounted accessories

*Overall height may be greater depending on motor

Performance	
Requested Volume (CFM)	180
Actual Volume (CFM)	180
External SP (in. wg)	0.75
Total SP (in. wg)	0.75
Fan RPM	1450
Operating Power (hp)	0.1
Elevation (ft)	1,444
Airstream Temp.(F)	70
Air Density (ft3)	0.071
Drive Loss (%)	24.4
Tip Speed (ft/min)	4,224
Static Eff. (%)	29



- △ Operating Bhp point
- Operating point at Total SP
- Operating point at External SP
- Fan curve
- - - System curve
- - - Brake horsepower curve

Motor	
Motor Mounted	Yes
Size (hp)	1/4
V/C/P	115/60/1
Enclosure	EXP
Motor RPM	1725
Windings	1
NEC FLA* (Amps)	5.8

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	76	73	62	56	58	52	48	44	63	52	6.6

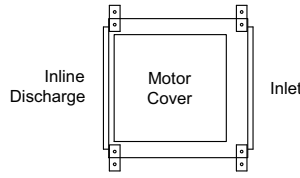
Notes:

All dimensions shown are in units of in.
*FLA - based on tables 150 or 148 of National Electrical Code 2002. Actual motor FLA may vary, for sizing thermal overload, consult factory.
LwA - A weighted sound power level, based on ANSI S1.4
dBA - A weighted sound pressure level, based on 11.5 dB attenuation per Octave band at 5 ft - dBA levels are not licensed by AMCA International
Sones - calculated using AMCA 301 at 5 ft

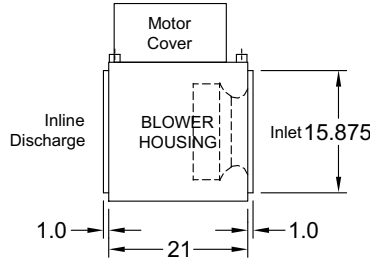


Model: BSQ-120-7

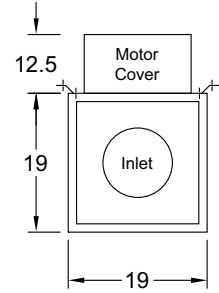
Belt Drive Centrifugal Inline Fan



PLAN VIEW



ELEVATION VIEW

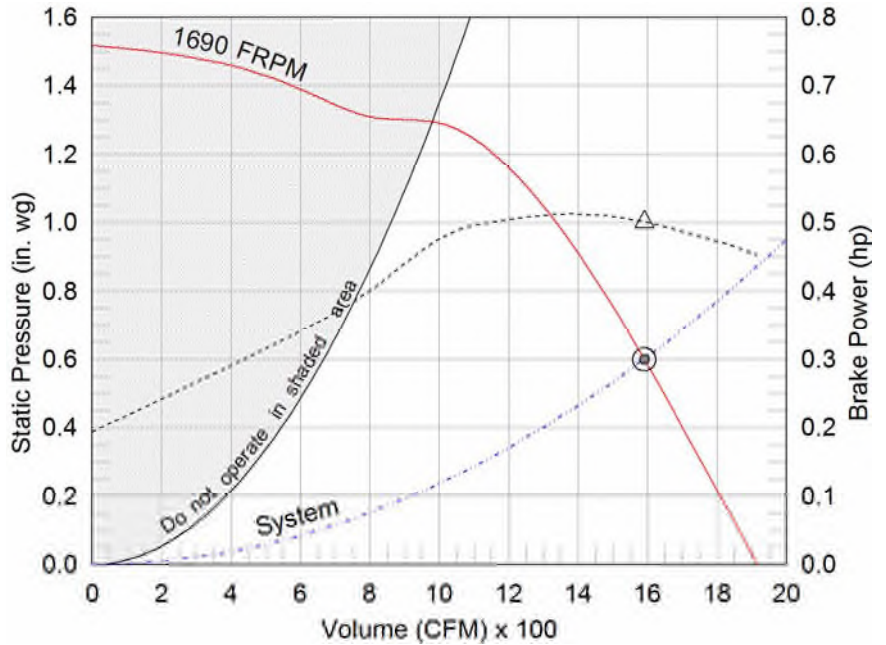


END VIEW

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	94
Weight w/ Acc's (lb)	131
Max T Motor Frame Size	145
Optional Damper (in.)	16 x 16

Performance	
Requested Volume (CFM)	1,590
Actual Volume (CFM)	1,590
External SP (in. wg)	0.6
Total SP (in. wg)	0.6
Fan RPM	1690
Operating Power (hp)	0.5
Elevation (ft)	1,444
Airstream Temp.(F)	70
Air Density (ft3)	0.071
Drive Loss (%)	8.4
Tip Speed (ft/min)	5,808
Static Eff. (%)	33

Motor	
Motor Mounted	Yes
Size (hp)	3/4
V/C/P	208/60/3
Enclosure	EXP
Motor RPM	1725
Windings	1
NEC FLA* (Amps)	3.5



- △ Operating Bhp point
- Operating point at Total SP
- Operating point at External SP
- Fan curve
- - - System curve
- - - Brake horsepower curve

Sound Power by Octave Band

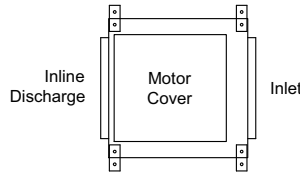
Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	82	77	76	76	70	67	63	57	77	65	13.7
Radiated	83	79	70	70	65	61	57	53	72	60	10.8

Notes:

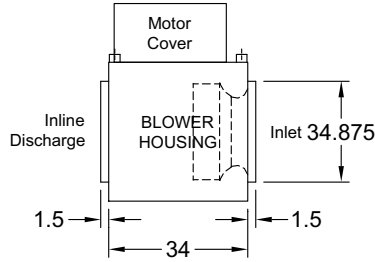
All dimensions shown are in units of in.
*FLA - based on tables 150 or 148 of National Electrical Code 2002. Actual motor FLA may vary, for sizing thermal overload, consult factory.
LwA - A weighted sound power level, based on ANSI S1.4
dBA - A weighted sound pressure level, based on 11.5 dB attenuation per Octave band at 5 ft - dBA levels are not licensed by AMCA International
Sones - calculated using AMCA 301 at 5 ft



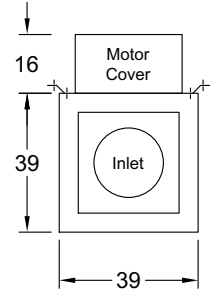
Model: BSQ-240-30
Belt Drive Centrifugal Inline Fan



PLAN VIEW



ELEVATION VIEW

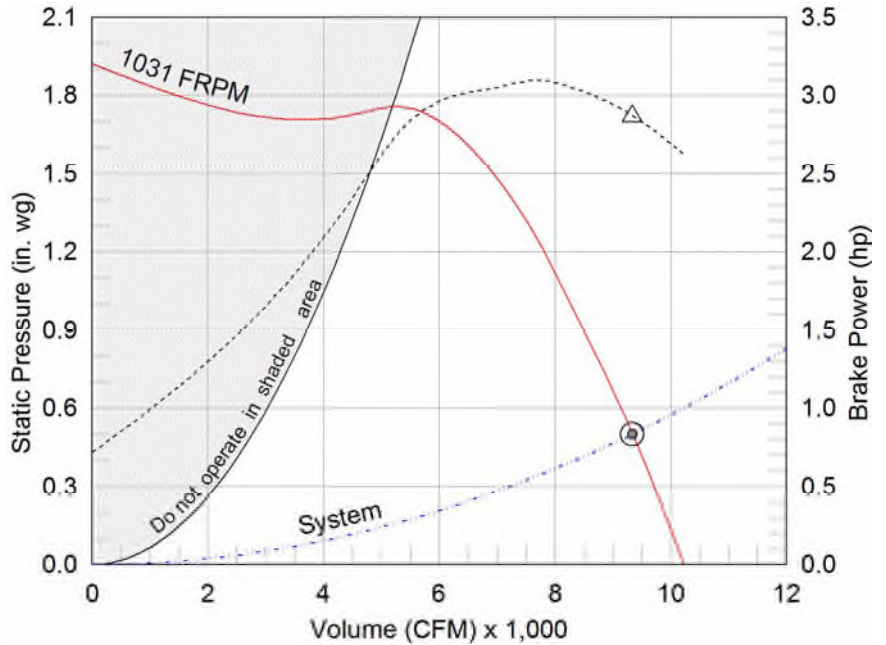


END VIEW

Dimensional	
Quantity	1
Weight w/o Acc's (lb)	377
Weight w/ Acc's (lb)	452
Max T Motor Frame Size	215
Optional Damper (in.)	35 x 35

Performance	
Requested Volume (CFM)	9,328
Actual Volume (CFM)	9,328
External SP (in. wg)	0.5
Total SP (in. wg)	0.5
Fan RPM	1031
Operating Power (hp)	2.87
Elevation (ft)	1,444
Airstream Temp.(F)	70
Air Density (ft3)	0.071
Drive Loss (%)	4.4
Tip Speed (ft/min)	6,615
Static Eff. (%)	27

Motor	
Motor Mounted	Yes
Size (hp)	3
V/C/P	575/60/3
Enclosure	EXP
Motor RPM	1725
Windings	1
NEC FLA* (Amps)	3.9



- △ Operating Bhp point
- Operating point at Total SP
- Operating point at External SP
- Fan curve
- - - System curve
- - - Brake horsepower curve

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	87	87	93	83	79	79	72	66	88	76	27
Radiated	90	88	89	77	71	64	54	50	82	71	19.1

Notes:

All dimensions shown are in units of in.
*FLA - based on tables 150 or 148 of National Electrical Code 2002. Actual motor FLA may vary, for sizing thermal overload, consult factory.
LwA - A weighted sound power level, based on ANSI S1.4
dBA - A weighted sound pressure level, based on 11.5 dB attenuation per Octave band at 5 ft - dBA levels are not licensed by AMCA International
Sones - calculated using AMCA 301 at 5 ft



MAKEUP AIR UNITS



M E C H A N I C A L
C O M P O N E N T S
L I M I T E D

MUA-1



Submittal

File name: Jenkins & Power Direct Fired Unit TMC

Prepared By

Mechanical Components Ltd.
Jason Gallant

Prepared For

Jenkins & Power

119 Clyde Ave.

Phone: 709-747-9750

Cell Phone: 709-691-4236

Fax: 709-747-7750

Email: jason@mclimited.ca

8/11/2014

Subject: Your Temprite Direct Fired Submittal

Dear Sir/Madam:

Your customized Temprite unit has been configured as follows:

Model: TMC-230

4,800,000 BTU/H Input for 78.6° F Temperature Rise with -40° F Inlet Temperature

52,000 SCFM - ISP: 1.00 / Accessory SP: .50 / Duct SP: .50 / TESP: 1.00 / TSP: 2.00

Approximate Unit Ship Weight (each): 4,465 lbs

Discharge Option: Back inlet, top outlet

Any duct work that is attached to the top of the unit must be fully supported as the unit is not built to hold the weight of duct work

Complete with the following:

Basic Frame (#2000)

Inlet Hood and Birdscreen without Filters (#2002)

V-Bank Filter Section with Pleated Filters - Qty (36) 20"x25"x2" (#2003P)

Motorized Inlet Air Damper (#2005)

12" High Roof Curb on Basic Frame (#2010B)

Insulation on:

-Basic Frame (#2011) -Filter Section (#2012F)
Finish - Bright Spangled Finish
Discharge Configuration: HRB - Horizontal, Right Hand, Bottom
Burner and Controls (#2050N)
Burner Modulation: High Turndown Modulation
Gas Manifold: Standard ANSI Gas Train (#2050N)
Fuel: Natural Gas @ Over 1 - 2 PSIG Inlet Pressure
High Pressure Gas Train (#2055N)
Motor HP: 40 HP Motor and Starter (#2071C)
Motor Type: Single Speed High Eff TEFC 1800 RPM / Voltage: 575/3/60
Blower Amps: 41.0 / Control Transformer Amps: .9 / Total Amp Draw: 41.9
Disconnect (#2079D)
Remote Ctrl Panel-MDT Ctrl System for BACnet Protocol (#2087C)
UV Flame Sensor (Mini-Peeper) (#2088)
Clogged Filter Indication (#2089)
Exhaust Interlock (#2091)
Interlocking Relay (#2092)

Sincerely,

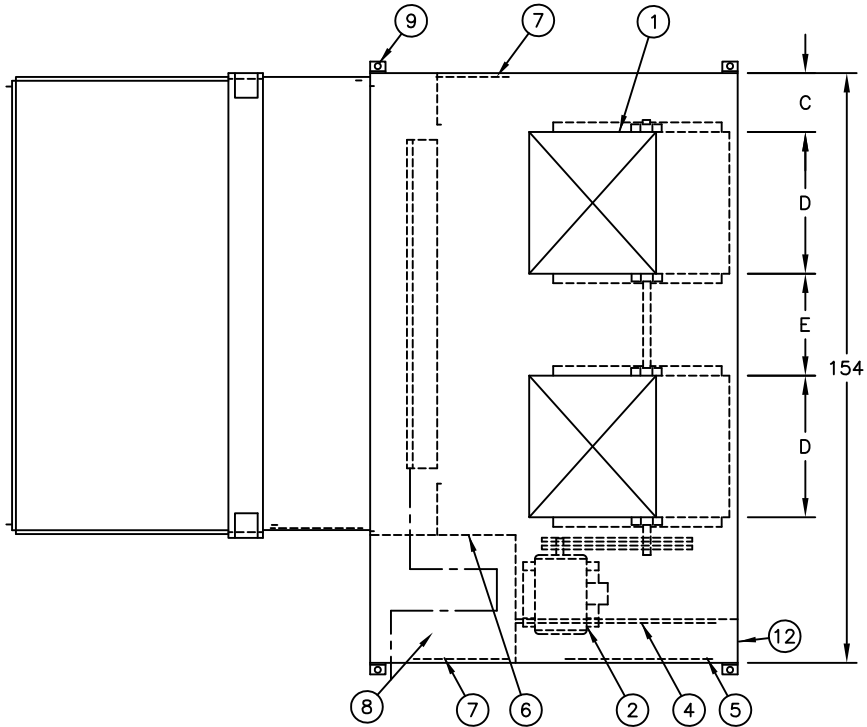
Jason Gallant

Factory Use: _____
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0480004E1DE

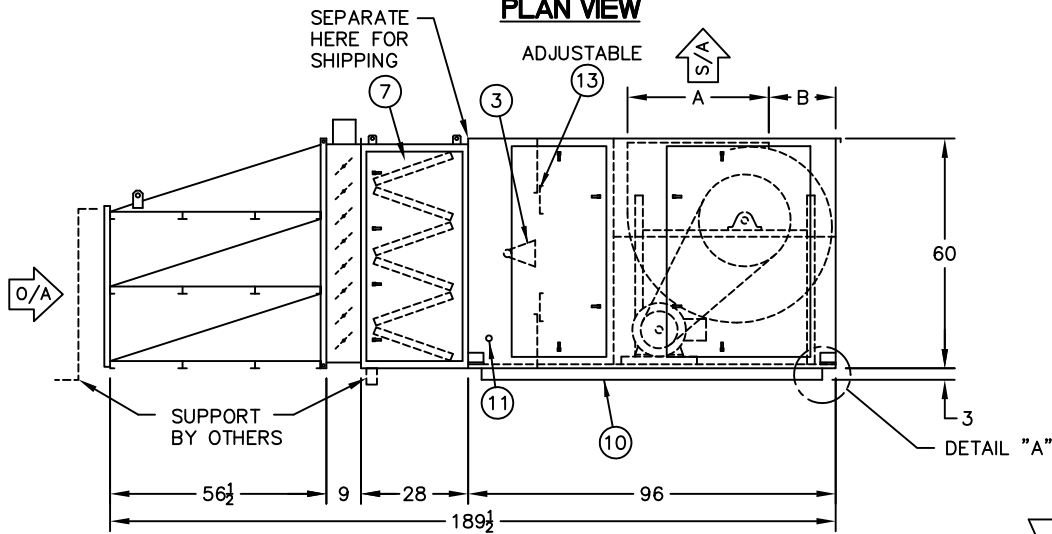
Version 10.0
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UNIT COMPONENTS

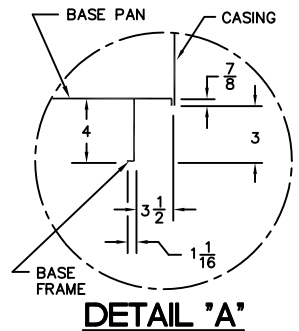
- | | | | |
|----------------------------|----------------------------|------------------------|----------------------------|
| 1. Centrifugal Supply Fan. | 4. Control Cabinet. | 8. Piping Compartment. | 12. Electrical Connection. |
| 2. Fan Motor. | 5. Control Cabinet Access. | 9. Lifting Lug. | 13. Profile Assembly. |
| 3. Line Burner. | 6. Observation port. | 10. Unit Base. | |
| | 7. Access Door. | 11. Gas Connection. | |



PLAN VIEW



FRONT VIEW



NOTES:

- UNIT SUITABLE FOR OUTDOOR APPLICATIONS.
- SOME FIELD ASSEMBLY AND/OR WIRING BETWEEN OPTIONS MAY BE REQUIRED.
- SUPPLY DUCT CONNECTION (BY OTHERS) TO BE "PANTS LEGGED" FROM UNIT DISCHARGE.

Model	Dimensions				
	A	B	C	D	E
230	36 7/8	17 9/16	15 3/8	37	26-5/8



TITLE: TMC-230-HRT
HORIZONTAL DOUBLE BLOWER UNIT

F.O. NO. TEST081114TMC	TAG: TMC230	DRN. BY: DSS	DATE: 8/11/2014
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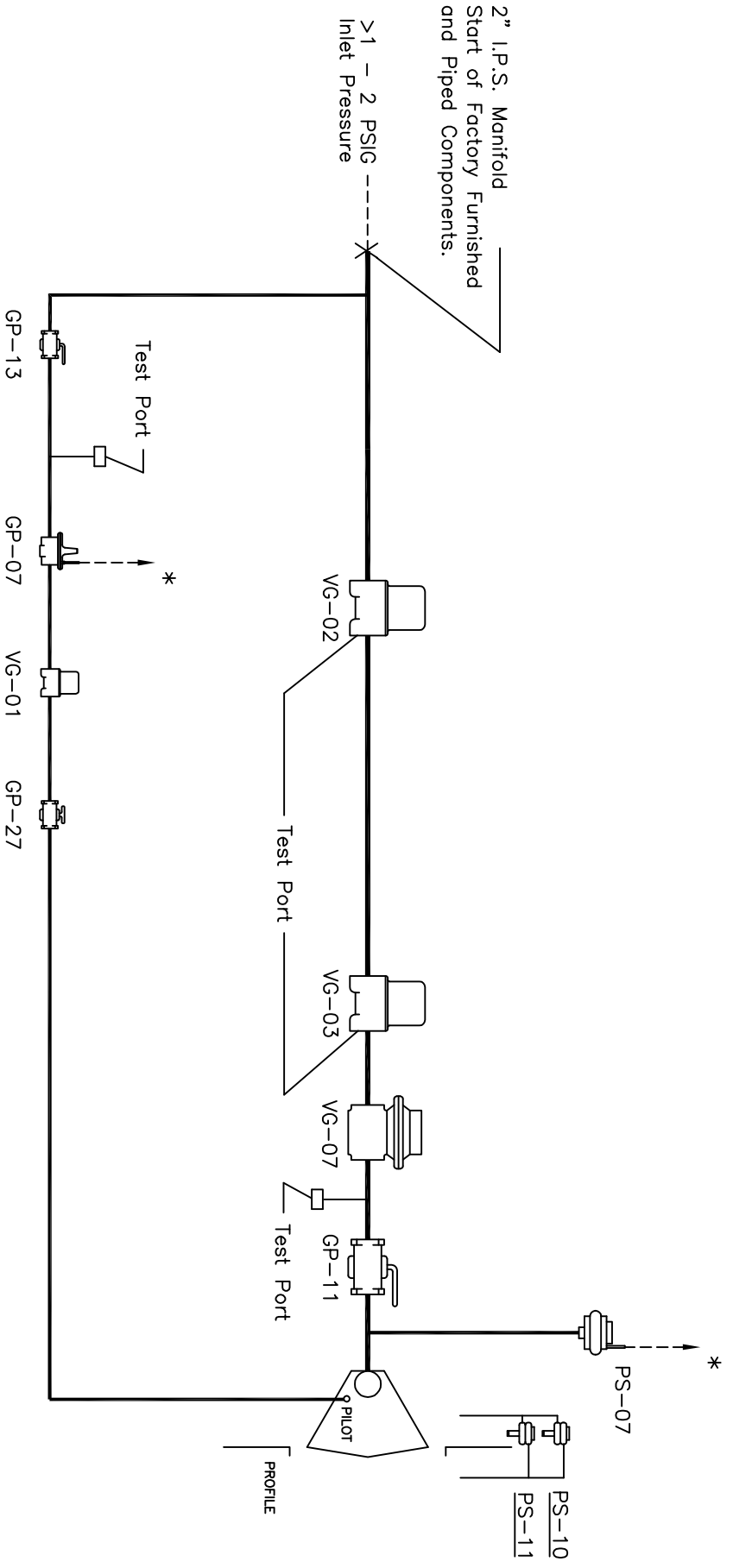
DRAWING NO.

DD-TEST081114TMC

001060

REV	DATE	BY	DESCRIPTION

MANIFOLD SKETCH



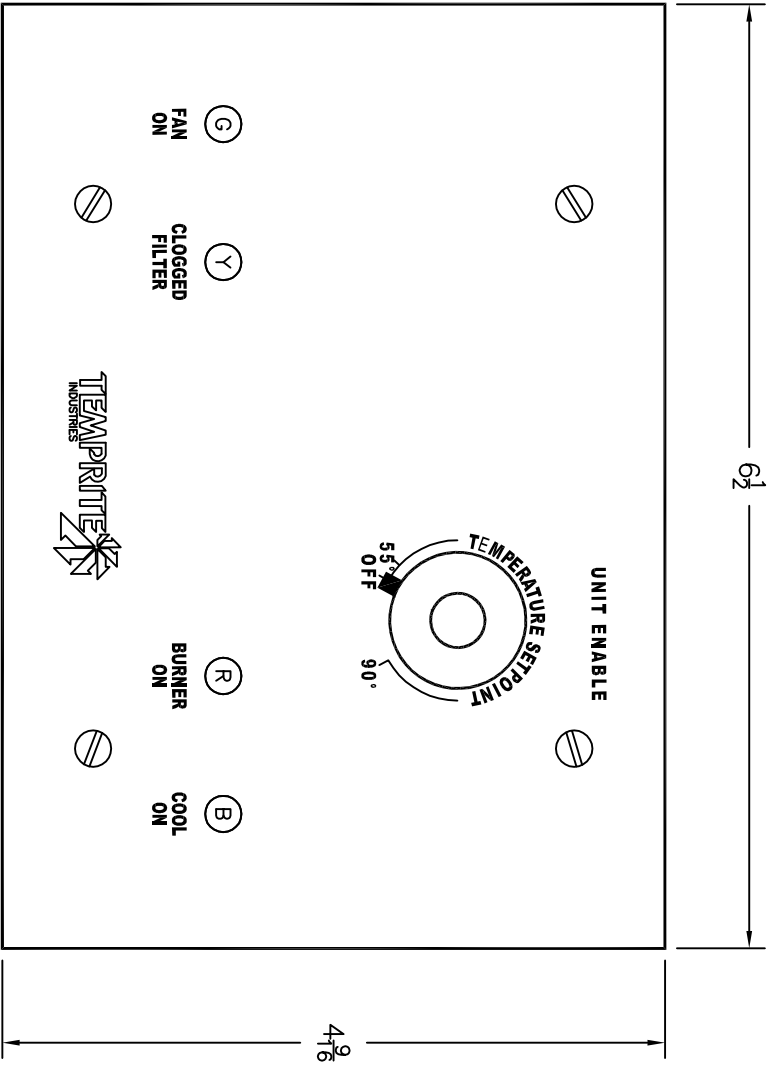
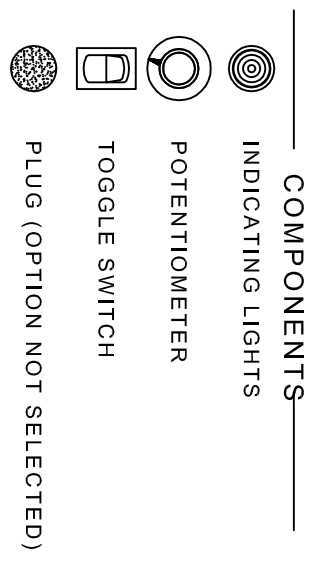
MARK	DESCRIPTION	MARK	DESCRIPTION	GAS PIPING - DIRECT FIRED NOTES
GP-07	PILOT GAS PRESSURE REGULATOR	PS-10	HIGH VELOCITY AIRFLOW SWITCH	---- DENOTES PIPING BY OTHERS * VENT LIMITING DEVICES ARE PROVIDED WHEREVER POSSIBLE, WHEN VENTING IS REQUIRED THE VENTING TO OUTSIDE IS BY OTHERS ON INDOOR UNITS, FURNISHED BY FACTORY ON OUTDOOR UNITS.
GP-11	MAIN GAS SHUTOFF VALVE	PS-11	LOW VELOCITY AIRFLOW SWITCH	
GP-13	PILOT GAS SHUTOFF VALVE	VG-01	PILOT GAS VALVE	
GP-27	ORIFICED NEEDLE VALVE	VG-02	MAIN GAS VALVE	
PS-07	HIGH GAS PRESSURE SWITCH	VG-03	AUXILIARY GAS VALVE	
		VG-07	MAXITROL MODULATING VALVE	



REV: 0	TITLE: DIRECT FIRED - FULL MODULATION	DRN. BY: Auto	DATE: 8/11/2014
F.O. NO.	STANDARD & ETL IRI - MAXITROL MR212 - ABOVE 825 MBH		
TAG:			
DRAWING NO.			

AAE_IR1_MR212

BASIC REMOTE NOTES:
 A) MOUNTING BETWEEN REMOTE AND UNIT CONTROLLER
 UP TO 500 FEET IS VIA 18 GAGE WIRE.
 B) MOUNTS ON STANDARD 3 GANG ELECTRICAL BOX.

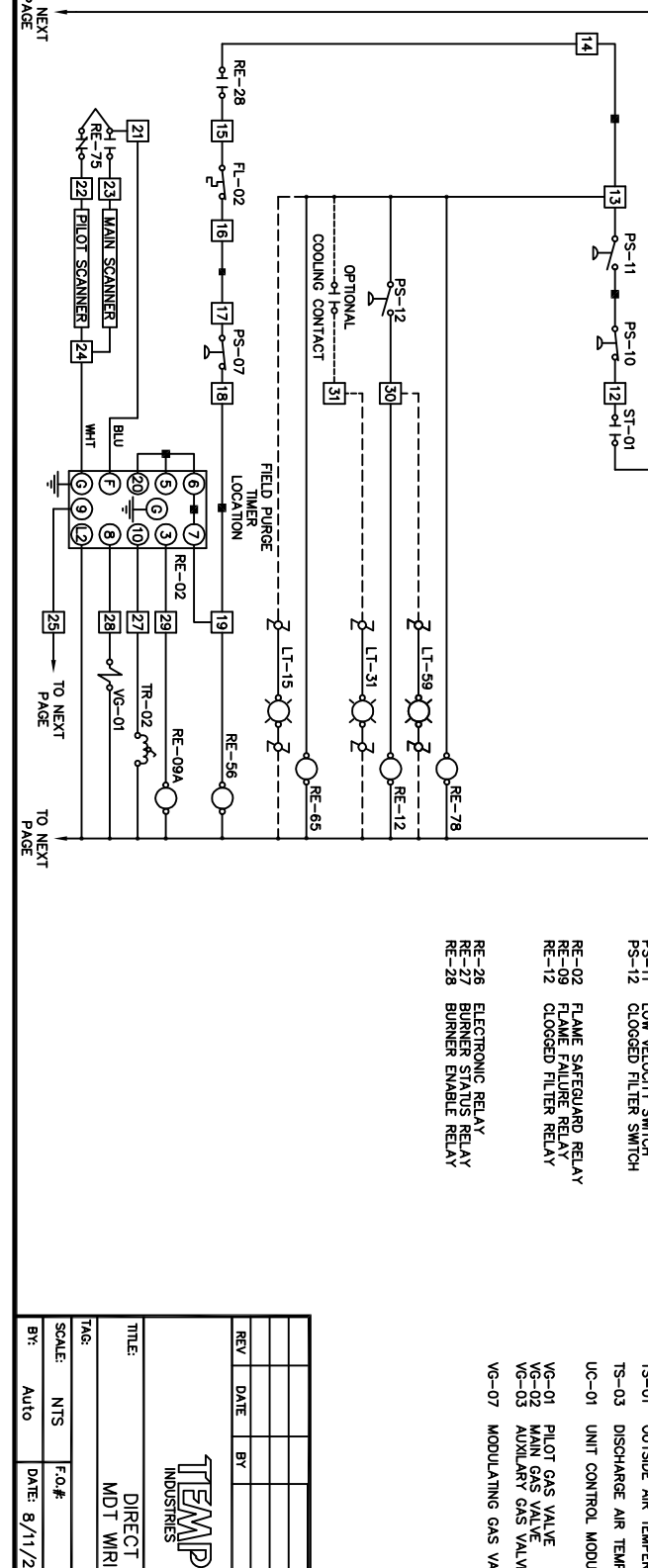


BASIC REMOTE

REV	DATE	BY	REVISION



DRAWN BY:	Auto	DATE:	8/11/2014	TAG:	
TITLE:	MDT STANDARD				
F.O. #:	DDC REMOTE STATION				
DRAWING #:	R D				



- COMPONENT IDENTIFICATION**
- CB-09 CONTROL CIRCUIT TRANSFORMER BREAKER
 - FL-02 HIGH TEMPERATURE LIMIT SWITCH
 - RE-01 SAFETY CIRCUIT STATUS RELAY
 - RE-02 UNIT ENABLE RELAY
 - RE-03 FAN STATUS RELAY
 - RE-04 FLAME SUPERVISION SWITCHING RELAY
 - RE-05 INTERLOCKING RELAY
 - RE-06 RESISTOR 1K OHM
 - RE-07 RESISTOR 2K OHM
 - RE-08 RESISTOR 4.02K OHM
 - RE-09 RESISTOR 8.06K OHM
 - RE-10 RESISTOR 10 OHM
 - RE-11 MAIN SUPPLY FAN MOTOR STARTER
 - RE-12 MAIN DISCONNECT SWITCH
 - RE-13 DAMPER MOTOR END SWITCH
 - RE-14 100 PERCENT OUTSIDE AIR SWITCH
 - RE-15 CONTROL CIRCUIT TRANSFORMER
 - RE-16 IGNITION TRANSFORMER
 - RE-17 MODULATING VALVE TRANSFORMER
 - RE-18 LOW VOLTAGE TRANSFORMER
 - RE-19 OUTSIDE AIR TEMPERATURE SENSOR
 - RE-20 DISCHARGE AIR TEMPERATURE SENSOR
 - RE-21 UNIT CONTROL MODULE
 - RE-22 PILOT GAS VALVE
 - RE-23 MAIN GAS VALVE
 - RE-24 ADVLARTY GAS VALVE
 - RE-25 MODULATING GAS VALVE
 - RE-26 ELECTRONIC RELAY
 - RE-27 BURNER STATUS RELAY
 - RE-28 BURNER ENABLE RELAY
 - OL-01 MAIN FAN MOTOR OVERLOAD
 - MP-01 UNIT ENABLE POTENTIOMETER
 - MT-01 MAIN SUPPLY FAN MOTOR
 - MT-13 INLET DAMPER MOTOR
 - LT-05 BURNER ON LIGHT (REMOTE)
 - LT-15 FAN ON LIGHT (REMOTE)
 - LT-30 COOLING ON LIGHT (REMOTE)
 - LT-31 CLOGGED FILTER LIGHT (REMOTE)
 - PS-07 HIGH GAS PRESSURE SWITCH
 - PS-10 HIGH VELOCITY SWITCH
 - PS-12 CLOGGED FILTER SWITCH
 - TR-02 CONTROL TRANSFORMER
 - TR-04 MODULATING VALVE TRANSFORMER
 - TR-05 LOW VOLTAGE TRANSFORMER
 - TS-01 OUTSIDE AIR TEMPERATURE SENSOR
 - TS-03 DISCHARGE AIR TEMPERATURE SENSOR
 - UC-01 UNIT CONTROL MODULE
 - VG-01 PILOT GAS VALVE
 - VG-02 MAIN GAS VALVE
 - VG-03 ADVLARTY GAS VALVE
 - VG-07 MODULATING GAS VALVE

CAUTION: OPEN MAIN DISCONNECT SWITCH BEFORE SERVICING EQUIPMENT

575 VOLT 3 PHASE 60 HERTZ 3 WIRE

CUSTOMER EXHAUST MAIN INTERLOCK (JUMPER IF NOT USED)

JUMPER FOR CLOCK INTERLOCK

OPTIONAL COOLING CONTACT

FIELD PURGE LOCATION

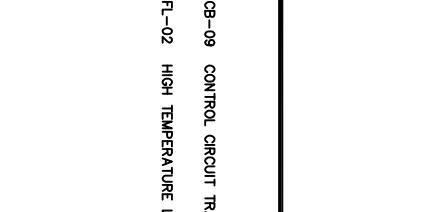
TO NEXT PAGE

REV	DATE	BY	DESCRIPTION

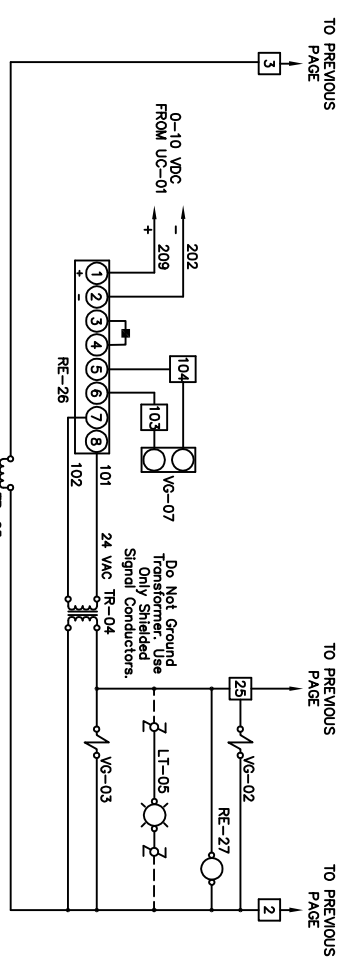
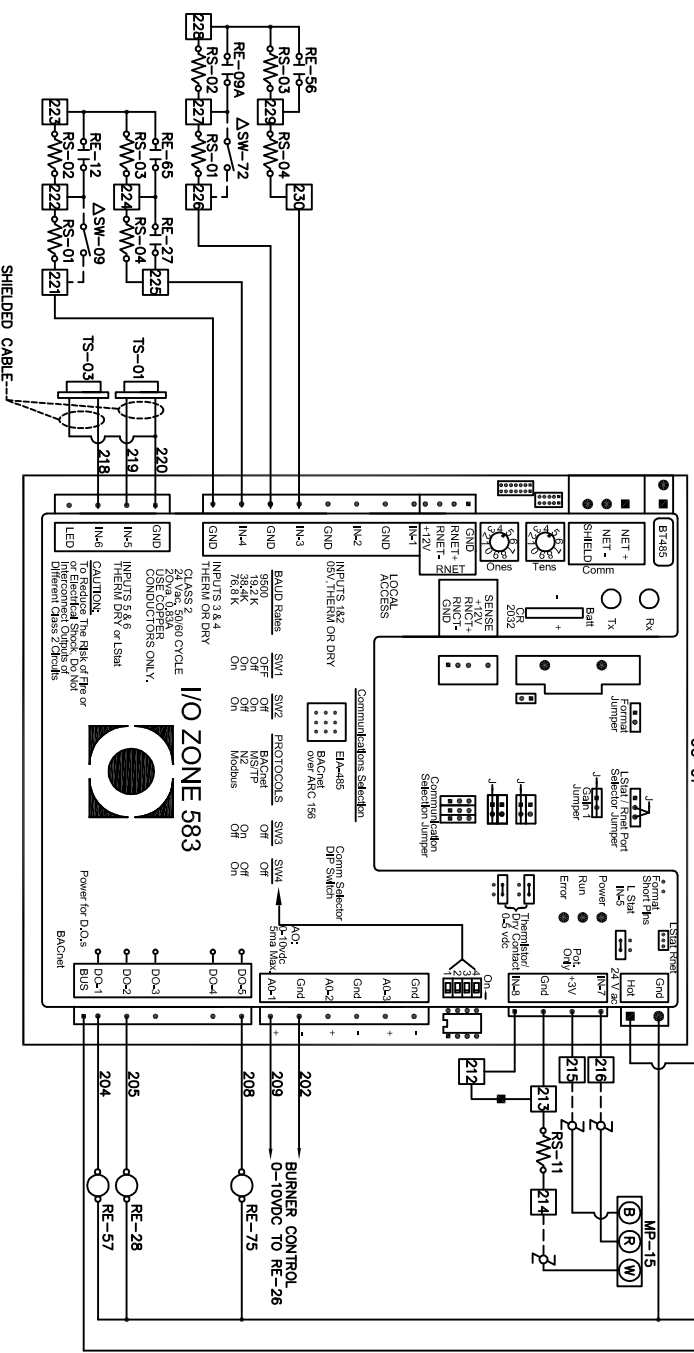
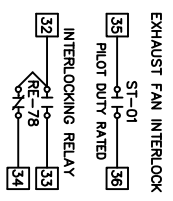
TITLE: DIRECT FIRED UNIT MDT WIRING DIAGRAM

SCALE: NTS F.O.#: DRAWING NO.

BY: Auto DATE: 8/11/2014



PAGE 1 OF 2



TO PREVIOUS PAGE

TO PREVIOUS PAGE

TO PREVIOUS PAGE

REV	DATE	BY	DESCRIPTION

TITLE: DIRECT FIRED UNIT
MDT WIRING DIAGRAM

TEMPRITE INDUSTRIES

SCALE: NTS F.O.#
BY: Auto DATE: 8/11/2014

DRAWING NO.

