TECHNICAL SPECIFICATION

GAS CHARGING UNIT

model: **MRC**

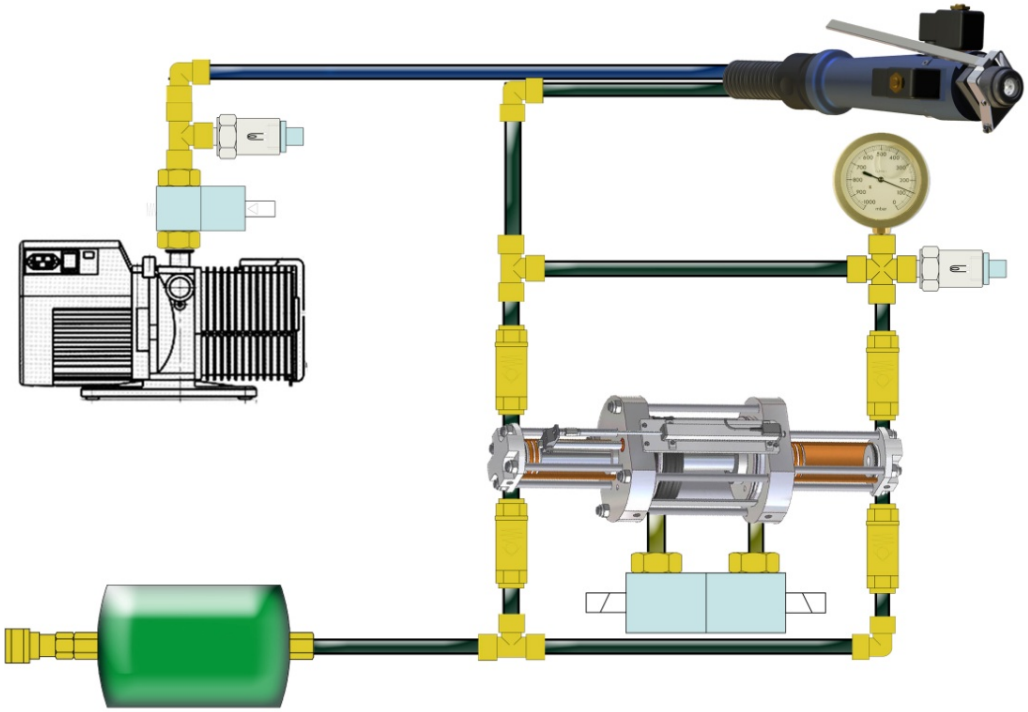
GENERAL DESCRIPTION

The MRC is a complete automatic unit for the vacuum and charging any refrigerant gas and mainly able to perform the main following steps:

- **Vacuum (condensable and incondensable elimination),**
- **Rise pressure test (total leakage test),**
- **Refrigerant gasses injection (CFC, HCFC, HFC and HC).**

The unit is composed by the following devices:

- **One filler model V2BO-L, (optional with start button)**
- **One Piston metering devices able to charge CFC, HCFC, HFC gasses, (optional coriolis mass metering device)**
- **One user interface PC panel with 12" LCDTFT (opt. 15", 17" or 19"),**
- **One vane pump 2010SD (optional 15 m^3/h or 21 m^3/h).**



Lay out of MRC (base version)

MAIN FEATURES

In order to meet different production and market needs, for the vacuum and charge of the refrigerant gases, MRC can be supply in many configurations; details and the main performances are here below briefly reported.

1. VACUUM

A large range of double stage vane pump can be fit in the MRC.
The user can choose the pump's displacement needed in function of the volume of the circuit, the cycle time and if a previous vacuum cycle is used or not used. The output port is always connected to a discharge piping in order to eliminate pollution of tracer gas and oil mist.
To make easier the maintenance and do not increase the internal temperature of the MRC, the vacuum pump is located on the top of the structure, outside of the electrical and hydraulic main box. The vacuum cycle can be programmed both at time level than at vacuum level.

2. RISE PRESSURE TEST

Using the PIRANI vacuum sensor and the leak test valve to close the vacuum pump, the MRC can check the rise of pressure inside the refrigerant circuit for an adjustable time. This test will allow an evaluation of the total leakage and can be perform with different vacuum set points for each cycle.

3. REFRIGERANT GAS CHARGE

The gas charge can be performed by two different system: "mass metering device" or "Piston metering device".
Accordingly to the required charging speed and the relevant accuracy, it is possible to have the following main configurations:

Metring device	*Charging speed (g/s)*	*Accuracy*
Piston	40 for CFC,HCFC,HFC	Up to 100 g: ±1 g,
Coriolis	80 for CFC,HCFC,HFC	over ±1%

Our ISODUE filler is designed in order not have gas accumulation after the charge, so the unit will not release any gas at the operator position after filler disconnection.

