

## TDM Specification

**SYSTEM:**

**PREPARED FOR:**

**JOB NAME:**

**DATE:**

### SCOPE

The Indirect Gas Fired unit shall be Model TDM \_\_\_\_\_ and supplied by Temprite Industries.

The unit shall be factory fabricated, assembled, wired and tested prior to shipment in accordance with the specification and equipment schedule.

The unit will include all components herein and as shown on the drawings. Alternate equipment, equal in design, construction, performance and capacity to unit(s) specified, must be shown with price deduct/add, if any. Approval of alternate equipment will be subject to review of shop drawings.

The unit shall be CGA/ETL approved and capable of following performance:

Airflow Rate:	_____	Scfm (Acfm)
Entering Air Temperature:	_____	°F. (°C)
Leaving Air Temperature:	_____	°F. (°C)
External Static Pressure:	_____	" w.c.
Main Fan Motor Size:	_____	Hp
Induced Draft Fan Motor Size:	_____	Hp
Heat Output:	_____	Btuh
Heat Input:	_____	Btuh

### CASING

The unit casing is be panel construction from 16 gauge galvanized steel, suitably reinforced to ensure rigidity.

Panels shall be fastened with cadmium plated neoprene grommets metal screws (sheet metal screws and/or pop rivets are not acceptable) and be removable for servicing.

All panels shall be factory sealed with butyl tape between mating panels and externally caulked at all seams prior to painting.

The unit shall have an integral milled channel base complete with lifting lugs.

The casing enclosing the heat exchanger shall be of double wall construction with a galvanized steel inner wall serving as a radiation shield. Radiation and transmission losses shall not exceed 1 1/2% of the rated output. This section shall be insulated with 1", 1 1/2 lb. density mineral wool.

The fan section shall be insulated with 1", 1 1/2 lb. density fabric faced fiberglass mechanically secured to the walls with welded pins at 12" centers horizontally and vertically. All joints shall be taped or sealed.

The underside of the unit (under the floor) shall be insulated with 1", 1 1/2 lb. density foil faced fiberglass, mechanically secured to the floor with welded pins at 12" centers horizontally and vertically. All joints shall be taped or sealed.

The unit shall have a weather enclosure which is the full height of the unit. The enclosure will be complete with hinged access doors, captive screws and handles.

An inlet cowl and birdscreen will be provided. The inlet velocity to the cowl will be designed not to exceed 500 fpm.

When split for shipping, the unit splits will be framed with heavy structural angle to form flanges with drilled notch holes at 12" maximum spacing. Factory fabricated mechanically fastened 1/2" thick gaskets will be provided for flanges at all shipping splits.

The entire unit shall be brushed or scraped to remove any dirt, dust or other foreign substances. The unit will be primed with a vinyl wash and finish coated with a heat resistant alkyd enamel.

Hinged access doors with cadmium plated piano type hinges shall be supplied to allow physical entry to all sections requiring inspection and periodic maintenance. Access doors shall be complete with 1" thick insulation, interior metal liner, captive screws and handles.

## FAN SECTION

The fan(s) shall be centrifugal AMCA rated forward curved statically and dynamically balanced. The fan(s) shall be double width, double inlet with motor and drives in the air stream.

The fan is to be mounted on a heavy duty, turned and ground solid steel shaft designed with its maximum operating speed not exceeding 75% of its first critical speed. The bearings are to be of the pre-lubricated, self aligning type. Drives have a capacity 25% greater than the motor horsepower and a minimum of two belts. Up to 7.5 HP, the motor sheaves shall be of the adjustable pitch type. Motors shall be rated for fan duty, (ODP) (TEFC), T-frame and \_\_\_\_\_ volt, \_\_\_\_\_ cycle, \_\_\_\_\_ phase. The fan motor shall be mounted on an adjustable base and wired in flexible conduit to the control panel.

The fan wheel, shaft, drives, and motor assembly shall be electrically balanced as a complete assembly in the factory.