- NOTES
- 1) UNIT SHALL BE GROUNDED ACCORDING TO THE LATEST PROVISIONS OF NEC.
 - 2) FOR SEQUENCE OF OPERATION PLEASE SEE DDC USER MANUAL.
 - 3) BECAUSE OF SHIPPING RESTRICTIONS FIELD CONNECTIONS AND/OR WIRING BETWEEN COMPONENTS OR SECTIONS MAY BE REQUIRED
- ⊗ DENOTES WIRE NUT
 ○ DENOTES BURNER TERMINAL BLOCK & WIRE NUMBER
 --- DENOTES WIRING BY OTHERS
 ⊔ DENOTES WIRE CONNECTION
 ⊔ DENOTES CONTROL CABINET TERMINAL BLOCK & WIRE NUMBER
 1 TO 99 - 115 VOLT
 101 TO 299 - 24 VOLT
 ⊔ DENOTES WIRE NUMBER LEADS
 ⊔ DENOTES COMPONENTS BY OTHERS

BANANZA

Direct-Fired Heating, Ventilation And Pressurization Systems



B-Series Dimension and Selection Guide

1.800.255.3416
www.bananza.com



CA N A DA : 100% O UTSIDE A I R O N LY

B-Series Selection Guide

CFM (m ³ /h)	MODEL	MOTOR HP (kW) AT 1 in wc (2.5 mbar) EXTERNAL STATIC PRESSURE	dB "A" AT 1 in wc (2.5 mbar)** EXTERNAL STATIC PRESSURE	HEAT INPUT AT MAX. TEMP. RISE (Btu/h) x 1000		MINIMUM INLET GAS PRESSURE in wc (mbar)***	MANIFOLD SIZE in NPT (mm)
				NG	LPG		
1,000 (1,700)	B-350	2 (1.5)	70	97	76	7 (17.5)	0.75 (19)
2,000 (3,400)	B-350	2 (1.5)	70	194	151	7 (17.5)	0.75 (19)
3,000 (5,100)	B-350	3 (2.2)	70	292	227	7 (17.5)	0.75 (19)
4,000 (6,800)	B-350	3 (2.2)	70	389*	302	7 (17.5)	0.75 (19)
4,000 (6,800)	B-650	3 (2.2)	69	432	346	7 (17.5)	1.0 (25)
5,000 (8,500)	B-650	3 (2.2)	68	540	432	7 (17.5)	1.0 (25)
6,000 (10,200)	B-650	5 (4.0)	67	648	518	7 (17.5)	1.0 (25)
7,000 (11,900)	B-650	5 (4.0)	66	756*	605	7 (17.5)	1.0 (25)
8,000 (13,600)	B-650	5 (4.0)	66	800*	691	7 (17.5)	1.0 (25)
9,000 (15,300)	B-650	7.5 (5.5)	67	800*	778	7 (17.5)	1.0 (25)
10,000 (17,000)	B-650	7.5 (5.5)	68	800*	800	7 (17.5)	1.0 (25)
7,000 (11,900)	B-1000	5 (4.0)	66	756	605	7 (17.5)	1.25 (32)
8,000 (13,600)	B-1000	5 (4.0)	66	864	691	7 (17.5)	1.25 (32)
9,000 (15,300)	B-1000	7.5 (5.5)	67	972	778	7 (17.5)	1.25 (32)
10,000 (17,000)	B-1000	7.5 (5.5)	68	1,080	864	7 (17.5)	1.25 (32)
11,000 (18,700)	B-1000	10 (7.5)	68	1,188	950	7 (17.5)	1.25 (32)
12,000 (20,400)	B-1000	10 (7.5)	69	1,296	1,037	7 (17.5)	1.25 (32)
13,000 (22,100)	B-1000	CF	CF	1,404	1,123	7 (17.5)	1.25 (32)
14,000 (23,800)	B-1000	CF	CF	1,512	1,210	7 (17.5)	1.25 (32)
12,000 (20,400)	B-2000	7.5 (5.5)	73	1,296	1,037	9 (22.5)	1.5 (38)
14,000 (23,800)	B-2000	10 (7.5)	73	1,512	1,210	9 (22.5)	1.5 (38)
16,000 (27,200)	B-2000	10 (7.5)	76	1,728	1,382	9 (22.5)	1.5 (38)
18,000 (30,600)	B-2000	15 (11.0)	77	1,944	1,555	9 (22.5)	1.5 (38)
20,000 (34,000)	B-2000	15 (11.0)	77	2,160	1,728	9 (22.5)	1.5 (38)
22,000 (37,400)	B-2000	20 (15.0)	77	2,376	1,901	9 (22.5)	1.5 (38)
25,000 (42,500)	B-2000	20 (15.0)	77	2,700	2,160	9 (22.5)	1.5 (38)
25,000 (42,500)	B-3000	15 (11.0)	74	2,700	2,160	11 (27.5)	2.0 (50)
27,500 (46,700)	B-3000	15 (11.0)	75	2,970	2,376	11 (27.5)	2.0 (50)
30,000 (51,000)	B-3000	20 (15.0)	76	3,240	2,592	11 (27.5)	2.0 (50)
32,500 (55,200)	B-3000	25 (18.5)	77	3,510	2,808	11 (27.5)	2.0 (50)
35,000 (59,500)	B-3000	25 (18.5)	79	3,780	3,024	11 (27.5)	2.0 (50)
37,500 (63,700)	B-3000	30 (22.5)	79	4,050*	3,240	11 (27.5)	2.0 (50)
40,000 (68,000)	B-3000	CF	CF	4,320*	3,456	11 (27.5)	2.0 (50)
35,000 (59,500)	B-4000	25 (18.5)	77	3,780	N/A	Consult Factory	1.5 - 3.0 (38 - 76)
37,500 (63,700)	B-4000	30 (22.5)	77	4,050			1.5 - 3.0 (38 - 76)
40,000 (68,000)	B-4000	30 (22.5)	77	4,320			1.5 - 3.0 (38 - 76)
42,500 (72,200)	B-4000	40 (30.0)	77	4,590			1.5 - 3.0 (38 - 76)
45,000 (76,500)	B-4000	40 (30.0)	77	4,860			1.5 - 3.0 (38 - 76)
47,500 (80,700)	B-4000	40 (30.0)	78	5,130			1.5 - 3.0 (38 - 76)
45,000 (76,500)	B-5000	30 (22.5)	77	4,860	N/A		1.5 - 3.0 (38 - 76)
47,500 (80,700)	B-5000	30 (22.5)	77	5,130			1.5 - 3.0 (38 - 76)
50,000 (85,000)	B-5000	40 (30.0)	77	5,400			1.5 - 3.0 (38 - 76)
52,500 (89,200)	B-5000	40 (30.0)	78	5,670			1.5 - 3.0 (38 - 76)
55,000 (93,400)	B-5000	40 (30.0)	78	5,940			1.5 - 3.0 (38 - 76)
57,500 (97,700)	B-5000	40 (30.0)	79	6,210			1.5 - 3.0 (38 - 76)
60,000 (101,900)	B-5000	50 (37.5)	80	6,480		1.5 - 3.0 (38 - 76)	

CF = Consult Factory

* Temperature rise at this CFM is less than the maximum temperature rise.

** dB "A" is measured at 10' (3 m) from unducted discharge.

*** Maximum Inlet Gas Pressure: ANSI - Compliant Manifold (B-350 - B-3000) = 14 in wc (34.9 mbar)

ANSI - Compliant Manifold (B-4000 - B-5000) = 5 psi (344.7 mbar)

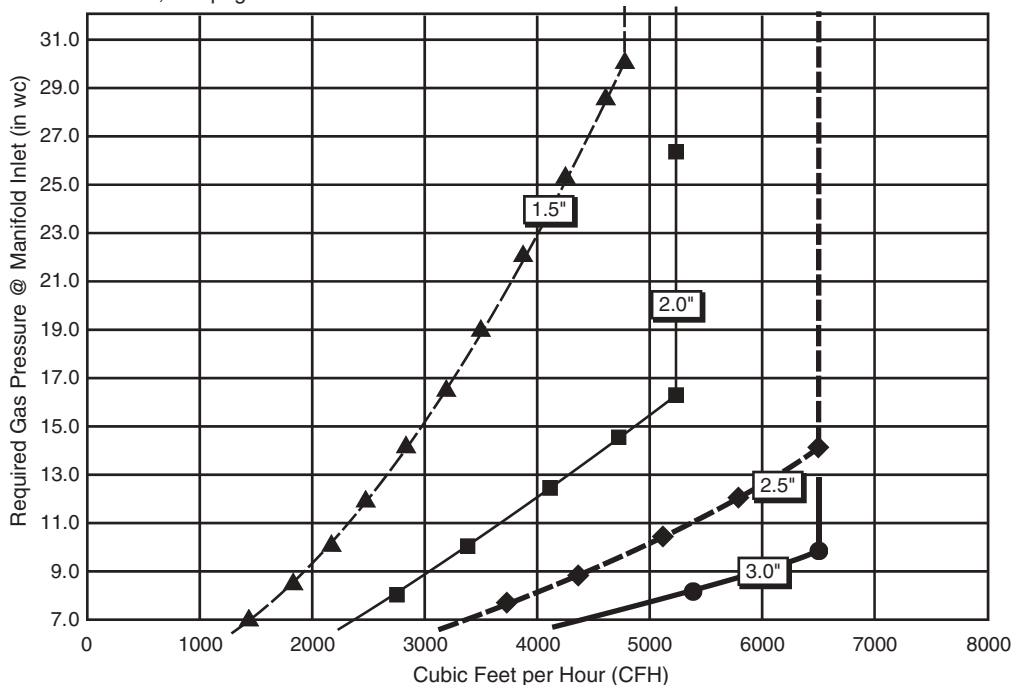
FM and XL Insurance (formerly-IRI) - Compliant Manifold (All Models) = 5 psi (344.7 mbar)

B-4000 & B-5000 Manifold Selection Charts

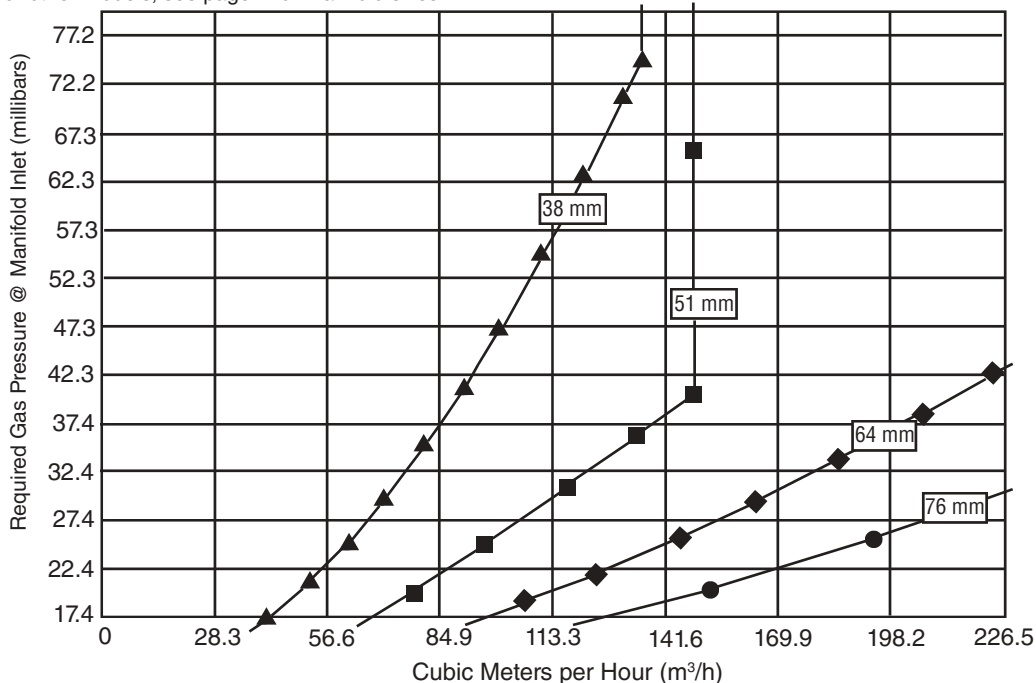
DIRECTIONS:

- To Calculate CFH:
 - For NG Unit: 1 MBH = 1,000 Btu/h = 1 CFH = 0.028 CMH (m³/h)
 - For LPG Unit: 1 MBH = 1,000 Btu/h = .65 CFH = 0.018 CMH (m³/h)
- Select a point on the chart that represents the intersection of the inlet gas pressure and the unit CFH.
- Select the manifold size to the right of this point.

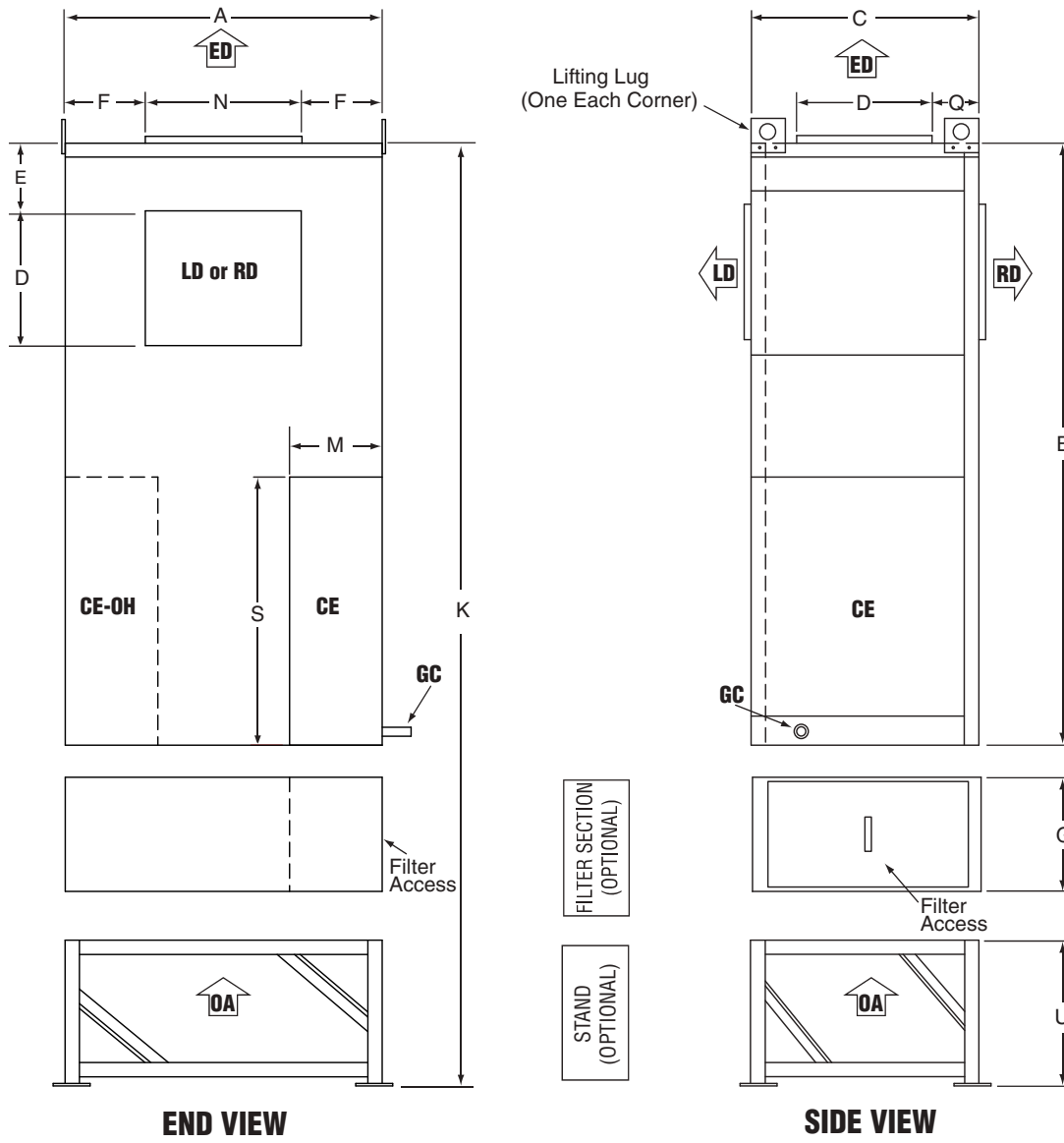
Natural Gas Flow vs. Pressure Drop using the Maxon NP burner for B-4000 & B-5000 (specific gravity = 0.64)
For other models, see page 2 for manifold sizes.



Natural Gas Flow vs. Pressure Drop using the Maxon NP burner for B-4000 & B-5000 (specific gravity = 0.64)
For other models, see page 2 for manifold sizes.



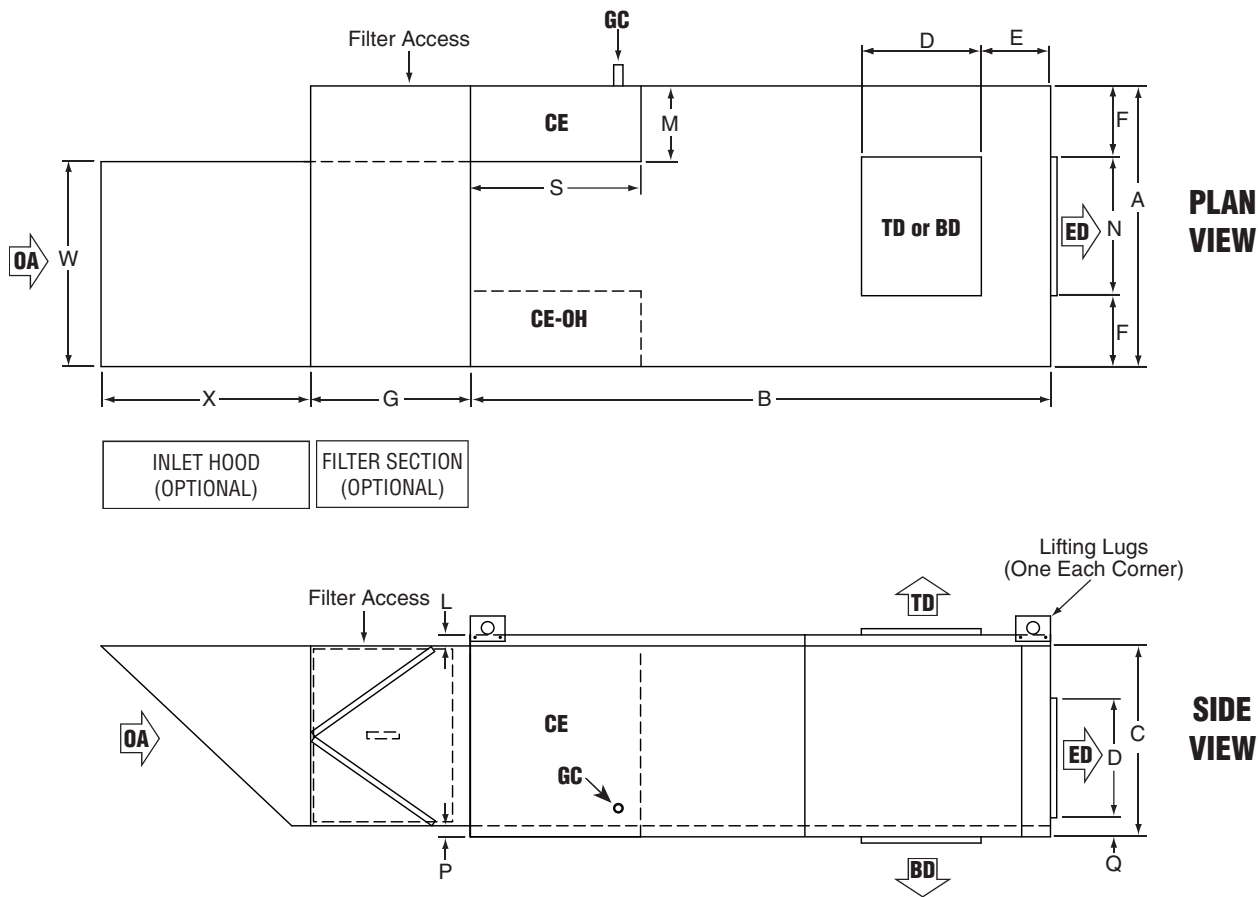
B-350 Upright Model Dimensions



CABINET DIMENSIONS

MODEL	CFM	A	B	C	D	E	F	G	K	L	M	N	P	Q	S	U	W	X	
B-350	(in)	1,000 - 3,000	32.3	60.3	28.3	10.4	6.8	11.5	27.0	117.3	1.5	8.0	9.3	1.8	3.1	35.2	30.0	25.2	38.4
	(cm)		82.0	153.2	71.9	26.4	17.3	29.2	68.6	297.9	3.8	20.3	23.6	4.6	7.9	89.4	76.2	64.0	97.5
	(in)	4,000	32.3	60.3	28.3	13.8	7.6	8.2	27.0	117.3	1.5	8.0	15.8	1.8	3.1	35.2	30.0	25.2	38.4
	(cm)		82.0	153.2	71.9	35.1	19.3	20.8	68.6	297.9	3.8	20.3	40.1	4.6	7.9	89.4	76.2	64.0	97.5

B-350 Horizontal Model Dimensions



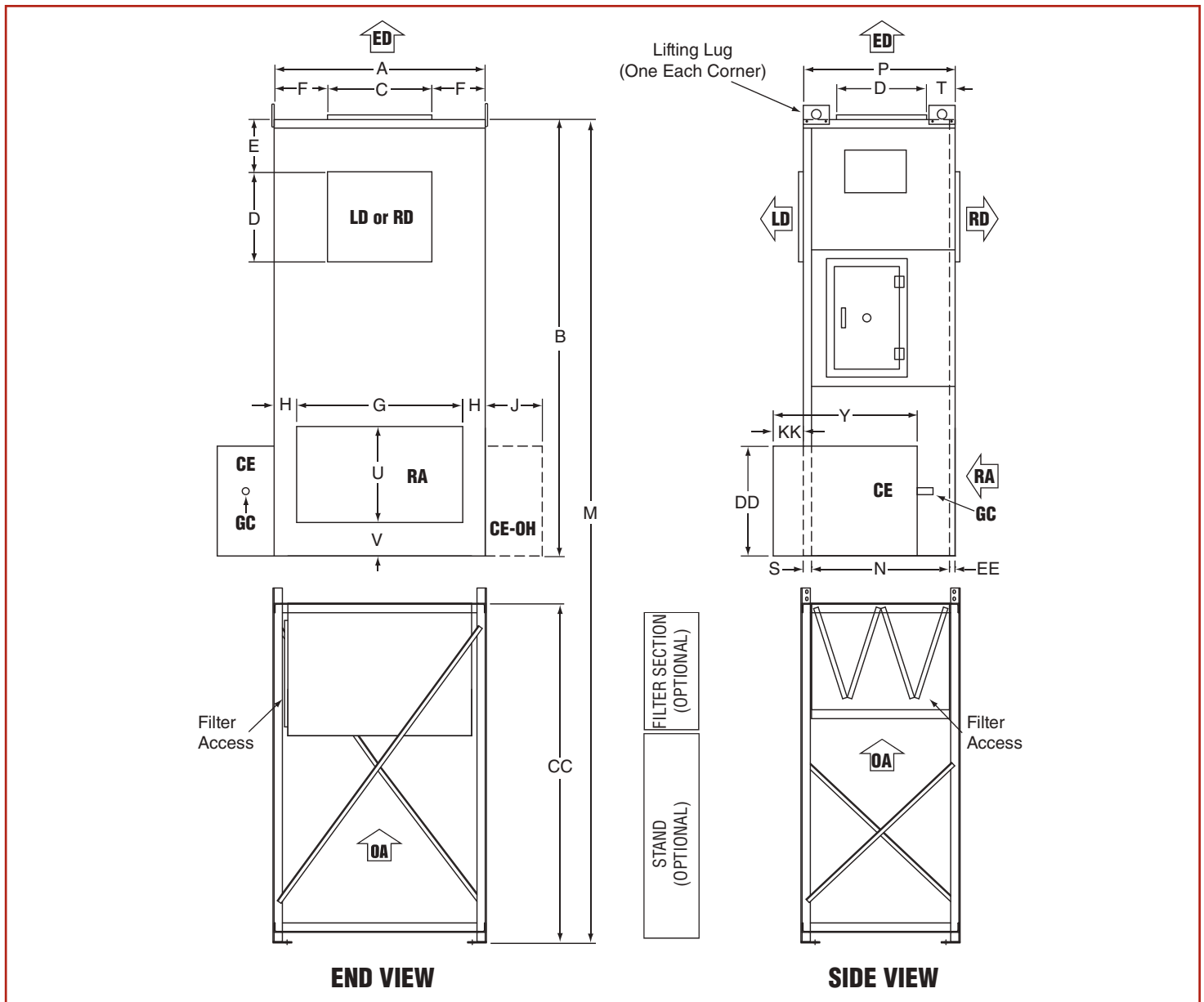
ESTIMATED SHIPPING WEIGHTS			
MODEL		AIR HANDLER	SKID
B-350	(lb)	450.0	50.0
	(kg)	204.1	22.7

LEGEND
BD = Bottom Discharge
CE = Control Enclosure
GC = Gas Connection
ED = End Discharge
LD = Left Discharge
OA = Outside Air
RA = Return Air (Optional)
RD = Right Discharge
TD = Top Discharge
OH = Opposite Hand

IMPORTANT NOTES:

- Shipping weights apply to both horizontal and upright models.
- All dimensions and weights are subject to change without notice.
- Outdoor air duct size varies. Consult factory.
- Control enclosure is located on the left side of the air handler when looking downstream into the inlet end.

B-650, B-1000, B-2000 & B-3000 Upright Model Dimensions



CABINET DIMENSIONS																						
MODEL		A	B	C	D	E	F	G	H	J	M	N	P	Q	R	S	T	U	V	W	Y	Z
B-650/ B-1000	(in)	44.2	92.3	22.0	19.0	10.5	11.1	37.9	3.2	14.0	*	29.6	32.7	48.1	35.1	1.6	3.0	10.0	3.4	56.4	37.2	34.0
	(cm)	112.3	234.4	55.9	48.3	26.7	28.2	96.3	8.1	35.6	*	75.2	83.1	122.2	89.2	4.1	7.6	25.4	8.6	143.2	94.5	86.3
B-2000	(in)	56.0	116.2	31.5	31.5	13.8	12.3	44.3	6.0	17.0	188.2	52.6	56.1	69.6	23.3	1.5	3.9	26.5	6.0	89.3	44.0	31.0
	(cm)	142.2	295.1	80.0	80.0	35.0	31.2	112.5	15.2	43.2	477.8	133.6	142.5	176.8	59.2	3.8	9.9	67.3	15.2	226.8	111.8	78.7
B-3000	(in)	68.0	116.2	36.8	36.8	17.0	15.6	56.3	6.0	17.0	188.2	56.6	60.1	69.6	23.3	1.5	3.9	30.5	6.0	86.9	44.0	31.0
	(cm)	172.7	295.1	93.5	93.5	43.2	39.6	143.0	15.2	43.2	477.8	143.8	152.7	176.8	59.2	3.8	9.9	77.5	15.2	220.7	111.8	78.7

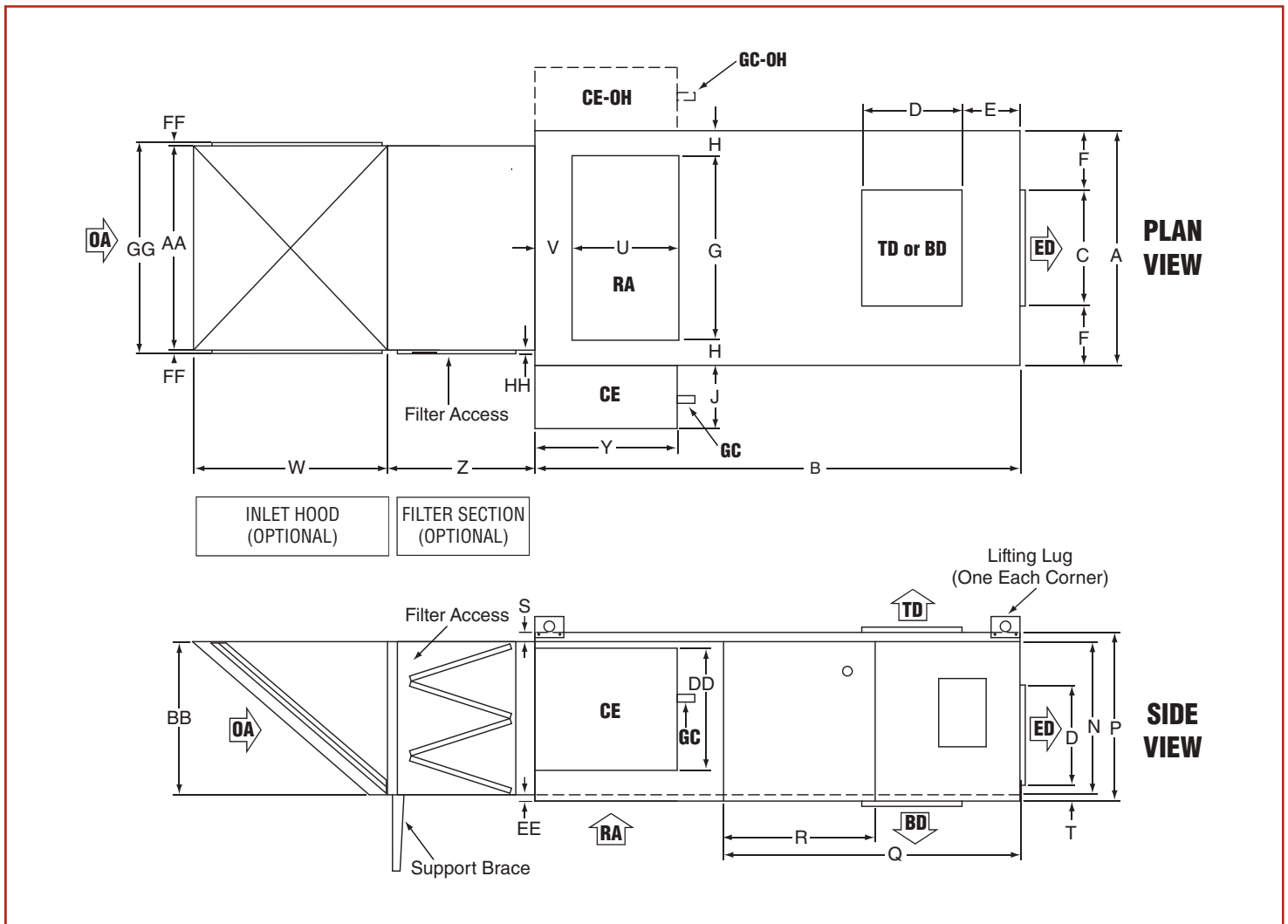
Refer to M in stand chart below.

CABINET DIMENSIONS										
MODEL		AA	BB	CC	DD	EE	FF	GG	HH	KK
B-650/ B-1000	(in)	38.8	28.8	**	28.6	1.5	1.1	41.0	0.5	6.5
	(cm)	98.6	73.2	**	72.6	3.8	2.8	104.1	1.3	16.5
B-2000	(in)	49.7	52.8	72.0	33.0	2.0	1.1	52.0	0.4	N/A
	(cm)	126.2	134.1	182.9	83.8	5.1	2.8	132.1	1.0	N/A
B-3000	(in)	64.1	56.8	72.0	33.0	2.0	1.1	66.4	0.4	N/A
	(cm)	162.8	144.3	182.9	83.8	5.1	2.8	168.7	1.0	N/A

STANDS		
MODEL	M*	HEIGHT CC**
B-650/ B-1000	(in)	53.0
	(cm)	134.6
	(in)	72.0
	(cm)	182.9

Refer to CC in stand chart to the right.

B-650, B-1000, B-2000 & B-3000 Horizontal Model Dimensions



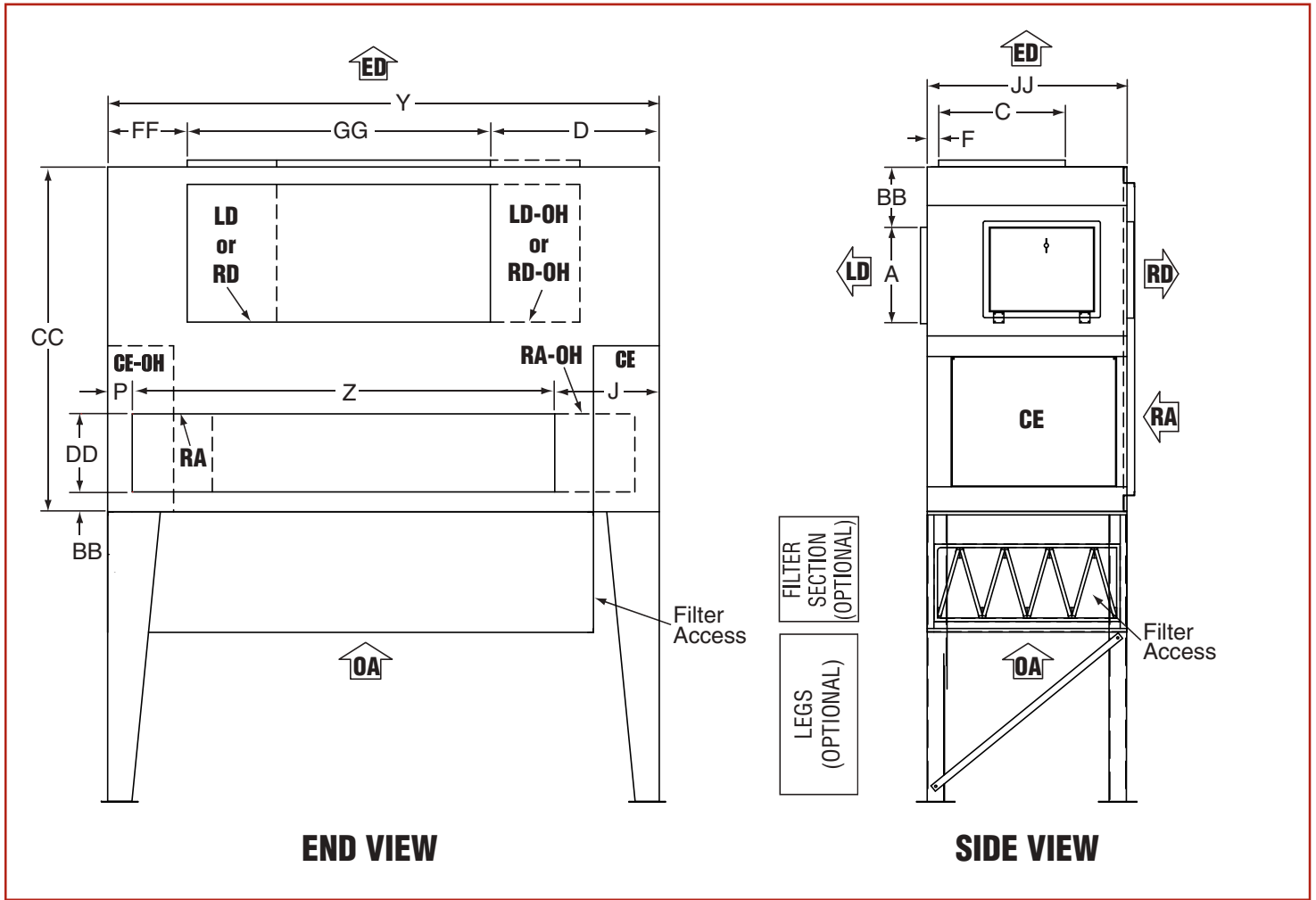
ESTIMATED SHIPPING WEIGHTS			
MODEL		AIR HANDLER	SKID
B-650/	(lb)	700.0	140.0
B-1000	(kg)	317.5	63.5
B-2000	(lb)	1,400.0	340.0
	(kg)	638.0	154.2
B-3000	(lb)	1,650.0	365.0
	(kg)	748.4	165.6

IMPORTANT NOTES:

- Shipping weights apply to both horizontal and upright models.
- All dimensions and weights are subject to change without notice.
- Outdoor air duct size varies. Consult factory.
- Support brace required on horizontal units only if both filter section and inlet hood are required. Support brace provided by factory.
- Control enclosure is located on the right side of the air handler when looking downstream into the inlet end.

LEGEND
BD = Bottom Discharge
CE = Control Enclosure
GC = Gas Connection
ED = End Discharge
LD = Left Discharge
OA = Outside Air
RA = Return Air (Optional)
RD = Right Discharge
TD = Top Discharge
OH = Opposite Hand

B-4000 & B-5000 Upright Model Dimensions

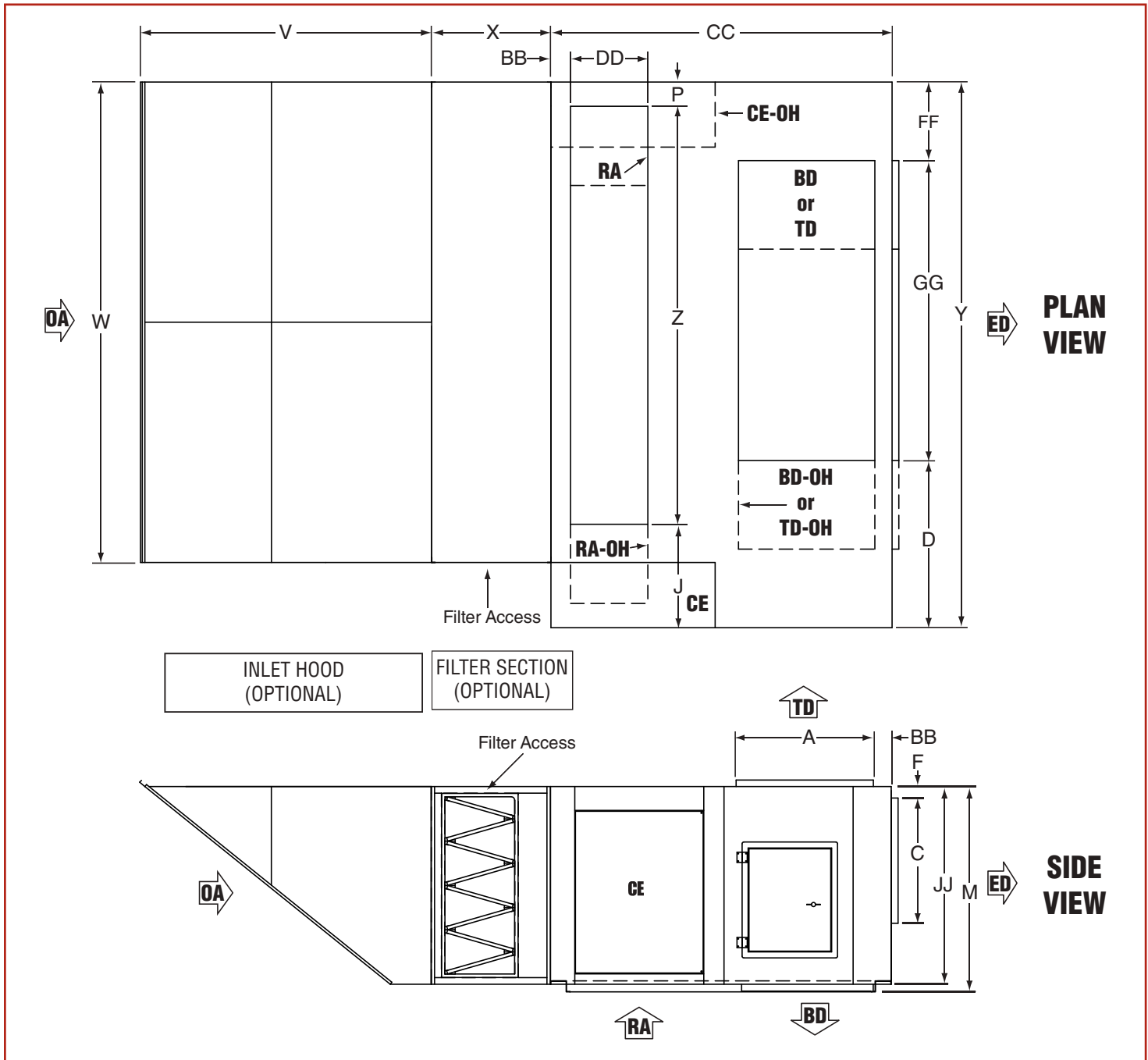


CABINET DIMENSIONS																
MODEL		A	C	F	J	M	P	V	W	X	Y	Z	BB	CC	DD	JJ
B-4000	(in)	40.6	31.5	12.4	31.6	60.3	5.8	86.0	138.8	34.0	160.0	122.5	5.0	100.1	28.6	58.0
	(cm)	103.1	80.0	31.5	80.3	153.0	14.7	218.4	352.6	86.4	406.4	311.2	12.7	254.3	72.6	147.3
B-5000	(in)	46.3	35.3	6.5	31.6	60.3	5.8	86.0	138.8	34.0	160.0	122.5	5.0	100.1	28.6	58.0
	(cm)	117.6	89.7	16.5	80.3	153.0	14.7	218.4	352.6	86.4	406.4	311.2	12.7	254.3	72.6	147.3

MODEL		BOTTOM DISCHARGE			END/TOP DISCHARGE		
		D	FF	GG	D	FF	GG
B-4000	(in)	47.6	23.8	88.3	47.9	24.1	87.8
	(cm)	120.9	60.5	224.3	121.7	61.2	223.0
B-5000	(in)	42.0	18.2	99.1	42.4	18.7	98.6
	(cm)	106.7	46.2	251.7	107.7	47.5	250.4

