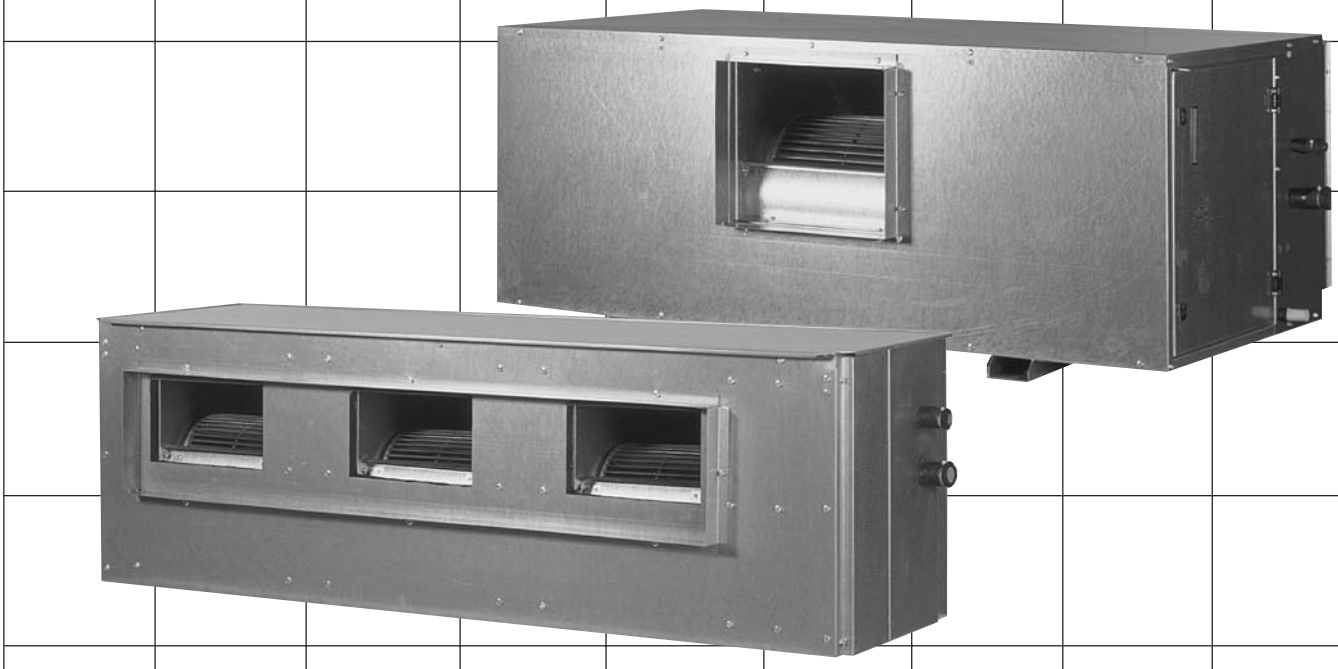
ENERGY EFFICIENT

temperzone

ISD 470Q, 480Q / OSA 480

Technical Data

Ducted Three Phase
Split System Air Conditioner



EXTRA LONG LIFE
EPOXY COATED
OUTDOOR COIL

Nominal Cooling Capacity

48.0 kW

OCTOBER 2004

ISD 470Q, 480Q / OSA 480 DUCTED THREE PHASE SPLIT SYSTEM AIR CONDITIONER

GENERAL

ISD 470Q - Indoor unit, direct drive fans, usable for reverse cycle or cooling only

ISD 480Q - Indoor unit, belt drive fan, usable for reverse cycle or cooling only

OSA - A general designation for outdoor unit

OSA 480C - Outdoor unit, cooling only version, 1 stage cooling

OSA 480R - Outdoor unit, reverse cycle version, 2 stage cooling / 1 stage heating

The ISD indoor unit, together with its associated OSA outdoor unit, provides a three phase split system air conditioner designed and developed to comply with and exceed AS/NZS 3823 specified conditions (i.e. guaranteed cooling cycle performance at 43°C outdoor temperature).

