SIEMENS MRI Chiller Installation Guide

Applicable for;

Aera with SEP 45	use model	ICE076/MRI
Aera with SEP 60	use model	ICE090/MRI
Avanto with SEP 45	use model	ICE076/MRI
Avanto with SEP 60	use model	ICE090/MRI
Espree with SEP	use model	ICE076/MRI
Essenza ICS Passive	use model	ICE029/MRI
Skyra with SEP 60	use model	ICE090/MRI
Symphony with RCA	use model	ICE046/MRI
Sonata	Use model	ICE076/MRI
Trio with SEP	use model	ICE090/MRI
Verio with SEP	use model	ICE090/MRI

This document is provided to help with the planning and installation of Parker Hiross ICE chillers when used with Siemens MRI Scanners and should be used together with the Hiross Operation and Maintenance Manual.

All sections of this guide are relevant to the chiller installation.

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1) Chiller Positioning

Chiller are normally located externally. If located internally, centrifugal fans may be required to allow ductwork to be installed to reject heat outside the building.

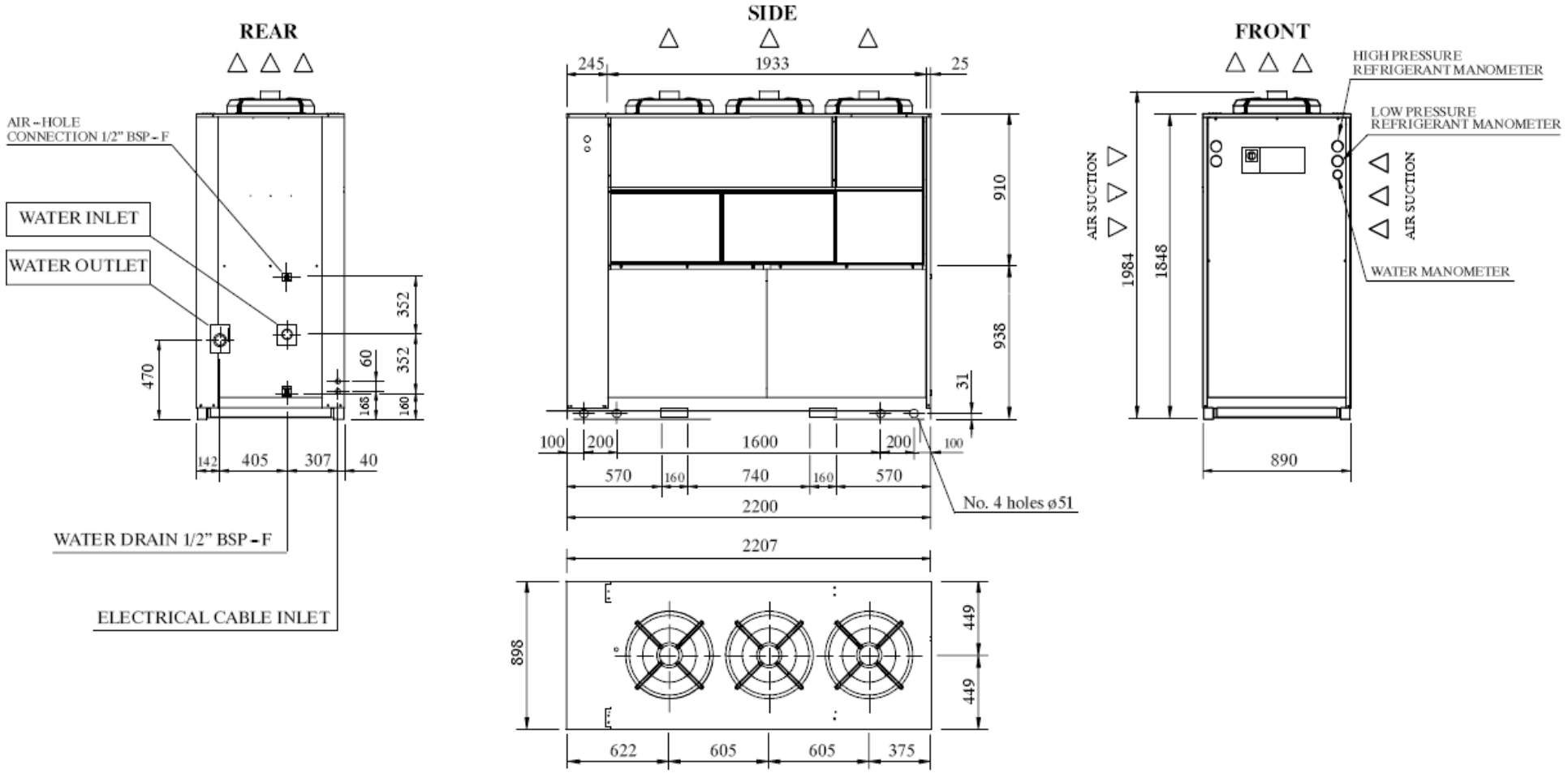
The unit should be positioned with an area of free space on all four sides to accommodate service and maintenance requirements.