ESTIMATED SHIPPING WEIGHTS		
MODEL		AIR HANDLER
DF700A	(lb)	3,350.0
	(kg)	1,520.0
DF700B	(lb)	3,800.0
	(kg)	1,723.7

B-4000 & B-5000 Horizontal Model Dimensions

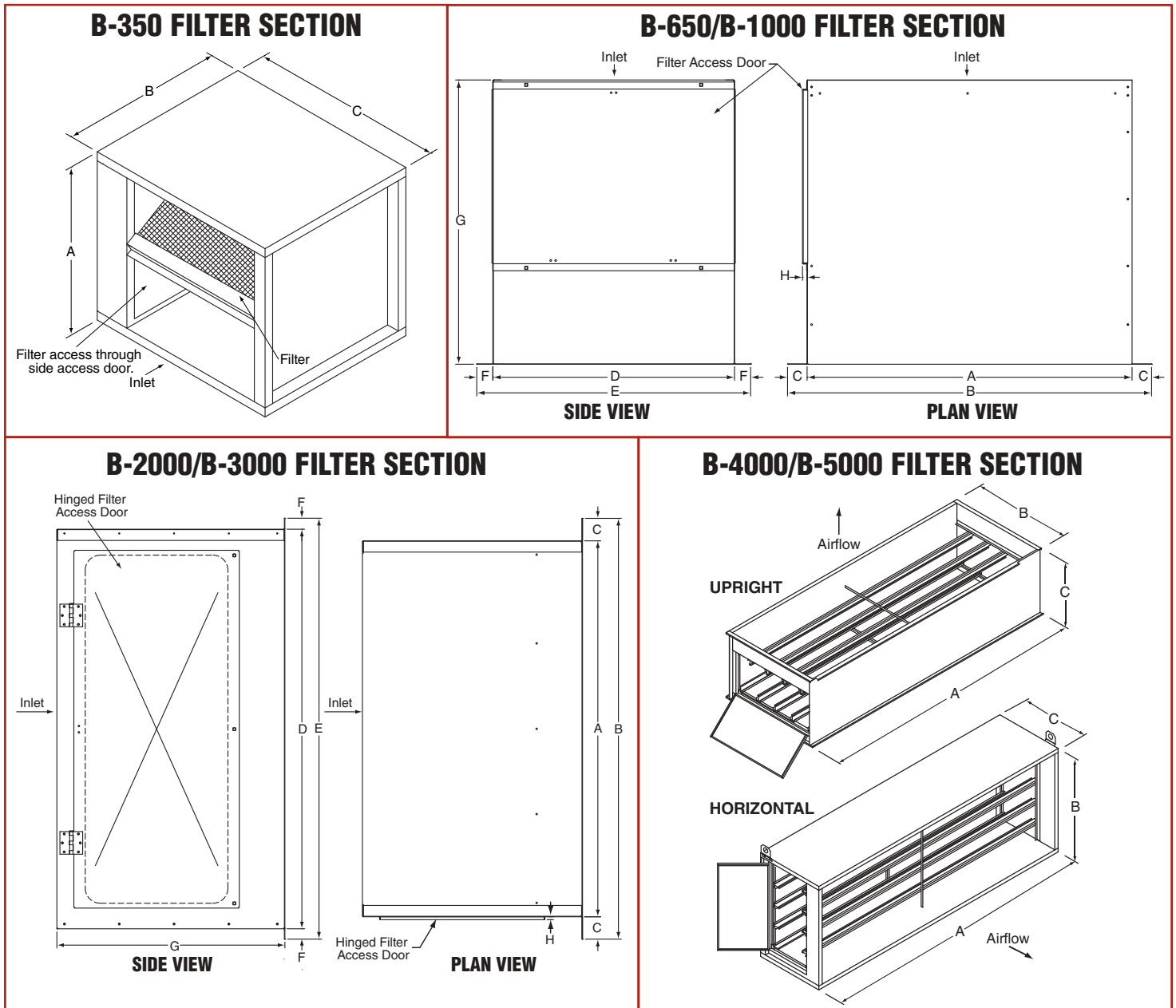


LEGEND	
BD	Bottom Discharge
CE	Control Enclosure
GC	Gas Connection
ED	End Discharge
LD	Left Discharge
OA	Outside Air
RA	Return Air (Optional)
RD	Right Discharge
TD	Top Discharge
OH	Opposite Hand

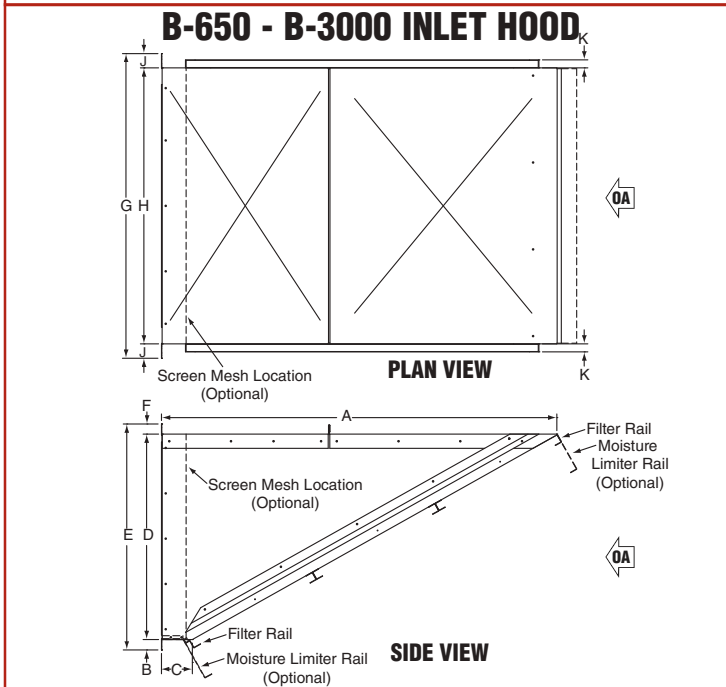
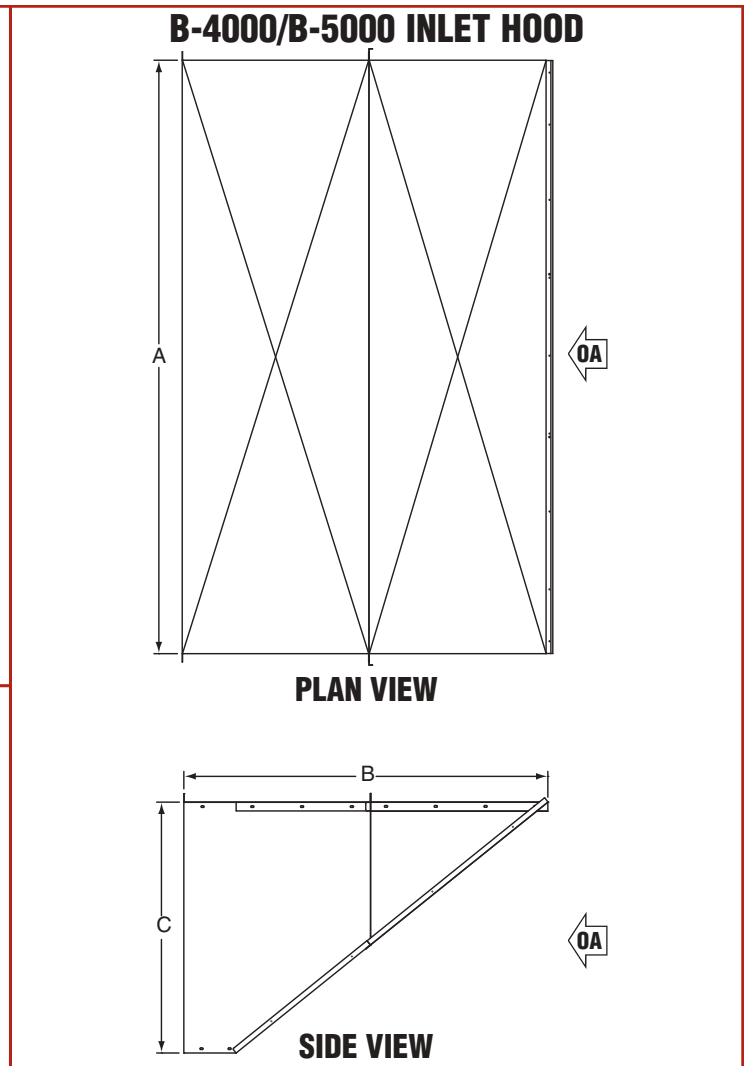
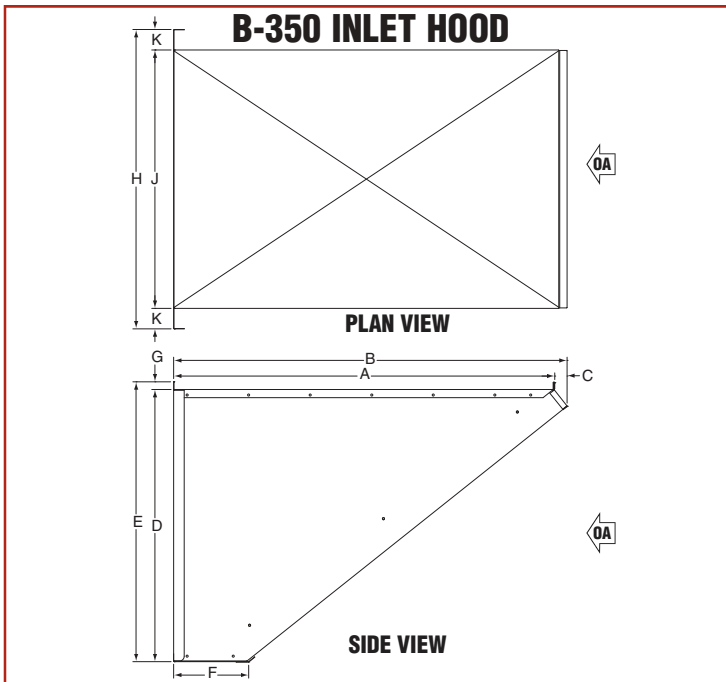
IMPORTANT NOTES:

- Shipping weights apply to both horizontal and upright models.
- All dimensions and weights are subject to change without notice.
- Outdoor air duct size varies. Consult factory.
- Support brace required on horizontal units only if both filter section and inlet hood are required. Support brace provided by factory.
- Control enclosure is located on the right side of the air handler when looking downstream into the inlet end.

Filter Sections



MODEL	FILTER SECTION DIMENSIONS									FILTERS				WEIGHT	
										PERMANENT ALUMINUM MESH		DISPOSABLE POLYESTER			
	A	B	C	D	E	F	G	H	SIZE	QTY	SIZE	QTY	lbs	kg	
B-350	(in) (cm)	28.3 71.9	27.0 68.6	32.3 82.1	N/A	N/A	N/A	N/A	N/A	20 x 25 x 2 50.8 x 63.5 x 5.1	2	20 x 50 x 1 50.8 x 127 x 2.5	1	100.0	45.4
B-650/B-1000	(in) (cm)	38.8 98.6	43.4 110.2	2.3 5.9	28.8 73.2	32.7 83.1	1.9 4.9	34.0 86.3	0.5 1.3	20 x 20 x 1 50.8 x 50.8 x 2.5	8	20 x 40 x 1 50.8 x 101.6 x 2.5	4	100.0	45.4
B-2000	(in) (cm)	49.7 126.2	55.7 141.5	3.0 7.6	52.8 134.1	55.7 141.5	1.4 3.6	31.0 78.7	0.4 1.0	20 x 25 x 1 50.8 x 63.5 x 2.5	12	20 x 50 x 1 50.8 x 127 x 2.5	6	220.0	99.8
B-3000	(in) (cm)	64.1 162.8	68.3 173.5	2.1 5.3	56.8 144.3	60.7 154.2	1.9 4.8	31.0 78.7	0.4 1.0	20 x 20 x 1 & 20 x 25 x 1 50.8 x 50.8 x 2.5 & 50.8 x 63.5 x 2.5	16 & 8 16 & 8	20 x 60 x 1 50.8 x 152.4 x 2.5	8	270.0	122.5
B-4000/B-5000 UPRIGHT	(in) (cm)	143.0 363.2	53.6 136.1	34.9 88.6	N/A	N/A	N/A	N/A	N/A	20 x 20 x 1 50.8 x 50.8 x 2.5	56	20 x 140 x 1 50.8 x 355.6 x 2.5	8	550.0	249.5
B-4000/B-5000 HORIZONTAL	(in) (cm)	138.8 352.6	57.9 147.1	34.0 86.4	N/A	N/A	N/A	N/A	N/A	20 x 20 x 1 50.8 x 50.8 x 2.5	56	20 x 140 x 1 50.8 x 355.6 x 2.5	8	580.0	263.1



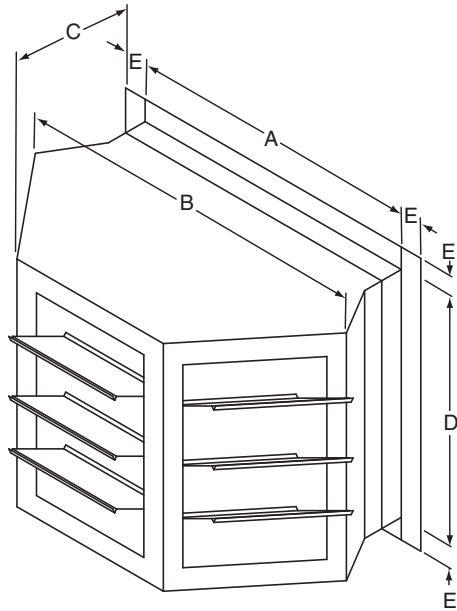
IMPORTANT NOTES:

- Inlet hood is also available with screen mesh, no filters.
- Inlet variation of screen mesh without filters has equal weight as inlet hoods with filters, with the exception of B-4000 and B-5000 (less 120 lbs/54 kg to filtered variation).

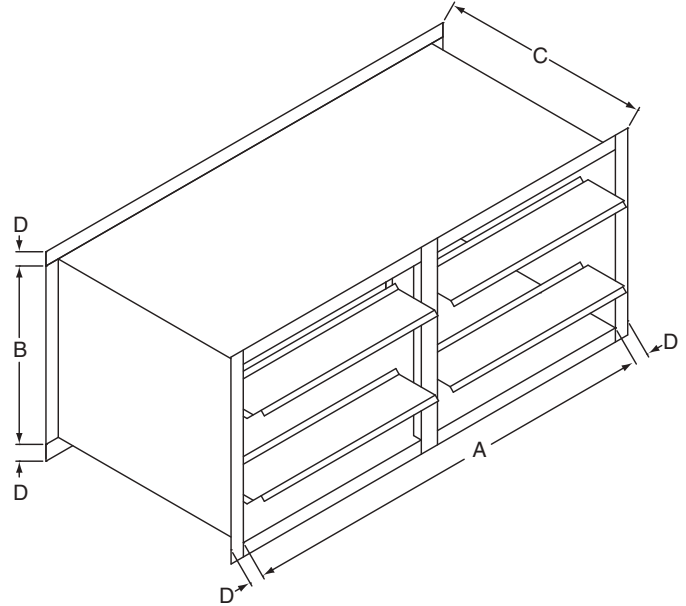
MODEL	INLET HOOD DIMENSIONS											INLET VARIATIONS (SEE NOTES)							
												PERMANENT ALUMINUM MESH FILTERS				MOISTURE LIMITER			
	A	B	C	D	E	F	G	H	J	K	SIZE	QTY	WEIGHT		SIZE	QTY	WEIGHT		
(in)	(cm)	(in)	(cm)	(in)	(cm)	(in)	(cm)	(in)	(cm)	(in)	(cm)	(in)	(cm)	lbs	kg	(in)	(cm)	lbs	kg
B-350	(in) 37.2 (cm) 94.5	(in) 38.4 (cm) 97.5	(in) 1.2 (cm) 3.0	(in) 26.4 (cm) 67.1	(in) 27.3 (cm) 69.3	(in) 7.3 (cm) 18.5	(in) 0.9 (cm) 2.3	(in) 29.2 (cm) 74.2	(in) 25.0 (cm) 63.5	(in) 2.1 (cm) 5.3	20 x 25 x 2	2	60.0	27.2	N/A	N/A	N/A	N/A	
B650/ B-1000	(in) 56.4 (cm) 143.2	(in) 1.5 (cm) 3.8	(in) 4.3 (cm) 10.9	(in) 29.0 (cm) 73.7	(in) 31.9 (cm) 81.0	(in) 1.4 (cm) 3.6	(in) 43.0 (cm) 109.0	(in) 38.9 (cm) 98.8	(in) 2.0 (cm) 5.1	(in) 1.1 (cm) 2.8	50.8 x 63.5 x 5.1	6	110.0	49.9	12 x 60 x 5.5 30.5 x 152.4 x 14.0	3	120.0	54.4	
B-2000	(in) 89.3 (cm) 226.8	(in) 1.3 (cm) 3.3	(in) 5.0 (cm) 12.7	(in) 52.8 (cm) 134.1	(in) 55.3 (cm) 140.5	(in) 1.3 (cm) 3.3	(in) 52.1 (cm) 132.3	(in) 49.7 (cm) 126.2	(in) 1.2 (cm) 3.0	(in) 1.1 (cm) 2.8	20 x 25 x 1 50.8 x 63.5 x 2.5	10	190.0	86.2	12 x 96 x 5.5 30.5 x 243.8 x 14.0	4	210.0	95.3	
B-3000	(in) 86.9 (cm) 220.7	(in) 1.3 (cm) 3.3	(in) 4.7 (cm) 11.9	(in) 56.8 (cm) 144.3	(in) 59.3 (cm) 150.6	(in) 1.3 (cm) 3.3	(in) 66.8 (cm) 169.7	(in) 64.1 (cm) 162.8	(in) 1.3 (cm) 3.3	(in) 1.1 (cm) 2.8	20 x 25 x 1 & 20 x 25 x 1 50.8 x 50.8 x 2.5 & 50.8 x 63.5 x 2.5	10 & 5 10 & 5	240.0	108.9	12 x 96 x 5.5 30.5 x 243.8 x 14.0	5	260.0	117.9	
B4000/ B-5000	(in) 137.5 (cm) 349.3	(in) 86.0 (cm) 218.4	(in) 58.0 (cm) 147.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	24 x 24 x 2 61.0 x 61.0 x 5.1	24	600.0	272.2	12 x 96 x 5.5 30.5 x 243.8 x 14.0	12	710.0	322.0	

Discharge Heads

B-350 - B-3000 THREE-WAY DISCHARGE HEAD



B-4000/B-5000 ONE-WAY DISCHARGE HEAD



THREE-WAY DISCHARGE HEAD DIMENSIONS

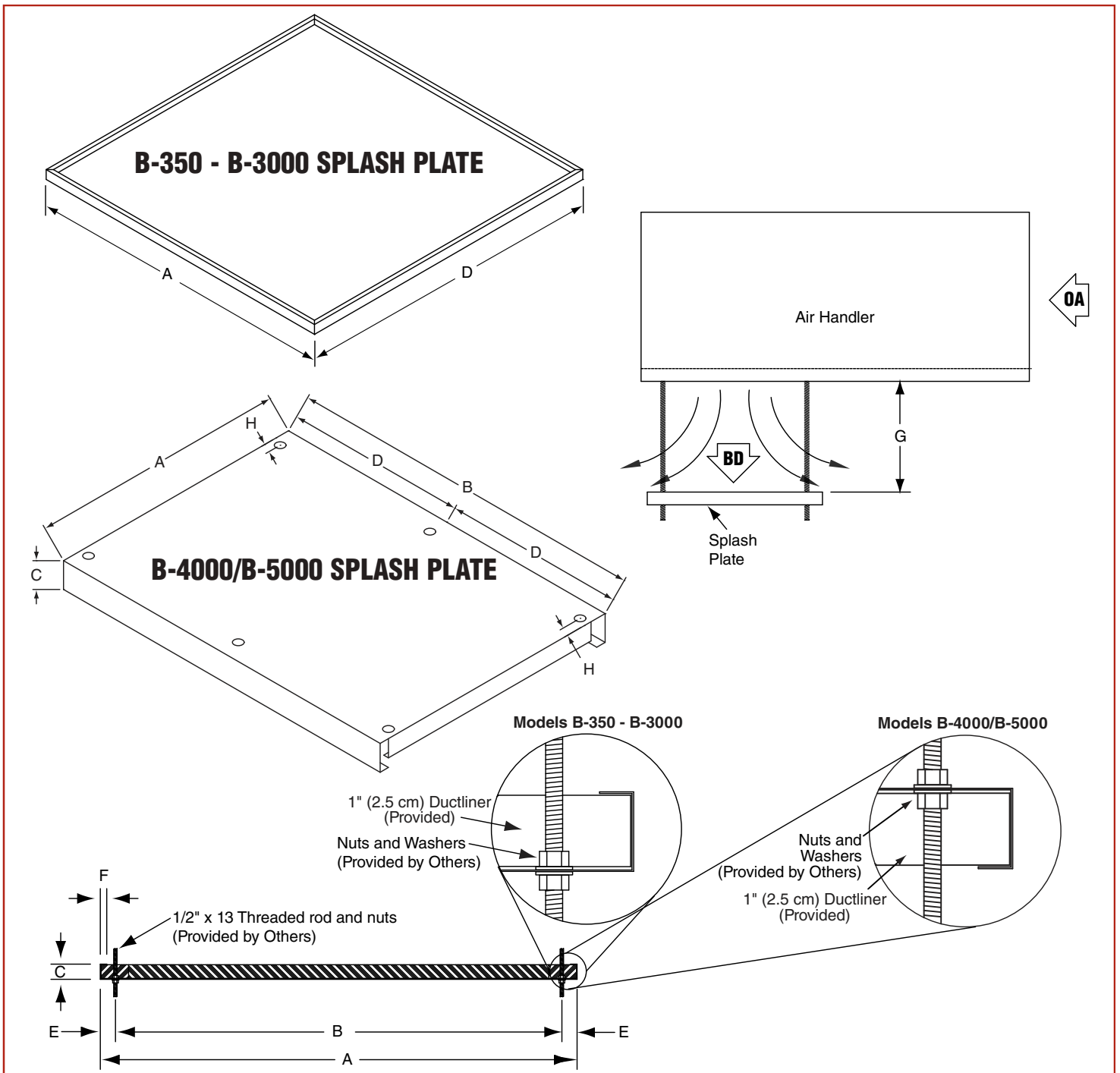
MODEL		A	B	C	D	E	WEIGHT	
							lbs	kg
B-350	(in)	19.0	40.8	23.8	21.0	2.0	50.0	22.7
	(cm)	48.3	103.5	60.3	53.3	5.1		
B-650/B-1000	(in)	22.4	40.8	24.0	19.4	2.0	80.0	36.3
	(cm)	56.9	103.5	61.0	49.3	5.1		
B-2000	(in)	31.9	43.3	21.5	33.9	2.0	120.0	54.4
	(cm)	81.0	109.9	54.6	86.1	5.1		
B-3000	(in)	36.9	48.3	22.5	36.9	2.0	160.0	72.6
	(cm)	93.7	122.6	57.2	93.7	5.1		

ONE-WAY DISCHARGE HEAD DIMENSIONS

MODEL		A	B	C	D	WEIGHT	
						lbs	kg
B-4000	(in)	87.8	39.8	30.0	3.0	215.0	97.5
	(cm)	222.9	101.1	76.2	7.6		
B-5000	(in)	103.8	48.5	30.0	2.0	355.0	161.0
	(cm)	263.5	123.2	76.2	5.1		

IMPORTANT NOTES:

- Discharge head must be field supported by others.
- Discharge head has manually adjustable horizontal blades.



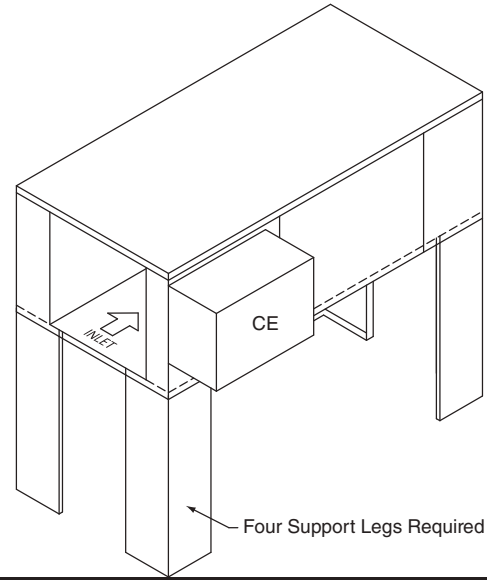
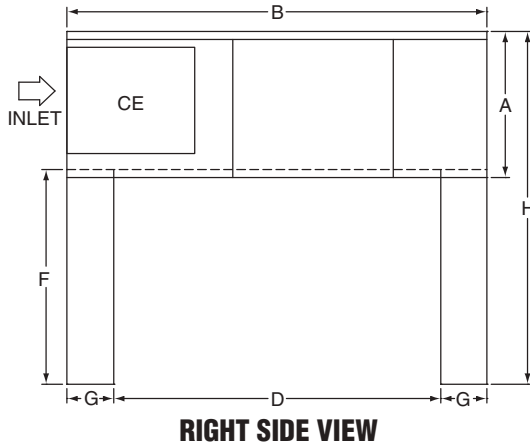
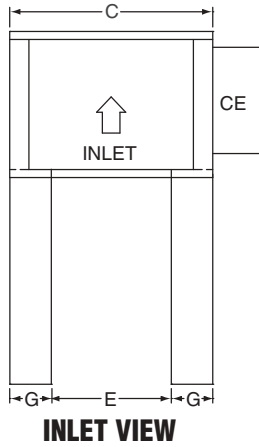
SPLASH PLATE DIMENSIONS												
MODEL		A	B	C	D	E	F	G (min)	G (max)	H	WEIGHT	
											lbs	kg
B-350	(in)	22.0	19.5	0.9	25.0	1.3	0.6	15.0	20.0	N/A	20.0	9.1
	(cm)	55.9	49.5	2.2	63.5	3.2	1.6	38.1	50.8	N/A	40.0	18.1
B650/ B-1000	(in)	44.0	41.5	0.9	44.0	1.3	0.6	18.0	27.0	N/A	40.0	18.1
	(cm)	111.8	105.4	2.2	111.8	3.2	1.6	47.5	68.6	N/A	60.0	27.2
B-2000	(in)	54.8	51.3	1.8	54.8	1.8	0.8	25.0	38.0	N/A	60.0	27.2
	(cm)	139.1	130.2	4.4	139.1	4.4	2.0	63.5	96.5	N/A	60.0	27.2
B-3000	(in)	54.8	51.3	1.8	54.8	1.8	0.8	30.0	45.0	N/A	60.0	27.2
	(cm)	139.1	130.2	4.4	139.1	4.4	2.0	76.2	114.3	N/A	60.0	27.2
B-4000/ B-5000	(in)	51.0	110.4	3.0	55.2	2.0	1.0	25.0	38.0	1.8	170.0	77.1
	(cm)	129.5	280.4	7.6	140.2	5.1	2.5	63.5	96.5	4.6	170.0	77.1

IMPORTANT NOTES:

- B-350 - B-3000 require four threaded rods.
- B-4000 and B-5000 require six threaded rods.

Legs

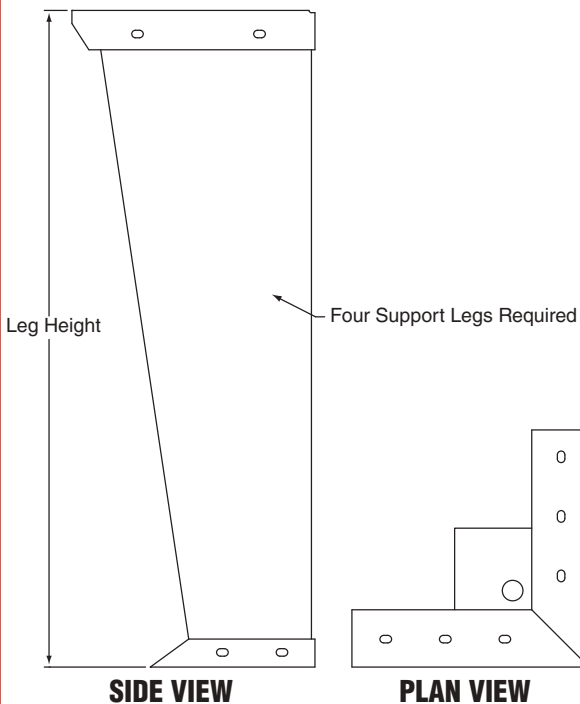
B-350 - B-3000 LEGS



LEG DIMENSIONS

MODEL		A	B	C	D	E	F	G	H	WEIGHT (EACH LEG)	
										lbs	kg
B-350 (See Note)	(in)	28.3	60.3	32.3	31.1	3.1	46.0	14.6	72.5	26.0	11.8
	(cm)	71.9	153.2	82.0	79.0	7.9	116.8	37.1	184.2		
B-650/B-1000	(in)	32.7	92.3	44.2	63.1	15.0	46.0	14.6	77.2	26.0	11.8
	(cm)	83.1	234.4	112.3	160.3	38.1	116.8	37.1	196.1		
B-2000	(in)	56.1	116.1	56.0	86.9	26.8	46.0	14.6	100.1	26.0	11.8
	(cm)	142.5	294.9	142.2	220.7	68.1	116.8	37.1	254.3		
B-3000	(in)	60.1	116.1	68.0	96.9	38.8	46.0	14.6	104.1	26.0	11.8
	(cm)	152.7	294.9	172.7	220.7	98.6	116.8	37.1	264.4		

B-4000/B-5000 LEGS



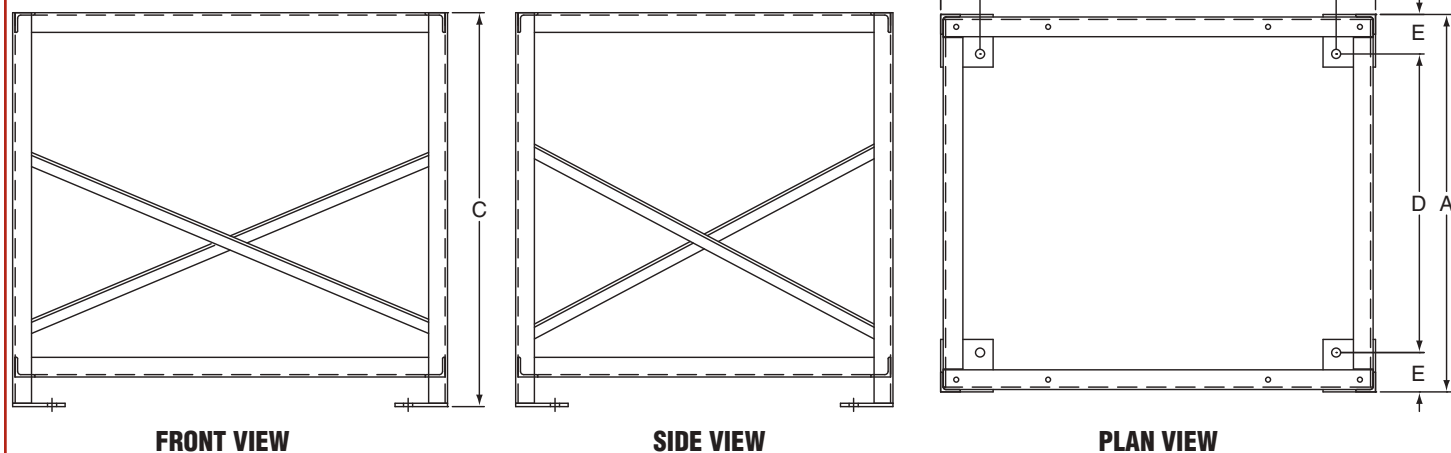
B-4000/B-5000 LEG DIMENSIONS

LEG HEIGHT	WEIGHT (EACH LEG)	
	lbs	kg
(in)	24.0	26.3
(cm)	61.0	
(in)	36.0	35.0
(cm)	91.4	
(in)	48.0	43.8
(cm)	121.9	
(in)	60.0	53.8
(cm)	152.4	
(in)	72.0	62.5
(cm)	182.9	
(in)	84.0	71.3
(cm)	213.4	
(in)	96.0	81.3
(cm)	243.8	

IMPORTANT NOTES:

- B-350 control enclosure is located on the left side of the air handler when looking downstream of the inlet end.
- 24" (61 cm) and 36" (91.4 cm) leg heights are not available for upright units.
- 48" (121.9 cm) minimum leg height without filter section for B-4000.
- 60" (152.4 cm) minimum leg height without filter section for B-5000.
- 72" (182.9 cm) minimum leg height with a filter section for B-4000.
- 96" (243.8 cm) minimum leg height with a filter section for B-5000.

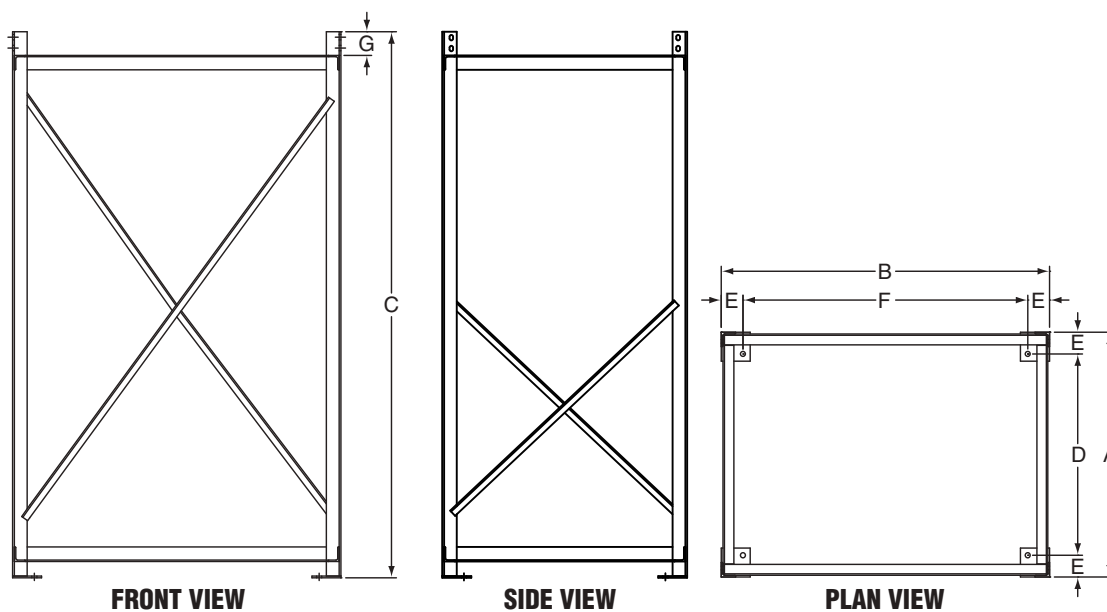
B-350 30" UPRIGHT STAND



30" UPRIGHT STAND DIMENSIONS

MODEL		A	B	C	D	E	F	WEIGHT	
								lbs	kg
B-350	(in) (cm)	28.8 73.0	33.1 84.1	30.0 76.2	22.8 57.8	3.0 7.6	27.1 68.9	75.0	34.0

B-650 - B-3000 53"/72" UPRIGHT STAND



53"/72" UPRIGHT STAND DIMENSIONS

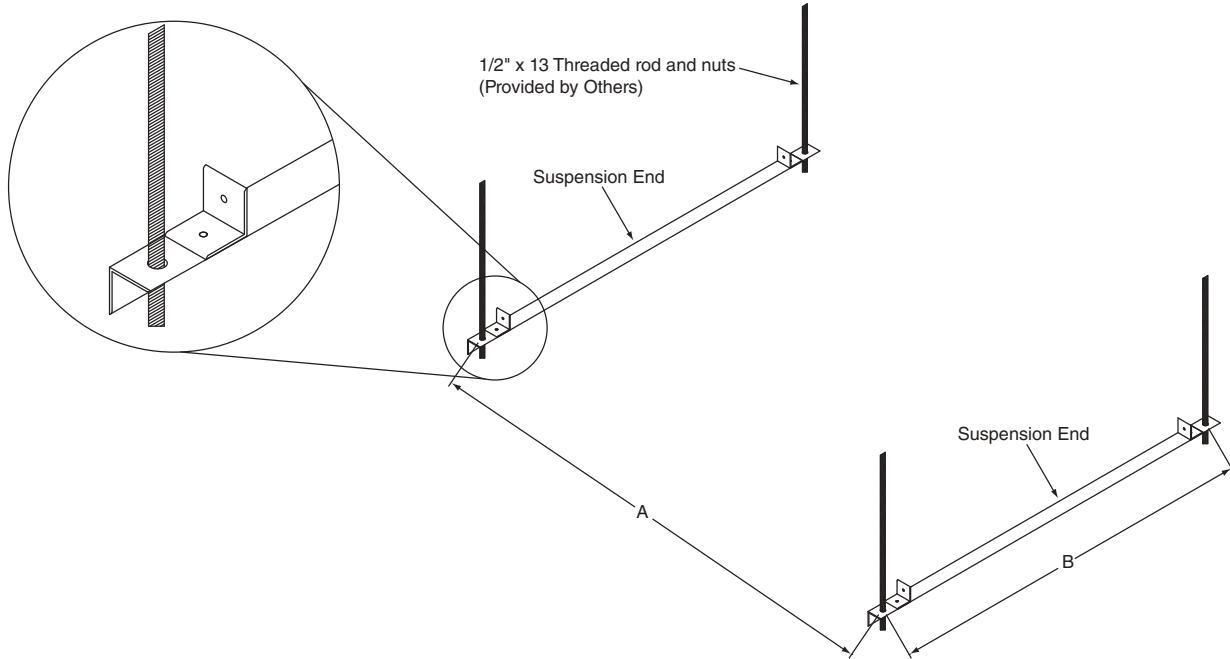
MODEL		A	B	C	D	E	F	G	WEIGHT	
									lbs	kg
B-650/B-1000 (53")	(in)	33.8	45.3	56.3	27.8	3.0	39.3	3.3	160.0	72.6
	(cm)	85.7	114.9	142.9	70.5	7.6	99.7	8.3		
B-650/B-1000 (72")	(in)	33.8	45.3	75.3	27.8	3.0	32.5	3.3	190.0	86.2
	(cm)	85.7	114.9	191.1	70.5	7.6	82.6	8.3		
B-2000	(in)	57.5	57.5	75.3	51.1	3.0	51.5	3.3	230.0	104.3
	(cm)	146.1	146.1	191.1	129.8	7.6	130.8	8.3		
B-3000	(in)	69.5	61.8	75.3	63.5	3.0	55.8	3.3	300.0	136.1
	(cm)	176.5	156.8	191.1	161.3	7.6	141.6	8.3		

IMPORTANT NOTES:

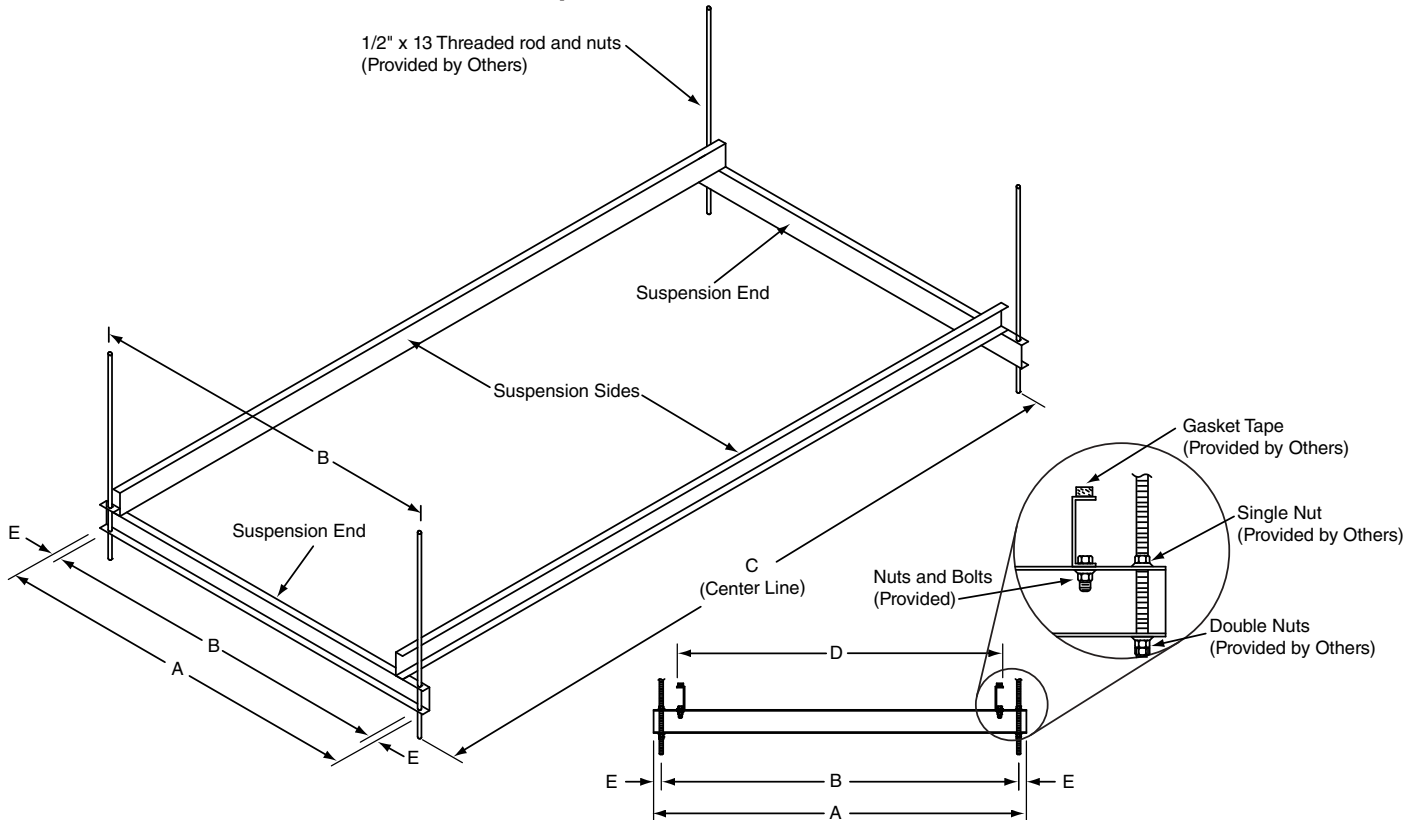
- 1/4" angle iron construction.