APPLICATIONS

These units have been specifically developed for air conditioning of commercial premises, e.g. offices, motels, shops and restaurants.

The ISD 470Q incorporates three direct drive fans for lower static applications.

The ISD 480Q has a belt drive fan which is more suitable for higher static applications.

Two stage cooling control on Reverse Cycle versions (i.e. using OSA 480R) enables the system to cope more effectively with fluctuations in the load.

Air Flow Selection

The nominal indoor air flow and temperature /humidity conditions meet ASHRAE rating standards (incl. 50%RH). If the air returning to the indoor coil is regularly expected to be above 50%RH, then the coil face velocity should be limited to be 2.5 m/s or less (refer Air Flow graph; 2.5 m/s is clearly marked).

High humidity levels can occur in tropical or subtropical conditions, and/or when heavily moisture laden fresh air is introduced. Consideration must always be given to selecting an air flow and face velocity that avoids water carry-over problems.

Applications using full or high proportions of fresh air should be referred to your nearest **temperzone** sales office to establish the correct selection of units.

FEATURES

Efficient. Heat exchange coils incorporate inner grooved (rifled) tube for better heat transfer. Use of thermostatic expansion valves ensure the system remains efficient over a wide range of operating conditions.

Performance.

ISD 470Q: Use of multi-speed direct drive indoor fan motors enables fine tuning of the indoor unit to match the supply air requirements.

ISD 480Q: Use of an adjustable pulley drive indoor fan motor enables fine tuning of the indoor unit to match higher static supply air requirements.

Quiet. The indoor unit's generous insulation ensures a quiet unit.

Durable. The outdoor coil fins are epoxy coated for extra protection in corrosive environments, e.g. salt laden sea air. The outdoor unit's cabinet and drain tray are constructed from high grade galvanised steel - polyester powder coated for all weather protection (IP45). External fasteners are stainless steel. Heat exchange coils comprise aluminium plate fins on mechanically expanded rifled copper tube. The indoor unit's cabinet is constructed from high grade galvanised steel and also includes a polyester powder coated drain tray.

Insulation. Closed cell foam insulation has been used in the indoor unit's cabinet to ensure no particles are introduced into the air stream. The insulation is foil faced and meets fire test standards AS 1530.3 (1989) and BS 476 parts 6 & 7.

STANDARD EQUIPMENT

ISD 470Q Indoor Unit:

1. Coil
2. Fans - forward curved centrifugal (x3)
3. Fan motors - multi-speed, direct drive (x3)
4. Thermostatic expansion device
5. Drain tray - powder coated
6. Return air spigot
7. Supply air spigot - horizontal discharge

ISD 480Q Indoor Unit:

1. Coil
2. Fan - forward curved centrifugal
3. Fan motor - variable speed, belt drive (x1)
4. Thermostatic expansion device
5. Drain tray - powder coated
6. Return air spigot
7. Supply air spigot - horizontal discharge

OSA Outdoor Unit:

1. Compressor
2. Coil - epoxy coated
3. Fan (x3) - propeller
4. Fan motor (x3) - multi-speed, direct drive
5. Fan guard
6. High/low pressure switch
7. Circuit breaker control
8. External current overloads on compressors
9. 24V control circuit
10. Compressor crankcase heater

OSA ✳R version also includes:

11. Reversing valve
12. Thermostatic expansion device
13. Time/temperature electronic de-ice control

OPTIONAL EQUIPMENT

Outdoor Unit:

1. **temperzone** HP Fan Speed Controller - recommended where cooling is required in below 20°C ambient conditions for long periods of time.
2. Coil protection guards.

Indoor Units:

ISD 470Q:

1. Filter box - integrated return air spigot and washable panel filters (rated EU2) (x2).
2. Spring Mounting Kit.
3. 12 kW electric booster heat (factory fitted) - complete with safety cutouts required to meet AS/NZS 3350.2.40 1997.