The condensers on both sides of the unit require an un-inhibited passage of air in order to work correctly. Ideally a minimum gap of 750mm should be left. Refer to chiller GA drawing for dimensions. Please seek advice if site limitations restrict free space.

If the chiller is located directly onto steelwork and/or onto a roof, it should be mounted on "anti vibration mounts".

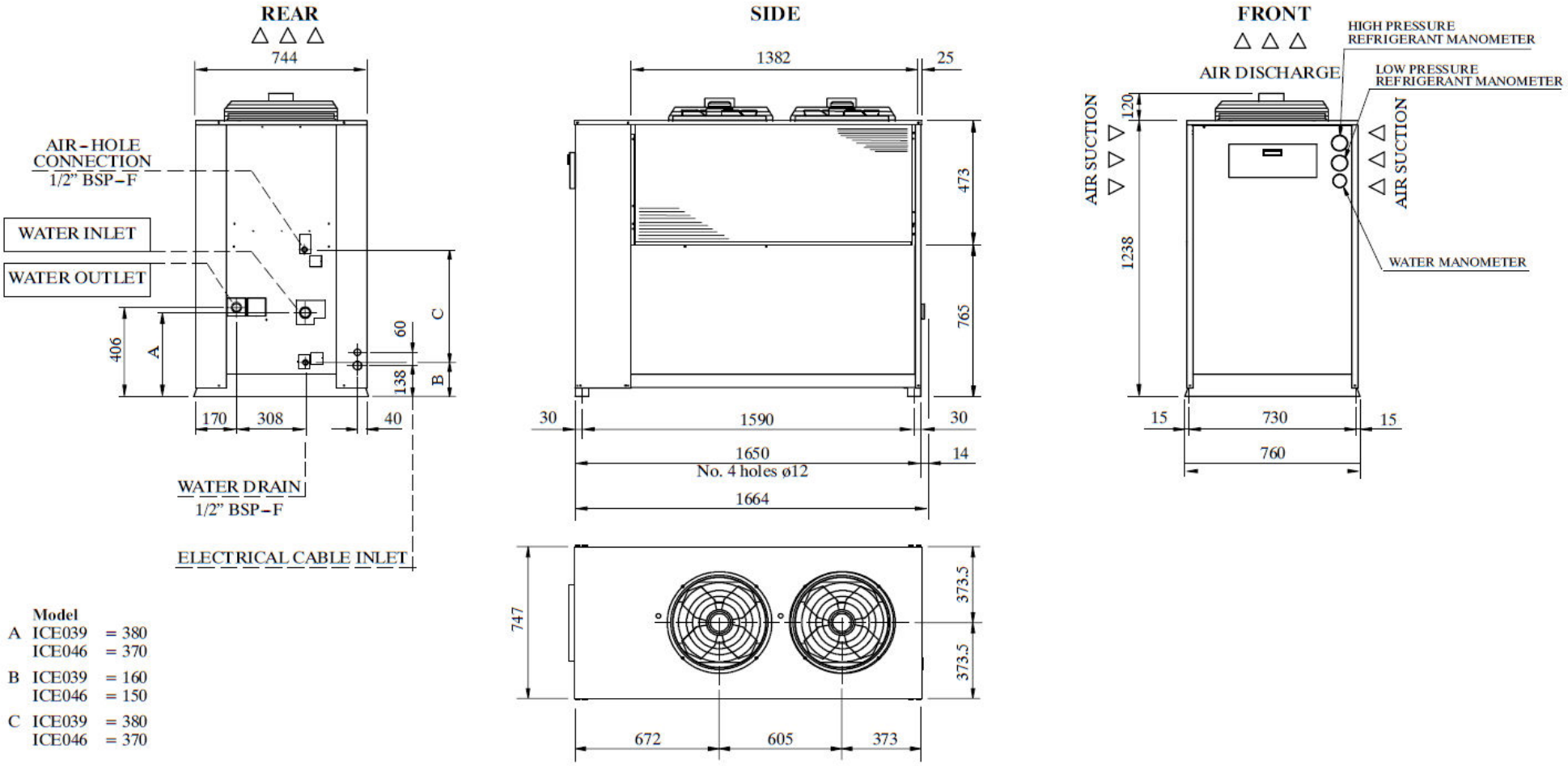
WARNING; The chillers operational performance will be compromised if air-flow is significantly restricted, or warm air from other equipment is being drawn through the chillers' condensers.