Suspension Kits

B-350 SUSPENSION KIT



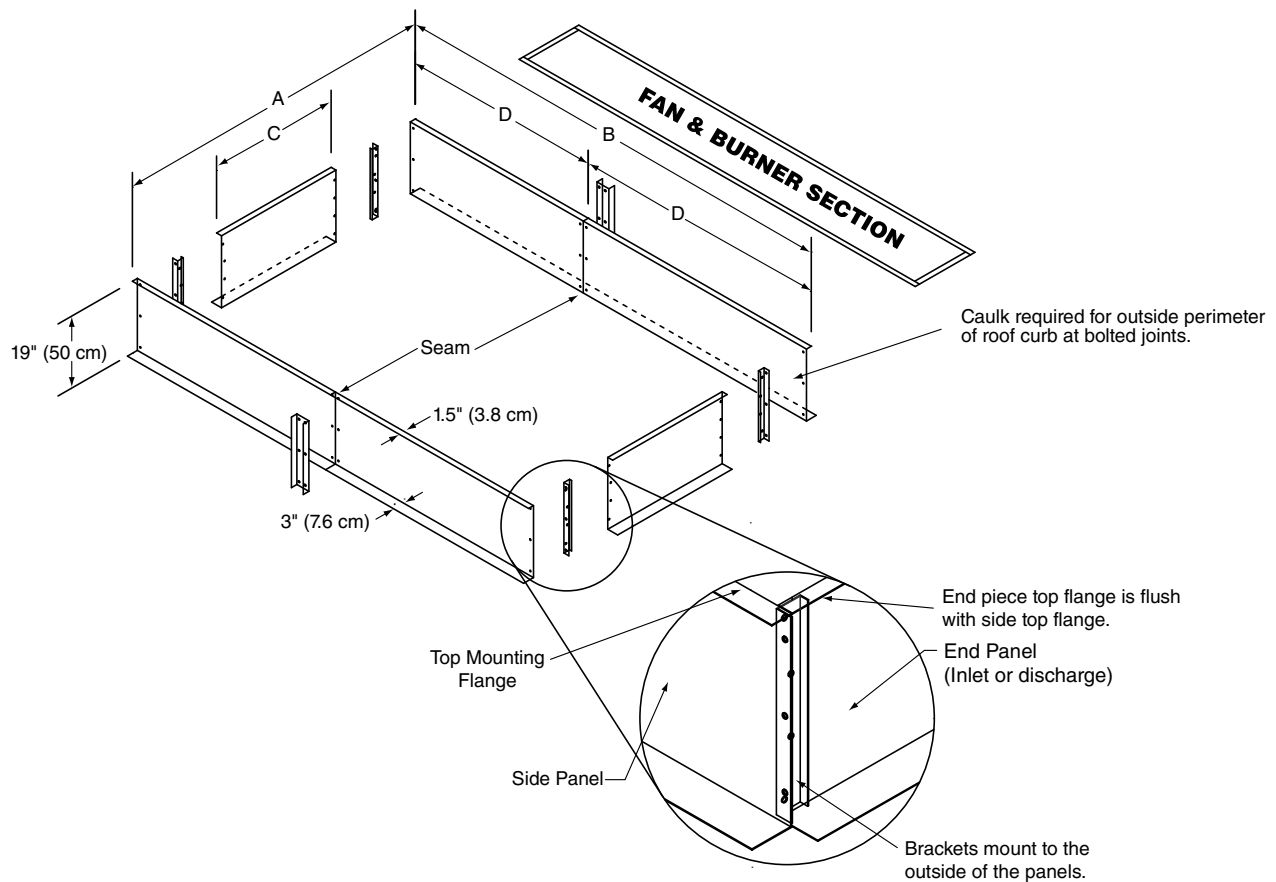
B-650/B-1000 SUSPENSION KIT



SUSPENSION KIT DIMENSIONS

MODEL		A	B	C	D	E	WEIGHT	
							lbs	kg
B-350	(in)	59.3	36.5	N/A	N/A	N/A	13.0	5.9
	(cm)	73.0	84.1					
B-650/B-1000	(in)	48.0	46.0	90.0	42.0	1.0	140.0	63.5
	(cm)	121.9	116.8	228.6	106.7	2.5		

B-350 - B-5000 ROOF CURB



ROOF CURB DIMENSIONS

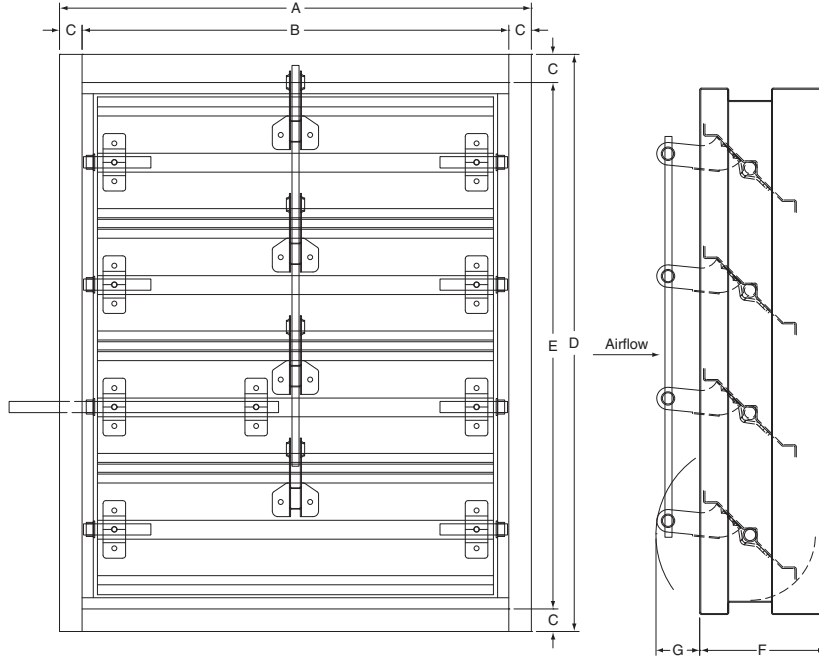
MODEL		A	B	C	D	WEIGHT	
						lbs	kg
B-350	(in) (cm)	27.0 68.6	57.5 146.1	28.8 73.2	N/A	75.0	34.0
B-650/B-1000	(in) (cm)	42.0 106.7	88.0 223.5	38.8 98.6	N/A	110.0	49.9
B-2000	(in) (cm)	53.0 134.6	113.0 287.0	49.8 126.5	56.5 143.5	150.0	68.0
B-3000	(in) (cm)	65.0 165.1	113.0 287.0	61.8 157.0	56.5 143.5	160.0	72.6
B-4000/B-5000	(in) (cm)	98.0 248.9	157.7 400.7	94.8 240.8	78.8 200.3	267.0	121.1

IMPORTANT NOTES:

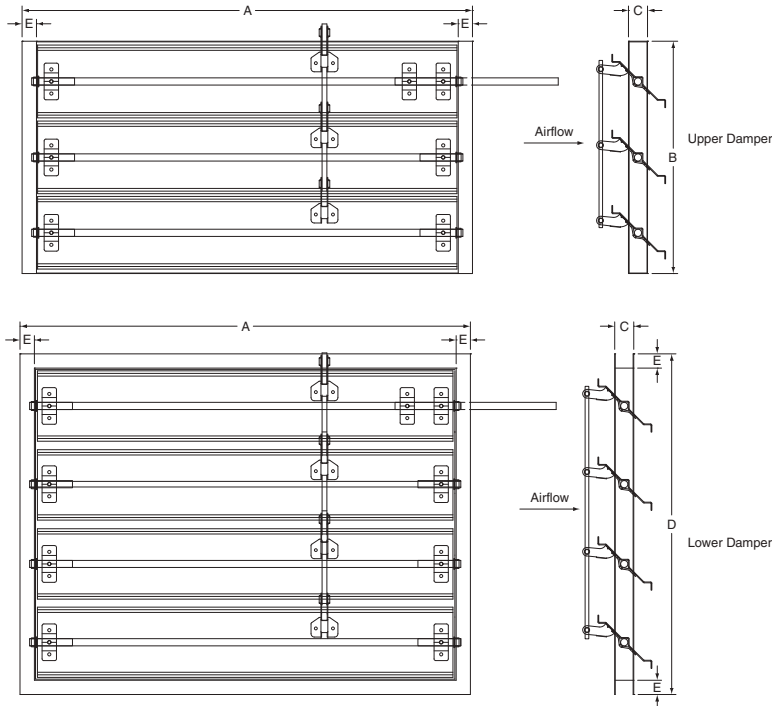
- Curb is shipped unassembled.
- All dimensions are from the outside.
- Curb material is 16 gauge galvanized steel for B-350 - B-3000 and 14 gauge galvanized steel for B-4000 and B-5000.
- Nuts and bolts (3/8" x 1") are furnished.
- Caulk all joints before assembling. (Caulk provided by others).
- B-2000 - B-5000 have seam in roof curb.
- When measuring dimensions A and B, include the top mounting flange width on both sides.

Inlet Dampers

B-350 - B-1000 MOTORIZED INLET DAMPER



B-2000/B-3000 MOTORIZED INLET DAMPER



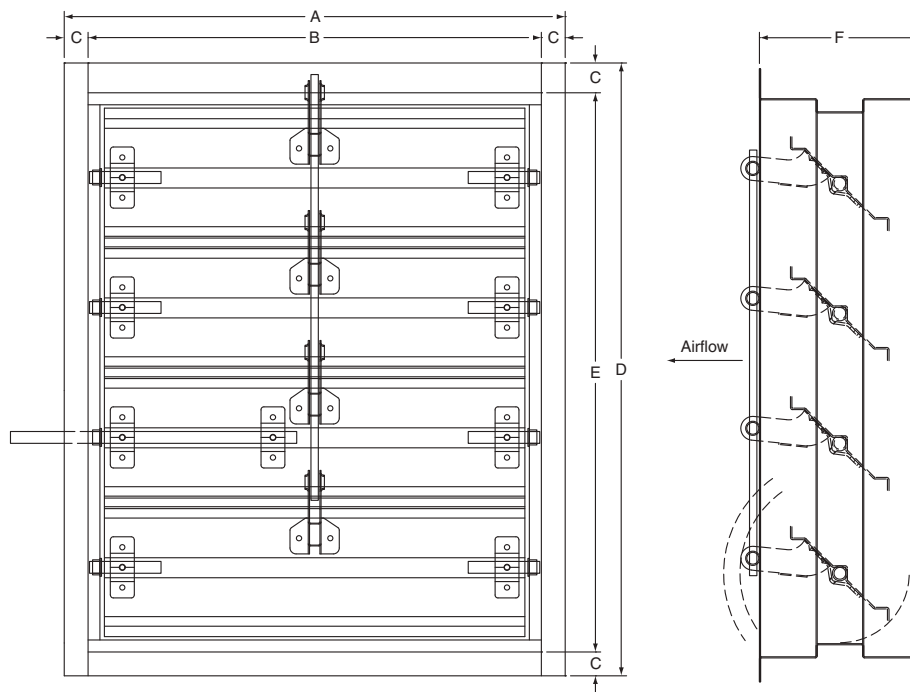
MODEL	DAMPER	WEIGHT*	
		lbs	kg
B-2000	UPPER	34.0	15.4
	LOWER	41.0	18.6
B-3000	UPPER	46.0	20.9
	LOWER	61.0	27.7

MOTORIZED INLET DAMPER DIMENSIONS

MODEL		A	B	C	D	E	F	G	WEIGHT	
									lbs	kg
B-350	(in)	21.0	19.0	1.3	25.7	23.4	5.0	3.3	40.0	18.1
	(cm)	53.3	48.3	3.3	65.2	59.5	12.7	8.3		
B-650/ B-1000	(in)	33.3	30.8	1.3	29.0	26.3	5.0	3.3	60.0	27.2
	(cm)	84.5	78.1	3.2	73.7	66.7	12.7	8.3		
B-2000	(in)	47.3	24.4	2.0	29.5	1.5	N/A	N/A	*	*
	(cm)	120.0	63.0	5.1	74.9	3.8				
B-3000	(in)	59.3	24.4	2.0	33.5	1.5	N/A	N/A	*	*
	(cm)	150.6	63.0	5.1	85.1	3.8				

*Refer to chart above for DF270 and DF410 weights.

B-350 - B-3000 MOTORIZED DISCHARGE DAMPER



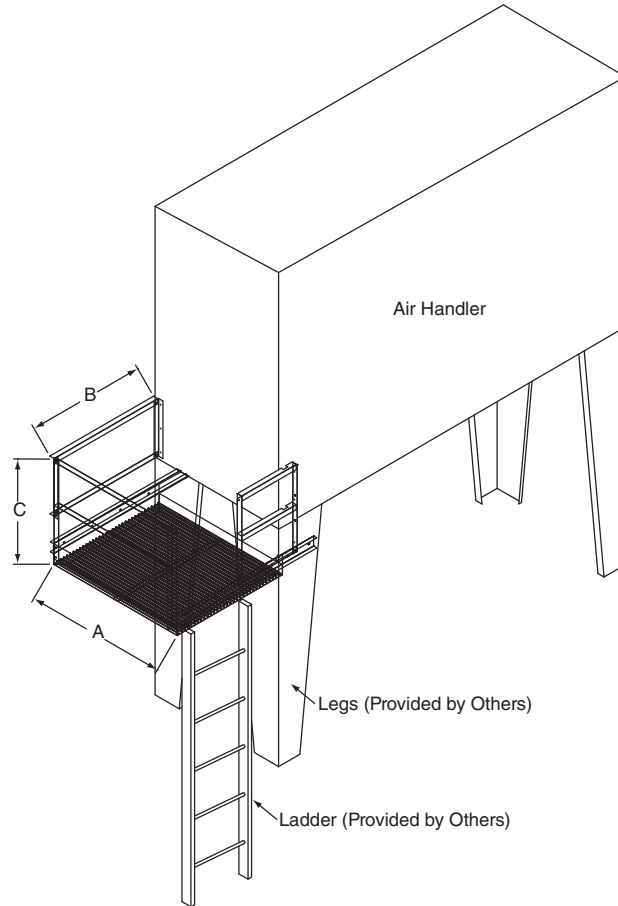
MOTORIZED DISCHARGE DAMPER DIMENSIONS

MODEL		A	B	C	D	E	F	WEIGHT	
								lbs	kg
B-350	(in)	21.0	19.0	1.0	19.0	17.0	9.0	40.0	18.1
	(cm)	53.3	48.3	2.5	48.3	43.2	22.9		
B-650/ B-1000	(in)	27.0	25.0	1.0	23.5	21.5	8.0	60.0	27.2
	(cm)	68.6	63.5	2.5	59.7	54.6	20.3		
B-2000	(in)	37.0	34.0	1.5	36.0	33.0	10.0	100.0	45.4
	(cm)	94.0	86.4	3.8	42.0	83.8	25.4		
B-3000	(in)	42.0	39.0	1.5	42.0	39.0	10.0	150.0	68.0
	(cm)	106.7	99.1	3.8	106.7	99.1	25.4		

IMPORTANT NOTES:

- Number of louvers will vary by model.
- Inlet dampers are mounted upstream of the air handler, directly to the air handler.
- Inlet dampers also available to ship loose.
- Inlet dampers for MUA style use both the upper and lower dampers for B-2000 and B-3000.
- Inlet dampers for FR, AM, SC, SC2 and VAV styles only use the upper damper for B-2000 and B-3000.
- Discharge dampers do not mount directly to the air handler; they mount downstream of the air handler in ductwork.

B-4000/B-5000 SERVICE PLATFORM



SERVICE PLATFORM DIMENSIONS

MODEL		A	B	C	WEIGHT	
					lbs	kg
B-4000/B-5000	(in)	57.0	49.0	43.0	325.0	147.0
	(cm)	144.8	124.5	109.2		

Installation Code and Annual Inspections:

All installation and service of BANANZA® equipment must be performed by a contractor qualified in the installation and service of equipment sold and supplied by Bananza and conform to all requirements set forth in the BANANZA® manuals and all applicable governmental authorities pertaining to the installation, service and operation of the equipment. To help facilitate optimum performance and safety, Bananza recommends that a qualified contractor conduct, at a minimum, annual inspections of your BANANZA® equipment and perform service where necessary, using only replacement parts sold and supplied by Bananza.

Further Information: Applications, engineering and detailed guidance on systems design, installation and equipment performance is available through BANANZA® representatives. Please contact us for any further information you may require, including the Installation, Operation and Service Manual.

This product is not for residential use.

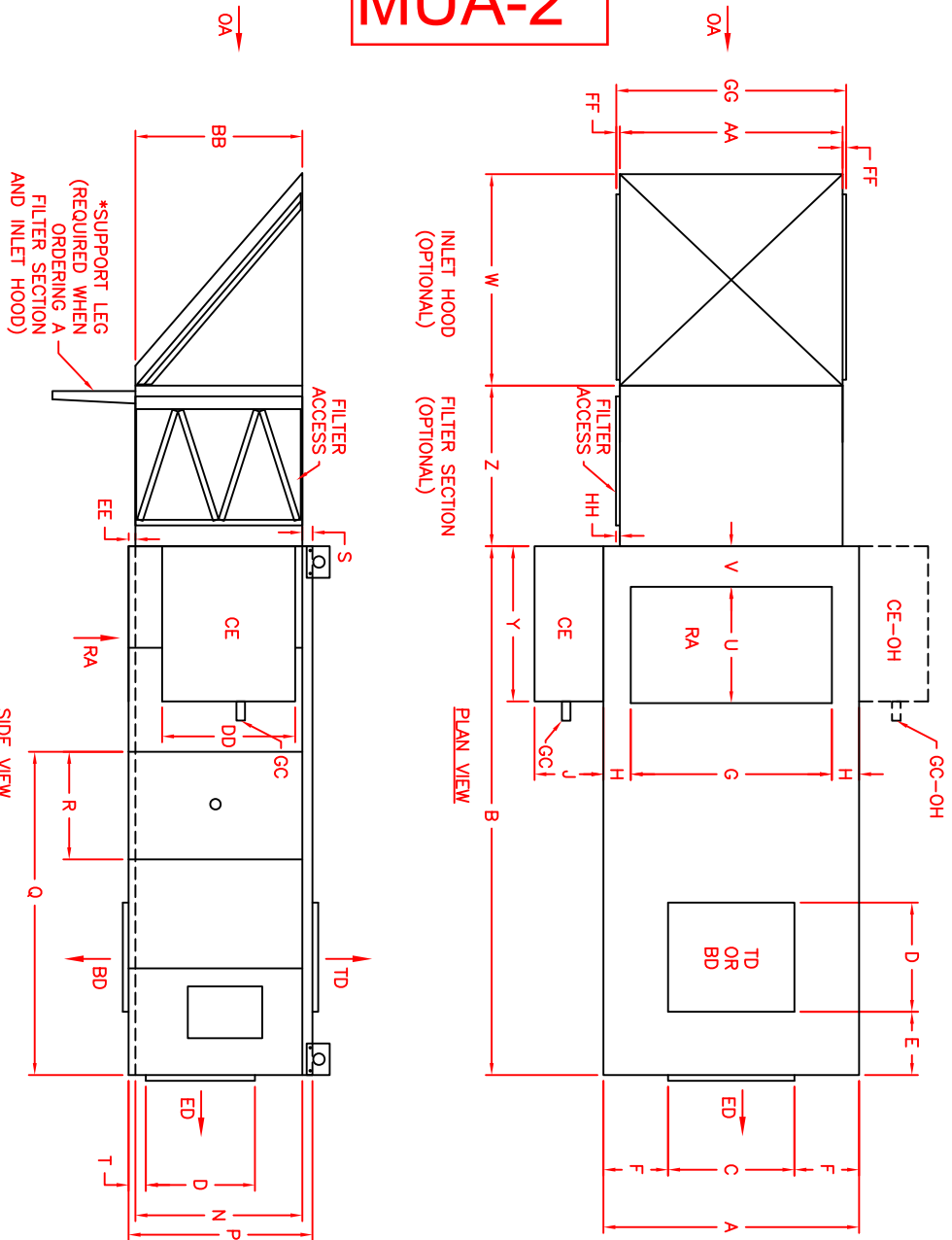
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MUA-2



CODE:

- ED - END DISCHARGE
- BD - BOTTOM DISCHARGE
- TD - TOP DISCHARGE
- CE - CONTROL ENCLOSURE
- OA - OUTSIDE AIR
- GC - GAS CONNECTION
- RA - RETURN AIR
- OH - OPPOSITE HAND CONTROLS

NOTE: 1) CONTRACTOR/INSTALLER MUST MAKE APPROPRIATE ALLOWANCES FOR DUCT CONNECTIONS.

- 2) AS A STANDARD, CONTROLS ARE LOCATED ON THE RIGHT-HAND SIDE OF THE UNIT WHEN LOOKING DOWNSTREAM FROM THE INLET END. LEFT-HAND (OPPOSITE HAND) SIDE CONTROLS ARE AN AVAILABLE OPTION.
- 3) *SUPPORT LEG IS PROVIDED FOR USE WITH STANDARD 19"(50CM) ROOF CURB. SUPPORT LEG FOR USE WITH STANDARD 46"(116.8CM) LEGS PROVIDED BY OTHERS.
- 4) RETURN AIR (RA) IS ONLY FOR FRIXED RECIRCULATION) AND AM(AIR MANAGEMENT) STYLES.

MODEL	AIR HANDLER	INLET HOOD W/FILTERS	INLET HOOD W/SCREEN MESH	INLET HOOD W/MOISTURE LIMITER	FILTER SECTION	SKID
B2000	1400 (638)	190 (86.2)	210 (95.3)	220 (99.8)	340 (154.2)	
B3000	1650 (748.4)	240 (108.9)	260 (117.9)	270 (122.5)	365 (165.6)	

MODEL	INLET HOOD		FILTERS		FILTER SECTION	
	QTY	IN	QTY	IN	QTY	IN
B2000	10	CM	12	CM	8	CM
		50.8 X 63.5 X 2.5		50.8 X 63.5 X 2.5		50.8 X 63.5 X 2.5
B3000	10	CM	16	CM	8	CM
		50.8 X 50.8 X 2.5		50.8 X 50.8 X 2.5		50.8 X 50.8 X 2.5

MODEL	DIMENSION	A	B	C	D	E	F	G	H	J	N	P	Q	R	S	T	U	V	W	Y	Z	AA	BB	DD	EE	FF	GG	HH
B2000	IN	56.0	116.2	31.5	31.5	13.8	12.3	44.3	6.0	17.0	52.6	56.1	69.6	23.3	1.5	3.9	26.5	6.0	89.3	44.0	31.0	49.7	52.8	33.0	2.0	1.1	52.0	0.4
	CM	142.2	295.1	80.0	80.0	35.0	31.2	112.5	15.2	43.2	133.6	142.5	176.8	59.2	3.8	9.9	67.3	15.2	226.8	111.8	78.7	126.2	134.1	83.8	5.1	2.8	132.1	1.0
B3000	IN	68.0	116.2	36.8	36.8	17.0	15.6	56.3	6.0	17.0	56.6	60.1	69.6	23.3	1.5	3.9	30.5	6.0	86.9	44.0	31.0	64.1	56.8	3.0	2.0	1.1	66.4	0.4
	CM	172.7	295.1	93.5	93.5	43.2	39.6	143.0	15.2	43.2	143.8	152.7	176.8	59.2	3.8	9.9	77.5	15.2	220.7	111.8	78.7	162.8	144.3	83.8	5.1	2.8	166.7	1.0

JOB: _____ LOCATION: _____ APPROVAL: _____ DATE: _____

BANANZA 1100 SERRA LUTE ROAD, COMESTOCK PARK, IL 60321 (618) 726-8800

TITLE: **HORIZ. CABINET WITH FS AND IH**

DESIGN NUMBER: **1.3591021** DATE: **2059** REV: **A**

PRODUCT: **DIRECT FIRED AIR HANDLER** DATE: **MAR. 20, 12** DRAWN BY: _____

COMPRESSOR AND RECEIVER

COMP-1

Atlas Copco

Oil-injected Rotary Screw Compressors

GA 30+-90/GA 37-90 VSD (30-90 kW/40-125 hp)



Sustainable Productivity

Atlas Copco

The ultimate smart solution, driven by efficiency

Atlas Copco's GA 30-90 compressors bring you outstanding sustainability, reliability and performance, while minimizing the total cost of ownership. A choice of three premium compressor types (GA VSD, GA+ and GA) provides you with the compressed air solution that perfectly matches your requirements with clear value propositions. Built to perform even in the harshest environments, these compressors keep your production running efficiently.

NEW HEIGHTS IN SUSTAINABILITY

The GA 30-90 family enables you to realize sustainable productivity through lower lifecycle costs and maximum uptime. IE3 or NEMA Premium Efficiency motors in combination with the highly efficient element minimize operating cost. The integrated dryer R410A reduces ozone depletion and protects the environment. Maximum uptime is achieved by maintenance from one side and complete drive train accessibility.

NEW MILESTONES IN RELIABILITY

The reliability of the GA 30-90 range starts with the cool canopy and low element outlet temperatures, an oversized separate oil cooler and an aftercooler with patented integrated mechanical separator. The three-stage air/oil separation ensures low oil consumption. All electrical cubicles are in overpressure, preventing electrically conductive dust, thus increasing the lifetime of electrical components.

BENCHMARKING PERFORMANCE

Outstanding performance is ensured by design, with IE3 or NEMA Premium Efficiency motors in combination with Atlas Copco's highly efficient element and an oversized cooling arrangement resulting in significant energy savings. Internal pressure drops from inlet to discharge are optimized. Efficient smart compressor controls and Atlas Copco algorithms minimize the working pressure band, saving energy.



GA VSD: ULTIMATE ENERGY SAVER

- Unique integrated Variable Speed Drive (VSD) technology for on average 35% energy savings.
- Industry-leading operating turndown range and flexible pressure selection: 4-13 bar.
- Start under system pressure due to special VSD motor, no idling time.
- Integrated Dryer Saver Cycle saves up to 60% of the dryer's electrical consumption.
- Smart Elektronikon® graphic compressor controller with high-definition color display working to a set point minimizes pressure drops.

IE3/NEMA PREMIUM

GA+: INDUSTRY-LEADING PERFORMANCE

- Industry-leading Free Air Delivery and low energy consumption.
- IE3 / NEMA Premium Efficiency motor combined with highly efficient element.
- Low noise emission suitable for workplace installation.
- Environmentally-friendly R410A integrated dryer reduces footprint and pressure drops.
- Smart Elektronikon® graphic compressor controller with high-definition color display.

GA: PREMIUM COMPRESSOR

- High performance Free Air Delivery.
- IE2 / NEMA Premium Efficiency motor in combination with highly efficient element.
- Premium quality at the lowest initial investment.
- Efficient environmentally-friendly R410A integrated dryer reduces footprint and pressure drops.
- Ensured efficiency of Elektronikon® controller with connectivity.

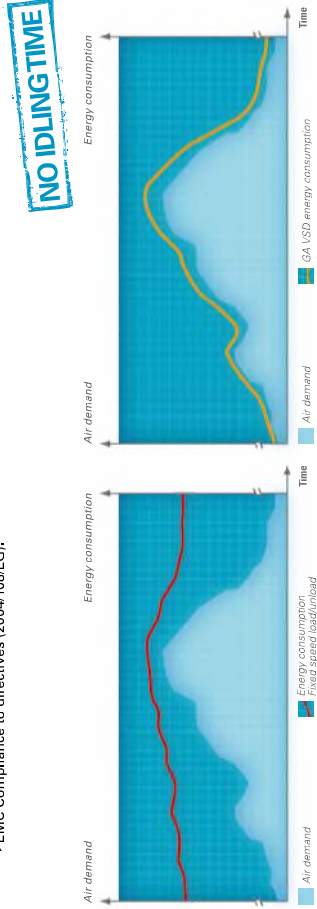


VSD: Driving down your energy costs

Over 80% of a compressor's lifecycle cost is taken up by the energy it consumes. Moreover, the generation of compressed air can account for more than 40% of a plant's total electricity bill. To cut your energy costs, Atlas Copco pioneered Variable Speed Drive (VSD) technology in the compressed air industry. VSD leads to major energy savings, while protecting the environment for future generations. Thanks to continual investments in this technology, Atlas Copco offers the widest range of integrated VSD compressors on the market.

WHY ATLAS COPCO VARIABLE SPEED DRIVE TECHNOLOGY?

- On average 35% energy savings during fluctuations in production demand with an extensive turndown range.
- Integrated Elektronikon® Graphic controller controls the motor speed and high efficiency frequency inverter.
- No wasted idling times or blow-off losses in normal operation.
- Compressor can start/stop under full system pressure without the need to unload with special VSD motor.
- Eliminates peak current penalty during start-up.
- Minimizes system leakage due to a lower system pressure.
- EMC Compliance to directives (2004/108/EC).



In almost every production environment, air demand fluctuates depending on different factors such as the time of the day, week or even month. Extensive measurements and studies of compressed air demand profiles show that many compressors have substantial variations in air demand.

ON AVERAGE 35% ENERGY SAVINGS

Atlas Copco's GA VSD technology closely follows the air demand by automatically adjusting the motor speed. This results in on average 35% energy savings. The lifecycle cost of a compressor can be cut by an average of 22%. In addition, lowered system pressure with GA VSD dramatically minimizes energy use across your production.

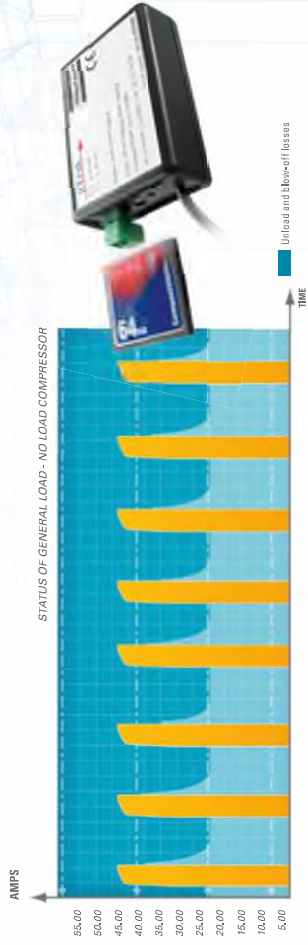
TOTAL COMPRESSOR LIFECYCLE COST

- Energy
- Energy savings with VSD
- Investment
- Maintenance



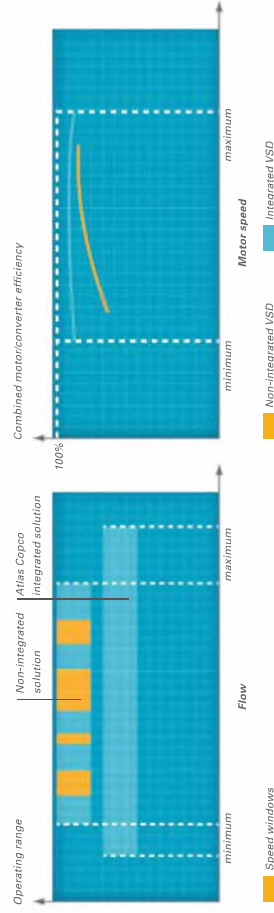
HOW GA VSD TECHNOLOGY SAVES ENERGY

Contact your local Atlas Copco representative for an audit of your compressed air system. A real-time measurement simulation and audit report can be provided with recommendations for additional savings and sizing to meet your compressed air needs.



WHAT IS UNIQUE ABOUT THE INTEGRATED ATLAS COPCO GA VSD?

- 1 The Elektronikon® controls both the compressor and the integrated converter, ensuring maximum machine safety within parameters.
- 2 Flexible pressure selection from 4 to 13 bar with electronic gearing reduces electricity costs.
- 3 Special electric motor specifically designed for VSD operation (inverter duty motor). Bearings are protected against induced bearing currents. Both motor and converter are perfectly tuned for highest efficiency across the entire speed range.
- 4 Electric motor specifically designed for low operating speeds with clear attention to motor cooling and compressor cooling requirements.
- 5 All Atlas Copco GA VSD compressors are EMC tested and certified. External sources do not influence compressor operation, nor does the compressor affect the operation of other instruments via emissions or via the power supply line.
- 6 Mechanical enhancements ensure that all components operate below critical vibration levels throughout the entire compressor speed range.
- 7 A highly efficient frequency converter in a cool overpressure cubicle ensures stable operation in high ambient temperatures up to 50°C/122°F.*
* Standard up to 46°C/114.8°F
- 8 No 'speed windows' that can jeopardize the energy savings and the stable net pressure. Turn-down capability of the compressor is maximized to 80-85%.
- 9 The cubicle cooling booster increases the lifetime of electrical components due to a cool cubicle in overpressure and reduced dust ingress.
- 10 Net pressure band is maintained within 0.10 bar, 1.5 psi.

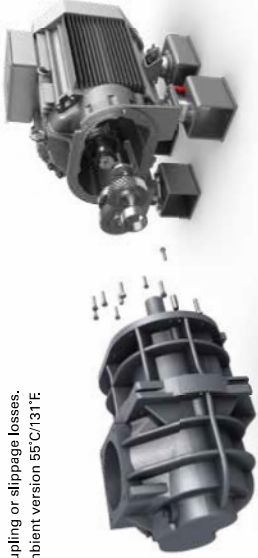


High reliability and smart energy

1

Maintenance-free drive system

- 100% maintenance-free; totally enclosed and protected against dirt and dust.
- Suitable for harsh environments.
- High-efficiency drive arrangement; no coupling or slippage losses.
- Standard up to 46°C/115°F and for high ambient version 55°C/131°F



2

IE3 / NEMA Premium Efficiency electrical motors

- IP55, insulation Class F B rise.
- Non-drive side bearing greased for life.
- Designed for continuous operation in harsh environments.

3

Robust spin-on oil filter

- High-efficiency, removing 300% smaller particles than a conventional filter.
- Integrated bypass valve with the oil filter.

4

SIL Smart inlet lock system for GA VSD compressors

- Superior designed vacuum and air pressure controlled valve with minimal pressure drop and no springs.
- Smart stop/start which eliminates back-pressure oil vapor.



5

Separate oversized oil cooler and aftercooler

- Low element outlet temperatures, ensuring long oil lifetime.
- Removal of nearly 100% condensate by mechanical separator.
- No consumables.
- Eliminates possibility of thermal shocks in coolers.

11

NEOS drive

- Atlas Copco's in-house designed inverter for GA VSD compressors.
- IP5X protection degree.
- A robust, aluminum enclosure for trouble-free operation in the harshest conditions.
- Fewer components: compact, simple and user-friendly.



10

Integrated highly efficient R410A dryer

- Excellence in air quality.
- 50% reduction in energy consumption compared to traditional dryers.
- Zero ozone depletion.
- Incorporates optional DD and PD filters according to Class 1,4,1.



9

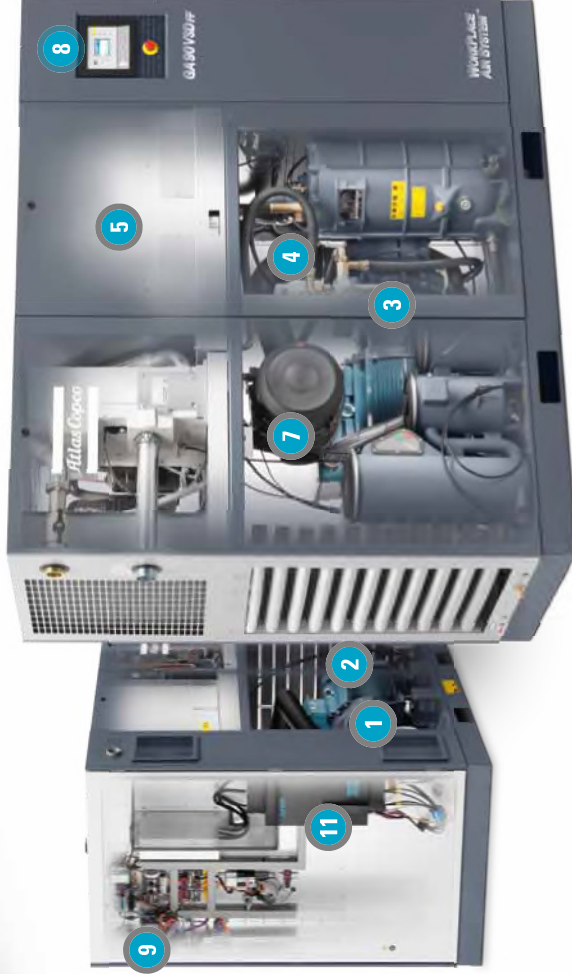
Cubicle cooling booster

- Cubicle in overpressure minimizes ingress of conductive dust.
- Electrical components remain cool, enhancing lifetime of components.

8

Elektronikon® for remote monitoring

- Integrated smart algorithms reduce system pressure and energy consumption.
- Monitoring features include warning indications, maintenance scheduling and online visualization of machine's condition.



7

Heavy-duty air intake filter

- Protects the compressor components by removing 99,9% of dirt particles down to 3 microns.
- Differential inlet pressure for proactive maintenance while minimizing pressure drop.

6

Electronic no-loss water drain

- Ensures constant removal of condensate.
- Manual integrated bypass for effective condensate removal in case of power failure.
- Integrated with compressor's Elektronikon® with warning/alarm features.



A step ahead in monitoring and controls

The next-generation Elektronikon® operating system offers a wide variety of control and monitoring features that allow you to increase your compressor's efficiency and reliability. To maximize energy efficiency, the Elektronikon® controls the main drive motor and regulates system pressure within a predefined and narrow pressure band.



IMPROVED USER-FRIENDLINESS

- 3.5-inch high-definition color display with clear pictograms and extra 4th LED indicator for service.
- Graphical display of key parameters (day, week, month) and 32 language settings.
- Internet-based compressor visualization using a simple Ethernet connection.
- On-screen Delayed Second Stop function and VSD savings indication.
- Graphical indication Serviceplan, remote control and connectivity functions.
- Software upgrade available to control up to 6 compressors by installing the optional integrated compressor controller.

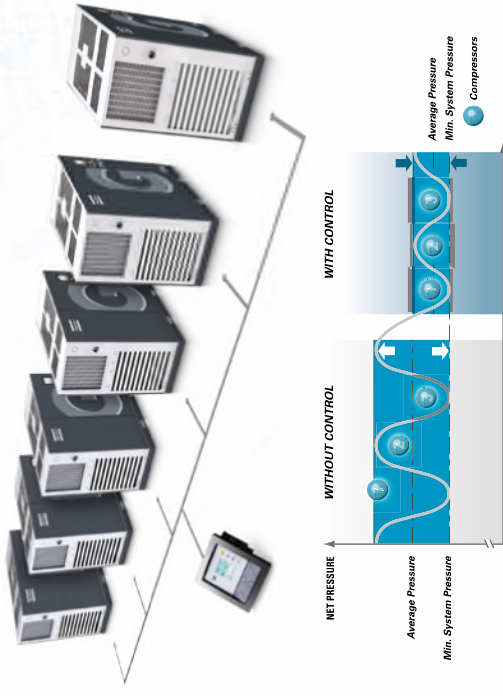


ONLINE & MOBILE MONITORING

Monitor your compressors over the Ethernet with the new Elektronikon® controller. Monitoring features include warning indications, compressor shut-down and maintenance scheduling. The Atlas Copco App is available for iPhone/Android phones as well as iPad and Android tablets. It allows fingertip monitoring of your compressed air system through your own secured network.

Optional integrated compressor controller

Install, with a simple license, the optional integrated compressor controller and get simple, central control to reduce system pressure and energy consumption in installations of up to 4 (ES4i) or 6 (ES6i) compressors.



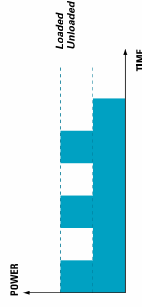
The Elektronikon® continuously monitors critical parameters. Monitoring features include service and warning indications, error detection, compressor shut-down and maintenance scheduling.

DUAL PRESSURE SET POINT & DELAYED SECOND STOP

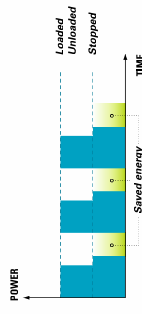
Most production processes create fluctuating levels of demand which, in turn, can create energy waste in low use periods. Using either the standard or graphic Elektronikon® controller, you can manually or automatically create two different system pressure bands to optimize energy use and reduce costs at low

use times. In addition, the sophisticated Delayed Second Stop (DSS) runs the drive motor only when needed. As the desired system pressure is maintained while the drive motor's run time is minimized, energy consumption is kept at a minimum.

WITHOUT DSS



WITH DSS



INTEGRATED DRYER SAVER CYCLE

Saver Cycle technology reduces the energy consumption of the integrated refrigerant dryers with the fan in light load applications. Using an ambient sensor to monitor the required

dew point suppression, the Elektronikon® starts and stops the dryer and the fan, minimizing energy use and protecting the air system from corrosion.

Excellence in integrated air quality

Untreated compressed air contains moisture, aerosols and dirt particles that can damage your air system and contaminate your end product, resulting in risk of corrosion and compressed air system leaks. Maintenance costs can far exceed air treatment costs. Our compressors provide the clean, dry air that improves your system's reliability, avoids costly downtime and production delays, and safeguards the quality of your products.

