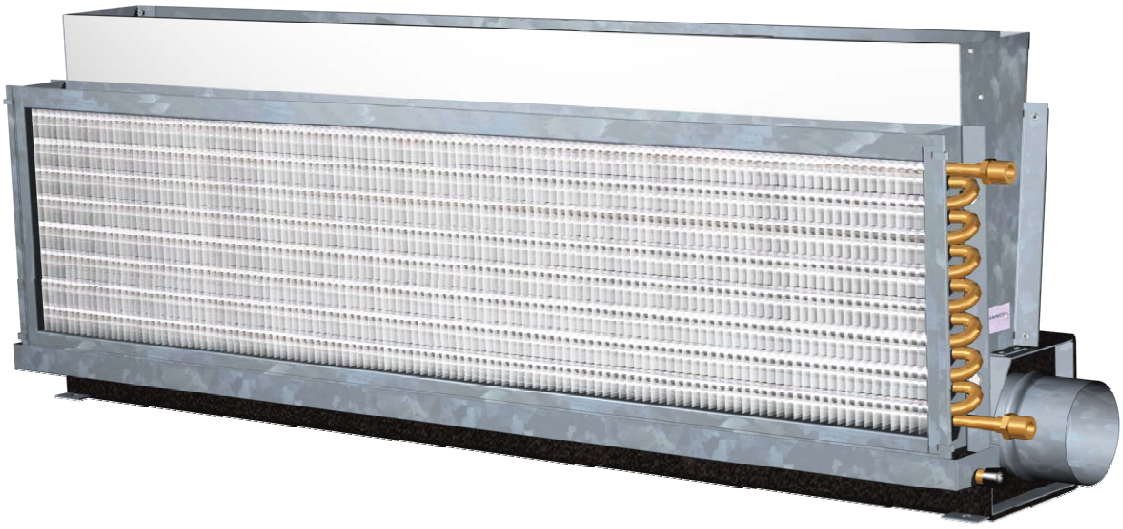
STARLINE

INSTALLATION & MAINTENANCE INSTRUCTIONS

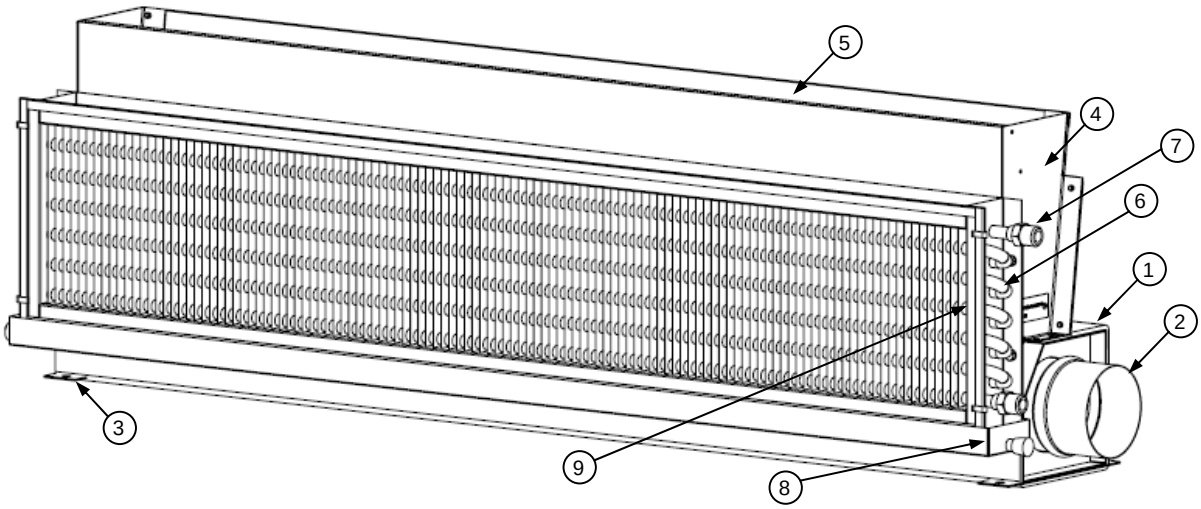


FM30 - Floor Mounted Induction Unit

DADANCO
Breathing Life into Your Building

DESCRIPTION

STARLINE FM30 floor mounted induction units are designed for undersill (Parapet) installation with vertical air discharge, and are manufactured to suit three heights and nine length sizes (Refer Table A).