ISD 480Q:

1. Filters (rated EU4) - 50 mm deep pleated filters; 2 @ 625 x 500 mm & 2 @ 625 x 400 mm.
2. Vertical supply air configuration.
3. 12 kW electric booster heat (factory fitted) - complete with safety cutouts required to meet AS/NZS 3350.2.40 1997.

SAFETY FEATURES

1. HP switch (auto reset), LP switch (auto reset) and an anti rapid cycle timer for compressor protection. The compressor also has internal and external overload protection.
2. Circuit breaker control circuits.
3. Time-and-temperature controlled electronic de-ice switch prevents icing up of the outdoor coil during heating cycle (OSA ✳R only).
4. Crankcase heater prevents liquid refrigerant condensing in the compressors during the 'off' cycle.

COMPRESSOR

The high efficiency scroll type compressor is hermetically sealed, quiet running and supported on rubber mounts to minimise vibration.

REFRIGERATION PIPING

The standard unit allows for a line length of up to 50 m.

Max. height separations between units are :
Outdoor unit above indoor unit : 18 m
Outdoor unit below indoor unit : 12 m.

For extended line lengths contact your nearest **temperzone** sales office for additional details on piping requirements.

The OSA unit is shipped from the factory with a holding charge of HCFC-22 (R22) refrigerant. Liquid and suction service valves are provided. The matched indoor unit is shipped with a holding charge of nitrogen. Both units have one flare and one brazed pipe connection.

WIRING

The electrical supply required (including voltage fluctuation limits) is:
3 phase 342-436 V a.c. 50 Hz with neutral and earth. A control panel, located in the outdoor unit, is fully wired ready to accept the main power supply.

The manufacturer operates a quality management system that conforms to AS/NZS **ISO 9001**:2000.

PERFORMANCE DATA

COOLING CAPACITY (kW)

Total = Total Capacity (kW) Sens. = Sensible Capacity (kW)
E.A.T. = Entering Air Temperature ◯ = Nominal Capacity (kW)

Note: Capacities are **gross** and do not include allowance for fan motor heat loss. Capacities are for close coupled systems. Interconnecting pipework will reduce capacity.

MODELS Indoor Unit / Outdoor Unit	INDOOR FAN AIR FLOW l/s	INDOOR COIL E.A.T. W.B. °C	INDOOR COIL E.A.T. D.B. °C	OUTDOOR COIL ENTERING AIR TEMPERATURE °C D.B. 23 Total	23 Sens.	27 Total	27 Sens.	31 Total	31 Sens.	35 Total	35 Sens.	39 Total	39 Sens.	43 Total	43 Sens.
ISD 470QB / OSA 480 or ISD 480QB / OSA 480	2850	17	23	49.0	34.5	47.6	34.0	46.2	33.4	44.9	32.8	43.4	32.3	42.0	31.7
		19	27	51.8	39.5	50.3	39.0	48.9	38.4	(47.6)	37.9	45.9	37.3	44.5	36.8
		21	31	54.7	44.5	53.2	43.9	51.7	43.4	50.2	42.9	48.6	42.4	47.1	41.8

Indoor Air Flow Correction Factors @ nominal conditions

	Indoor Air Flow (%) -20%	-10%	Rated	+10%
Total Capacity	0.95	0.975	1.0	1.025
Sensible Capacity	0.89	0.950	1.0	1.050

NOTE: An optional Outdoor Unit fan speed controller is available and is recommended where cooling is required in below 20°C ambient conditions for long periods of time.

PIPE LENGTH CAPACITY LOSS

ON COOLING CYCLE DUE TO PRESSURE DROP

Note: Loss percentage is approximate only.
No allowance made for vertical piping.