## INDIRECT GAS FIRED SECTION

The heat exchanger shall be rated at a minimum 80% efficiency at rated output. The flue gas travel shall be of four-pass design, with no internal baffles. The primary heat transfer surface and header shall be of 409 stainless steel; the secondary heat transfer surface shall be (steel boiler tube) (409 stainless steel). The heat exchanger design shall permit unrestricted lateral and peripheral expansion during the heating and cooling cycle. The surface temperature of the heat exchanger shall not exceed 75% of its scaling temperature when operating at rated capacity. A pressure relief door complete with an observation window to view the complete flame and pilot shall be provided.

An integrally mounted, heavy duty, radial blade induced draft fan c/w motor shall be provided. The induced draft fan shall be equipped with a manual damper complete with locking quadrant to ensure proper draft, rated efficiency and extended heat exchanger performance.

The burner shall fire natural gas and be arranged for full modulation with low fire start and a \_\_\_\_\_ turndown ratio. The factory wired and piped valve train shall be mounted on the unit and be complete with:

- an (low pressure) appliance regulator
- automatic main gas shut-off valve
- auxiliary main gas shut-off combination modulating valve
- main manual test firing shut-off valve
- pilot manual shut-off valve
- pilot pressure regulator
- pilot automatic shut-off valve
- pilot manual test firing shut-off valve

## **ELECTRICAL CONTROLS**

A NEMA 1 control panel complete with hinged access door shall be mounted on the unit and wired. All control components are to be labelled and individually wired to a numbered terminal strip to aid in servicing. All wiring shall be color coded and number tagged at each end to match the control diagram supplied. Full operating and maintenance instructions shall accompany each unit. All wiring between the controls and valves shall be run in flexible conduit. The control system shall include but not be limited to the following components required for automatic operation:

- main disconnect switch
- control circuit transformer
- fan motor starters, overloads and subcircuit fuses
- control circuit fuses
- control relays
- electronic flame relay complete with alarm contacts
- induced draft fan air proving differential switch
- high limit switch
- automatic/manual fan switch
- heavy duty ignition transformer

All controls are to be mounted in the control enclosure and wired to a numbered terminal strip. All wiring shall be colour coded with numbers tagged at each end to match the circuit diagram supplied with the unit. Full operating and maintenance instructions shall accompany each unit.

## **COOLING COIL SECTION**

Cooling coil section shall be a minimum of 36" deep in direction of airflow and located downstream of the filters and upstream of the heat exchanger. Coils to have slide frames and heavy gauge galvanized steel blank off sheets. Coils to slide into unit through a removable end panel. Troughs and down spouts will be supplied where required for coil banks more than one high.

Chilled water coils with copper tubes, aluminum fins and galvanized steel casing. Headers to be non-ferrous with vents, drains and suitable for 200 psi working pressure. Maximum air velocity across the face of the coil shall not exceed 500 fpm.

Provide drain pan under the cooling coil and downstream of the coil to collect all condensation. Provide a minimum of two drain pans where cooling coils are stacked complete with piped down drain. Drain pan shall be galvanized steel construction.

## **FILTERS**

Air filters shall be 2" medium efficiency, pleated, disposable type. Filter media shall be of the non-woven cotton fabric and have an average efficiency of 25 - 30% on Ashrae Test Standard 52-76. Filters shall have a rated air velocity of 500 FPM and a final resistance of 1.0" w.g. Filters shall be rated Class 2 by Underwriter Laboratories and each product shall bear the U.L.C. label indicating class and issue number. Face velocity shall not exceed those shown on the schedule.

The filters shall be mounted in the main body of the unit. Filters mounted on the inlet cowl are not acceptable.

## **DAMPERS**

The unit will be complete with a motorized discharge damper with a 16 gauge galvanized steel frame. Blades shall be rolled formed, triple V-groove 16 gauge galvanized steel, maximum 6" wide. Axles shall be 1/2" plated steel hex. Bearings shall be molded synthetic and linkage outside of the air stream. Blade edge seals shall be extruded dual vinyl. The damper and damper motor shall be mounted inside the unit casing.

## **START UP**

Start up to be performed by a factory trained technician and to include testing the controls and ensuring the proper operation of all the unit functions. Any wiring or piping connections required due to the unit being split in sections (including remote panels) is the responsibility of the installing contractor. Start up will not include any air balancing required due to changes in external static pressures.