Fig. 4 Overall dimensions ICE076 – 116 (axial version)



model	weight (Kg)	refrigerant / charge R407C (Kg)	F.L.A. [A] (400V 3~ 50Hz) compressors	fans	pump (P3)	pump (P1)	pump (P5)	max. water inlet temperature	ambient temperature min.	ambient temperature max.	in/out water connections	max. water pressure
ICE076	800	2 x 8.5	2 x 19.2	3 x 1.35	4.6	2.9	2 x 4.6	30 °C	5 °C	45 °C	2" BSP-F	6 bar
ICE090	900	2 x 9.5	2 x 25.6	3 x 1.35	4.9	2.9	2 x 4.6					
ICE116	1000	2 x 13	2 x 27.8	3 x 1.35	4.9	2.9	2 x 4.6					

Fig. 2 Overall dimensions (ICE039–046)



Model

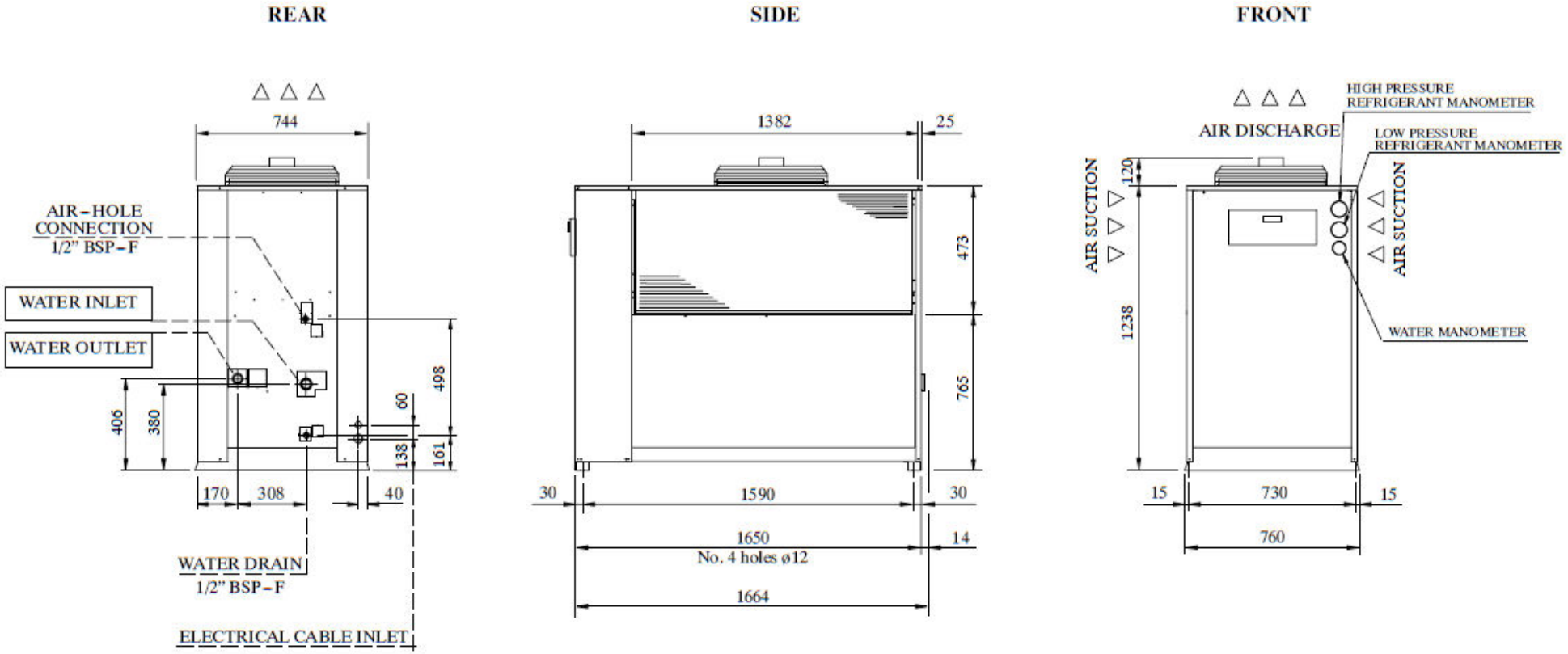
A ICE039 = 380
ICE046 = 370

B ICE039 = 160
ICE046 = 150

C ICE039 = 380
ICE046 = 370

model	weight (Kg)	refrigerant / charge R407C (Kg)	F.L.A. [A] (400V 3~ 50Hz) compressor	fan	pump (P3) std.	pump (P1) opt.	pump (P5) opt.	max. water inlet temperature	ambient temperature min.	ambient temperature max.	in/out water connections	max. water pressure
ICE039	390	8.62	19.2	1.15	2.4	2.2	5.2	30 °C	5 °C	45 °C	1½" BSP-F	6 bar
ICE046	410	9.6	25.6	1.15	4.4	2.2	5.2					

Fig. 2 Overall dimensions (ICE029)



model	weight (Kg)	refrigerant / charge R407C (Kg)	E.L.A. [A] (400V 3~50Hz) compressor	fan	pump (P3) std.	pump (P1) opt.	pump (P5) opt.	max. water inlet temperature	ambient temperature min.	ambient temperature max.	in/out water connections	max. water pressure
ICE029	360	6.8	16	1.35	2.4	2.2	5.2	30 °C	5 °C	45 °C	1½" BSP-F	6 bar