Pipe Size (mm) Liquid	Suction	Equivalent Line Pipe Length (m) 10	20	30	40
19	35	1.5 %	3 %	5 %	6.5 %

Additional Pipe Length to allow per Bend Suction Pipe Size OD	35 mm
Long 90° Radius (2 x pipe dia.)	0.76 m

HEATING CAPACITY (kW)

G = Gross Heating Capacity kW, based on nominal air flow.
N = Net Heating Capacity kW allowing for average defrost.
◯ = Nominal Capacity (kW)

Reverse Cycle Systems

MODELS Indoor Unit / Outdoor Unit	INDOOR ENTERING AIR TEMP. °C D.B.	OUTDOOR COIL ENTERING AIR TEMPERATURE (E.A.T.) °C D.B. -4 G	-4 N	-2 G	-2 N	0 G	0 N	2 G	2 N	4 G	4 N	6 G	6 N	8 G	8 N	10 G	10 N
ISD 470QB / OSA 480 or ISD 480QB / OSA 480	15	34.3	27.0	36.7	28.1	39.2	28.3	41.6	27.9	44.1	27.7	47.3	31.4	50.2	46.7	51.9	51.9
	20	33.5	26.3	35.8	27.4	38.2	27.6	40.6	27.3	43.0	27.1	46.1	30.6	(49.0)	45.6	50.7	50.7
	25	32.4	25.5	34.7	26.5	37.0	26.7	39.3	26.4	41.6	26.2	44.6	29.6	47.4	44.1	49.0	49.0

ELECTRICAL

OSA 480 / ISD :	470Q	480Q
E.E.R. (cooling)	2.58	2.65
Indoor Fan Full Load Amps	6.3 A/ph.	6.5 A/ph.
Running Amps (Total System)	30 A/ph.	30 A/ph.
Recommended External Fuse	80 A/ph.	80 A/ph.

PERFORMANCE DATA

SOUND LEVELS

Sound Power Levels (SWL)

Test Conditions: BS 848 PT2 1985.
Direct method of measurement (reverberant room).
Measured in decibels re 1 picowatt, at nominal airflow.

Indoor Unit - Supply Air Outlet

MODEL	FAN SPEED	AIR FLOW	STATIC PRESSURE	SWL	OCTAVE BAND FREQUENCY Hz					
					125	250	500	1 k	2 k	4 k
		l/s	Pa	dB(A)	SOUND POWER LEVELS (SWL) dB					
ISD 470Q	LOW	2000	150	72	70	68	69	67	65	62
	MED	2300	200	76	73	72	72	72	69	67
	HIGH	2850	300	80	78	76	76	76	74	72
ISD 480Q	800 RPM	2200	340	83	84	80	80	78	76	72
	900 RPM	2850	360	88	84	82	85	84	81	77
	1000 RPM	3150	400	89	87	84	85	85	81	77

Supply Air Outlet + Insulated Duct *

ISD 470Q	HIGH	2850	300	72	71	69	69	67	63	63
ISD 480Q	1000 RPM	3150	400	80	80	77	77	77	69	65

* 1 metre of 25 mm insulated duct

Outdoor Unit

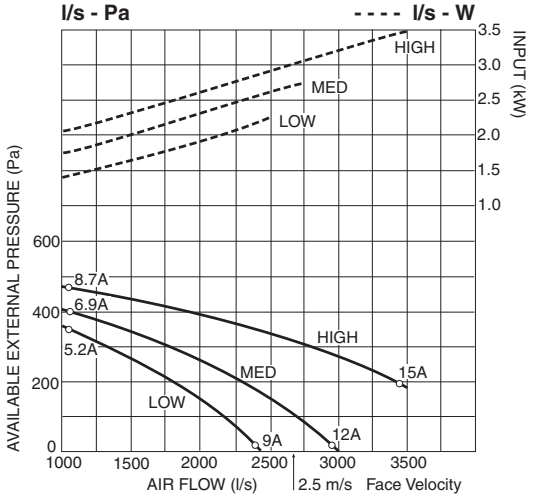
Sound Pressure Level (SPL) in decibels re 20 μPa.