1. Primary Air Plenum
2. Primary Air Spigot
3. Mounting 'Foot' Bracket
4. Mixing Chamber
9. Fabric Lint Screen
5. Air Discharge Opening
6. Heat Exchanger Coil
7. ½" BSP Male Fittings
8. Condensate drip tray

UNIT CONSTRUCTION

As shown in the above figure, each induction unit is comprised of:

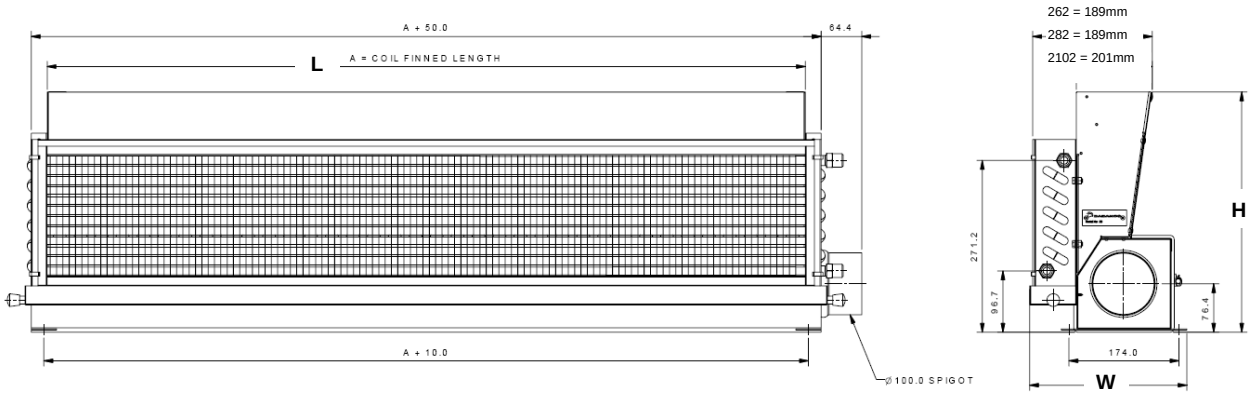
- Primary air plenum (1), which accommodates an array of primary air nozzles and incorporates a Ø100mm primary air spigot connection (2) at either end or an ovalised spigot in the centre rear or bottom of the plenum plus mounting support 'foot' brackets (3) at each end of the unit.
- Air entrainment / mixing chamber (4), comprised of a fixed back plate, two end plates to form an air discharge opening (5) at the top of the unit.
- Heat exchanger coil (6), of aluminium finned 1/2" copper tube with 1/2" BSP Male Tapered Thread water inlet / outlet (7) fittings and protected by a mesh fabric lint screen (9). The heat exchanger coil (6) is attached to the air entrainment / mixing chamber by M6 bolts, secured into the end plates and sits in a fabricated metal condensate drip tray (8) that incorporates two 1/2" condensate water outlets.

STARLINE FM30 units are suitable for a variety of air and water connection configurations:

air right / water right	air left / water left
air right / water left	air left /water
air centre / water right	air centre / water left

NOTE: Water connection and air inlet handings are designated prior to unit manufacture and are not reversible at site.

PHYSICAL DATA



FM30 UNIT SIZES (Table A)

	Coil Finned Length	Air Plenum Length	Overall Length	**H** = Unit Height (mm)			**W** = Unit Width (mm)		
Unit Model	**A** (mm)	**L** (mm)	(mm)	6 Tube	8 Tube	10 Tube	6 Tube	8 Row	10 Tube
FM30 -0700.--	700	700	815	380	440	503	249	249	249
FM30 -0800.--	800	800	915						
FM30 -0900.--	900	900	1015						
FM30 -1000.--	1000	1000	1115						
FM30 -1050.--	1050	1050	1165						
FM30 -1100.--	1100	1100	1215						
FM30 -1200.--	1200	1200	1315						
FM30 -1300.--	1300	1300	1415						
FM30 -1400.--	1400	1400	1515						
FM30 -1500.--	1500	1500	1615						

FM30 PRIMARY AIR FLOW OPERATING RANGE (Table B)