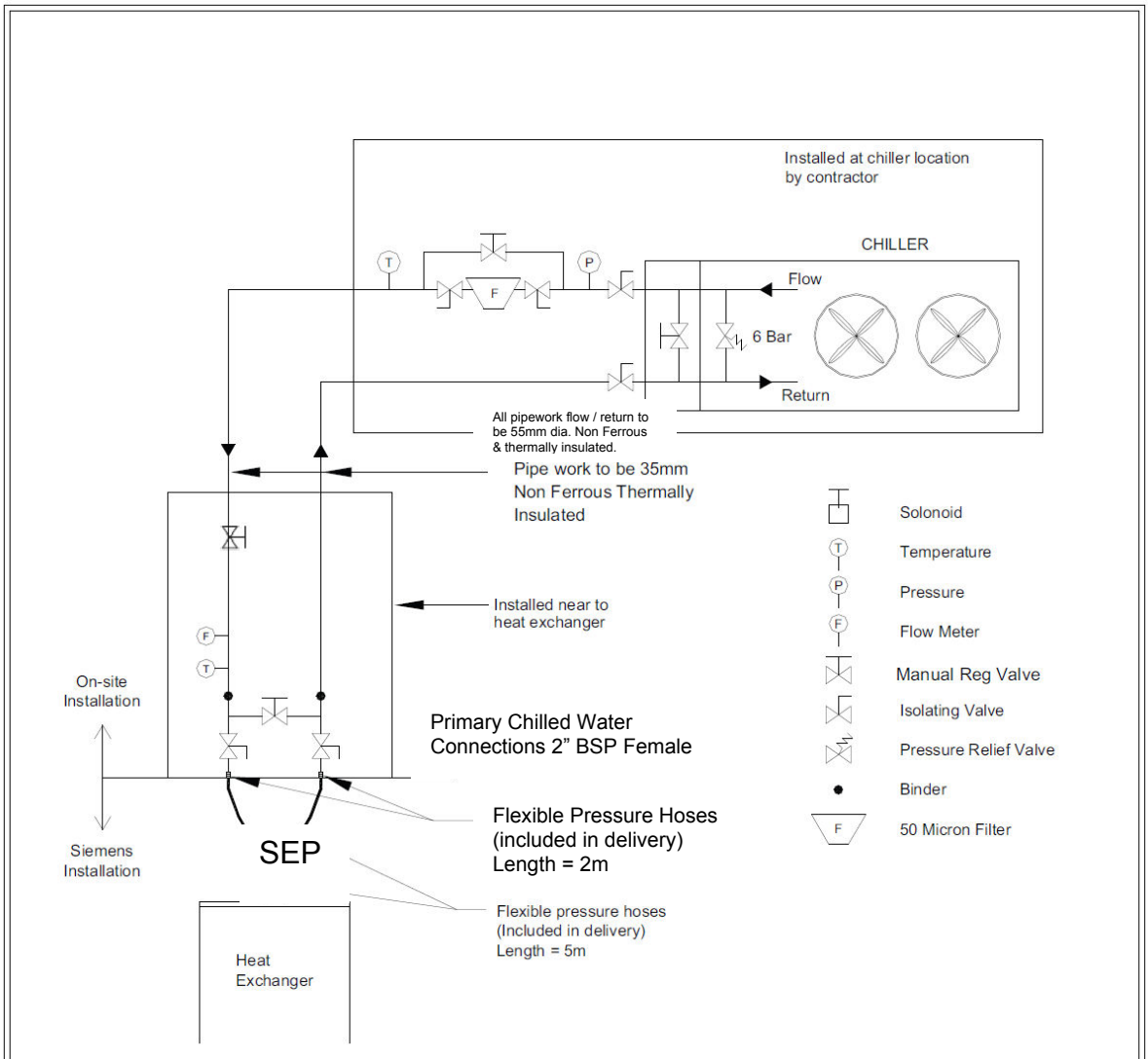
2) Pipe Work

a) Connections

Care should be taken when making up pipe work to the threaded connections on the chiller. Ensure adequate retention of the chiller connections when tightening to prevent chiller connections rotating inside the chiller.

b) Schematic Drawing

Recommended pipe work layout.



SUGGESTED INSTALLATION FOR CHILLED WATER SUPPLY

3) Flow Meter

A Flow Meter should be fitted as indicated in the pipe work schematic. The unit should be capable of accurately measuring the specified nominal flow (see table below) based on the Siemens Planning Guide.

The Flow Meter is critical for setting flows during the commissioning process.