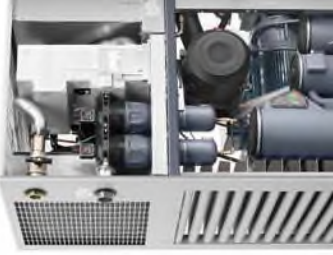
SAVE MONEY AND THE ENVIRONMENT

Avoid risk of corrosion and system leaks, and ensure the effective safe disposal of untreated condensate – all within ISO 14001 standards.



ON AVERAGE 50% ENERGY SAVINGS WITH R410A INTEGRATED DRYERS

- Use of energy-efficient refrigerant R410A reduces operating costs, - R410A refrigerant reduces global warming potential by an average of 50%.
- Environmentally-friendly characteristics; zero ozone depletion, - Unique Saver Cycle Control, with ambient temperature sensor and based on dryer load and relative humidity of compressed air, saves energy at partial load.
- Heat exchanger cross-flow technology with low pressure drop, - Zero waste of compressed air thanks to no-loss condensate drain, - Pressure dew point of 3°C (100% relative humidity at 20°C).



INTEGRATED PURITY

The optional DD/DP filters and integrated refrigerant air dryer (IFD) efficiently remove moisture, aerosols and dirt particles to protect your investment. This air quality prolongs the life of

downstream equipment, increasing efficiency and ensuring quality of your final product.

ISO quality class*	Dirt particle size	Water pressure dew point**	Oil concentration
3,-,4	3 microns	-	3 ppm
3,4,4	3 microns	+3°C, 37°F	3 ppm
2,4,2	1 micron	+3°C, 37°F	0,1 ppm
1,4,1	0,01 microns	+3°C, 37°F	0,01 ppm

*The table values affect the maximum limits according to the temperature ISO gravity class.
 **Water pressure dew point based on 100% RH at 20°C/68°F

WorkPlace: Compressed air at the point of use

With the industry-leading low noise operation and integration of air and condensate treatment equipment, the GA[®] offers complete versatility for your production. The compressor's integrated design allows it to be placed on the production floor, creating substantial energy savings for your business.

LOW INSTALLATION COSTS

- The GA[®] can operate close to the point of use – eliminating the need for a dedicated compressor room.
- The GA[®] is delivered ready for use – minimizing production downtime and reducing installation costs.
- Filtration equipment is integrated – reducing the need for costly external piping and minimizing pressure drops.
- Low noise enables the above to be a reality.



REDUCED ENERGY AND MAINTENANCE COSTS

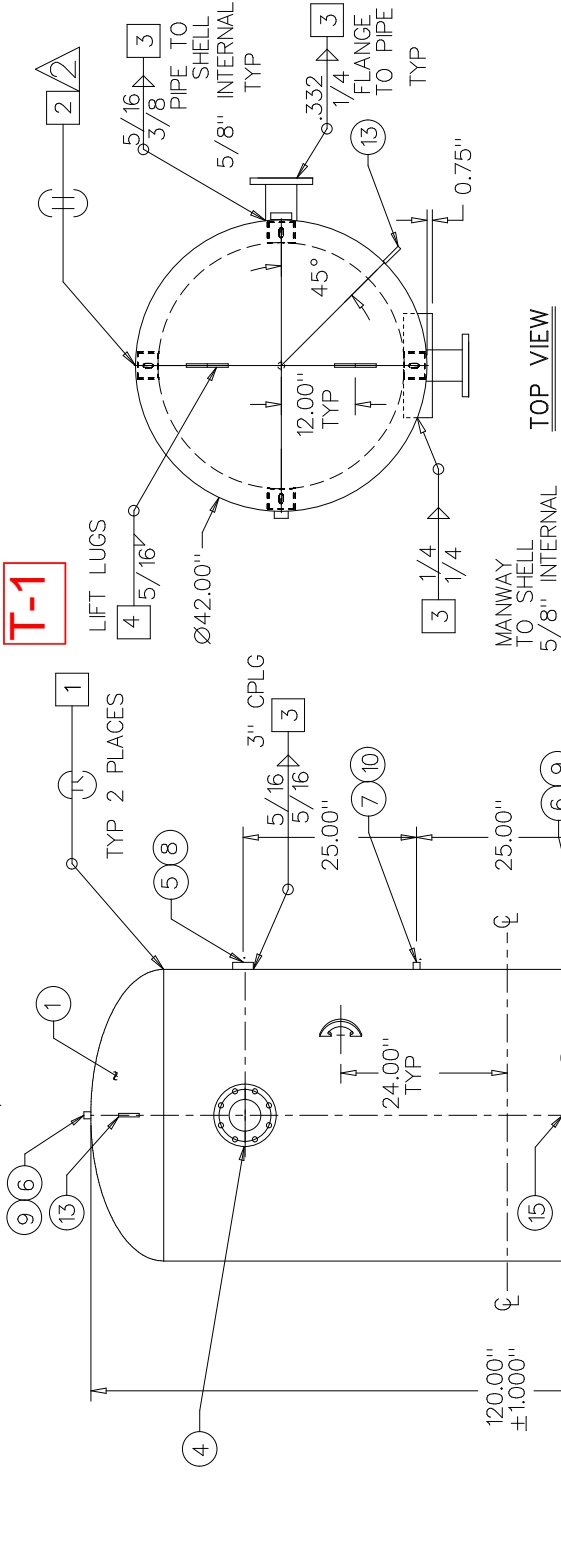
- With less external piping, the GA[®] minimizes pressure drop across the system which can reduce energy costs.
- The filtration system produces clean air to prevent network corrosion – minimizing energy, repair and maintenance costs.
- The GA[®] operates at the lowest possible system pressure to reduce energy costs thanks to the Elektronikon[®] advanced monitoring system.

INTEGRATED CONDENSATE MANAGEMENT

- OSCI is an efficient integrated solution that removes oil from condensate.
- Oil carryover contained in condensate can harm the environment.
- Treated condensate protects water, wildlife and ecosystems.
- The delivered water is harmless and can be disposed in a sewage system, reducing disposal costs.



RADIUS INSIDE PROJECTED EDGES OF NOZZLES 1/8" MINIMUM



TOP VIEW

MANWAY TO SHELL
5/8" INTERNAL

PRIMER EXTERIOR

TRAVELER REQUIRED

REQU REQUIRED

ATTACHMENT WPS
3/16 & BELOW A569 SFI-6
5/16 & ABOVE A36 SFI-2-1
STRUCTURAL A36 SFI-2-1
1/4 A635 SFI-3

RELEASED TO PRODUCTION
S.O.# _____
DATE _____

42" X 120" VERTICAL - AIR RECEIVER (660 GALLONS)

NO.	DATE	REVISION	ENG OCM	AI/DATE	HEAD THK:	MATL	SA	414-G	EFF	85%
5	9/16/09	ADDED 1" TO TOP HEAD	AH	JP	Bo-9/22/09	NONE	MATL	SA	455	EFF 85%

COUPLING = SA105 3000#
FITTINGS = SA181 CL70
FLANGES = SA105 CL150
PIPE = SA106-B SEAMLESS
MANWAY = SA106-C

IMPACT TESTING NOT REQUIRED PER UG-20(f)

SHIPPING WEIGHT: 1825#

ITEM	P/N	DESCRIPTION	QTY
1	H42250J	42"OD 2:1 SE JOGGLE HEAD	2
2	R100019	SHELL, 250x96x131.161	1
3	S100343-S	12 X 16 MANWAY - 1"TH	2
4	S102115	4" RF50 ASY 150# SCH40 7LG	1
5	F603000H	3" HALF COUPLING	1
6	F101000	1" SERIES 385 NPT	4
7	F100250	1/4" SERIES 381 NPT	1
8	F503000	3" PLASTIC PLUG	1
9	F501000	1" PLASTIC PLUG	4
10	F500250	1/4" PLASTIC PLUG	1
11			
12			
13	LL0063	LIFTING LUG 1/2" THK	4
14	S102114	SKIRT ASY, 7GAx35.50"OD	1
15	S100001	NAME PLATE	1

DESIGN & CALCULATIONS COMPLY WITH
ASME CODE SECTION VIII, DIV1.
LATEST EDITION AND ADDENDA

- 1 SFI-1 SK 1
- 2 SFI-1 SK 2
- 3 SFI-1-2
- 4 ATTACHMENT

ENG APPL	DATE
JE	5/31/05
OCM APPL	DATE
BW	6/1/05
AI VERIFICATION	DATE
BQ	6/2/05

STEEL FAB
ABINGDON, VA
OAKVILLE, ONT.
DRAWN BY: ABH
REV _____
DATE 09/20/04
P/N C100950-X
REV _____
DATE 09/20/04

PAINTING EQUIPMENT DATA SHEETS



Xtreme[®] Airless Sprayers

The Latest in High-Performance, High-Pressure Technology



PROVEN QUALITY. LEADING TECHNOLOGY.

Xtreme Sprayers with NXT® Technology

Discover the Next Generation of Xtreme Power and Performance

NXT Air Motor Technology lasts up to 10 times longer!

We've taken the best and made it even better. With the Xtreme NXT, you get a new airless sprayer that sets a higher standard for long-lasting durability. In fact, the NXT Air Motor is proven to last 10 times longer than its predecessor, the Graco King™. Built to handle the toughest protective coatings and corrosion control applications, the Xtreme NXT also provides easy access to the modular air valve, a de-icing feature and reduced noise. And with more models and configurations to choose from, you get the precise pressure and output you need for your high performance coatings spraying applications.

NXT Air Motor

- Modular design for easier maintenance
- Rugged body armor won't rust or dent
- Highest technology air motor on the market

DataTrak® Control

- Runaway protection
- Pump diagnostics
- Material usage
- Optional accessory



Modular Air Valve

- De-ice control reduces icing
- Up to 50% quieter than previous models
- Modular air valve
 - Reduces stalling
 - Easy-to-repair

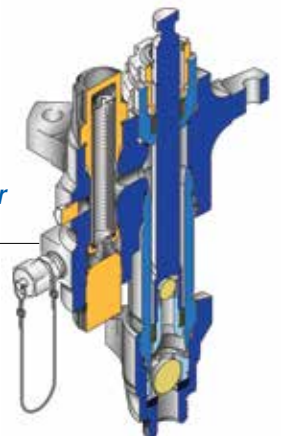


Quick Disconnect

- Makes for easier service

Graco Xtreme Pump Lower with Built-In Filter

- Lower cost of ownership
- Longer-lasting rod with Chromex™ coating
- Quick knockdown



The Rules Have Changed

Raising the Bar for High-Performance Airless Spraying

Reliability. Durability. More Choices.

Xtreme Sprayers... choose the package that fits your demanding spraying applications.



Zinc Xtreme Package with Circulation and Heavy-Duty Cart



Xtreme Sprayer with Lightweight Cart

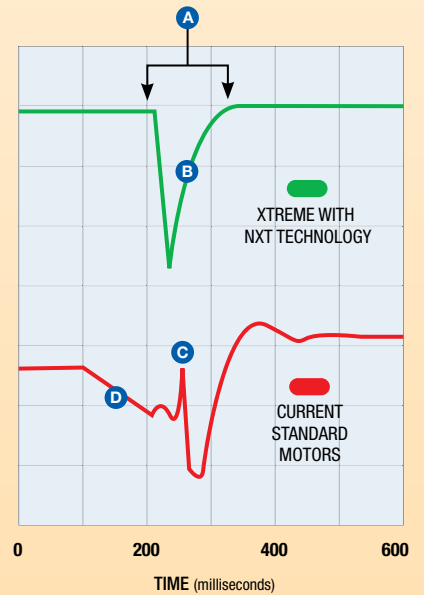


Xtreme Sprayer with Hopper Feed Kit and Heavy-Duty Cart



Less pulsation for better results

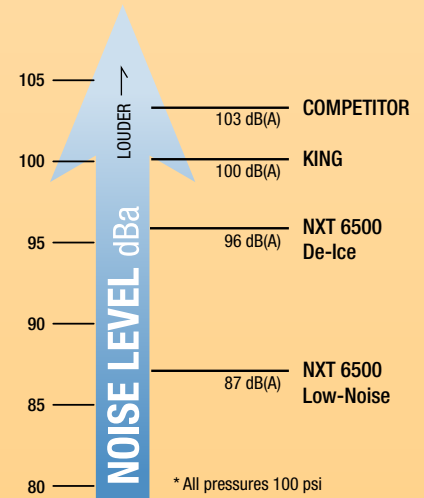
Xtreme NXT technology provides a smooth, rapid changeover for a better, more consistent finish and less user fatigue.



- A** Less than $\frac{1}{15}$ of a second changeover!
- B** Quick changeover and recovery with less pulsation
- C** Pressure spike at changeover
- D** Longer changeover causing pulsation

Noise-reduction technology

The quiet, low-noise NXT air motor operates around 87 decibels, while other comparable motors operate up to 103 dB(A).



Selecting the Right Xtreme Sprayer

Three air motor sizes and 12 models to fit all your demanding applications

PACKAGES

X X X X X X

Product Identifier:
X=Xtreme Sprayer

Package Ratio:

- 25: 3400cc motor/290cc lower
- 30: 3400cc motor/220cc lower
- 35: 2200cc motor/115cc lower
- 40: 3400cc motor/180cc lower
- 45: 6500cc motor/290cc lower
- 46: 3400cc motor/145cc lower
- 50: 6500cc motor/250cc lower
- 55: 3400cc motor/115cc lower
- 60: 6500cc motor/220cc lower
- 70: 6500cc motor/180cc lower
- 80: 3400cc motor / 85cc lower
- 90: 6500cc motor/145cc lower

Motor Type:

- D: De-icing
- L: Low noise

Mount Type:

- H: Heavy-duty cart
- L: Lightweight cart
- W: Wall-mount

Package/DataTrak™:

- 1: Complete package with DataTrak
- 2: Bare package with DataTrak
- 3: Complete package, no DataTrak
- 4: Bare package, no DataTrak
- 5: Complete hopper package with DataTrak
- 6: Complete hopper package, no DataTrak
- 7: Complete package, no DataTrak, no built-in fluid filter*

Example:

X46DH2 is a 46:1, De-Ice, heavy-duty, bare package with DataTrak

Notes: Packages sold with XSeal_LTH packings only. Packages sold with built-in filter only. Complete packages sold with XTR™ gun, 50 ft x 3/8 hose and 6 ft x 1/4 whip hose. Wall-mount packages are only available bare, but include 10 ft suction hose with 55 gal suction tube.

* Only available on X45, X60 or X70 De-ice, heavy-duty or lightweight cart packages.

PUMPS

P X X X C X

Product Identifier:
P=Xtreme Pump

Pump Ratio:

- 25: 3400cc motor/290cc lower
- 30: 3400cc motor/220cc lower
- 35: 2200cc motor/115cc lower
- 40: 3400cc motor/180cc lower
- 45: 6500cc motor/290cc lower
- 46: 3400cc motor/145cc lower
- 50: 6500cc motor/250cc lower
- 55: 3400cc motor/115cc lower
- 60: 6500cc motor/220cc lower
- 70: 6500cc motor/180cc lower
- 80: 3400cc motor / 85cc lower
- 90: 6500cc motor/145cc lower

Motor/DataTrak:

- D: De-icing: None
- E: De-icing: DataTrak
- L: Low noise: None
- M: Low noise: DataTrak

Lower Material:

- C: Carbon steel

Filter/Air Controls:

- 1: No built-in filter, no air controls
- 2: Built-in filter, no air controls
- 3: No built-in filter, air controls
- 4: Built-in filter, air controls

Example:

P70DC2 is a 70:1 De-Ice, with built-in filter and no air control

Note: Pumps sold with XSeal_LTH packings only.

XTREME SPRAYER SPECIFICATIONS	X25	X30	X35	X40	X45	X46	X50	X55	X60	X70	X80	X90
	Output per cycle	290cc	220cc	115cc	180cc	290cc	145cc	250cc	115cc	220cc	180cc	85cc
Motor Size	NXT 3400	NXT 3400	NXT 2200	NXT 3400	NXT 6500	NXT 3400	NXT 6500	NXT 3400	NXT 6500	NXT 6500	NXT 3400	NXT 6500
Maximum Working Pressure psi (bar, MPa)	2375 (164, 16.4)	3150 (217, 21.7)	3800 (262, 26.2)	3800 (262, 26.2)	4550 (313, 31.3)	4750 (327, 32.7)	5200 (359, 35.9)	5950 (410, 41.0)	6000 (417, 41.7)	7250 (500, 50.0)	7250 (500, 50.0)	7250 (500, 50.0)
Maximum Air Input Pressure psi (bar, MPa)	100 (7, 0.7)	100 (7, 0.7)	100 (7, 0.7)	100 (7, 0.7)	100 (7, 0.7)	100 (7, 0.7)	100 (7, 0.7)	100 (7, 0.7)	100 (7, 0.7)	100 (7, 0.7)	100 (7, 0.7)	80 (5.5, .55)
Maximum Free Flow Output gpm (lpm)	13.8 (52.2)	10.0 (38)	6.0 (22.7)	8.5 (32)	13.8 (52.2)	7.5 (28)	11.3 (43)	6.0 (22.7)	10.0 (38)	8.5 (32)	4.5 (17)	7.5 (28)
Output at 60 CPM gpm (lpm)	4.6 (17)	3.4 (12.9)	2.0 (7.6)	2.9 (11)	4.6 (17)	2.3 (8.7)	4.0 (15.2)	2.0 (7.6)	3.4 (12.9)	2.9 (11)	1.5 (5.7)	2.3 (8.7)

SPRAYER	MOTOR TYPE	MOUNT TYPE	DATATRAK INCLUDED	PACKAGE	X25	X30	X35	X40	X45	X46	X50	X55	X60	X70	X80	X90
					COMPLETE	D	H	YES	C	X25DH1	X30DH1	X35DH1	X40DH1	X45DH1	X46DH1	X50DH1
	D	H	NO	C	X25DH3	X30DH3	X35DH3	X40DH3	X45DH3	X46DH3	X50DH3	X55DH3	X60DH3	X70DH3	X80DH3	X90DH3
	D	L	YES	C	X25DL1	X30DL1	X35DL1	X40DL1	X45DL1	X46DL1	X50DL1	X55DL1	X60DL1	X70DL1	X80DL1	X90DL1
	D	L	NO	C	X25DL3	X30DL3	X35DL3	X40DL3	X45DL3	X46DL3	X50DL3	X55DL3	X60DL3	X70DL3	X80DL3	X90DL3
	L	H	YES	C					X45LH1		X50LH1		X60LH1	X70LH1		X90LH1
	L	H	NO	C					X45LH3		X50LH3		X60LH3	X70LH3		X90LH3
	L	L	YES	C					X45LL1		X50LL1		X60LL1	X70LL1		X90LL1
	L	L	NO	C					X45LL3		X50LL3		X60LL3	X70LL3		X90LL3
BARE	D	H	YES	B	X25DH2	X30DH2	X35DH2	X40DH2	X45DH2	X46DH2	X50DH2	X55DH2	X60DH2	X70DH2	X80DH2	X90DH2
	D	H	NO	B	X25DH4	X30DH4	X35DH4	X40DH4	X45DH4	X46DH4	X50DH4	X55DH4	X60DH4	X70DH4	X80DH4	X90DH4
	D	L	YES	B	X25DL2	X30DL2	X35DL2	X40DL2	X45DL2	X46DL2	X50DL2	X55DL2	X60DL2	X70DL2	X80DL2	X90DL2
	D	L	NO	B	X25DL4	X30DL4	X35DL4	X40DL4	X45DL4	X46DL4	X50DL4	X55DL4	X60DL4	X70DL4	X80DL4	X90DL4
	L	H	YES	B					X45LH2		X50LH2		X60LH2	X70LH2		X90LH2
	L	H	NO	B					X45LH4		X50LH4		X60LH4	X70LH4		X90LH4
	L	L	YES	B					X45LL2		X50LL2		X60LL2	X70LL2		X90LL2
	L	L	NO	B					X45LL4		X50LL4		X60LL4	X70LL4		X90LL4
WITH HOPPER	D	H	YES	C	X25DH5	X30DH5	X35DH5	X40DH5	X45DH5	X46DH5	X50DH5	X55DH5	X60DH5	X70DH5	X80DH5	X90DH5
	D	H	NO	C	X25DH6	X30DH6	X35DH6	X40DH6	X45DH6	X46DH6	X50DH6	X55DH6	X60DH6	X70DH6	X80DH6	X90DH6
	D	L	YES	C	X25DL5	X30DL5	X35DL5	X40DL5	X45DL5	X46DL5	X50DL5	X55DL5	X60DL5	X70DL5	X80DL5	X90DL5
	D	L	NO	C	X25DL6	X30DL6	X35DL6	X40DL6	X45DL6	X46DL6	X50DL6	X55DL6	X60DL6	X70DL6	X80DL6	X90DL6
	L	H	YES	C					X45LH5		X50LH5		X60LH5	X70LH5		X90LH5
	L	H	NO	C					X45LH6		X50LH6		X60LH6	X70LH6		X90LH6
	L	L	YES	C					X45LL5		X50LL5		X60LL5	X70LL5		X90LL5
	L	L	NO	C					X45LL6		X50LL6		X60LL6	X70LL6		X90LL6
WALL-MOUNT	D	W	YES	B	X25DW2	X30DW2	X35DW2	X40DW2	X45DW2	X46DW2	X50DW2	X55DW2	X60DW2	X70DW2	X80DW2	X90DW2
	D	W	NO	B	X25DW4	X30DW4	X35DW4	X40DW4	X45DW4	X46DW4	X50DW4	X55DW4	X60DW4	X70DW4	X80DW4	X90DW4
	L	W	YES	B					X45LW2		X50LW2		X60LW2	X70LW2		X90LW2
	L	W	NO	B					X45LW4		X50LW4		X60LW4	X70LW4		X90LW4

PUMPS	MOTOR TYPE	BUILT-IN FILTER	DATATRAK INCLUDED	AIR CONTROLS	X25	X30	X35	X40	X45	X46	X50	X55	X60	X70	X80	X90
					BARE	D	YES	NO	NO	NA	P30DC2	P35DC2	P40DC2	P45DC2	P46DC2	P50DC2
	D	YES	NO	YES	NA	P30DC4	P35DC4	P40DC4	P45DC4	P46DC4	P50DC4	P55DC4	P60DC4	P70DC4	P80DC4	P90DC4
	D	YES	YES	NO	NA	P30EC2	P35EC2	P40EC2	P45EC2	P46EC2	P50EC2	P55EC2	P60EC2	P70EC2	P80EC2	P90EC2
	D	YES	YES	YES	NA	P30EC4	P35EC4	P40EC4	P45EC4	P46EC4	P50EC4	P55EC4	P60EC4	P70EC4	P80EC4	P90EC4
	D	NO	NO	NO	NA	P30DC1	P35DC1	P40DC1	P45DC1	P46DC1	P50DC1	P55DC1	P60DC1	P70DC1	P80DC1	P90DC1
	D	NO	NO	YES	NA	P30DC3	P35DC3	P40DC3	P45DC3	P46DC3	P50DC3	P55DC3	P60DC3	P70DC3	P80DC3	P90DC3
	D	NO	YES	NO	NA	P30EC1	P35EC1	P40EC1	P45EC1	P46EC1	P50EC1	P55EC1	P60EC1	P70EC1	P80EC1	P90EC1
	D	NO	YES	YES	NA	P30EC3	P35EC3	P40EC3	P45EC3	P46EC3	P50EC3	P55EC3	P60EC3	P70EC3	P80EC3	P90EC3
	L	YES	NO	NO	NA	P30LC2	P35LC2	P40LC2	P45LC2	P46LC2	P50LC2	P55LC2	P60LC2	P70LC2	P80LC2	P90LC2
	L	YES	NO	YES	NA	P30LC4	P35LC4	P40LC4	P45LC4	P46LC4	P50LC4	P55LC4	P60LC4	P70LC4	P80LC4	P90LC4
	L	YES	YES	NO	NA	P30MC2	P35MC2	P40MC2	P45MC2	P46MC2	P50MC2	P55MC2	P60MC2	P70MC2	P80MC2	P90MC2
	L	YES	YES	YES	NA	P30MC4	P35MC4	P40MC4	P45MC4	P46MC4	P50MC4	P55MC4	P60MC4	P70MC4	P80MC4	P90MC4
	L	NO	NO	NO	NA	P30LC1	P35LC1	P40LC1	P45LC1	P46LC1	P50LC1	P55LC1	P60LC1	P70LC1	P80LC1	P90LC1
	L	NO	NO	YES	NA	P30LC3	P35LC3	P40LC3	P45LC3	P46LC3	P50LC3	P55LC3	P60LC3	P70LC3	P80LC3	P90LC3
	L	NO	YES	NO	NA	P30MC1	P35MC1	P40MC1	P45MC1	P46MC1	P50MC1	P55MC1	P60MC1	P70MC1	P80MC1	P90MC1
	L	NO	YES	YES	NA	P30MC3	P35MC3	P40MC3	P45MC3	P46MC3	P50MC3	P55MC3	P60MC3	P70MC3	P80MC3	P90MC3

LEGEND: Motor Type: D=De-Ice, L=Low-Noise Mount Type: H=Heavy-Duty Cart, L=Lightweight Cart, W=Wall Mount Package: C=Complete Hose & Gun, B=Bare

Ordering Information & Accessories

To get genuine Graco accessories, see your nearest Graco Distributor, or call Graco at 877-844-7226.

NXT Package Configurations

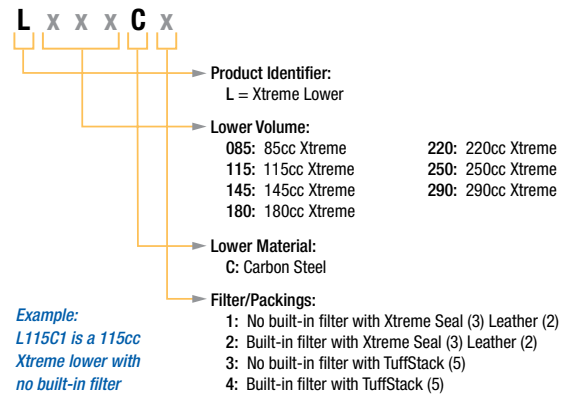
287978	40:1 with External Filter Wall Mount Package with Low Noise NXT Air Motor with DataTrak	287979	23:1 Dura-Flo Sprayer Bare with De-Icing NXT Air Motor
287975	30:1 Heavy-Duty Cart AA Package (G40 Spray Gun and Hoses) with De-Icing NXT Air Motor with DataTrak	287981	32:1 Dura-Flo Sprayer Package (Silver Spray Gun and Hoses) with De-Icing NXT Air Motor
287976	40:1 Heavy-Duty Cart AA Package (G40 Spray Gun and Hoses) with De-Icing NXT Air Motor with DataTrak	XN3DH2	NXT 3400 De-Icing with DataTrak on a Bare Heavy Duty-Cart *
287971	25:1 Heavy-Duty Cart Zinc Package, no hose or gun, with De-Icing NXT Air Motor	XN3DH4	NXT 3400 De-Icing on a Bare Heavy-Duty Cart *
287972	40:1 Heavy-Duty Cart Zinc Package, no hose or gun, with De-Icing NXT Air Motor	XN3DL2	NXT 3400 De-Icing with DataTrak on a Bare Lightweight Cart *
287973	25:1 Heavy-Duty Cart Zinc Package (Silver Spray Gun 238591 and Hoses) with De-Icing NXT Air Motor	XN3DL4	NXT 3400 De-Icing on a Bare Lightweight Cart *
287974	40:1 Heavy-Duty Cart Zinc Package (Silver Spray Gun 238591 and Hoses) with De-Icing NXT Air Motor	XN6DH2	NXT 6500 De-Icing with DataTrak on a Bare Heavy-Duty Cart *
287970	23:1 Dura-Flo Sprayer Package (Silver Spray Gun and Hoses) with De-Icing NXT Air Motor with DataTrak	XN6DH4	NXT 6500 De-Icing on a Bare Heavy-Duty Cart *
		XN6DL2	NXT 6500 De-Icing with DataTrak on a Bare Lightweight Cart *
		XN6DL4	NXT 6500 De-Icing on a Bare Lightweight Cart *
		247312	Cart adapter for NXT2200 Air Motor
		287919	Lightweight base cart
		287884	Heavy-duty base cart

* Add any Xtreme Lower (Sizes 145cc-290cc) to make a Package. Includes tie rods, coupling kit and a suction hose.

Xtreme Loweres

Part #	Output per cycle (cc)	Packing	Filter	Rod	Cylinder	Rebuild Kits*
L085C1	85	Xseal_LTH	None	24B819	15F682	24F973
L085C2	85	Xseal_LTH	Built-In	24B819	15F682	24F973
L085C3	85	Tuff-Stack (5)	None	24B819	15F682	262507
L085C4	85	Tuff-Stack (5)	Built-In	24B819	15F682	262507
L115C1	115	Xseal_LTH	None	24B820	15F656	24F972
L115C2	115	Xseal_LTH	Built-In	24B820	15F656	24F972
L115C3	115	Tuff-Stack (5)	None	24B820	15F656	262508
L115C4	115	Tuff-Stack (5)	Built-In	24B820	15F656	262508
L145C1	145	Xseal_LTH	None	24B821	197315	24F971
L145C2	145	Xseal_LTH	Built-In	24B821	197315	24F971
L145C3	145	Tuff-Stack (5)	None	24B821	197315	262510
L145C4	145	Tuff-Stack (5)	Built-In	24B821	197315	262510
L180C1	180	Xseal_LTH	None	24B822	197316	24F969
L180C2	180	Xseal_LTH	Built-In	24B822	197316	24F969
L180C3	180	Tuff-Stack (5)	None	24B822	197316	24F970
L180C4	180	Tuff-Stack (5)	Built-In	24B822	197316	24F970
L220C1	220	Xseal_LTH	None	24B823	197317	24F967
L220C2	220	Xseal_LTH	Built-In	24B823	197317	24F967
L220C3	220	Tuff-Stack (5)	None	24B823	197317	24F968
L220C4	220	Tuff-Stack (5)	Built-In	24B823	197317	24F968
L250C1	250	Xseal_LTH	None	24B824	197318	24F965
L250C2	250	Xseal_LTH	Built-In	24B824	197318	24F965
L250C3	250	Tuff-Stack (5)	None	24B824	197318	24F966
L250C4	250	Tuff-Stack (5)	Built-In	24B824	197318	24F966
L290C1	290	Xseal_LTH	None	24B825	197319	24F963
L290C2	290	Xseal_LTH	Built-In	24B825	197319	24F963
L290C3	290	Tuff-Stack (5)	None	24B825	197319	24F964
L290C4	290	Tuff-Stack (5)	Built-In	24B825	197319	24F964
244849	Connection Kit. Includes tie rods and coupler to adapt Xtreme lower to King, Senator® or Bulldog® motors					

* Includes seals for both old and new series filter caps.



Replacement Screen Filter Elements		
2-Pack	25-Pack	Description
224458	238436	30 Mesh (595 micron)
224459	238438	60 Mesh (250 micron)
224468	238440	100 Mesh (149 micron)

Filter Support	Filter Cap Conversion Kit
186075 Poly filter support	24F975 (85-290cc lowers) see manual 406882
179801 Carbon steel filter support	

New X-Tuff™ Repair Kits		
262789	X-Tuff Repair Kit, 85 cc lowers	Xtreme Seal™ (UHMWPE/LTH). Good for abrasive materials. Standard in new Xtreme Sprayers.
262790	X-Tuff Repair Kit, 115 cc lowers	
262791	X-Tuff Repair Kit, 145 cc lowers	Tuff-Stack™ (PTFE). Ideal for chemical resistance and higher temperatures. Not ideal for abrasive applications.
262792	X-Tuff Repair Kit, 180 cc lowers	
262793	X-Tuff Repair Kit, 220 cc lowers	
262794	X-Tuff Repair Kit, 250 cc lowers	X-Tuff™ (UHMWPE/PTFE). Good for chemical resistance and durability in applications below 140°F (60°C).
262795	X-Tuff Repair Kit, 290 cc lowers	

Airless Guns

XTR-5 Airless Spray Gun

Maximum working pressure: 5000 psi (345 bar, 34.5 MPa)

XTR500	One inch round handle, four-finger trigger, no tip
XTR501	One inch round handle, four-finger trigger, 519 flat tip
XTR502	Oval-insulated handle, four-finger trigger, 519 XHD RAC tip
XTR503	Oval-insulated handle, two-finger trigger, 519 XHD RAC tip
XTR504	One inch round handle, four-finger trigger, 519 XHD RAC tip
XTR505	One inch round handle, two-finger trigger, 519 XHD RAC tip

XTR-7 Airless Spray Gun

Maximum working pressure: 7250 psi (500 bar, 50.0 MPa)

XTR700	Round handle, four-finger trigger, no tip
XTR701	Round handle, four-finger trigger, 519 flat tip
XTR702	Oval-insulated handle, four-finger trigger, 519 XHD RAC tip
XTR703	Oval-insulated handle, two-finger trigger, 519 XHD RAC tip
XTR704	Round handle, four-finger trigger, 519 XHD RAC tip
XTR705	Round handle, two-finger trigger, 519 XHD RAC tip

XHF Airless Spray Gun

Maximum working pressure: 7250 psi (500 bar, 50.0 MPa)

262854	XHF Gun, includes XHD 429 tip (see brochure 348891)
248834	XHF Gun Swivel

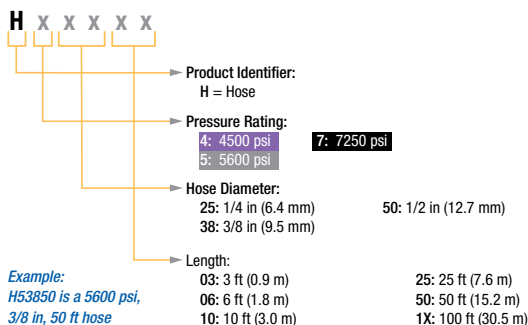
Gun Accessories

Accessories

287450	Two-finger Trigger Kit	262826	Gun splitter, 7250 psi (500 bar, 50 MPa)
287449	Four-finger Round Trigger Kit	246297	180° spray nozzle, 7/8-14 UNC-2B, 7250 psi (500 bar, 50 MPa)
287451	Four-finger Oval Insulation Trigger Kit	248837	Gun Repair Kit, Includes Gasket, Needle and Seat
246294	10 in (254 mm) Gun Extension, 7250 psi (500 bar, 50 MPa)	287032	Filter, 60 Mesh
246295	15 in (380 mm) Gun Extension, 7250 psi (500 bar, 50 MPa)	287033	Filter, 100 Mesh
246296	18 in (457 mm) Gun Extension, 7250 psi (500 bar, 50 MPa)	287034	Filter, 60 and 100 Mesh Combination

Xtreme-Duty High-Pressure Hoses

4500 psi | 5600 psi | 7250 psi



Choose the Right Hose for the Job

Working pressure..... 4500 psi (310 bar), 5600 psi (386 bar), or 7250 psi (500 bar)
 Temperature rating (all sizes).....-40° to 180°F (-40° to 82°C)
 Chemical resistance... Hose cover resistant to a wide variety of solvents, acids and bases
 Weather resistanceHose cover has outstanding resistance to oxygen, ozone, sunlight and general weather conditions
 Electrical propertiesConductive hose

New 3/4 - Inch Hoses

H67550	3/4 in x 50 ft (15.2 m), 6500 psi, (44.8 bar, 44.8 MPa)
H77550	3/4 in x 50 ft (15.2 m), 7250 psi, (500 bar, 50.0 MPa)

XHD™ RAC® SwitchTip

ORIFICE SIZE - INCHES

IN (MM)	ORIFICE SIZE - INCHES																																								
	.007	.009	.011	.013	.015	.017	.019	.021	.023	.025	.027	.029	.031	.033	.035	.037	.039	.041	.043	.045	.047	.049	.051	.053	.055	.057	.059	.061	.063	.065	.067	.069	.071	.075	.081						
2-4 (51-102)	107	109	111	113	115	117	119	121																																	
4-6 (102-152)	209	211	213	215	217	219	221																																		
6-8 (152-203)	309	311	313	315	317	319	321	323	325	327	329	331	333	335	337	339	341	343	345	347	349	351	353	355	357	359	361	363	365	367	369	371	373	375	377	379	381	383	385		
8-10 (203-254)	409	411	413	415	417	419	421	423	425	427	429	431	433	435	437	439	441	443	445	447	449	451	453	455	457	459	461	463	465	467	469	471	473	475	477	479	481	483	485		
10-12 (254-305)	509	511	513	515	517	519	521	523	525	527	529	531	533	535	537	539	541	543	545	547	549	551	553	555	557	559	561	563	565	567	569	571	573	575	577	579	581	583	585		
12-14 (305-356)	609	611	613	615	617	619	621	623	625	627	629	631	633	635	637	639	641	643	645	647	649	651	653	655	657	659	661	663	665	667	669	671	673	675	677	679	681	683	685		
14-16 (356-406)																																									
16-18 (406-457)																																									
18-20 (457-508)																																									
Flow Rate (gpm)	.05	.09	.12	.18	.24	.31	.38	.47	.57	.67	.74	.90	1.03	1.17	1.31	1.47	1.63	1.8	1.98	2.17	2.37	2.58	2.79	3.25	3.49	3.74	4.0	4.26	4.53	4.82	5.11	5.41	6.04	7.04							
Flow Rate (lpm)	.20	.33	.49	.69	.91	1.17	1.47	1.79	2.15	2.54	2.96	3.42	3.90	4.42	4.98	5.56	6.18	6.83	7.51	8.23	8.98	9.76	10.57	12.29	13.20	14.14	15.12	16.13	17.17	18.24	19.34	20.48	22.85	26.66							

Water @ 2000 psi (138 bar, 13.8 MPa) - paints with a higher viscosity will decrease the flow rate Example: for a tip with a .039 in orifice and a 10-in (254 mm) pattern, order XHD539

Graco XHD Guard

XHD001	For pressures up to 7250 psi (500 bar, 50.0 MPa)
XHD005	For pressures up to 7250 psi (500 bar, 50.0 MPa); for guns with 11/16 in thread

XHD Tips

XHD ___	Use numbers in table above to complete the part number
XHD003	XHD RAC housing, SST - wrench-tight for extended life

Xtreme NXT Spray Accessories

Part #	Description	Part #	Description
288347	Hopper Feed Kit	NXT100	Replacement Poppet Valve Kit
255143	Wall-Mount Bracket	181072	Round Suction Tube Strainer
245132	Xtreme Floor-Stand Kit	191635	Tube Strainer
NXT206	DataTrak Upgrade Kit for the NXT 2200	245176	Suction Kit, Replaces OEM Suction Assembly (6 ft, 1.8 m hose)
NXT306	DataTrak Upgrade Kit for the NXT 3400	288687	Suction Kit, Wall Mount Version (10 ft, 3 m hose)
NXT606	DataTrak Upgrade Kit for the NXT 6500	245136	55 gal (200 l) suction tube extension,
NXT107	NXT Air Motor Valve - fits all three sizes	245190	Inlet Ball Spring Load Kit: 145cc, 180cc
262230	External Air Controls for Lightweight Xtreme Package Carts	245191	Inlet Ball Spring Load Kit: 220cc, 250cc, 290cc
262231	External Air Controls for Heavy-Duty Xtreme Package Carts	245127	Carbide piston ball for 145 or 180 cc lower, 3-pack
NXT112	De-Ice Control Knob (5-Pack)	244841	Lubricator - NXT Air Motor
NXT102	De-Ice Control Repair Kit	206995	TSL, 1 qt (0.9 L)



ABOUT GRACO

PROVEN QUALITY. LEADING TECHNOLOGY.

Founded in 1926, Graco is a world leader in fluid handling systems and components. Graco products move, measure, control, dispense and apply a wide range of fluids and viscous materials used in vehicle lubrication, commercial and industrial settings.

The company's success is based on its unwavering commitment to technical excellence, world-class manufacturing and unparalleled customer service. Working closely with qualified distributors, Graco offers systems, products and technology that set the quality standard in a wide range of fluid handling solutions. Graco provides equipment for spray finishing, protective coating, paint circulation, lubrication, and dispensing sealants and adhesives, along with power application equipment for the contractor industry. Graco's ongoing investment in fluid management and control will continue to provide innovative solutions to a diverse global market.