FM30 Induction Terminal Unit	Primary Air Flow Range (L/sec) @ Primary Air Static Pressure (Pa)				
	100 Pa	150 Pa	200 Pa	250 Pa	300 Pa
FM30 -0700.---	6.4 – 18.5	7.9 – 22.8	9.2 – 26.5	10.4 – 29.9	11.4 – 32.7
FM30 -0800.---	7.3 – 21.3	9.1 – 26.4	10.6 – 30.6	12.0 – 34.5	13.2 – 37.8
FM30 -0900.---	8.3 – 23.5	10.3 – 29.0	12.0 – 33.7	13.5 – 37.9	14.9 – 41.6
FM30 -1000.---	9.3 – 26.3	11.5 – 32.5	13.5 – 37.7	15.1 – 42.5	16.7 – 46.6
FM30 -1050.---	9.8 – 27.7	12.1 – 34.3	14.2 – 39.8	16.0 – 44.8	17.6 – 49.1
FM30 -1100.---	10.3 – 29.1	12.8 – 36.0	14.9 – 41.9	16.7 – 47.1	18.5 – 51.7
FM30 -1200.---	11.3 – 31.3	14.0 – 38.7	16.3 – 44.9	18.3 – 50.6	20.2 – 55.4
FM30 -1300.---	12.3 – 34.1	15.2 – 42.2	17.7 – 49.0	19.9 – 55.2	22.0 – 60.5
FM30 -1400.---	13.2 – 37.0	16.4 – 45.7	19.1 – 53.1	21.5 – 59.8	23.7 – 65.5
FM30 -1500.---	14.2 – 39.8	17.6 – 49.2	20.6 – 57.2	23.1 – 64.4	25.5 – 70.5

A wide range of primary air flow rates are possible for each unit length at different primary air pressures and number of STARLINE nozzles specified to suit the particular design. Refer to Dadanco for more detailed selections.

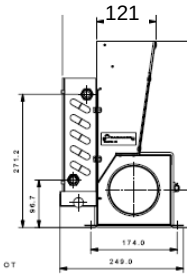
FM30 UNIT WEIGHTS (Table C)

Unit Model	Unit Weight (kg) 6 Row	8 Row	10 Row
FM30 -1500.--	24.9	25.8	41.1
FM30 -1400.--	23.2	24.0	38.4
FM30 -1300.--	21.5	22.3	35.6
FM30 -1200.--	19.0	20.6	32.9
FM30 -1100.--	17.4	18.9	30.2
FM30 -1000.--	15.7	17.2	27.4
FM30 - 0900.--	14.0	15.5	24.7
FM30 - 0800.--	13.5	13.7	22.0
FM30 - 0700.--	11.6	12.0	19.2

NOTE: Unit weights vary slightly for 1 and 2 row coil and insulated & uninsulated plenum.

Refer to Dadanco for specific operating weights for individual unit configurations.

Supply Air Opening Sizes (mm)



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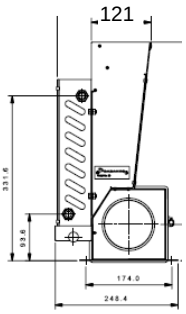

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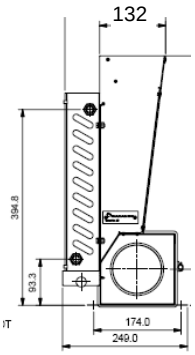

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UNIT NOMENCLATURE

Model Number: **FM30.04 – A. 2 8 2** Example: **FM30.04-1200.282**

Product Family & Generation

Unit Coil Finned Length (mm)

Coil Configuration
2 = 2-Pipe
4 = 4-Pipe

Coil Depth (Tube Rows)
1 = 1 Row Coil
2 = 2 Row Coil

Coil Height (Tube Rows)
6, **8** or **10** Tubes

STANDARD SPECIFICATION

- ½" BSP Male Flat Face Tapered Thread water connection fittings
- 2-Row secondary heat exchanger coil
- Uninsulated primary air plenum and condensate tray
- ∅100mm 'End Entry' primary air spigot
- Round sheetmetal primary air spigot (100mm diameter)

OPTIONS

Available product options (Specify at time of order)

- Left or Right Hand chilled water connections (as viewed looking into the coil face)
- Left or Right Hand condensate drain connection
- 1-Row heat exchanger coil
- Insulated (6mm foil faced foam sheet) primary air plenum and condensate tray
- 6, 8 or 10 tube high secondary heat exchangers
- Rear or Bottom ovalised primary air spigot (100 or 150mm equivalent diameter)

INSTALLATION

UNIT AS DELIVERED

Each unit is delivered by Dadanco individually packed in a carton containing: -

- The heat exchanger coil, with 1/2" BSP male connections on the coil inlet and outlet, secured in place
- The lint screen fitted to the air entry side of the heat exchanger coil
- All nozzles fitted
- Primary air spigot fitted to either end as specified

If insulation is nominated at the time of ordering, the primary air plenum and condensate drip tray will have been insulated with 6mm foil faced foam sheet.