Aera with SEP 45	Nominal Flow	80 Litres/Min
Aera with SEP 60	Nominal Flow	100 Litres/Min
Avanto with SEP 45	Nominal Flow	90 Litres/Min
Avanto with SEP 60	Nominal Flow	110 Litres/Min
Espree with SEP	Nominal Flow	90 Litres/Min
Essenza ICS Passive	Nominal Flow	30 Litres/Min
Skyra with SEP 60	Nominal Flow	100 Litres/Min
Symphony with RCA	Nominal Flow	60 Litres/Min
Sonata	Nominal Flow	90 Litres/Min
Trio with SEP	Nominal Flow	90 Litres/Min
Verio with SEP	Nominal Flow	90 Litres/Min

A typical unit available from RS Components.

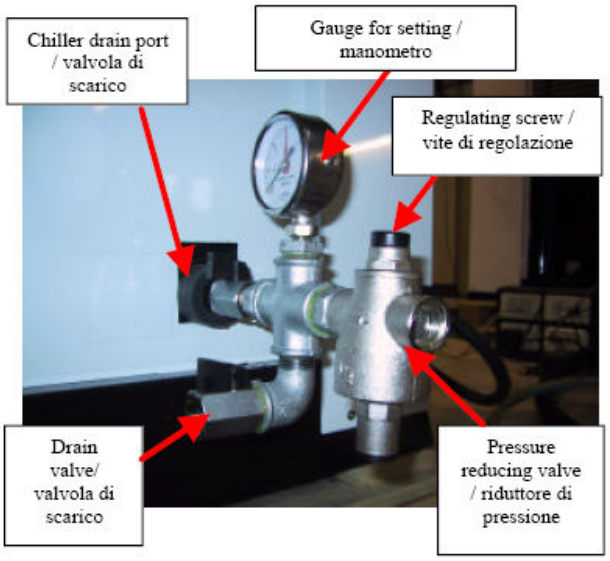
Indicator, flow, water calibrated, range 10-150l/min

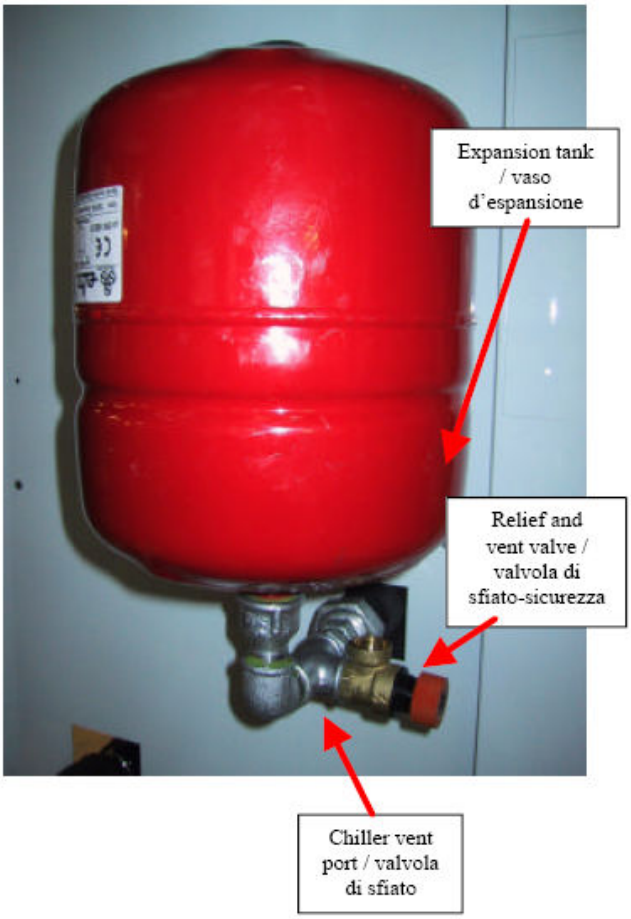
RS Code: 286-276

4) Pressurised Auto Mains Fill Kit

This kit needs to be installed onto the chiller and negates the need for any flood-back protection as the chilled water circuit runs as a closed loop.

A mains water feed (with local isolating valve) is required to connect into the pressure regulating valve as shown below. A double check valve should be fitted into the mains water feed to comply with local water regulations.