GRACO LOCATIONS

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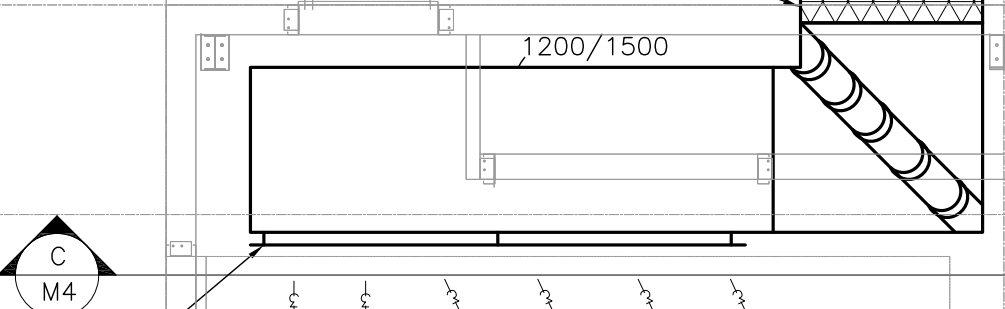
FACILITY DESIGN DRAWINGS

INSTALL NEW OWNER SUPPLIED BANAZA MAKEUP AIR UNIT (MUA-2) MODEL "B-3000" IN THIS APPROXIMATE LOCATION ON CONCRETE PAD. AIRFLOW: 16525L/s @ 250Pa ESP, HEAT: 887kW (PROPANE FIRED). FAN POWER: 19kW @ 600/3/60. FRESH AIR INTAKE SHALL BE 1000mm ABOVE GRADE. COORDINATE STRUCTURAL STAND REQUIREMENTS WITH STRUCTURAL. COORDINATE EXACT LOCATION ON SITE WITH OWNER. UNIT FILTERS SHALL BE CLASS ONE OR TWO ULC 900.

INSTALL 50mm INSULATION AND WEATHER GUARD EXTERIOR DUCT WRAP ON ALL EXTERIOR SUPPLY DUCTWORK.

INSTALL SUPPLY FAN AS HIGH AS POSSIBLE. FAN SHALL RUN CONTINUOUSLY AT MINIMUM POSITION OF 200L/s DURING PAINTING OPERATION. WHEN TEMPERATURE EXCEEDS COOLING SET POINT FAN SHALL INCREASE TO FULL SPEED. PROVIDE FLEX CONNECTIONS. PROVIDE HEATING COIL 7kW @ 208/3/60 C/W SCR CONTROL. HEATER TO BE ACTIVATED WHEN ROOM TEMPERATURE IS 18°C. COORDINATE EXHAUST STACK REQUIREMENTS WITH MANUFACTURER.

SEAL PENETRATION WEATHER TIGHT.



INSTALL NEW 3600mm X 1050mm (EIGHT 750mm x 750mm OR AS DETERMINED BY CONTRACTOR) DOUBLE DEFLECTION GRILLE EQUAL TO EH PRICE MODEL "302G" OR EQUIVALENT. PROVIDE GANG OPERATED BLADE CONTROL AND HEAVY DUTY DAMPER. CONTRACTOR TO CONFIRM DUCTWORK SIZE ON SITE AND REPORT ANY DISCREPANCIES TO ENGINEER. COORDINATE ALL CUTTING WITH STRUCTURAL ENGINEER BEFORE PROCEEDING WITH WORK.

INSTALL NEW NORMALLY CLOSED MOTORIZED 950/950 FIRE AND SMOKE DAMPER.

INSTALL NEW 1525mm X 2285mm (SIX @ 750mm x 750mm OR AS DETERMINED BY CONTRACTOR) DOUBLE DEFLECTION GRILLE EQUAL TO EH PRICE MODEL "302G" OR EQUIVALENT. PROVIDE GANG OPERATED BLADE CONTROL AND HEAVY DUTY DAMPER. CONTRACTOR TO CONFIRM DUCTWORK SIZE ON SITE AND REPORT ANY DISCREPANCIES TO ENGINEER.

INSTALL NEW 1200/900 STORM PROOF LOUVER EQUIVALENT TO VENTEX MODEL 2420. PROVIDE WELDED PLENUM SLOPED TO EXTERIOR C/W EXPLOSION PROOF MOTORIZED DAMPER.

INSTALL EXHAUST FAN EF-8 AS HIGH AS POSSIBLE IN THIS APPROXIMATE LOCATION. SEE EF-8 DETAIL THIS SHEET.

INSTALL NEW OWNER SUPPLIED PAINT EXHAUST FANS ON ROOF. ROUTE DUCTWORK FROM FANS TO PLENUM AS INDICATED. COORDINATE CUTTING AND SUPPORT WITH STRUCTURAL ENGINEER PRIOR TO STARTING WORK. SEE SCHEDULE.

ROUTE DUCTWORK AS HIGH AS POSSIBLE.

INSTALL NEW 600/600 STORM PROOF LOUVER EQUIVALENT TO VENTEX MODEL 2420. PROVIDE WELDED PLENUM SLOPED TO EXTERIOR.

INSTALL FIRE EXTINGUISHERS IN ACCORDANCE WITH NFPA 10.

INSTALL NEW 1800/1200 STORMPROOF EXHAUST LOUVER EQUIVALENT TO VENTEX MODEL 2420. PROVIDE WELDED PLENUM SLOPED TO EXTERIOR C/W MOTORIZED DAMPER. INSTALL AS HIGH AS POSSIBLE.

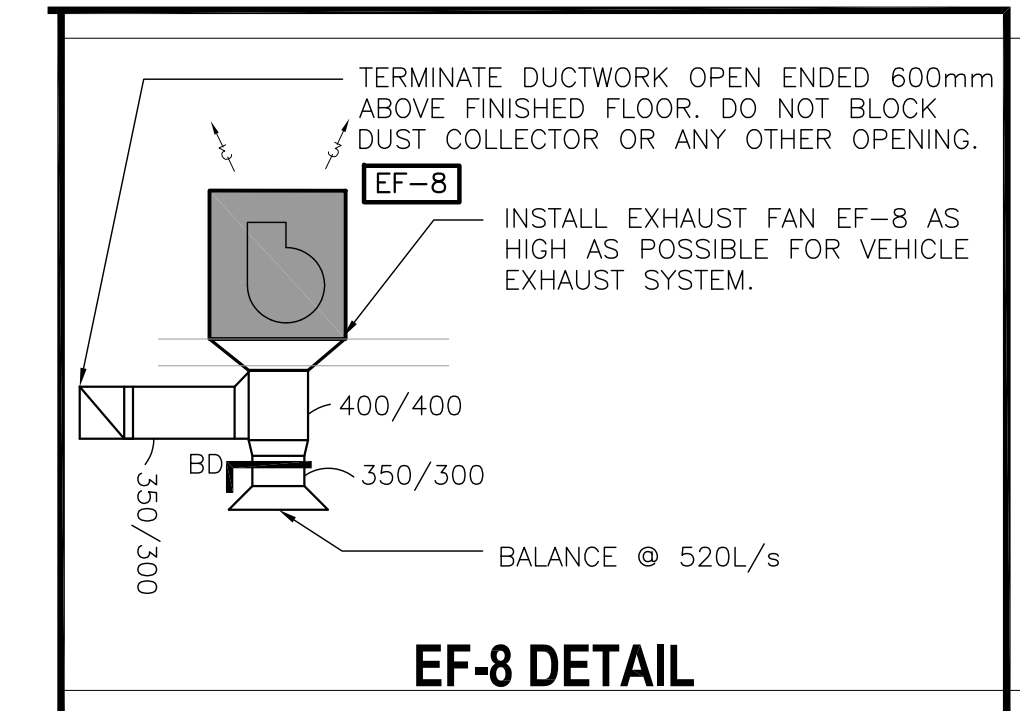
INSTALL NEW SUPPLY FAN AS HIGH AS POSSIBLE. PROVIDE FLEX CONNECTIONS.

INSTALL NEW 1800/1500 STORM PROOF LOUVER EQUIVALENT TO VENTEX MODEL 2420 C/W COWL. PROVIDE WELDED PLENUM SLOPED TO EXTERIOR C/W MOTORIZED DAMPER. MOUNT AS HIGH AS POSSIBLE.

CONNECT DUST COLLECTOR OUTLET TO DUCT. COORDINATE EXACT DUCT SIZE ON SITE AND PROVIDE BACKDRAFT DAMPER FOR EACH CONNECTION. (TYPICAL)

INSTALL NEW PAINT EXHAUST PLENUM ON BUILDING WALL. COORDINATE INSTALLATION HEIGHT WITH OWNER. PLENUM TO HAVE FILTER AREA OF 3.6m WIDE, 1.8m HIGH AND 0.75m DEEP C/W 600mmX600mmX50mm FILTERS FOR ULC LISTED FOR PAINT EXHAUST APPLICATION COVERING ENTIRE AREA. FILTERS SHALL BE SECURED TO FRAME BUT REMOVABLE. ENSURE PLENUM IS SECURELY ATTACHED TO BUILDING STRUCTURE. COORDINATE WITH STRUCTURAL. PROVIDE DUST TIGHT COVERS FOR PLENUM COORDINATE WITH OWNER.

CONNECT DUST COLLECTOR OUTLET TO DUCT. COORDINATE EXACT DUCT SIZE ON SITE. (TYPICAL)



INSTALL NEW 1500mm X 4500mm (12 @ 750mm x 750mm OR AS DETERMINED BY CONTRACTOR) DOUBLE DEFLECTION GRILLE EQUAL TO EH PRICE MODEL "302G" OR EQUIVALENT IN THE FRONT FACE OF PLENUM. PROVIDE GANG OPERATED BLADE CONTROL AND HEAVY DUTY DAMPER. CONTRACTOR TO CONFIRM DUCTWORK SIZE ON SITE AND REPORT ANY DISCREPANCIES TO ENGINEER. COORDINATE ALL CUTTING WITH STRUCTURAL ENGINEER BEFORE PROCEEDING WITH WORK.

INSTALL NEW CSA APPROVED BLASTING/PAINTING CURTAIN ON TRACK. POSITION SHOWN IS FOR HALF PAINTING.

INSTALL TWO 750mm x 750mm DOUBLE DEFLECTION GRILLE EQUAL TO EH PRICE MODEL "302G" OR EQUIVALENT IN BOTTOM OF PLENUM. PROVIDE BLADE CONTROL AND HEAVY DUTY DAMPER.

INSTALL THREE 750mm x 750mm DOUBLE DEFLECTION GRILLE EQUAL TO EH PRICE MODEL "302G" OR EQUIVALENT IN SIDE OF PLENUM. PROVIDE BLADE CONTROL AND HEAVY DUTY DAMPER.

INSTALL NEW 1200/900 STORM PROOF LOUVER EQUIVALENT TO VENTEX MODEL 2420. PROVIDE WELDED PLENUM SLOPED TO EXTERIOR C/W EXPLOSION PROOF MOTORIZED-DAMPER.

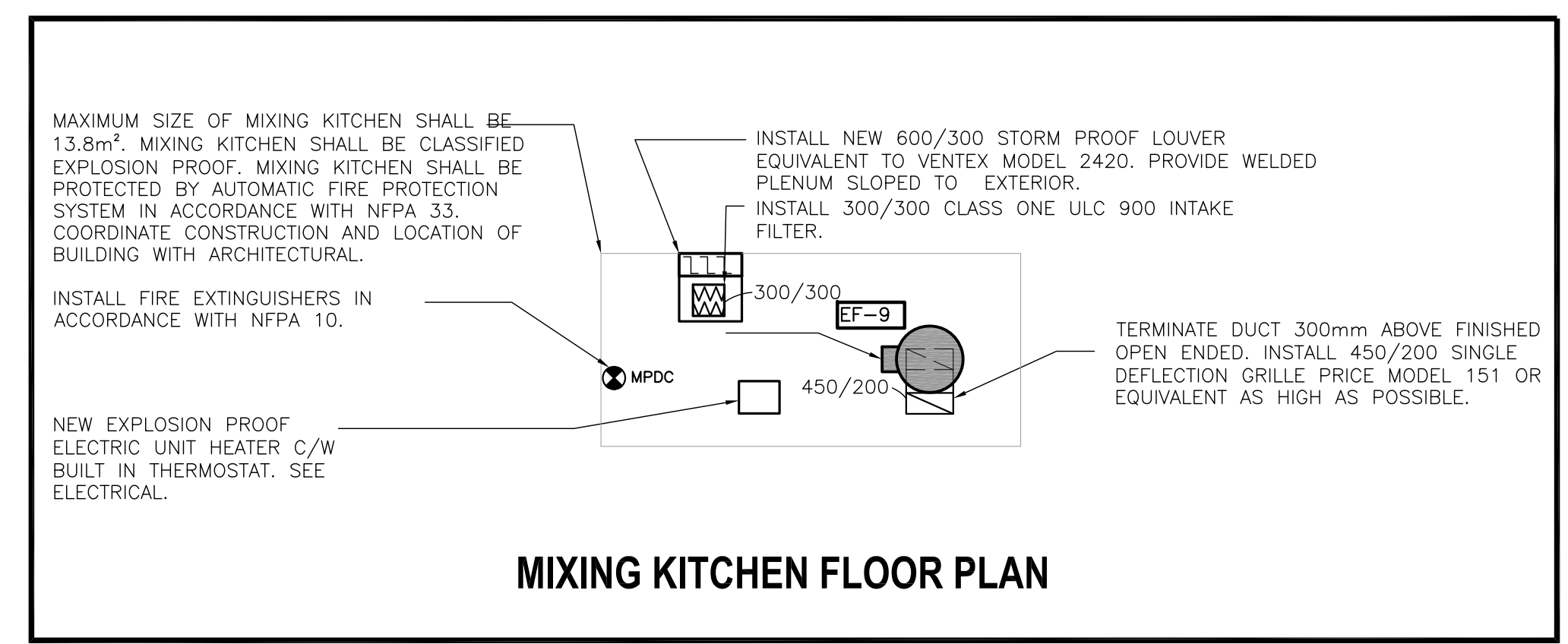
TERMINATE DUCTWORK OPEN ENDED 600mm ABOVE FINISHED FLOOR.

COORDINATE LOCATION AND QUANTITY OF SUPPORTS FOR DUCTWORK WITH STRUCTURAL ENGINEER PRIOR TO STARTING WORK.

INSTALL 50mm INSULATION AND WEATHER GUARD EXTERIOR DUCT WRAP ON ALL EXTERIOR SUPPLY DUCTWORK.

COORDINATE LOCATION AND QUANTITY OF SUPPORTS FOR DUCTWORK WITH STRUCTURAL ENGINEER PRIOR TO STARTING WORK.

INSTALL NEW OWNER SUPPLIED PAINT EXHAUST FANS ON TOP OF STRUCTURAL STAND. SEE SCHEDULE. (TYPICAL FOR ALL FANS ON STRUCTURAL STAND)



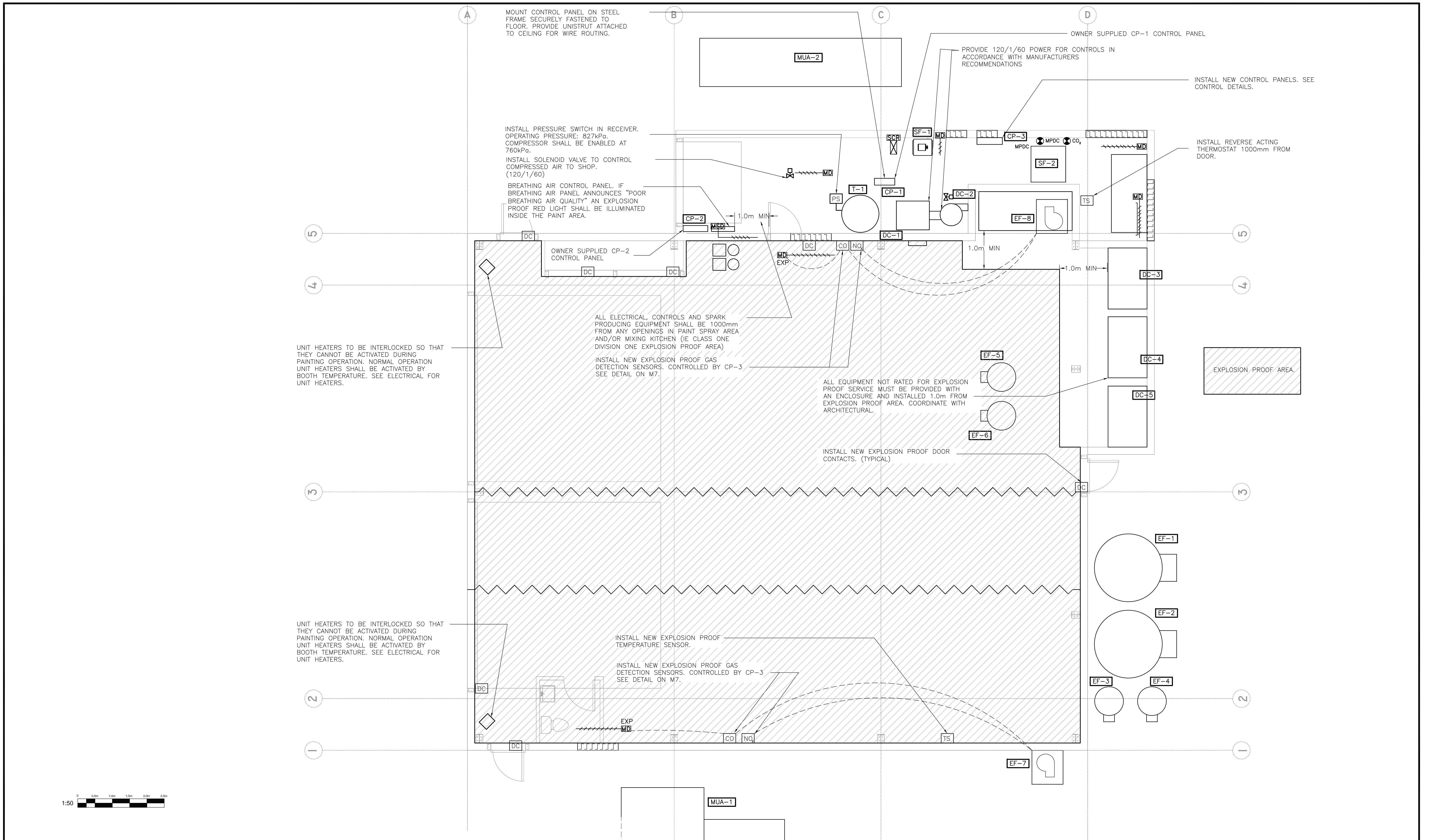
MAXIMUM SIZE OF MIXING KITCHEN SHALL BE 13.8m². MIXING KITCHEN SHALL BE CLASSIFIED EXPLOSION PROOF. MIXING KITCHEN SHALL BE PROTECTED BY AUTOMATIC FIRE PROTECTION SYSTEM IN ACCORDANCE WITH NFPA 33. COORDINATE CONSTRUCTION AND LOCATION OF BUILDING WITH ARCHITECTURAL.

INSTALL FIRE EXTINGUISHERS IN ACCORDANCE WITH NFPA 10.

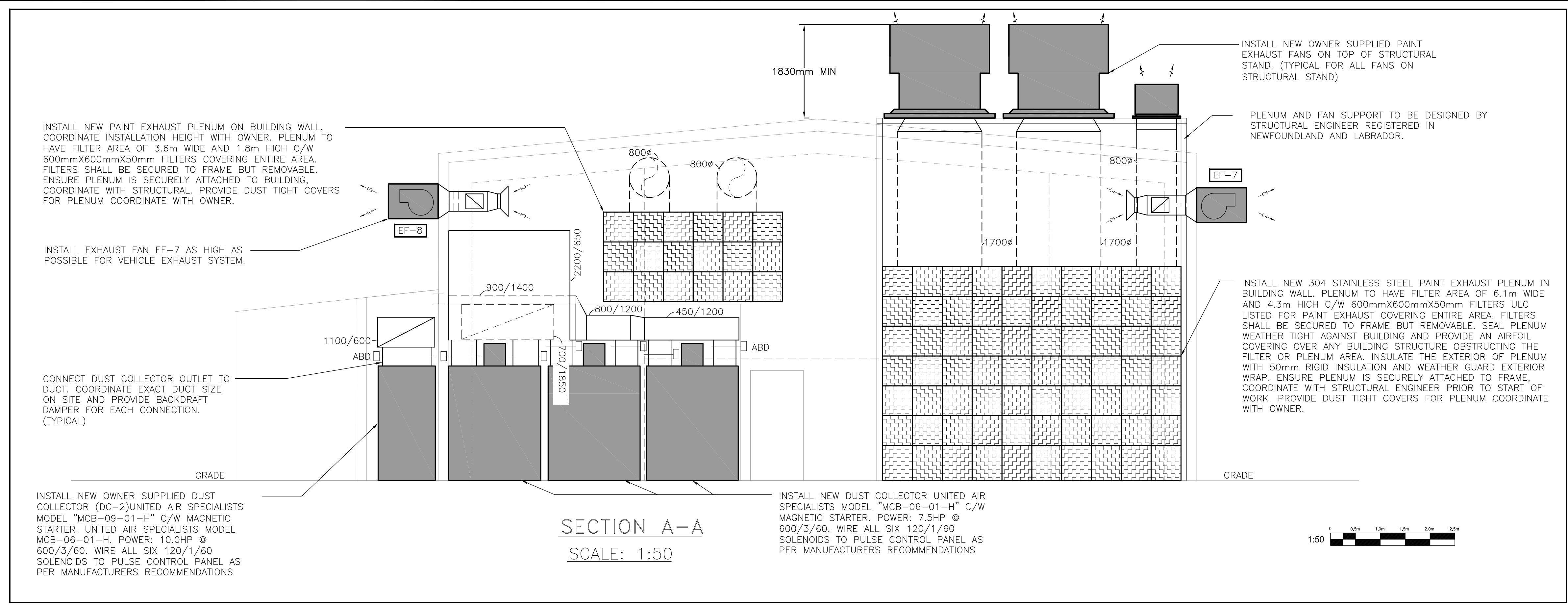
NEW EXPLOSION PROOF ELECTRIC UNIT HEATER C/W BUILT IN THERMOSTAT. SEE ELECTRICAL.

MIXING KITCHEN FLOOR PLAN

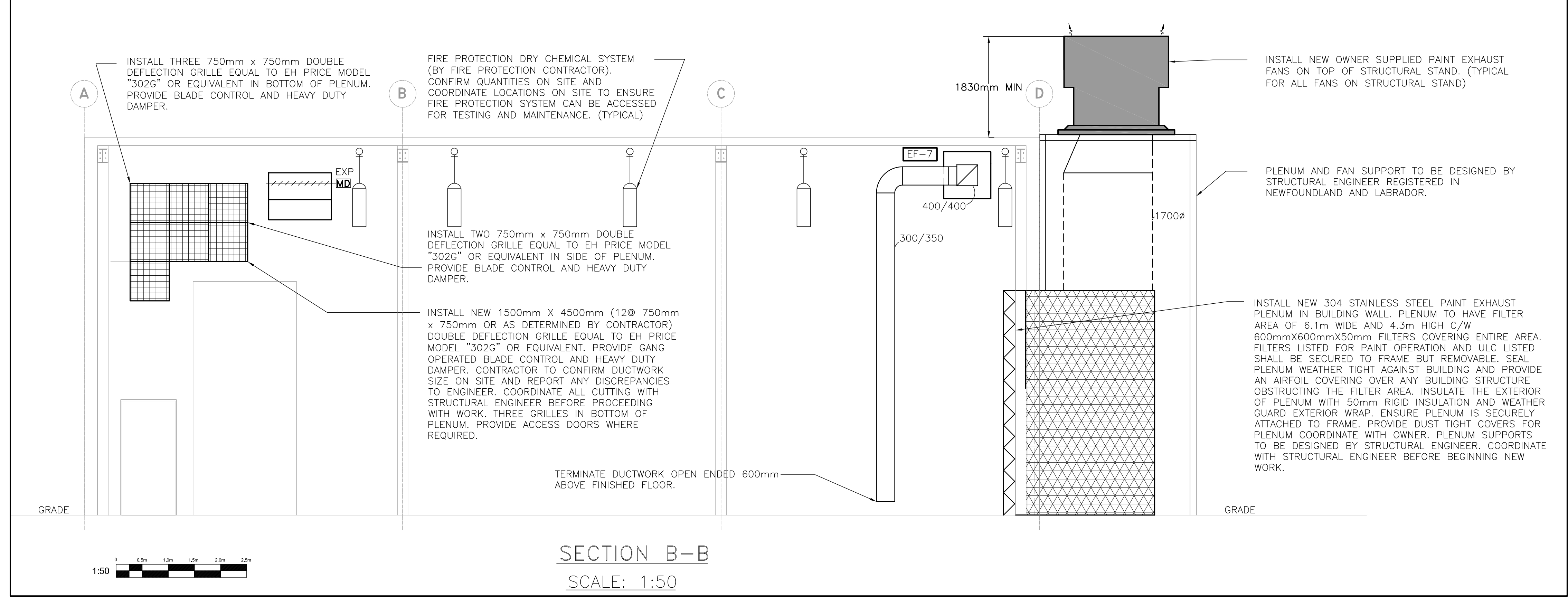
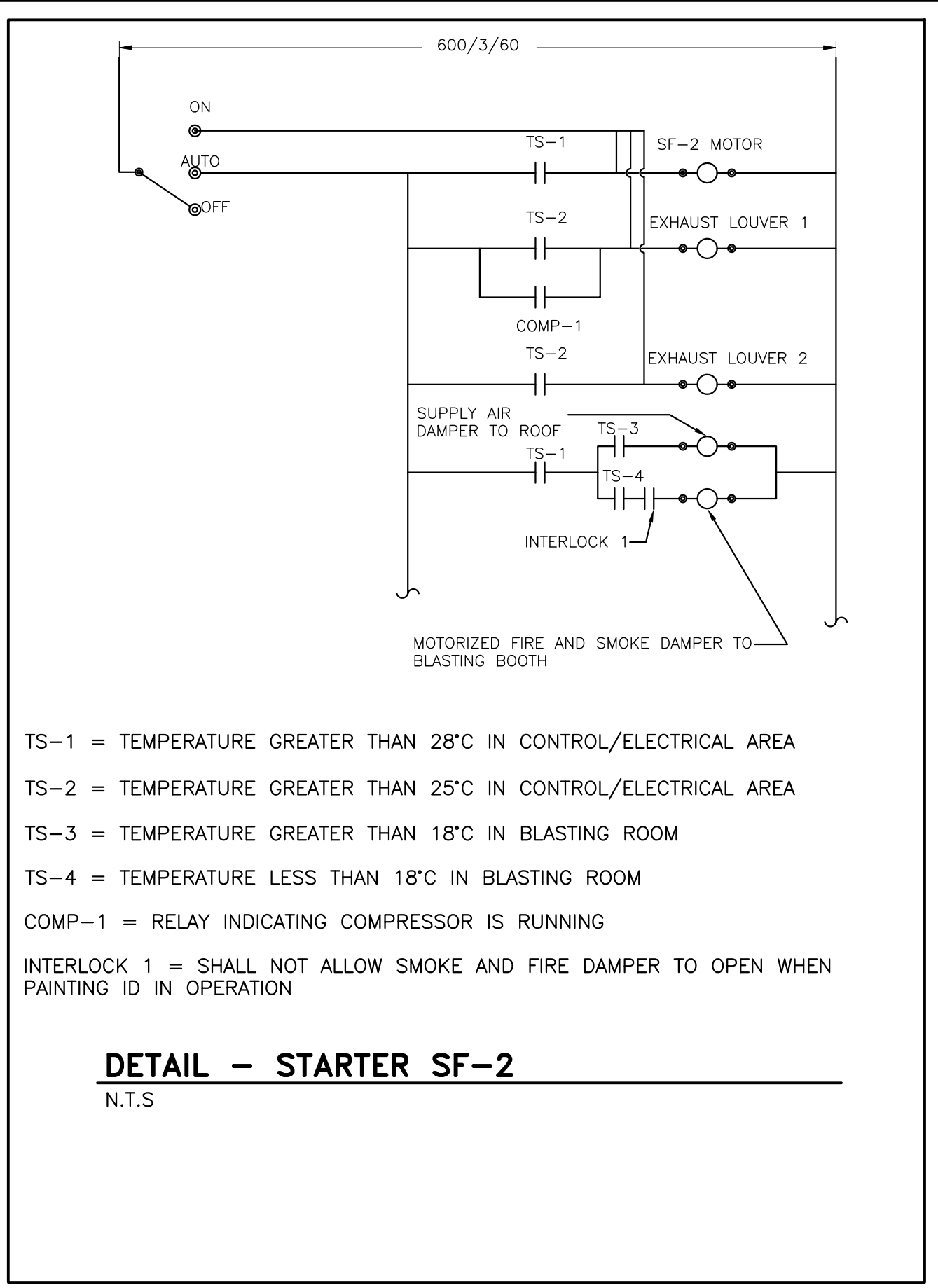
PERMIT PROVINCE OF NEWFOUNDLAND AND LABRADOR PEG Permit Holder This Permit Allows ROWSELL APPLBY NEWTON ENGINEERING INC. To practice Professional Engineering in Newfoundland and Labrador. Permit No. as issued by APRON P0255 which is valid for the year 2014.	STAMP REGISTERED PROFESSIONAL ENGINEER PEG CRAIG W. ROWSELL 02/12/14 NEWFOUNDLAND & LABRADOR	SUB CONSULTANT	SUB CONSULTANT	DRAWN JWC DESIGNED JWC CHECKED CWR APPROVED CWR SCALE AS SHOWN PROJECT No. 14-044	<table border="1"> <tr><td>G</td><td>ISSUED FOR MUNICIPAL REVIEW</td><td>JWC</td><td>2014.10.02</td></tr> <tr><td>F</td><td>ISSUED FOR FINAL REVIEW</td><td>JWC</td><td>2014.11.20</td></tr> <tr><td>E</td><td>ISSUED FOR PERMIT</td><td>JWC</td><td>2014.11.07</td></tr> <tr><td>D</td><td>ISSUED FOR 99% REVIEW</td><td>JWC</td><td>2014.10.27</td></tr> <tr><td>C</td><td>ISSUED FOR 95% REVIEW</td><td>JWC</td><td>2014.10.14</td></tr> <tr><td>B</td><td>ISSUED FOR 90% REVIEW</td><td>JWC</td><td>2014.09.23</td></tr> <tr><td>A</td><td>ISSUED FOR REVIEW</td><td>JWC</td><td>2014.09.16</td></tr> <tr><td>No.</td><td>Description</td><td>By</td><td>yy/mm/dd</td></tr> </table>	G	ISSUED FOR MUNICIPAL REVIEW	JWC	2014.10.02	F	ISSUED FOR FINAL REVIEW	JWC	2014.11.20	E	ISSUED FOR PERMIT	JWC	2014.11.07	D	ISSUED FOR 99% REVIEW	JWC	2014.10.27	C	ISSUED FOR 95% REVIEW	JWC	2014.10.14	B	ISSUED FOR 90% REVIEW	JWC	2014.09.23	A	ISSUED FOR REVIEW	JWC	2014.09.16	No.	Description	By	yy/mm/dd	PRIME / MECHANICAL / ELECTRICAL CONSULTANTS RAN ROWSELL APPLBY NEWTON ENGINEERING INC. 1 Centennial Street Suite 101 Mount Pearl, NL T. 709-754-9135	CLIENT CW OFFSHORE	PROJECT TITLE C&W OFFSHORE PAINT HALL	DRAWING TITLE MECHANICAL VENTILATION PLAN	DRAWING No. M3 SHEET No.
G	ISSUED FOR MUNICIPAL REVIEW	JWC	2014.10.02																																							
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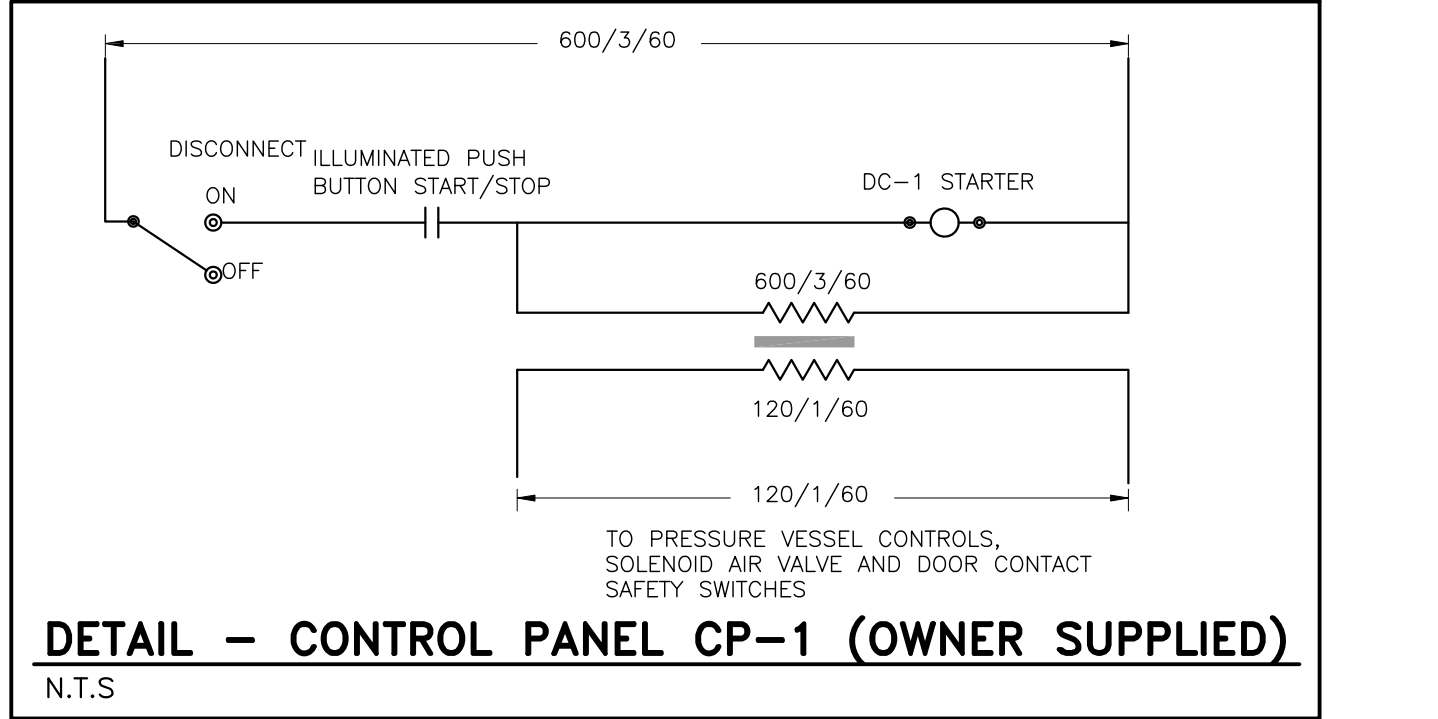
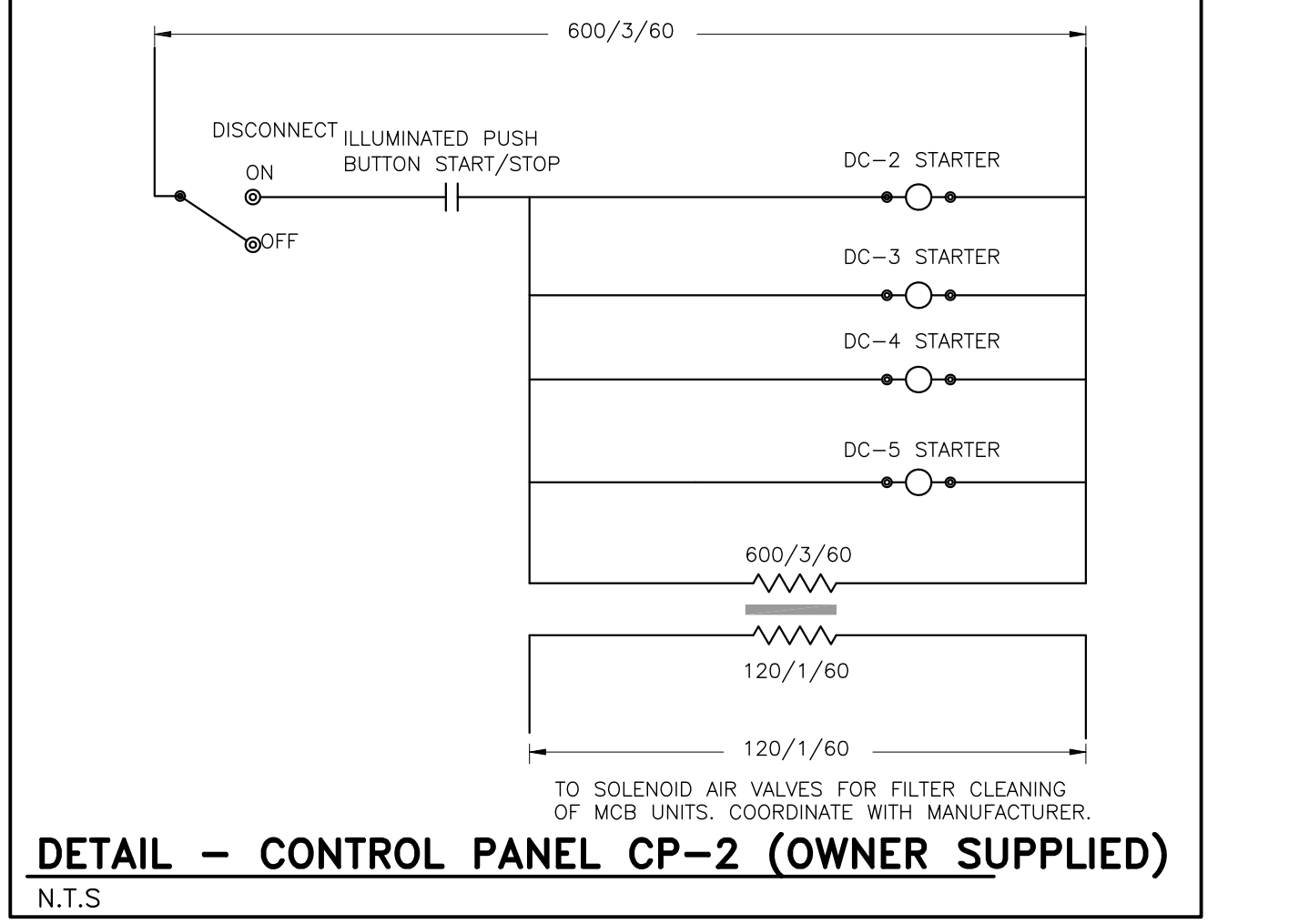
PERMIT PROVINCE OF NEWFOUNDLAND AND LABRADOR PEG Permit Holder This Permit Allows PROFESSIONAL ENGINEERING ROWSELL APPELBY NEWTON ENGINEERING INC. To practice Professional Engineering in Newfoundland and Labrador Permit No. as issued by APRON P0255 which is valid for the year 2014	STAMP 	SUB CONSULTANT 	SUB CONSULTANT 	DRAWN JWC DESIGNED JWC CHECKED CWR APPROVED CWR SCALE AS SHOWN PROJECT No. 14-044	G ISSUED FOR MUNICIPAL REVIEW JWC 2014.12.02	PRIME / MECHANICAL / ELECTRICAL CONSULTANTS ROWSELL APPELBY NEWTON ENGINEERING INC. 1 Centennial Street Suite 101 Mount Pearl, NL T.709.754.9135	CLIENT CW OFFSHORE	PROJECT TITLE C&W OFFSHORE PAINT HALL	DRAWING TITLE MECHANICAL CONTROLS PLAN	DRAWING No. M4 SHEET No.
					F ISSUED FOR FINAL REVIEW JWC 2014.11.20 E ISSUED FOR PERMIT JWC 2014.11.07 D ISSUED FOR 99% REVIEW JWC 2014.10.27 C ISSUED FOR 95% REVIEW JWC 2014.10.14 B ISSUED FOR 90% REVIEW JWC 2014.09.23 A ISSUED FOR REVIEW JWC 2014.09.16					