INSTALLER TO PROVIDE

The installer is to provide the following: -

- A mounting system or frame. This should allow the unit to drain the condensate drip tray and for the air discharge opening to meet the bottom of the supply air grille without any significant gaps.
- Condensate drainage from the drip tray outlet, where required (Drain to tundish).
- Secondary water flow and return piping with isolation valves (both lines) and flow control valves.
- Air flow balancing / adjusting device in the primary air duct.
- Insulation to the primary air plenum and condensate tray if required and not provided during unit manufacture.
- Supply & return air grilles in parapet enclosure

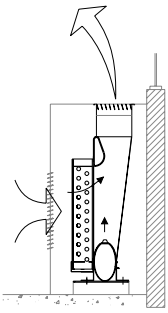
INSTALLING THE UNIT

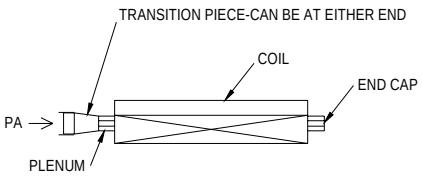
To prepare the STARLINE FM30 induction unit for mounting and connection, carry out the following procedures:

- Determine the orientation of the air and water connections.
- Ensure there is adequate space within the unit enclosure for the installation of the unit. Check that this space is clear of other services.
- Check the installation space for the unit, to ensure adequate clearance to remove the lint screen during maintenance, and to make piping and duct connections.

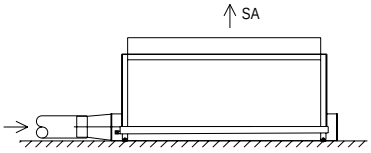
  NOTE: The space for the lint screen removal will provide adequate air entry space to the heat exchanger coil.
- Ensure the return air path to the unit is clear and does not restrict secondary airflow to the unit.
- Position the unit in the enclosure and secure it to the supporting frame by the mounting points.
- As per the air conditioning design drawings connect the primary air flexible duct to the primary air spigot.
- Insulate the primary air spigot up to the primary air duct insulation, and make a vapour tight seal with approved tape at the duct and plenum insulation joint.
- Connect condensate drain system if specified

NOTE: Take care when removing the plastic sealing caps from the condensate drain tray end caps. Excessive force may result in damage to the drain connection or break the seal between end cap and metal condensate tray.





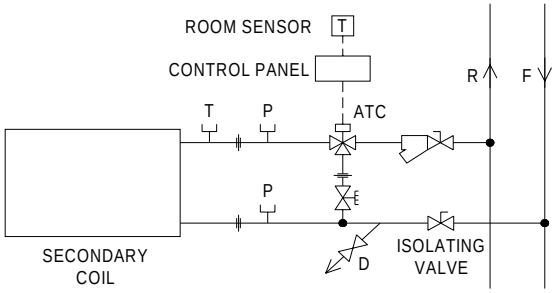
PLAN



FRONT ELEVATION

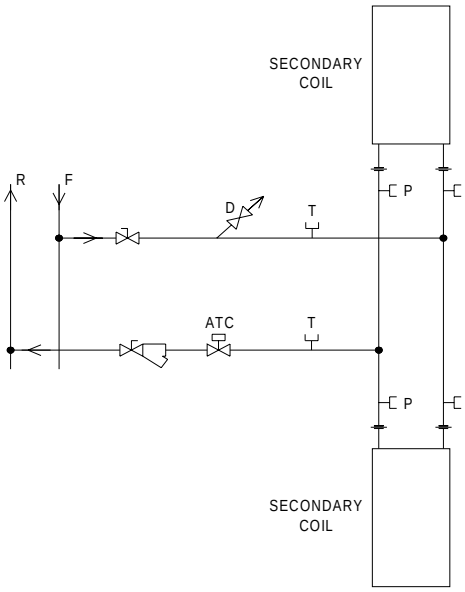
- Install the chilled water piping and valves as indicated on the working drawings. Connect the unit water inlet / outlets to the water reticulation system.

Single Unit Connection



NOTE: It is recommended that the unit be connected with readily removable pipe lengths or flexible hoses to permit disconnection and removal of the coil, should this be required during maintenance.

Dual Unit Connection



- Ensure that the secondary chilled water piping is aligned with the coil and the coil connection stubs. Use the correct tools to grip the flare nuts and union and apply only sufficient force to make the joint.
- Connect the condensate drain from the unit drip tray outlet (12) to the condensate drainage system, if required.