ACCESSORIES

A wide range of accessories are available for the MRC family:

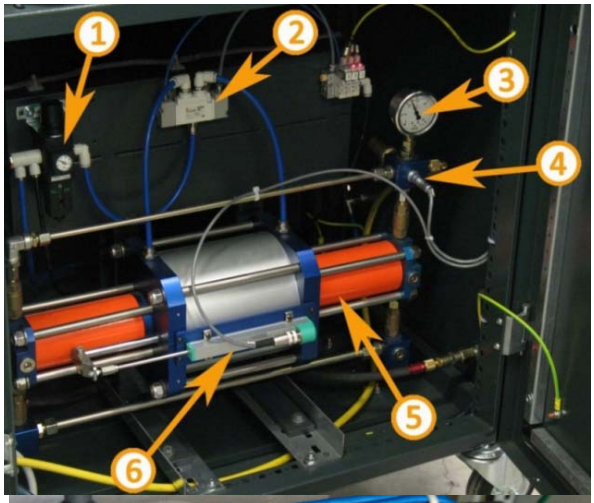
- **Barcode reader – for automatic selection of the charging cycle,**
- **Printer on board – to print out the report of the charge,**
- **Vacuum filler – one extra filler dedicated to vacuum in order to make the vacuum phase and leak test phase from two side of the refrigerator,**
- **Double charge test – a special device to detect if the unit under charge is charged or not; to avoid the double charge of the unit,**
- **Calibration kit – to calibrate the temperature sensor and the dose accuracy of the MRC,**
- **Gas Transfer Pump – to transfer the gas from the storage tank to the MRC; two models available PTG100 for piston metering device and PTG300 for direct mass metering device,**
- **Pressure accumulator – designed to reduce the variation of pressure in the gas distribution piping, and to assure the max charging speed.**
- **Automatic gas tank exchange – in case of use of small gas cylinder (up to 50 kg) this device control the gas quantity inside the used cylinder and switch to the spare one sending an alarm to the operator in order to replace the empty one. Available for CFC, HCFC and HFC,**
- **Tank support with Heater belt,**
- **Filler support,**
- **Isodue Filler.**

METERING DEVICES AND FILLERS

Piston Metering Device.

It is a volumetric sensor able to calculate the mass flow with high accuracy. This device is dedicated for charge up to 2 Kg.

1) Air regulator
2) Drive valve
3) Manometer
4) Temperature sensor
5) Cylinder
6) Potentiometer



Coriolis Metering Device.

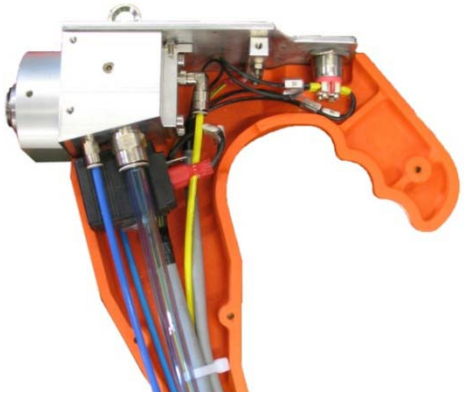
It is a mass sensor that can reach high charging speed and can work both in liquid and gas phase. It is dedicated for applications where the charge is over 1000 grams and the production rate require short charging cycles.

V2BO-LB FILLER

basic filler for vacuum and gas charge, includes mechanical device for Hansen opening and start button. In order to allow the high charging speed required, this device is supply with 3/8" quick coupler.

ISODUE Ex FILLER
ergonomic design and special features as:

- Pneumatic release for the quick coupling at the end of the cycle
- Pressure switch in order not start cycle in case of charged circuit
- Pneumatic pin control for filler prevacuum and purge at the end of the cycle
- Light weight less than 1300 grams



TECHNICAL DATA

DATA	UNITS	VALUE
Charging accuracy:		
For charge up to 100g	g	±1
For charge over 100 g	%	±1
Max Charging Speed (Piston/corioli)	g/sec	40 / 100
Vacuum pump displacement	m^3/h	10 to 21
Vacuum limit	mbar	1×10^{-4}
Vacuum sensor type		Pirani
Refrigerants type		CFC, HCFC, HFC
Display		LCD TFT 12" (larger on request)
Barcode Reader		Optional
Printer		Optional
Output		USB, RS232
Power supply		400V / 50Hz 3ph
Installed Power	W	1500 w
Dimensions	mm	600x800x1600
Weight	Kg	180