5) Electrical Connection

Initial Checks;

After electrical installation the unit should be checked for correct phase rotation.

IMPORTANT:
This should be done before switching the unit on by manually engaging the fan contactor (KM5) and observing correct rotation of the fan blades. Air movement should be vertically upwards.

Reverse rotation will cause damage to the chiller and invalidate the manufacturers warranty.

Under no circumstances should the pump be run without the chiller tank being full of water.

WARNING; 400/415 Volts Live Panel !

Chiller Maximum Running Currents

ICE090/MRI	58amps
ICE076/MRI	48amps
ICE046/MRI	31amps
ICE029/MRI	19amps

6) Remote Panel

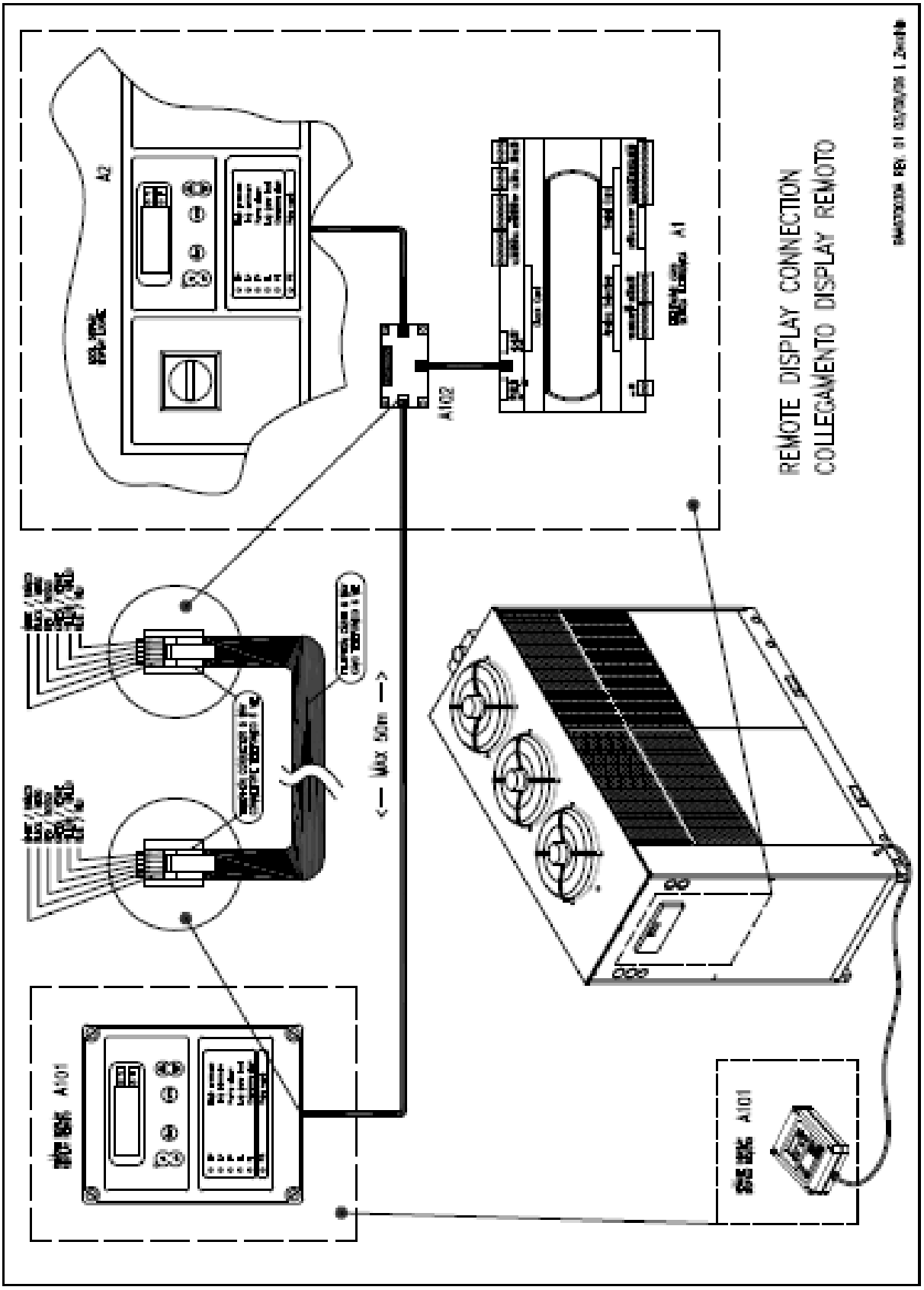
The chillers' main controller has been factory configured to operate with the remote panel connected or disconnected.