MODEL	FAN SPEED	SWL	OCTAVE BAND FREQ. Hz						SPL @ 3 m	OCTAVE BAND FREQ. Hz					
			125	250	500	1 k	2 k	4 k		125	250	500	1 k	2 k	4 k
		dB(A)	SOUND POWER LEVELS dB						dB(A)	SOUND PRESSURE LEVELS dB					
OSA 480	MED	77	84	77	75	72	67	61	61	68	61	59	56	51	45
	HIGH	79	84	78	78	74	69	62	63	68	62	62	58	53	46

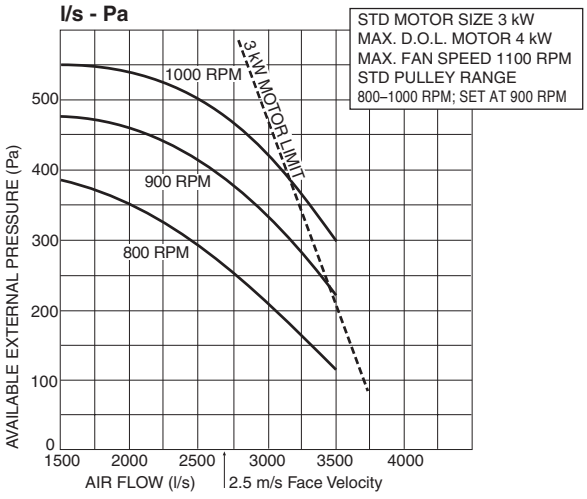
AIR HANDLING

Note: In a free blow or low resistance application, beware of exceeding indoor fan motor's full load amp limit (refer page 3). As filters are optional, the fan air flows given are for units installed without filters.

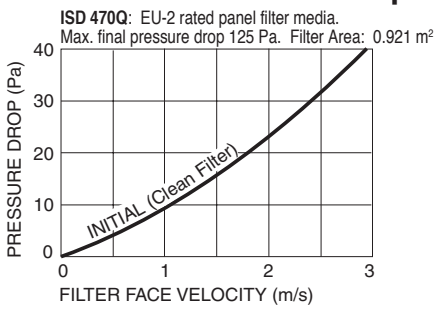
ISD 470Q

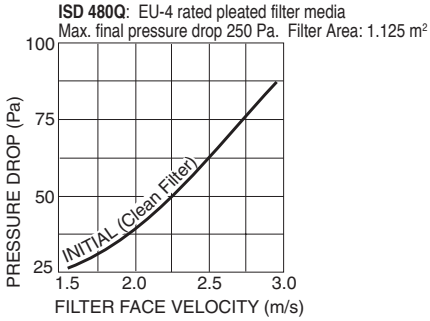


ISD 480Q



Optional Filters - Pressure Drop



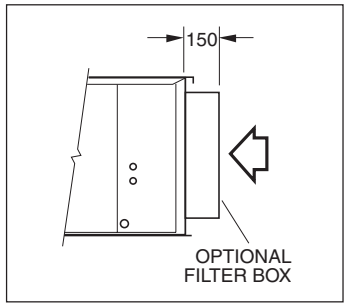


DIMENSIONS (mm)