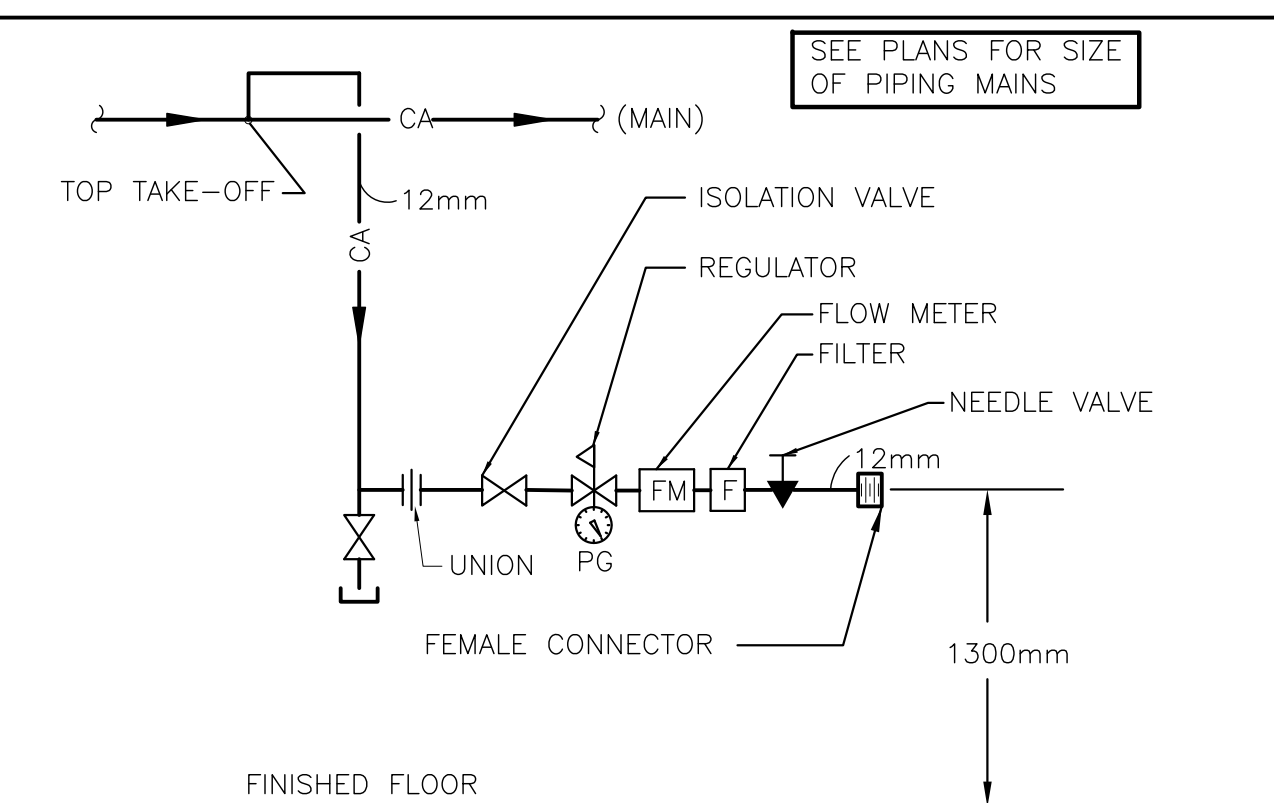
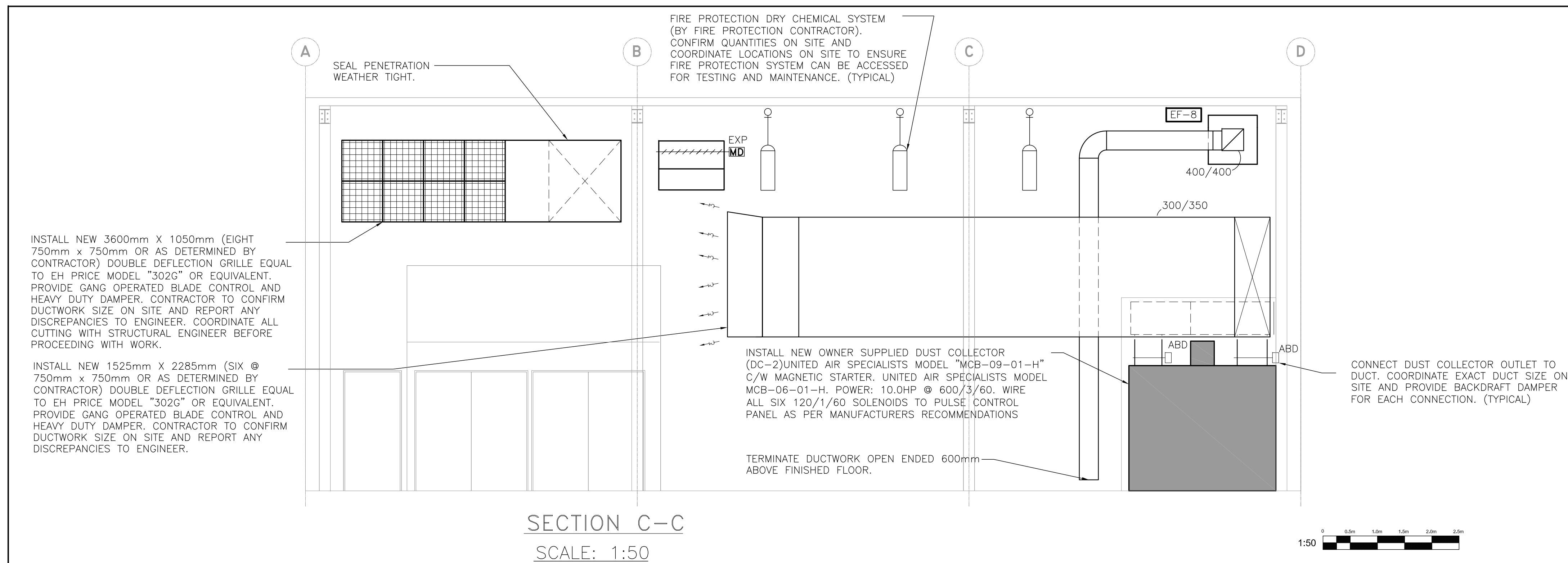
SECTION A-A
SCALE: 1:50



SECTION B-B
SCALE: 1:50



PERMIT PROVINCE OF NEWFOUNDLAND AND LABRADOR PEG Newfoundland and Labrador PERMIT HOLDER This Permit Allows PROFESSIONAL ENGINEERING ROWSELL APPLBY NEWTON ENGINEERING INC. To practice Professional Engineering in Newfoundland and Labrador. Permit No. as issued by APEON P0255 which is valid for the year 2014.	STAMP REGISTERED PROFESSIONAL ENGINEER PEG Newfoundland and Labrador GRAIG W. ROWSELL 02/12/14 NEWFOUNDLAND & LABRADOR	SUB CONSULTANT	SUB CONSULTANT	DRAWN JWC DESIGNED JWC CHECKED CWR APPROVED CWR SCALE AS SHOWN PROJECT No. 14-044	G ISSUED FOR MUNICIPAL REVIEW JWC 2014.12.02 F ISSUED FOR FINAL REVIEW JWC 2014.11.20 E ISSUED FOR PERMIT JWC 2014.11.07 D ISSUED FOR 99% REVIEW JWC 2014.10.27 C ISSUED FOR 95% REVIEW JWC 2014.10.14 B ISSUED FOR 90% REVIEW JWC 2014.09.23 A ISSUED FOR REVIEW JWC 2014.09.16 No. Description By yy/mm/dd	PRIME / MECHANICAL / ELECTRICAL CONSULTANTS RAN ROWSELL APPLBY NEWTON ENGINEERING INC. 1 Centennial Street Suite 101 Mount Pearl, NL T7B7S4-9135	CLIENT CW OFFSHORE	PROJECT TITLE C&W OFFSHORE PAINT HALL	DRAWING TITLE SECTIONS/DETAILS	DRAWING No. M5 SHEET No.
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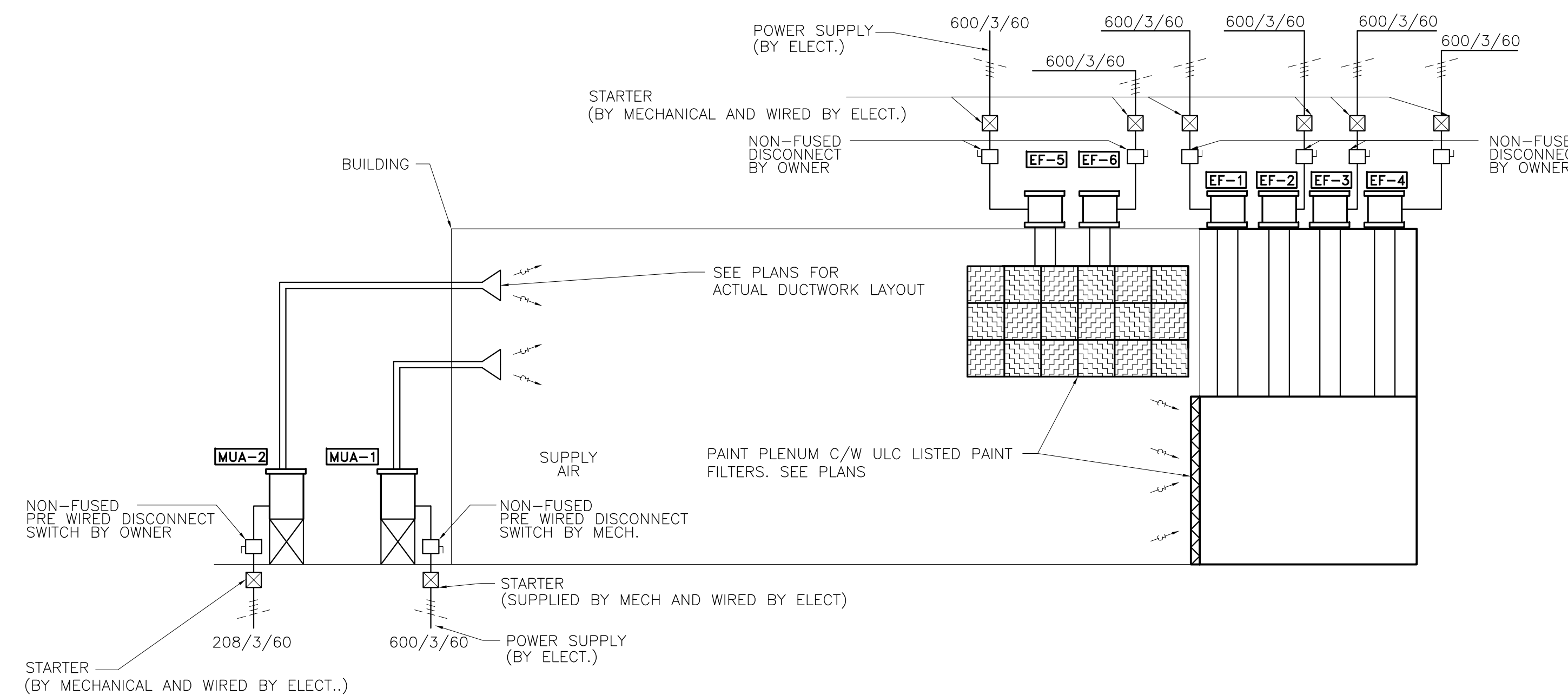
DETAIL - COMPRESSED AIR PIPING OUTLET
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SEQUENCE OF OPERATION

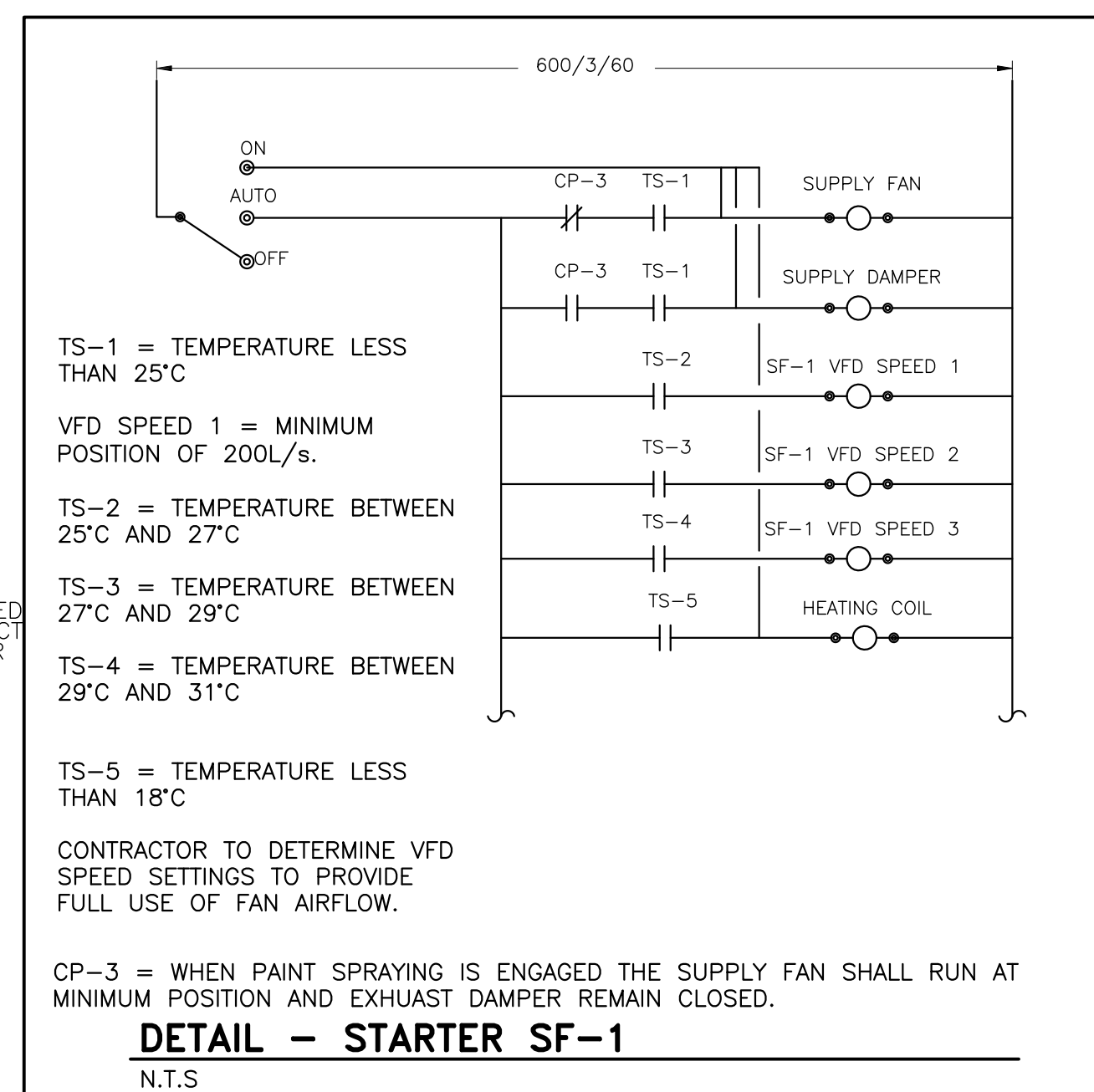
- MAKE UP AIR UNIT HEATING COIL SHALL NOT FUNCTION UNTIL FRESH AIR FLOW HAS BEEN CONFIRMED UTILIZING AN AIR PROVING SWITCH. THERE SHALL BE A HIGH TEMPERATURE CUTOFF SET AT 35°C.
- SUPPLY SYSTEM SHALL NOT FUNCTION UNTIL EXHAUST AIR FLOW HAS BEEN CONFIRMED UTILIZING AN AIR PROVING SWITCH.
- COMPRESSED AIR SUPPLY TO SPRAYING EQUIPMENT SHALL NOT FUNCTION UNTIL EXHAUST AND FRESH AIR FLOW HAVE BEEN CONFIRMED AND ALL DOOR CONTACTS ARE CLOSED.
- THERE SHALL BE PUSH BUTTON PURGE CYCLE. DURING PURGE/CURE CYCLE FRESH AND EXHAUST AIR SYSTEMS SHALL BE ENERGIZED BASED UPON A TIMER AND SPRAYING OPERATIONS SHALL BE DISABLED. AUTOMATICALLY AFTER THE SPRAY CYCLE THE BOOTH SHALL SWITCH TO THE PURGE CYCLE.
- CONTROL PANEL SHALL HAVE ADJUSTABLE TIME DELAY AT CONTROL PANEL FOR PURGE AND CURE CYCLE. THERE SHALL BE A MINIMUM PURGE SETTING OF 10 MINUTES FOR HALF BUILDING PAINT AND 15 MINUTES FOR FULL BUILDING PAINT.
- PAINT BOOTH LIGHTS SHALL BE ENERGIZED FROM THE CONTROL PANEL AND/OR FROM AN EXPLOSION PROOF SWITCH IN THE BOOTH (SWITCH BY ELECTRICAL)
- TEMPERATURE SET POINT OF BOOTH SHALL BE ABLE TO BE ADJUSTED AT CONTROL PANEL.
- CONTROL PANEL SHALL HAVE A TOGGLE SWITCH TO ADJUST SYSTEM FROM FULL BUILDING PAINT TO HALF BUILDING PAINT. DURING FULL BUILDING PAINT ALL EXHAUST FANS AND MAKE UP AIR UNITS SHALL BE IN OPERATION. DURING HALF BUILDING PAINT MODE MUA-2, EF-3, EF-4, EF-5 AND EF-6 SHALL BE LOCKED OUT FROM OPERATION.
- PAINT EXHAUST FILTERS SHALL HAVE EXPLOSION PROOF DIFFERENTIAL PRESSURE SWITCHES WIRED TO CONTROL PANEL. CONTRACTOR TO DETERMINE CLEAN FILTER DIFFERENTIAL PRESSURE DURING COMMISSIONING. DIRTY FILTER SETTING SHALL BE 150PA ABOVE CLEAN FILTER SET POINT AND SHALL SHUTDOWN COMPRESSED AIR SUPPLY. DIRTY FILTER LIGHT ON CONTROL PANEL SHALL ILLUMINATE WHEN DIFFERENTIAL PRESSURE REACHES 100Pa.
- MULTIPLE LIGHTED SIGNS LOCATED OUTSIDE DOORS INDICATED BLASTING/PAINTING IN PROGRESS.
- OUTDOOR INDICATING SIGNS DISPLAYING BLASTING OR PAINTING TO BE CONTROLLED THROUGH CP-3.
- THERE SHALL BE A MANOMETER OR OTHER DEVICE READING THE BOOTH STATIC PRESSURE AND DISPLAYING AT THE CONTROL PANEL. CONTRACTOR TO DETERMINE BOOTH PRESSURE WHEN IN FULL BUILDING MODE AND IN HALF BUILDING MODE AFTER AIR FLOWS HAVE BEEN BALANCED. THERE SHALL BE AN INTERLOCK TO SHUT DOWN COMPRESSED AIR TO PAINT SPRAYERS WHEN BOOTH PRESSURE EXCEEDS ORIGINAL SET POINTS BY 62.5Pa.
- BLASTING AND PAINTING SHALL BE INTERLOCKED SO BOTH OPERATIONS SHALL NOT BE ABLE TO OPERATE SIMULTANEOUSLY. THE EXPLOSION PROOF UNIT HEATERS (TWO AT 30kW) LOCATED IN THE BLASTING/PAINTING AREA SHALL BE INTERLOCKED SO THAT THEY MAY NOT BE OPERATED DURING PAINTING OPERATION.
- ALL DEVICES, EQUIPMENT, WIRING, ETC LOCATED IN PAINT AREA SHALL BE EXPLOSION PROOF.
- ALL DOORS ACCESSING THE PAINTING/BLASTING HALL SHALL HAVE EXPLOSION PROOF LIMIT SWITCH AND ALL PROCESSES SHALL STOP WHEN EITHER DOOR IS OPEN.

GENERAL NOTES

- READ SCHEMATIC IN CONJUNCTION WITH THESE NOTES AND SEQUENCE OF OPERATION.
- CONTRACTOR SHALL COORDINATE ALL REQUIREMENTS WITH OWNER/SUPPLIER.
- MECHANICAL TO SUPPLY AND INSTALL ALL WIRING UNDER 40V AND ELECTRICAL TO SUPPLY AND INSTALL ALL WIRING ABOVE 40V. COORDINATE WITH ELECTRICAL TO ENSURE ALL WIRING IS SUPPLIED AND INSTALLED.
- ALL BOOTH CONTROLS TO BE FIELD WIRED.
- PROVIDE FIELD WIRING BETWEEN MOTOR STARTERS AND REMOTE CONTROL PANEL AS REQUIRED.
- CONTROL PANEL SHALL HAVE INDICATING LIGHTS TO INDICATE EXHAUST FAN ON/OFF, MAKE UP AIR UNIT ON/OFF (TWO BUTTONS ONE FOR EACH UNIT), HEATING COIL ON/OFF (TWO BUTTONS ONE FOR EACH UNIT), SPRAY OPERATION ON/OFF, LIGHTS ON/OFF, CURE CYCLE ON/OFF AND PURGE CYCLE ON/OFF.
- CONTRACTOR TO DEVELOP COMPLETE AND OPERATIONAL SYSTEM BASED UPON DESIGN INTENT.

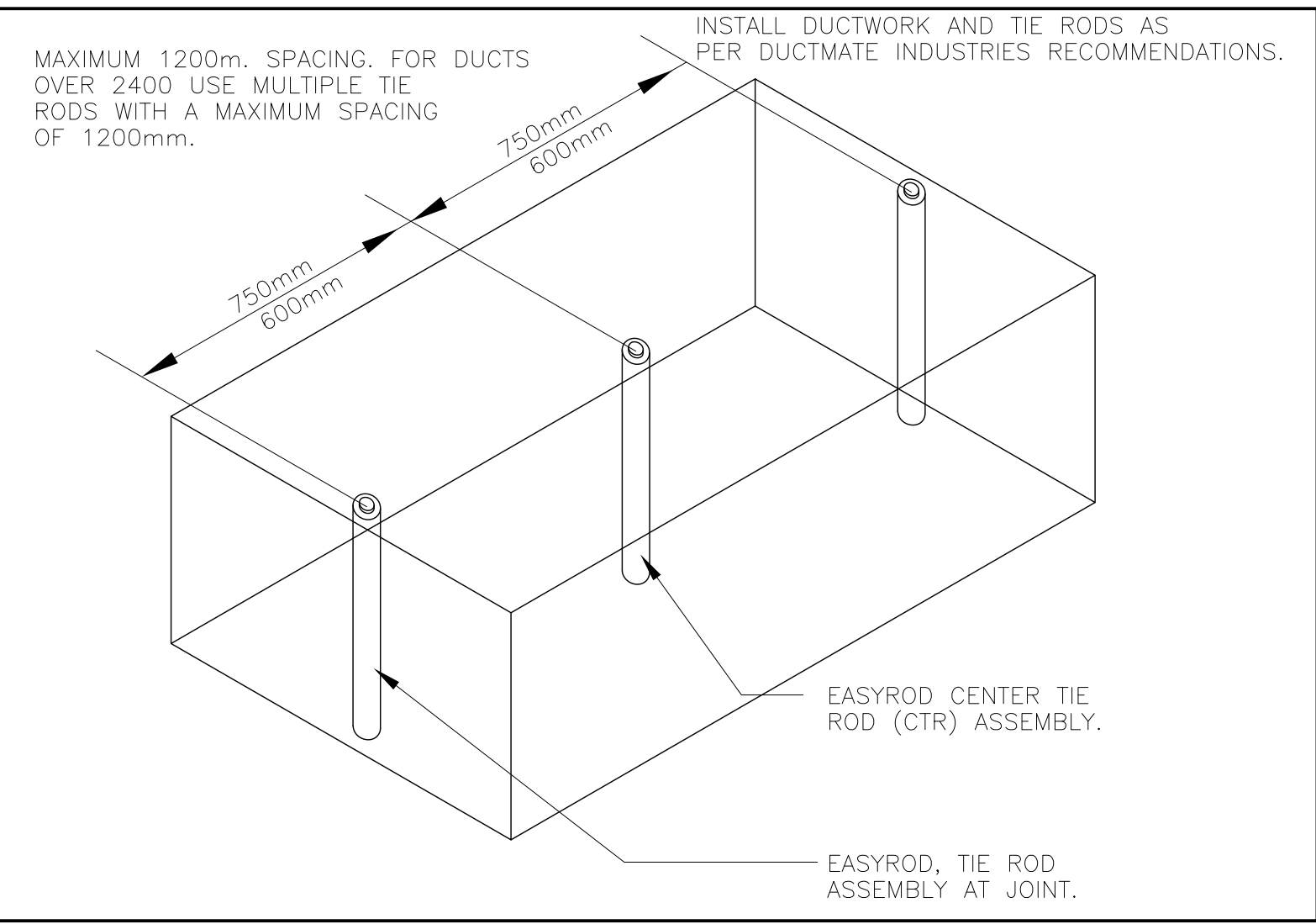


CONTROL DETAIL FOR PAINT BOOTH (CP-3)
SCALE: N.T.S.



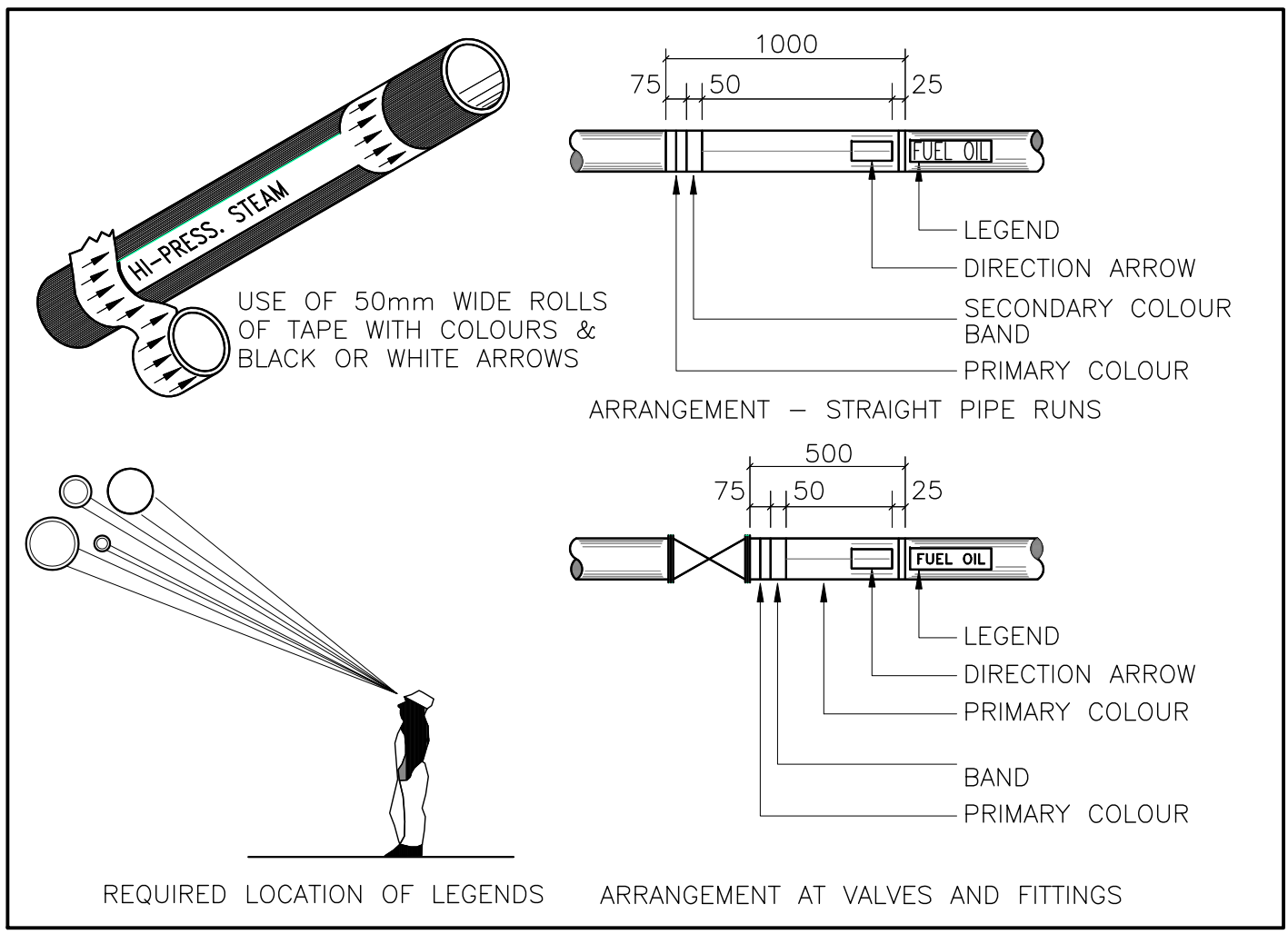
DETAIL - STARTER SF-1
N.T.S.

PERMIT PROVINCE OF NEWFOUNDLAND AND LABRADOR PEG Newfound and Labrador PERMIT HOLDER This Permit Allows PROFESSIONAL ENGINEERING ROWSSELL APPELBY NEWTON ENGINEERING INC. To practice Professional Engineering in Newfoundland and Labrador Permit No. as issued by APBON P0255 which is valid for the year 2014	STAMP 	SUB CONSULTANT	SUB CONSULTANT	DRAWN JWC DESIGNED JWC CHECKED CWR APPROVED CWR SCALE AS SHOWN PROJECT No. 14-044	G ISSUED FOR MUNICIPAL REVIEW JWC 2014.12.02 F ISSUED FOR FINAL REVIEW JWC 2014.11.20 E ISSUED FOR PERMIT JWC 2014.11.07 D ISSUED FOR 99% REVIEW JWC 2014.10.27 C ISSUED FOR 95% REVIEW JWC 2014.10.14 B ISSUED FOR 90% REVIEW JWC 2014.09.23 A ISSUED FOR REVIEW JWC 2014.09.16 No. Description By yy/mm/dd	PRIME / MECHANICAL / ELECTRICAL CONSULTANTS RAN ROWSELL APPELBY NEWTON ENGINEERING INC. 1 Centennial Street Suite 101 Mount Pearl, NL T.709.754.9135	CLIENT CW OFFSHORE	PROJECT TITLE C&W OFFSHORE PAINT HALL	DRAWING TITLE SECTIONS	DRAWING No. M6 SHEET No.
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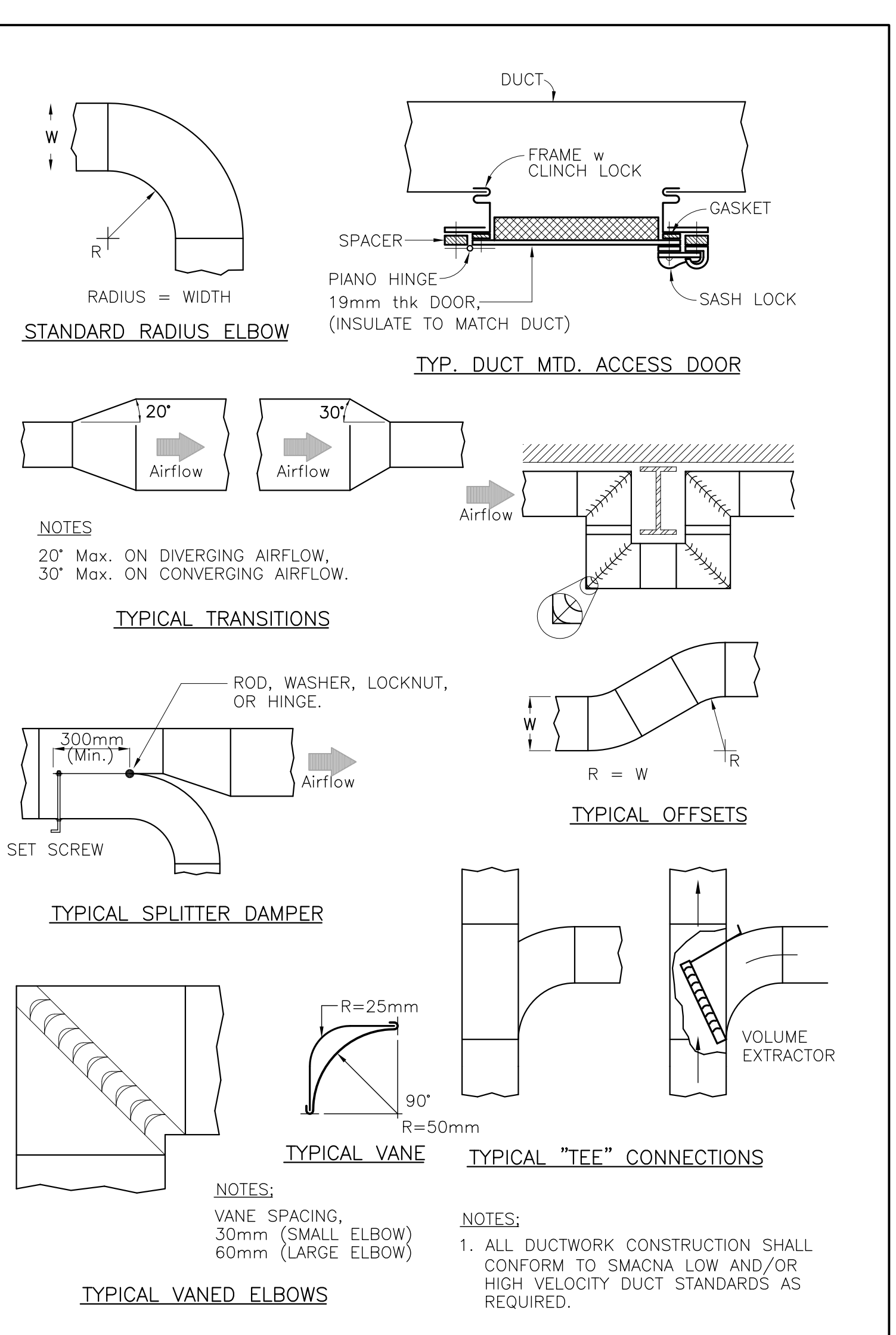
DETAIL – TYP. DUCT REINFORCEMENT

SCALE: N.T.S.



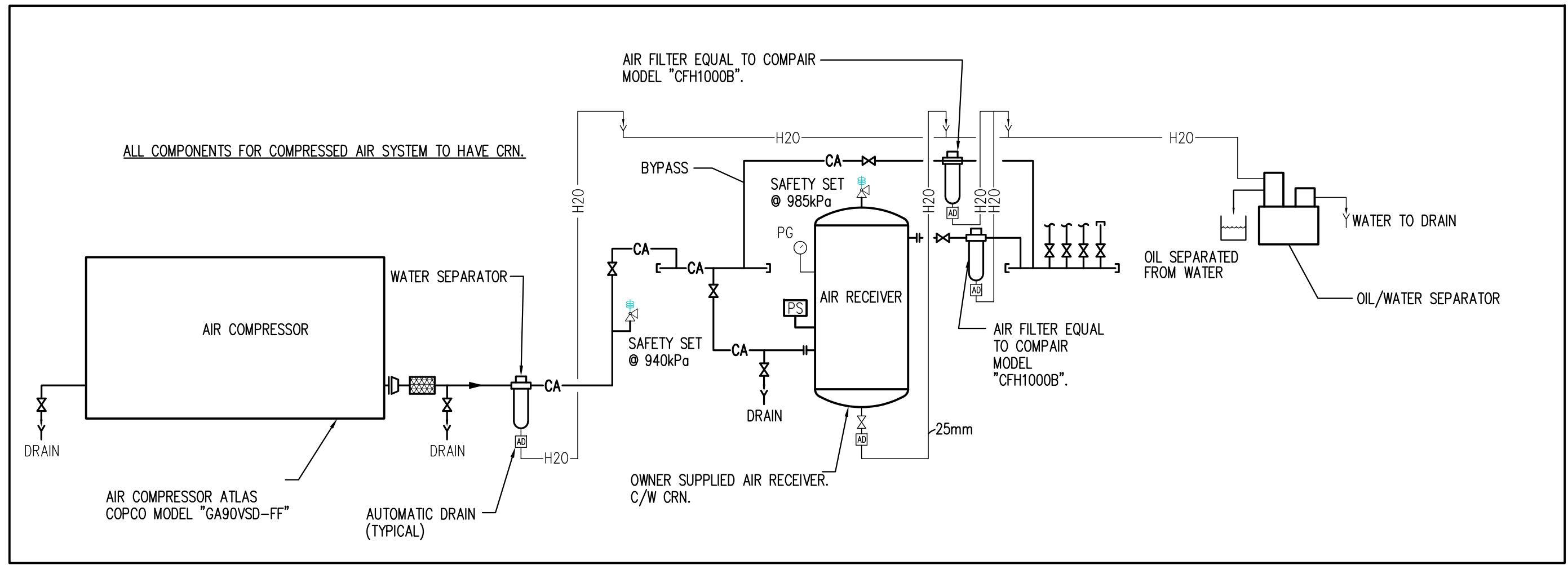
IDENTIFICATION OF PIPING SYSTEMS

SCALE: N.T.S.



TYPICAL DUCT CONSTRUCTION DETAILS

SCALE: N.T.S.

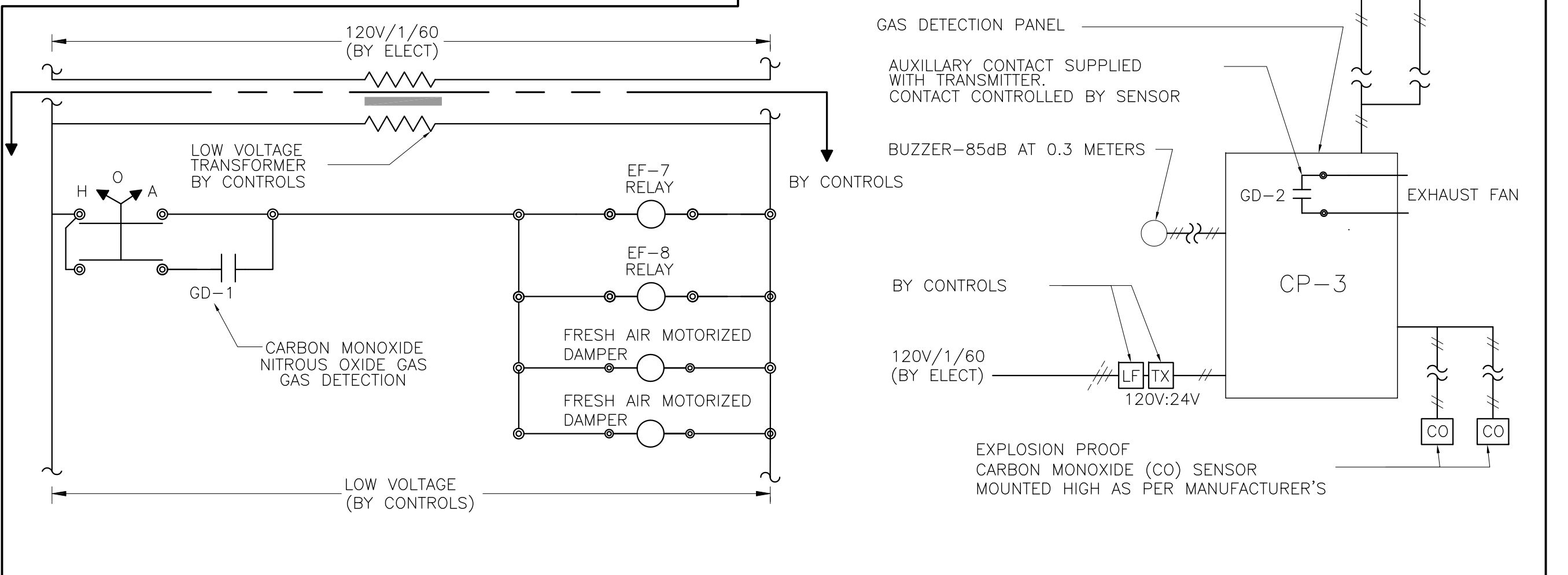


COMPRESSED AIR SCHEMATIC

SCALE: N.T.S.