Note. *Should the air conditioning design not require condensate drainage, leave the sealing cap of the condensate outlet in place.*

COMMISSIONING

The only way to accurately commission the primary air flow to the FM30 Unit is to measure the static pressure in the plenum. To achieve this, remove the plug from the commissioning extension tube and connect the pressure differential instrument (Manometer) onto the commissioning tube.

NOTE: Do not attempt to measure the static pressure back from the unit at the start of a flexible duct connection. Measure only at the provided commissioning point.

1. To obtain the designed primary air and total air flow rate, adjust the damper / volume control device as necessary to obtain the specified design primary air plenum pressure corresponding to the required primary air flow.
2. For secondary water flow commissioning, a suitable balancing valve should be installed in order to measure and adjust the secondary water flow to the designed/specified value. Adjust the balancing valve in order to achieve the specified flow rate per unit, according to the unit schedule.

MAINTENANCE

In normal operating conditions the minimum required maintenance involves the heat exchanger coil, the lint screen and the condensate drip tray and consists of:

- Visual inspection to comply with AS/NZS 3666.2:1995, or local regulations, for grime, lint, bacterial growth, etc., on the heat exchanger coil and in the condensate drip tray. If found, such deposits must be removed using appropriate cleaning methods.
- Yearly mechanical cleaning of heat exchanger coil and lint screen (e.g. vacuuming, brushing).
- Inspect the nozzles and the inside of the air-mixing chamber for any deposits of dust. Clean if dirty.
- Four yearly chemical cleaning (e.g. washing with health safe chemicals and clean water rinsing).

Guide Specification

Scope

Supply DADANCO floor mounted induction terminal units type STARLINE FM30-____.___, or equal and approved, fitted with low-noise, high efficiency patented nozzles capable of delivering the primary air quantities as listed in the specification schedule. Connect the units to the primary air duct and secondary water loop in the configuration shown on the drawings.

Construction

The STARLINE FM30 induction terminal unit shall be manufactured to provide a compact unit with a primary air plenum, mounting support points, air entrainment chamber with supply air outlet, secondary heat exchanger coil with condensate drain tray and an inlet air lint screen.

Plenum: The medium pressure primary air plenum shall be manufactured of 0.8mm wall thickness galvanised sheet steel designed to incorporate DADANCO multi lobe induction nozzles of the nominated number and size to discharge the specified primary air quantity into the air entrainment chamber.

Nozzles shall be DADANCO multi-lobed induction nozzles of flexible fire retardant polymer, designed for low noise generation and rapid secondary air entrainment.

Provide a circular sheet metal spigot of 100mm equivalent diameter for the primary air flexible duct connection at one end of the unit, or alternatively provide an ovalised sheet metal spigot of 100mm equivalent diameter in the centre rear or bottom of the primary air plenum.

Insulation *(if required)***:** Self adhesive, fire retardant foil faced thermal insulation to the exterior of the primary air plenum to prevent condensation forming on the outside of the unit.

The secondary air entrainment chamber shall be constructed of galvanized sheet steel end panels sealed as an integral part to the primary air plenum. The entrainment chamber will facilitate mounting of the secondary heat exchanger coil in a condensate drain tray capable of collecting and discharging secondary air condensate in humid conditions. The condensate tray shall incorporate ½" drain connections at either end.

Secondary cooling coil: Fit a removable single two-row (2-Pipe or 4-Pipe) secondary air coil of the specified length as required to achieve the specified secondary cooling capacity. Coil shall be constructed of galvanised steel end plates and frames with ½" copper tubes mechanically expanded into 0.145mm thickness rippled edge aluminium fins. Provide ½" BSP male flat face tapered thread fittings on all coil connections.

Secondary coil maximum recommended site test pressure not to exceed 2500 kPa (25 Bar) with continuous maximum recommended operating pressure of 1680 kPa (16.8 Bar). Coil to be factory pressure tested to 2500 kPa and conform to a burst pressure rating of 13,000 kPa (130 Bar) at 50^{o}C.

Coil capacities shall be equal to the specified secondary air sensible cooling capacity when operated at the scheduled secondary chilled water flow and inlet temperature.

Lint screen *(if required)*: Fit a serviceable lint screen with frame over the face of the secondary heat exchanger. Fabricate the lint screen from fine aluminium or plastic fabric mesh, as specified, held in a rectangular aluminium frame. Provide fixing clips to secure the lint screen frame to the secondary coil.

The unit shall be mounted by its support brackets to a suitable frame or support structure in a manner to ensure leak free connection to the supply air discharge vents and unrestricted secondary air entry to the unit.