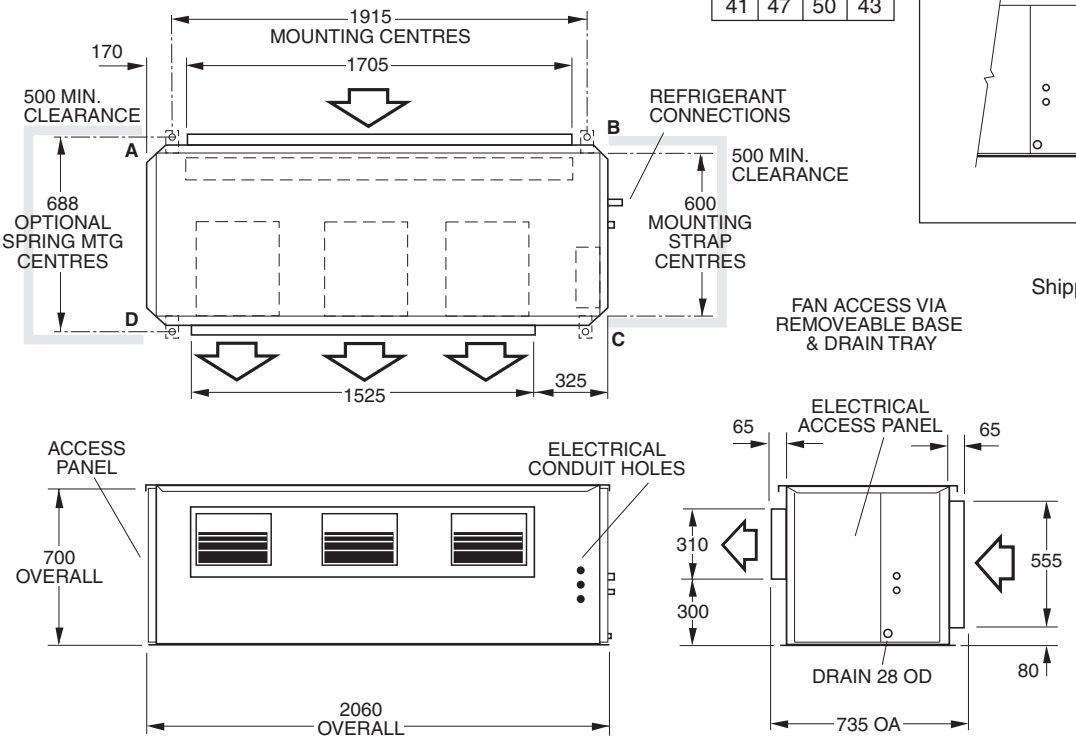
Not to Scale

ISD 470Q Indoor Unit

Corner Loads (kg)			
A	B	C	D
41	47	50	43

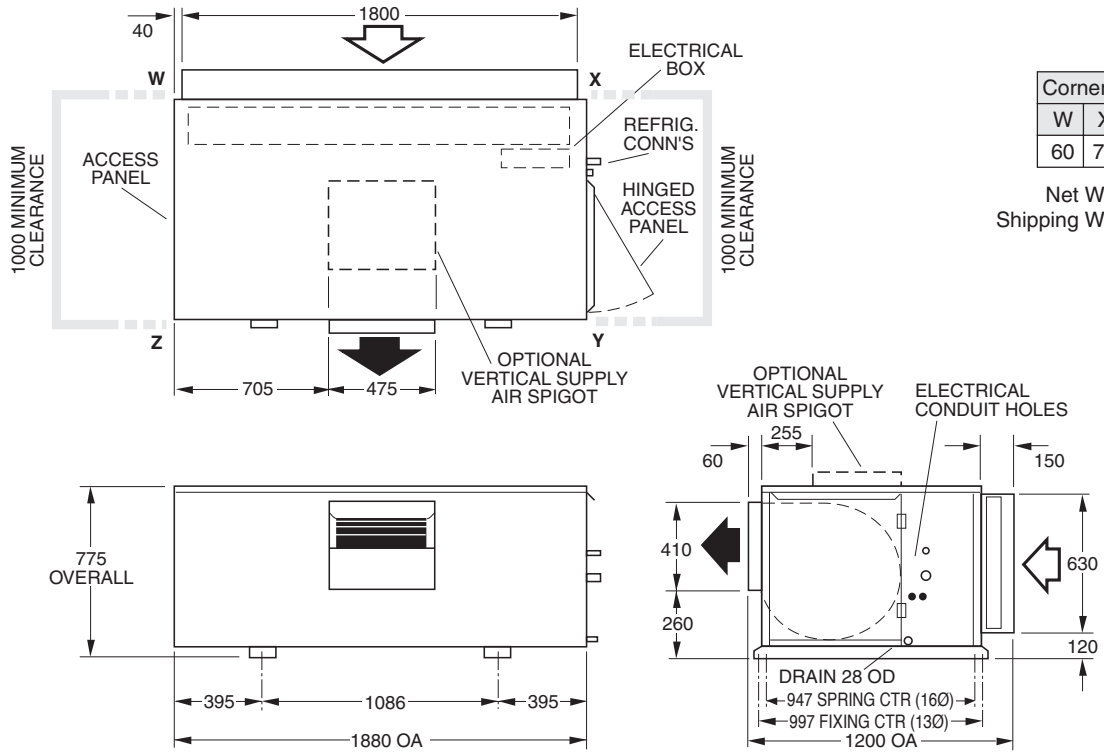


Net Weight 182 kg
Shipping Weight 188 kg



Note
Materials and specifications are subject to change without notice due to the manufacturer's ongoing research and development programme.

ISD 480Q Indoor Unit



Corner Loads (kg)			
W	X	Y	Z
60	73	61	48