TAG NO.	APPLICATION	MODEL NO.	MANUF.	AIR FLOW (L/s)	STATIC (Pa.)	MOTOR KW.	ELECTRICAL			FUSED DISCONNECT	FIRESTAT	MOTORIZED DAMPER	MOUNTING	REMARKS
							VOLTAGE	PH.	HZ.					
EF-1	OWNER SUPPLIED PAINT EXHAUST	JTEBC60SE8363	COOLAIR	14165	250	7.46	600	3	60	YES	N	NO	STRUCTURAL STAND	c/w DUCT CONNECTOR, DISCONNECT
EF-2	OWNER SUPPLIED PAINT EXHAUST	JTEBC60SE8363	COOLAIR	14165	250	7.46	600	3	60	YES	N	NO	STRUCTURAL STAND	c/w DUCT CONNECTOR, DISCONNECT
EF-3	OWNER SUPPLIED PAINT EXHAUST	7F841	COOLAIR	4250	125	1.5	600	3	60	YES	N	NO	ROOF	c/w DUCT CONNECTOR, DISCONNECT
EF-4	OWNER SUPPLIED PAINT EXHAUST	7F841	COOLAIR	4250	125	1.5	600	3	60	YES	N	NO	ROOF	c/w DUCT CONNECTOR, DISCONNECT
EF-5	OWNER SUPPLIED PAINT EXHAUST	7F841	COOLAIR	4250	125	1.5	600	3	60	YES	N	NO	STRUCTURAL STAND	c/w DUCT CONNECTOR, DISCONNECT
EF-6	OWNER SUPPLIED PAINT EXHAUST	7F841	COOLAIR	4250	125	1.5	600	3	60	YES	N	NO	STRUCTURAL STAND	c/w DUCT CONNECTOR, DISCONNECT
EF-7	VEHICLE EXHAUST SYSTEM	CWB-161-5	GREENHECK	1040	125	0.373	208	3	60	YES	N	NO	WALL	c/w DUCT CONNECTOR, EXPLOSION PROOF DISCONNECT AND MOTOR, WALL COLAR, GRAVITY DAMPER, NO SPARK CONSTRUCTION, ALUMINUM DAMPER GUARD.
EF-8	VEHICLE EXHAUST SYSTEM	CWB-161-5	GREENHECK	1040	125	0.373	208	3	60	YES	N	NO	WALL	c/w DUCT CONNECTOR, EXPLOSION PROOF DISCONNECT AND MOTOR, WALL COLAR, GRAVITY DAMPER, NO SPARK CONSTRUCTION, ALUMINUM DAMPER GUARD.
EF-9	PAINT MIXING ROOM EXHAUST	CUE-080-VG	GREENHECK	75	187.5	0.125	120	1	60	YES	N	NO	ROOF	c/w DUCT CONNECTOR, PRE WIRED DISCONNECT, GRAVITY DAMPER, NO SPARK CONSTRUCTION, STARTER
SF-1	BACK ROOM SUPPLY	BSQ-120-7	GREENHECK	750	150	0.565	208	3	60	YES	N	NO	WALL	c/w DUCT CONNECTOR, PRE WIRED DISCONNECT, WALL COLAR, GRAVITY DAMPER, NO SPARK CONSTRUCTION, TWO SPEED
SF-2	COMPRESSOR ROOM	BDF-180-50	GREENHECK	4400	125	3.73	600	3	60	YES	N	NO	WALL	c/w DUCT CONNECTOR, PRE WIRED DISCONNECT, WALL COLAR, GRAVITY DAMPER, NO SPARK CONSTRUCTION, STARTER

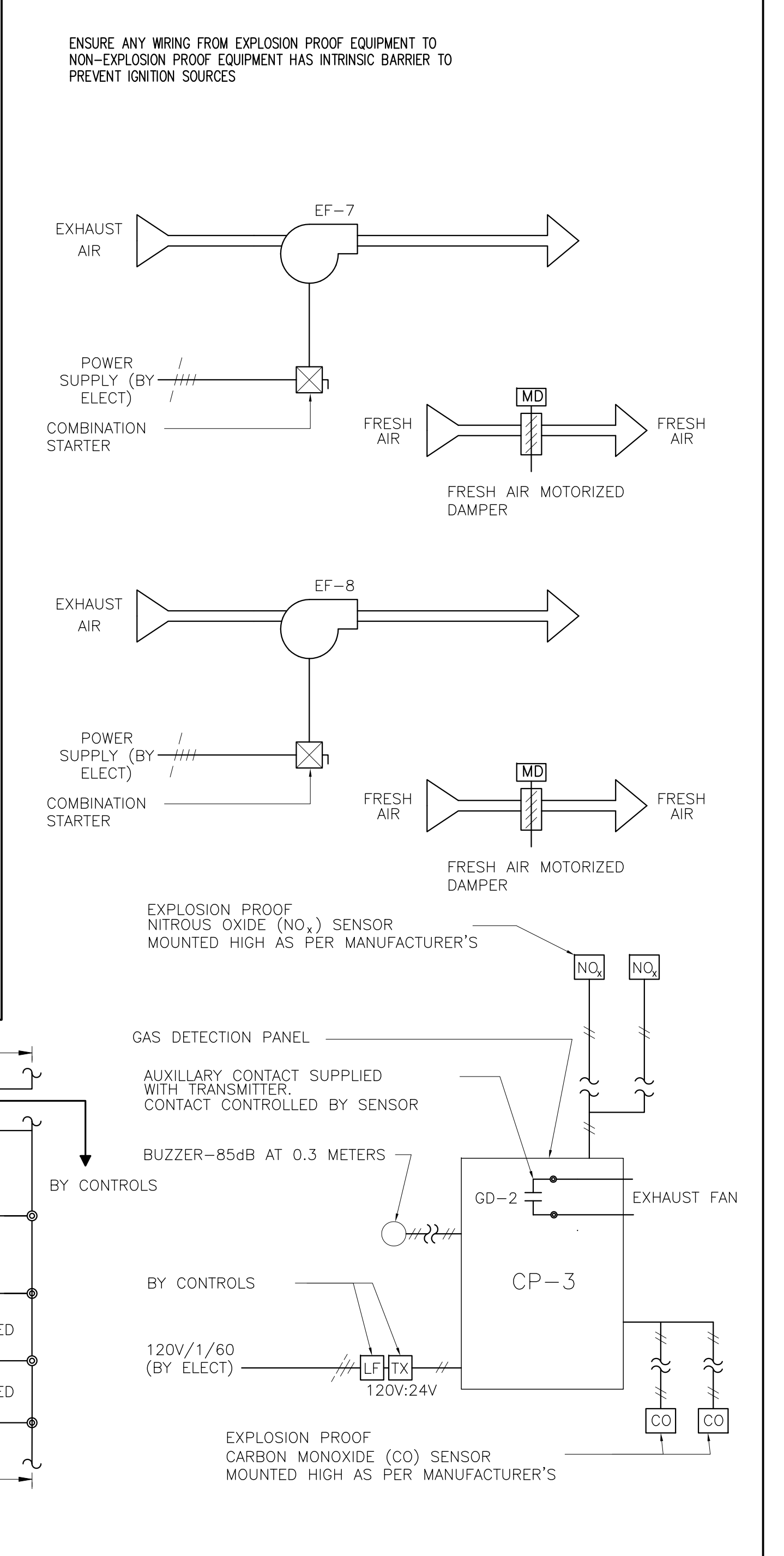
FAN SCHEDULE



TYPICAL CONTROL DETAIL FOR EMERGENCY EXHAUST SYSTEMS (EF-7 AND 8)

SCALE: N.T.S.

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				No. Description By yy/mm/dd						



MECHANICAL GENERAL SPECIFICATION

GENERAL

- THIS CONTRACTOR SHALL BE RESPONSIBLE TO SUPPLY AND INSTALL ALL MECHANICAL SYSTEMS AS DETAILED IN ACCORDANCE WITH THE LATEST EDITIONS OF THE NATIONAL BUILDING CODE, NATIONAL PLUMBING CODE, ASHRAE, SMACNA, NFPA, NFC, THE AUTHORITY HAVING JURISDICTION.
- THIS CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING BID TO DETERMINE EXISTING CONDITIONS.
- IT IS THE INTENT OF THESE DRAWINGS TO PROVIDE FOR A COMPLETE AND FULLY OPERATING SYSTEM IN ACCORDANCE WITH ALL APPLICABLE CODES. NOT WITHSTANDING THAT THE DRAWINGS MAY NOT COVER EACH AND EVERY ITEM REQUIRED FOR THE COMPLETE MECHANICAL INSTALLATION, THE MECHANICAL CONTRACTOR SHALL SUPPLY ALL LABOUR, MATERIALS, TOOLS, EQUIPMENT AND TRANSPORTATION NECESSARY FOR THE COMPLETE INSTALLATIONS OF THE MECHANICAL SYSTEM ON SITE.
- THE CONTRACTOR IS TO ENSURE THAT THE DELIVERY TIME OF ALL MECHANICAL EQUIPMENT DOES NOT CAUSE A DELAY IN THE SCHEDULING OF THIS PROJECT. NOTIFY THE ENGINEER IF ANY PROBLEMS ARISE.
- EMPLOY ONLY TRADESPEOPLE WITH PROPER LICENSES FOR THE WORK.
- DRAWINGS ARE DIAGRAMMATIC AND APPROXIMATE TO SCALE. THE CONTRACT DOCUMENTS ESTABLISH SCOPE, MATERIALS AND QUALITY AND ARE NOT A COMPREHENSIVE BILL OF MATERIALS, OR DETAILED INSTALLATIONS INSTRUCTIONS.
- CO-OPERATE WITH WITH OTHER SECTIONS AND TRADE DISCIPLINES AS REQUIRED FOR THE COMPLETION OF THE TOTAL WORK. REPORT ANY DISCREPANCIES TO ENGINEER.
- ALL FIRE ASSEMBLIES MUST BE MAINTAINED.
- ALL EQUIPMENT INCLUDING A/C UNITS, FANS, ETC. SHALL BE ON THE BASIS OF AND EQUAL TO SPECIFIED ITEMS.
- CONFORM TO MANUFACTURERS INSTALLATION INSTRUCTIONS, DETAILS, AND PROCEDURES FOR EQUIPMENT INSTALLATION AND START-UP. SUPPLY AND INSTALL ALL MANUFACTURER'S RECOMMENDED ACCESSORIES FOR EACH UNIT INCLUDING VALVES, FITTING, GAUGES, FILTERS, ETC.
- SUBMIT THREE (3) SHOP DRAWINGS OF ALL EQUIPMENT, VALVES, PIPING, INSULATION, ETC., FOR APPROVAL. EQUIPMENT IS NOT TO BE PURCHASED PRIOR TO SHOP DRAWING APPROVAL.
- OBTAIN AND PAY FOR ALL PERMITS AND FEES REQUIRED TO CARRY OUT AND COMPLETE THE WORK.
- ALL WORK SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR AFTER DATE OF ACCEPTANCE BY OWNER.
- PROVIDE THREE (3) COPIES OF AS-BUILT DRAWINGS AND MAINTENANCE MANUALS FOR APPROVAL BY ENGINEER.
- ALL EQUIPMENT, DEVICES, ACCESSORIES, ETC WITHIN BUILDING BLASTING/PAINTING AREA AND/OR 1000mm FROM ANY OPENING IN THIS AREA SHALL BE EXPLOSION PROOF.
- PAINT SPRAY AREA MUST RECEIVE CSA APPROVAL BEFORE BEGINNING OPERATION.
- PAINT SPRAY AREA, DUCTING, CONTROLS AND ALL OTHER SYSTEMS FORMING PART OF THE PAINT BOOTH SHALL BE CONSTRUCTED IN ACCORDANCE WITH NFPA 33 AND 91.
- PAINT SPRAY AREA AND BLASTING AREA HAVE AN EXPLOSION PROOF CLASSIFICATION. ANY EQUIPMENT WITHIN THIS AREA MUST BE EXPLOSION PROOF AND ANY EQUIPMENT WITHIN A 1.0M RADIUS OF ANY OPENING INCLUDING DOORS SHALL BE EXPLOSION PROOF.
- OWNER SHALL CLEAN THE SPRAY AND BLASTING AREAS REGULARLY. THE AREAS SHALL BE KEPT FREE OF ANY DEPOSITS AT ANY TIME. EACH TIME EITHER SYSTEM IS USED THE AREA SHALL BE CLEANED AND INSPECTED.

HVAC

- THIS CONTRACTOR TO PROVIDE ALL NEW DUCTWORK, GRILLES, DIFFUSERS, ETC. AS INDICATED IN THE DRAWINGS, AND AS REQUIRED TO COMPLETE THE NEW SYSTEM.
- ALL DUCTWORK UNLESS NOTED OTHERWISE, SHALL BE RUN USING PRIME QUALITY GALVANIZED SHEET METAL OF THE FOLLOWING THICKNESS: UP TO 300MM: 0.45MM THICK, 325MM TO 450MM; 0.61MM, 475MM TO 1075MM: 0.76MM. ALL NEW DUCT SHALL BE CONSTRUCTED AND INSTALLED AS PER LATEST ASHRAE AND SMACNA STANDARDS.
- ALL DUCT JOINTS TO BE SEALED.
- PAINT MAKEUP AIR SUPPLY SHALL BE DUCT MATE CONNECTIONS OR ASHRAE APPROVED SYSTEM FOR STATIC PRESSURE OF SYSTEM.
- DUST COLLECTION SYSTEM TO BE INSTALLED AS PER MANUFACTURERS RECOMMENDATIONS.
- PAINT BOOTH SYSTEM TO BE INSTALLED AS PER NFPA 33. PAINT EXHAUST DUCTWORK TO BE ALL WELDED CONSTRUCTION, 16ga, 316 STAINLESS STEEL. PAINT MAKEUP AIR SUPPLY SHALL BE DUCT MATE CONNECTIONS OR ASHRAE APPROVED SYSTEM FOR STATIC PRESSURE OF SYSTEM.
- ALL EQUIPMENT LOCATED IN THE PAINT AREA SHALL BE EXPLOSION PROOF

IDENTIFICATION

- ALL PIPING, DUCT, AND OTHER MECHANICAL EQUIPMENT AND SERVICES ARE TO BE PERMANENTLY LABELED WITH TAGS REFERENCED TO THE DRAWINGS AND DIRECTION OF FLOW.
- ALL CONTROL DEVICES ARE TO BE LABELED WITH THE IDENTIFICATION OF THE DEVICE THAT THEY CONTROL AND THE CONTROL FUNCTION.

CUTTING AND PATCHING

- UNLESS OTHERWISE STIPULATED, THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH GENERAL CONTRACTOR THE CUTTING, PATCHING, AND MAKE GOOD ALL OPENINGS REQUIRED FOR THE MECHANICAL SERVICES. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR THE STRUCTURAL SUPPORT REQUIREMENTS FOR ALL LOUVRE AND FAN OPENINGS.
- COORDINATE ALL CUTTING AND BUILDING MODIFICATIONS WITH STRUCTURAL ENGINEER PRIOR TO BEGINNING WORK.

INSERTS AND SLEEVES

- PIPE SLEEVES PASSING THROUGH WALLS, FLOORS, CEILINGS, BEAMS TO BE SCHEDULE 40 BLACK STEEL PACKED FOR WATER TIGHTNESS AND SOUND TRANSMISSION AND WITH FIREPROOF, FLEXIBLE SEALANT. INSTALL POLISHED CHROME ESCUTCHEON PLATES ON ALL PIPES WHERE PENETRATIONS ARE VISIBLE TO STAFF OR PUBLIC.

HANGERS AND SUPPORTS

- SUPPORT WITH CLEVIS TYPES HANGERS AS PER APPLICABLE CODES.
- ALL SUPPORTS TO BE FROM BUILDING STRUCTURE AND NOT FROM OTHER EQUIPMENT.

CONTROLS

- ALL WORK OF THIS CONTRACTOR SHALL BE COORDINATED AND PROVIDED BY THE SINGLE CONTROLS CONTRACTOR.
- THE WORK OF THIS CONTRACTOR SHALL BE SCHEDULED, COORDINATED, AND INTERFACED WITH THE ASSOCIATED WORK OF OTHER TRADES.
- THE WORK OF THIS CONTRACTOR SHALL BE AS REQUIRED BY THE SPECIFICATIONS AND DRAWINGS.
- IF THE CONTROLS CONTRACTOR BELIEVES THERE ARE CONFLICTS OR MISSING INFORMATION IN THE PROJECT DOCUMENTS, THE CONTRACTOR SHALL PROMPTLY REQUEST CLARIFICATION AND INSTRUCTION FROM THE ENGINEER.
- THE CONTROLWORK SHALL CONSIST OF THE PROVISION OF ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, SOFTWARE, SOFTWARE LICENSES, SOFTWARE CONFIGURATIONS AND DATABASE ENTRIES, INTERFACES, WIRING, TUBING, INSTALLATION, LABELING, ENGINEERING, CALIBRATION, DOCUMENTATION, SAMPLES, SUBMITTALS, TESTING, COMMISSIONING, TRAINING SERVICES, PERMITS AND LICENSES, TRANSPORTATION, SHIPPING, HANDLING, ADMINISTRATION, SUPERVISION, MANAGEMENT, INSURANCE, TEMPORARY PROTECTION, CLEANING, CUTTING AND PATCHING, WARRANTIES, SERVICES, AND ITEMS, EVEN THOUGH THESE MAY NOT BE SPECIFICALLY MENTIONED IN THESE DOCUMENTS WHICH ARE REQUIRED FOR THE COMPLETE, FULLY FUNCTIONAL AND COMMISSIONED CONTROLS.
- ALL WIRING FOR 50 VOLTS AND BELOW ARE THE RESPONSIBILITY OF THIS CONTRACTOR.
- ALL WIRING TO BE RUN IN EMT CONDUIT.
- CONTROLS CONTRACTOR SHALL COORDINATE WITH OWNER.
- ALL CONTROLS LOCATED IN THE PAINT AREA OR MIXING KITCHEN SHALL BE EXPLOSION PROOF

GAS PIPING SPECIFICATION

GENERAL

- INSTALL PIPING IN ACCORDANCE WITH THE LATEST EDITION OF THE CANADIAN BUILDING CODE, GOVERNMENT SERVICE REGULATIONS, THE PUBLIC SAFETY ACT AND TO THE BOILER & PRESSURE VESSEL AND COMPRESSED GAS REGULATIONS.
- ALL PRODUCTS TO HAVE CANADIAN REGISTRATION NUMBERS (CRN)
- TEST PRESSURE: 1-1/2 TIMES MAXIMUM SYSTEM OPERATING PRESSURE OR 860 KPA WHICHEVER IS GREATER.

PRODUCTS

- ONLY JOINT COMPOUNDS SPECIFICALLY APPROVED FOR EACH GAS SHALL BE USED IN MAKING JOINTS. PIPING SHALL BE OF SIZES AS NOTED ON THE PLANS AND ALL LOW POINTS SHALL BE FITTED WITH DRAINS. GENERALLY, PIPING SHALL BE GRADED DOWN TO THE LOW POINTS.
- ALL SHUT-OFF VALVES TO BE THE BALL TYPE APPROVED FOR EACH SERVICE. GENERALLY, VALVES SHALL BE WITH TEFLON SEATS, SCREWED CONNECTIONS, 3 PIECE TYPE, AND RATED FOR NOT LESS THAN 1500 KPA. ALL VALVES SHALL HAVE A CANADIAN REGISTRATION NUMBER & SHALL BE REGISTERED FOR USE IN THE PROVINCE OF NEWFOUNDLAND & LABRADOR. VALVES SHALL BE INSTALLED ON ALL MAIN BRANCHES AND BRANCH LINES OR WHERE SHOWN ON THE PLANS.
- ALL COMPRESSED AIR HOSE AND FITTING TO BE COMPLETE WITH CANADIAN REGISTRATION NUMBERS (CRN).

COMPRESSED AIR PIPING SYSTEM

- REFERENCE – PROVINCE OF NEWFOUNDLAND AND LABRADOR BOILER, PRESSURE VESSEL AND COMPRESSED GAS REGULATIONS.
- ASME B 31.3 PROCESS PIPING
- STEEL PIPE: TO ASTM A53/A53M, GRADE B SCHEDULE 40.
- PIPE JOINTS: NPS 2 AND UNDER: SCREWED FITTINGS WITH PTFE TAPE OR LEAD-FREE PIPE DOPE.
- FITTINGS: SCREWED FITTINGS: MALLEABLE IRON, TO ASME B16.3, CLASS 300.
- VALVES CONNECTIONS: NPS2 AND SMALLER: SCREWED ENDS.
- MAX SYSTEM PRESSURE: 895kPa

INSTALLATION

- THE ENTIRE GAS SYSTEM SHALL BE INSTALLED AND TESTED IN ACCORDANCE WITH GOVERNMENT SERVICES REGULATIONS. PROVIDE AND PAY FOR ALL ASSOCIATED PERMITS AND FEES REQUIRED.
- THE INSTALLATION OF THE GAS SYSTEM SHALL BE DONE BY QUALIFIED PERSONNEL HOLDING THE PROPER CERTIFICATES AS REQUIRED BY GOVERNMENT SERVICES.
- PIPING AND FITTINGS SHALL BE CLEAR FROM CUTTING OR THREAD BURRS, SCALE AND DEFECTS.
- REAM ALL PIPE ENDS.
- SUPPORT PIPING WITH INDIVIDUAL SUPPORT OF SUFFICIENT STRENGTH AND QUALITY MAXIMUM.
- THIS CONTRACTOR TO PROVIDE PIPING DROPS TO STATIONS ONLY AND INCLUDE SHUT OFF VALVES WITH SCREWED FITTINGS. ALL DEVICES AND HOOK UP OF EQUIPMENT BY OWNER.
- ALL PIPING TO BE DEGREASED AND DRIED AFTER INSTALLATION.
- ALL PIPING TO INCLUDE FLOW CODING AT ALL DROPS, ALL CHANGE IN DIRECTION AND AT A MAXIMUM OF 6 METER SPACING.

SEQUENCES OF OPERATION

FULL BUILDING PAINT MODE SEQUENCE

- SYSTEM SHALL ONLY START UP IF FILTER DIFFERENTIAL PRESSURE, BOOTH PRESSURE, DOOR CONTACTS, MOTORIZED SMOKE AND FIRE DAMPER CLOSED, AND ALL OTHER SAFETIES ARE WITHIN SAFE PARAMETERS. SOLENOID VALVE CONTROLLING COMPRESSED AIR TO SHOP SHALL CLOSE WHEN SYSTEM IS STARTED. IF ANY SAFETIES ARE OUTSIDE OF SAFE PARAMETERS ALARM SHALL DISPLAY AT PANEL TO IDENTIFY UNSAFE CONDITION.
- WHEN FULL PAINT MODE IS ENABLED WITH SAFE CONDITIONS THE FRESH AIR DAMPERS ON MAKE UP AIR UNITS (MUA-1,2) SHALL OPEN. END SWITCH REQUIRED TO CONFIRM DAMPER IS OPEN.
- AFTER FULL PAINT MODE IS ENABLED ALL PAINT EXHAUST FANS (EF-1,2,3,4,5,6) SHALL BE ENABLED. AIRFLOW: 46525L/s.
- SUPPLY FAN (SF-1) SHALL BE ENABLED AT MINIMUM POSITION TO PROVIDE PRESSURIZATION.
- ONCE EXHAUST AIR FLOW HAS BEEN CONFIRMED ALL MAKEUP AIR UNITS TO BE ENABLED (MUA-1,2). AIRFLOW: 42965L/s. WHEN ALL UNITS ARE CONFIRMED WORKING SOLENOID VALVE MAY NOW OPEN.
- AT CONTROL PANEL THERE SHALL BE SUPPLY AIR TEMPERATURE ADJUSTMENT.
- ONCE PAINTING IS COMPLETE AND OPERATOR SHUTS DOWN SYSTEM SOLENOID VALVE SHALL CLOSE AND SYSTEM SHALL CONTINUE IN PURGE CYCLE FOR A MINIMUM OF FIVE MINUTES AT FULL SYSTEM FLOW. PURGE SHALL BE ADJUSTABLE TO HIGHER PURGE TIMES.
- ONCE PURGE CYCLE HAS ENDED OPERATOR HAS THE OPTION OF SELECTING CURE CYCLE. DURING CURE CYCLE MUA-2 SHALL OPERATE AT FULL FLOW (16525L/s) AND FANS EF-3,4,5,6 SHALL OPERATE AT FULL FLOW (18200L/s). THERE SHALL BE USER DEFINED TIME SET POINT TO DETERMINE HOW LONG THE CURE CYCLE IS OPERATION.
- WHEN PAINT, PURGE, AND/OR CURE CYCLE IS ENABLED ALL BLASTING EQUIPMENT SHALL BE LOCKED OUT SO THEY CANNOT FUNCTION. THERE SHALL BE NO SITUATION WHERE BOTH SYSTEMS OPERATE SIMULTANEOUSLY AND OWNER SHALL CONTACT THE CONTROLS CONTRACTOR IF SUCH A SITUATION EVER EXISTS.

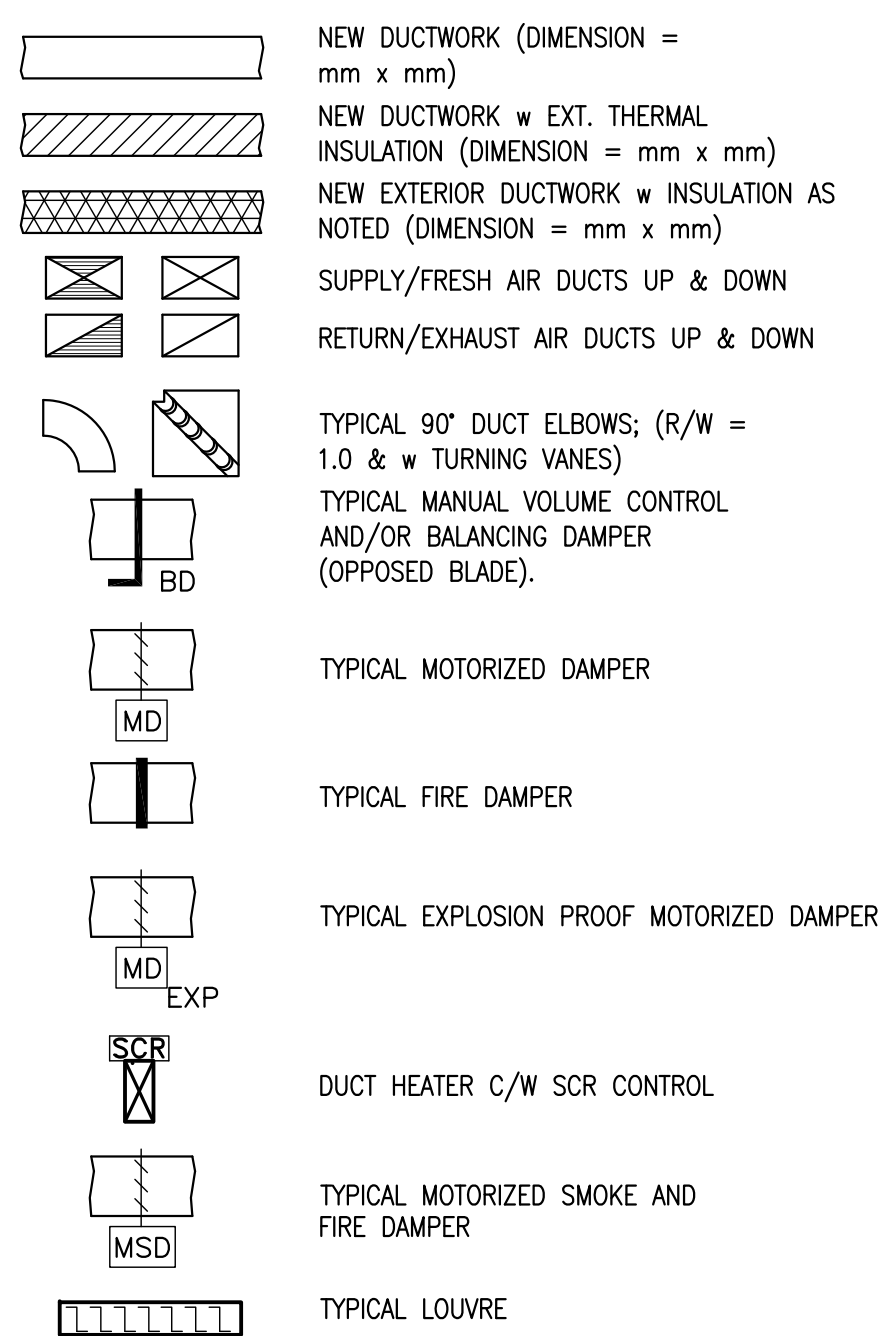
HALF BUILDING PAINT MODE SEQUENCE

- SYSTEM SHALL ONLY START UP IF FILTER DIFFERENTIAL PRESSURE, BOOTH PRESSURE, DOOR CONTACTS, MOTORIZED SMOKE AND FIRE DAMPER CLOSED, AND ALL OTHER SAFETIES ARE WITHIN SAFE PARAMETERS. SOLENOID VALVE CONTROLLING COMPRESSED AIR TO SHOP SHALL CLOSE WHEN SYSTEM IS STARTED. IF ANY SAFETIES ARE OUTSIDE OF SAFE PARAMETERS ALARM SHALL DISPLAY AT PANEL TO IDENTIFY UNSAFE CONDITION.
- WHEN HALF PAINT MODE IS ENABLED WITH SAFE CONDITIONS THE FRESH AIR DAMPERS ON MAKE UP AIR UNITS (MUA-1) SHALL OPEN. END SWITCH REQUIRED TO CONFIRM DAMPER IS OPEN.
- AFTER HALF PAINT MODE IS ENABLED ALL PAINT EXHAUST FANS (EF-1,2) SHALL BE ENABLED. AIRFLOW: 28325L/s.
- ONCE EXHAUST AIR FLOW HAS BEEN CONFIRMED ALL MAKEUP AIR UNITS TO BE ENABLED (MUA-1). AIRFLOW: 26440L/s. WHEN ALL UNITS ARE CONFIRMED WORKING SOLENOID VALVE SHALL OPEN.
- SUPPLY FAN (SF-1) SHALL BE ENABLED AT MINIMUM POSITION TO PROVIDE PRESSURIZATION.
- AT CONTROL PANEL THERE SHALL BE SUPPLY AIR TEMPERATURE ADJUSTMENT.
- ONCE PAINTING IS COMPLETE AND OPERATOR SHUTS DOWN SYSTEM SOLENOID VALVE SHALL CLOSE AND SYSTEM SHALL CONTINUE IN PURGE CYCLE FOR A MINIMUM OF FIVE MINUTES AT FULL SYSTEM FLOW. PURGE SHALL BE ADJUSTABLE TO HIGHER PURGE TIMES.
- ONCE PURGE CYCLE HAS ENDED OPERATOR HAS THE OPTION OF SELECTING CURE CYCLE. DURING CURE CYCLE MUA-2 SHALL OPERATE AT FULL FLOW OF 16525L/s AND FANS EF-3,4,5,6 SHALL OPERATE AT FULL FLOW (18200L/s). THERE SHALL BE USER DEFINED TIME SET POINT TO DETERMINE HOW LONG THE CURE CYCLE IS OPERATION.
- WHEN PAINT, PURGE, AND/OR CURE CYCLE IS ENABLED ALL BLASTING EQUIPMENT SHALL BE LOCKED OUT SO THEY CANNOT FUNCTION. THERE SHALL BE NO SITUATION WHERE BOTH SYSTEMS OPERATE SIMULTANEOUSLY AND OWNER SHALL CONTACT THE CONTROLS CONTRACTOR IF SUCH A SITUATION EVER EXISTS.

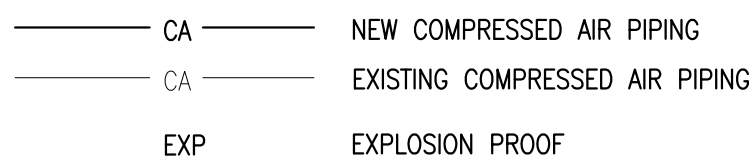
BLASTING MODE SEQUENCE

- SYSTEM SHALL ONLY START UP IF DOOR CONTACTS AND ALL OTHER SAFETIES ARE WITHIN SAFE PARAMETERS. SOLENOID VALVE CONTROLLING COMPRESSED AIR TO SHOP SHALL CLOSE WHEN SYSTEM IS STARTED. IF ANY SAFETIES ARE OUTSIDE OF SAFE PARAMETERS ALARM SHALL DISPLAY AT PANEL TO IDENTIFY UNSAFE CONDITION.
- CARTRIDGE DUST COLLECTORS SHALL BE ENABLED FROM CONTROL PANEL.
- SOLENOID VALVE TO SUPPLY SHOP AIR SHALL OPEN.
- OPENING THE EXTERIOR DOORS SHALL SHUT DOWN THE SYSTEM.

VENTILATION LEGEND



PIPING LEGEND



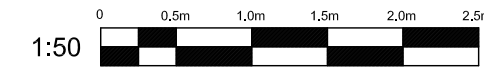
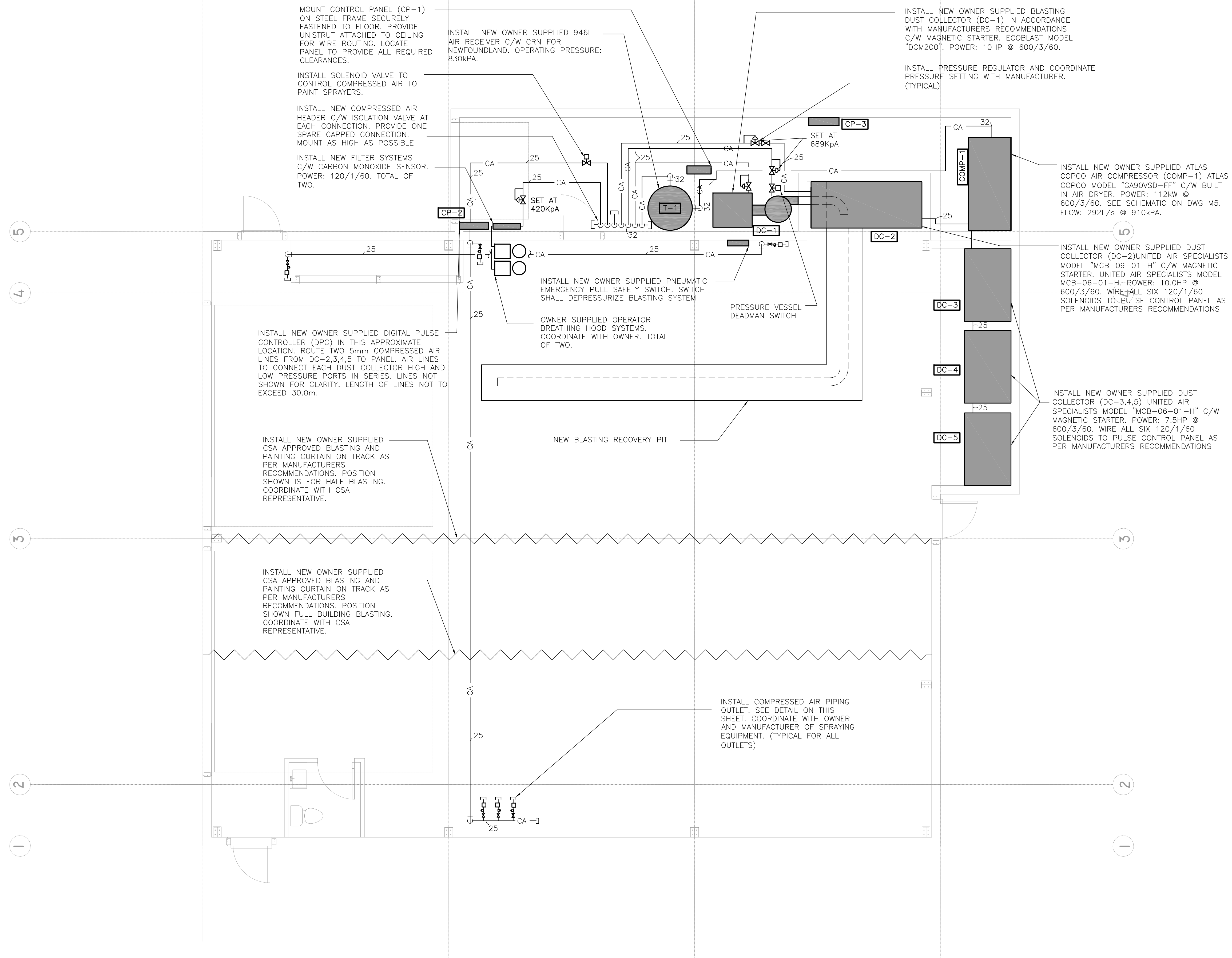
PRESSURIZATION SUPPLY FAN (SF-1) SEQUENCE

- WHEN PAINTING SEQUENCE OF OPERATION IS STARTED MOTORIZED DAMPER TO FAN SHALL OPEN
- FAN SHALL RUN AT MINIMUM POSITION OF 200L/s.
- IF TEMPERATURE INCREASES ABOVE SET POINT, VFD TO INCREASE SPEED IN RESPONSE.

COMPRESSOR COOLING SUPPLY FAN (SF-2) SEQUENCE

- WHEN COMPRESSOR IS ENABLED FIRST MOTORIZED DAMPER TO OPEN.
- IF TEMPERATURE IN CONTROL AREA INCREASES ABOVE FIRST TEMPERATURE SET POINT, SECOND MOTORIZED DAMPER TO OPEN.
- WHEN TEMPERATURE IN CONTROL AREA INCREASES ABOVE SECOND SETPOINT AND IT IS BELOW 18°C IN THE BLASTING AREA AND PAINTING/CURING/PURGING IS NOT IN OPERATION; MOTORIZED SMOKE AND FIRE DAMPER SHALL OPEN.
- IF TEMPERATURE IS ABOVE 18°C IN BLASTING AREA OR PAINTING/CURING/PURGING IS IN OPERATION SMOKE AND FIRE DAMPER SHALL REMAIN CLOSED BUT MOTORIZED DAMPER TO GOOSENECK ON ROOF SHALL OPEN.
- SF-2 SHALL THEN BE ENABLED.

PERMIT PROVINCE OF NEWFOUNDLAND AND LABRADOR PERMIT HOLDER This Permit Allows PROFESSIONAL ENGINEERING ROWSELL APPLBY NEWTON ENGINEERING INC. To practice Professional Engineering in Newfoundland and Labrador: Permit No. as issued by APRON P0255 which is valid for the year 2014	STAMP 	SUB CONSULTANT	SUB CONSULTANT	DRAWN JWC DESIGNED JWC CHECKED CWR APPROVED CWR SCALE AS SHOWN PROJECT No. 14-044	<table border="1"> <tr><td>G</td><td>ISSUED FOR MUNICIPAL REVIEW</td><td>JWC</td><td>2014.12.02</td></tr> <tr><td>F</td><td>ISSUED FOR FINAL REVIEW</td><td>JWC</td><td>2014.11.20</td></tr> <tr><td>E</td><td>ISSUED FOR PERMIT</td><td>JWC</td><td>2014.11.07</td></tr> <tr><td>D</td><td>ISSUED FOR 99% REVIEW</td><td>JWC</td><td>2014.10.27</td></tr> <tr><td>C</td><td>ISSUED FOR 95% REVIEW</td><td>JWC</td><td>2014.10.14</td></tr> <tr><td>B</td><td>ISSUED FOR 90% REVIEW</td><td>JWC</td><td>2014.09.23</td></tr> <tr><td>A</td><td>ISSUED FOR REVIEW</td><td>JWC</td><td>2014.09.16</td></tr> <tr><td>No.</td><td>Description</td><td>By</td><td>yy/mm/dd</td></tr> </table>	G	ISSUED FOR MUNICIPAL REVIEW	JWC	2014.12.02	F	ISSUED FOR FINAL REVIEW	JWC	2014.11.20	E	ISSUED FOR PERMIT	JWC	2014.11.07	D	ISSUED FOR 99% REVIEW	JWC	2014.10.27	C	ISSUED FOR 95% REVIEW	JWC	2014.10.14	B	ISSUED FOR 90% REVIEW	JWC	2014.09.23	A	ISSUED FOR REVIEW	JWC	2014.09.16	No.	Description	By	yy/mm/dd	PRIME / MECHANICAL / ELECTRICAL CONSULTANTS ROWSELL APPLBY NEWTON ENGINEERING INC 1 Centennial Street Suite 101 Mount Pearl, NL T.709-754-9135	CLIENT CW OFFSHORE	PROJECT TITLE C&W OFFSHORE PAINT HALL	DRAWING TITLE SPECIFICATION AND LEGEND	DRAWING No. M1 SHEET No.
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					F ISSUED FOR FINAL REVIEW JWC 2014.11.20 E ISSUED FOR PERMIT JWC 2014.11.07 D ISSUED FOR 99% REVIEW JWC 2014.10.27 C ISSUED FOR 95% REVIEW JWC 2014.10.14 B ISSUED FOR 90% REVIEW JWC 2014.09.23 A ISSUED FOR REVIEW JWC 2014.09.16					

PROPANE SYSTEM
ENGINEERING DRAWING

PROPANE SYSTEM PERMIT



Pressure System Permit


Permit N^o 77139

Date of Issue:
Apr 29, 2014

Anticipated Completion Date:
Jun 30, 2014

Applicant		Location	
Superior Propane, A Division Of Superior Plus L.P. 287 Kenmount Road St. John's NL A1B 3M9		C&W Offshore 16 Lintrose Place Mount Pearl	
Issued by		Description	
David Tucker Engineering and Inspection Services Division P.O. Box 8700 St. John's A1B 4J6		Install 2x2000gal. tanks, 20ft. sch. 80 blackiron pipe & fittings, 100ft of 1½in sch 40 pipe & fittings, 75ft of ¾in pipe & fittings, 30ft of 1½in perfection tubing u/g, heavy end traps, regulators to hook up commercial tube heaters & make up air unit.	
Area	1		
Code	CSA B149.1 & B149.2	Contractor	

COMPRESSED AIR SYSTEM PERMIT

	<h2>Pressure System Permit</h2>		Permit N^o 77451	
			Date of Issue: Nov 10, 2014	
			Anticipated Completion Date: Dec 31, 2014	
Applicant		Location		
Mechano Construction Limited 271 Buckingham Drive Paradise NL A1L 2G3		C&W Offshore 16 Lintrose Place Mount Pearl		
Issued by		Description		
David Tucker Engineering and Inspection Services Division P.O. Box 8700 St. John's A1B 4J6		Install compressor, reciever and air lines.		
Area	1	Contractor		
Code	ASME B31.9			

Att: Mike Terry