A 6-way telephone/data cable should be installed from remote panel to the interface board located inside the chiller electrical panel. For reference, the RS Components part numbers are as follows;

Cable	361-232
Plugs	331-6364
Crimping tool	443-895
Die set	443-930

New Hiross Remote Panel

Remote Panel Wiring Diagram



7) Glycol

The ICE MRI chiller range have built-in Frost Protection by way of Frost Stat with Pump Override, however;

Ethylene Glycol (blended with inhibitors) can also be added to the water system to provide anti-freeze protection (during power failure) and to help maintain the fluid system condition. A mix of 20% by volume is recommended.

The fluid system should be flushed and leak tested with water prior to refilling with the Anti-Freeze mix.

WARNING; The chiller water circuit contains the following metals;

- Copper
- Aluminium
- Stainless Steel

Care must be taken to ensure any chemical used to flush, clean, or maintain the water system is compatable with the above metals.

8) Pre-Commissioning

Parker Hiross can provide a Pre-Commissioning visit by a Service Engineer to help initialise the chiller and set flow rate (through bypass at scanner end) **prior to Siemens Engineers commissioning the scanner.**

This visit can be booked with Parker Hiross to coincide, or following completion of;

a. Chiller installed with power and remote cable.
b. Mains water feed connected.
c. Chilled water pipe work installed, pressure tested and flushed.

Please contact to book visit;

Parker Hiross - Tel; 01926 317803
Fax; 01927 317855

Or

Gary Downs - Mob; 07980210927
Gary.Downs@parker.com

9) Noise Information

For the purpose of providing accurate noise data the Hiross ICE MRI chillers have been independently noise tested to the criteria set out in BS EN ISO 3746:1996.

The data below can be used by acoustic engineers to design noise attenuation where necessary.

Chiller Model	Acoustic Sound Power Level At Source dB LA-w/Lp-w At Preferred Octave Band Centres Hz									
	63	125	250	500	1k	2k	4k	8k	A	AP
022 Axial 1 fan	57/83	69/85	71/80	77/80	81/81	78/77	70/69	61/62	85	92
029 Axial 1 fan	54/80	65/81	72/81	78/81	82/82	79/78	70/69	62/63	85	92
039 Axial 2 fan	54/80	66/82	73/82	80/83	83/83	80/79	70/69	63/64	86	93
046 Axial 2 fans	54/80	67/83	75/84	82/85	84/84	81/80	72/71	64/65	88	94
057 Axial 3 fans	55/81	68/84	76/85	84/87	86/86	82/81	73/72	65/66	89	95
076 Axial 3 fans	55/81	69/85	78/87	87/90	87/87	81/80	75/74	66/67	91	96
090 Axial 3 fans	55/81	69/85	79/88	87/90	88/88	84/83	77/76	67/68	92	97

10) Centrifugal Fan Option

The chiller can be supplied with centrifugal fans fitted for projects where the chiller needs to be located internally and ductwork fitted to the fans.

<u>Important</u>
It is essential that VCD's (variable control dampers) are fitted to all three ducts above each fan to allow for correct commissioning.

Drawings and costings are available on request.

11) Contacts

Main Contact - Technical Sales & Support

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