Net Weight 244 kg
Shipping Weight 254 kg

DIMENSIONS (mm)

Not to Scale

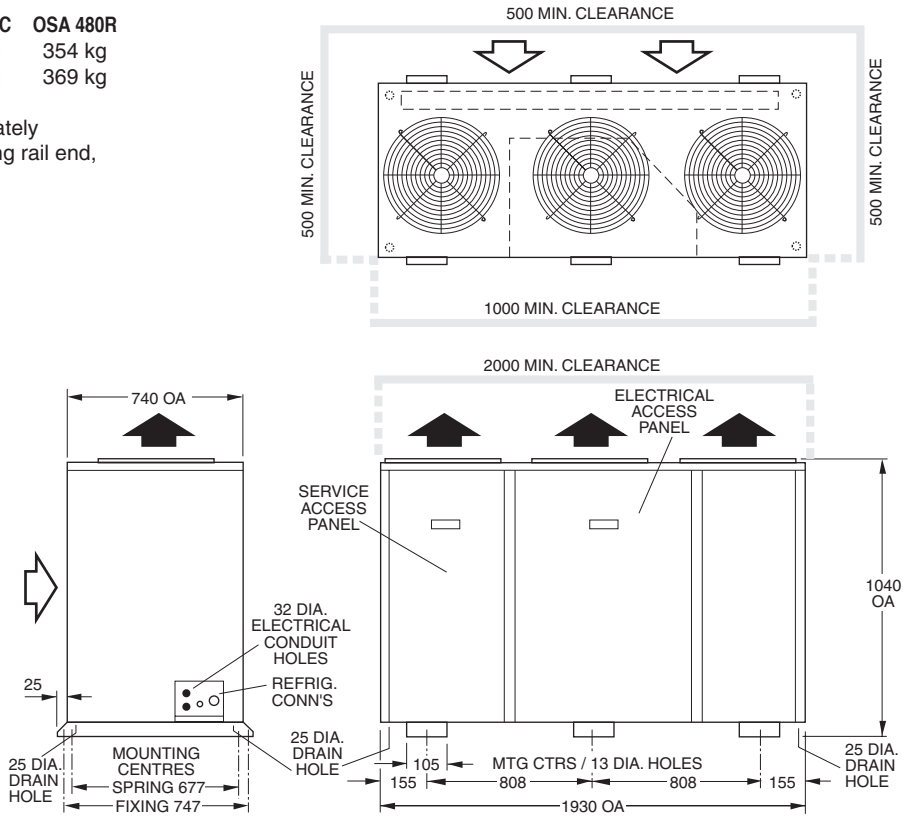
OSA 480 Outdoor Unit

	OSA 480C	OSA 480R
Net Weight	350 kg	354 kg
Shipping Weight	365 kg	369 kg

Point loads are approximately the same at each mounting rail end, i.e. 59 kg

Recommended Pipe Sizes

Suction: 35 mm OD
Liquid: 19 mm OD



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