

MARK



Rotary Screw Compressor
MSB 11 - 15 - 18 - 22 - 30 kW

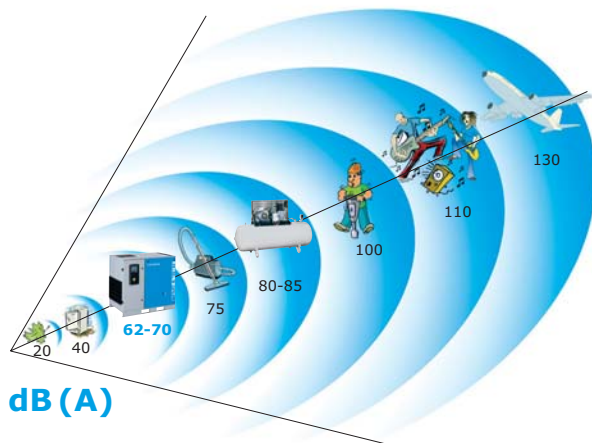
TECHNOLOGY YOU CAN TRUST

Rotary Screw Compressor MSB

MSB range is a modern and aesthetically designed belt driven oil lubricated screw compressor offering a wide choice of variants, built with quality components in a state of the art assembly plant:

	FIX SPEED	I V R
Power (kW)	FIVE: 11/15/18,5/22/30	FOUR: 15/18,5/22/30
Pressure (bar)	THREE: 8/10/13	TWO: 8 (5,5 to 9,5) and 10 (7 to 12,5)
Control	Load/Unload	Variable speed

MSB range can fulfil industrial requirements up to 147 cfm with maximum **reliability** and **efficiency** whilst ensuring **user friendliness**, easy **serviceability** and **low noise levels**.
Everything required from a compressor with technology you can trust.



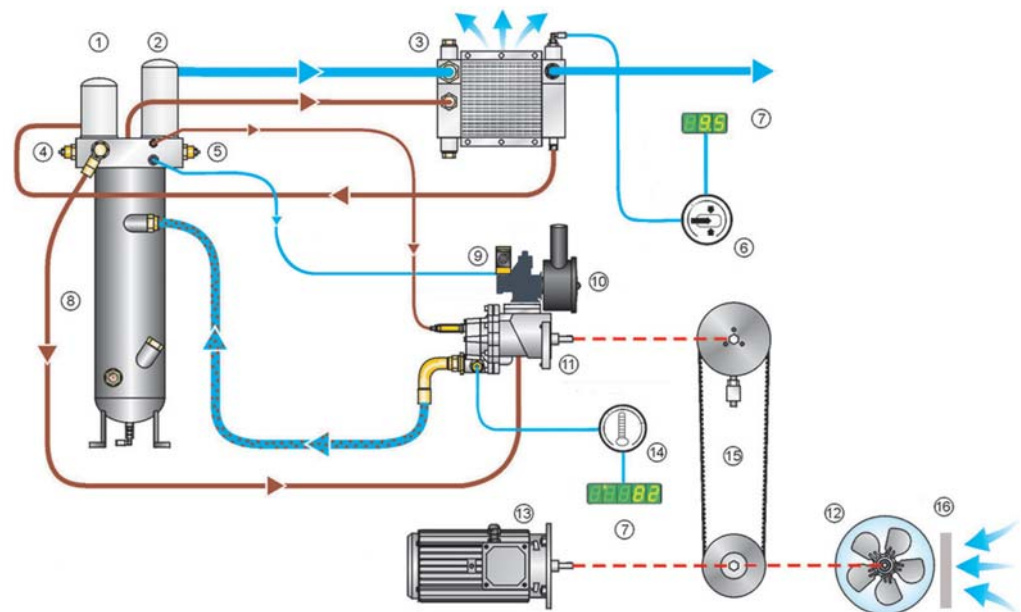
Low noise levels

Design experience, rigorous selection and careful assembly of components. Use of insulation foam, deflectors and anti-vibration pads are the key factors explaining our success in reducing noise levels of all our units to the lowest in the market. Compact and respectful of the environment, thanks to its low noise levels, the MSB range can easily be installed in working environments, even close to offices.

Flow Diagram

Legend

- 1 - Oil filter
- 2 - Air/oil separation cartridge
- 3 - Air/Air & Air/Oil Cooler
- 4 - Safety valve
- 5 - Thermostatic valve
- 6 - Pressure sensor
- 7 - ES3000 display
- 8 - Oil tank
- 9 - Suction electrovalve
- 10 - Air Filter
- 11 - Screw element
- 12 - Cooling turbine
- 13 - Electric motor
- 14 - Temperature sensor
- 15 - Belt Drive
- 16 - Air intake filtration foam



Quality Design and Components

All benefits included

0 Powder coated soundproofed canopy

Aesthetic and practical panels for service.
Easy handling from 3 sides.
Low noise levels.

1 Air intake external filtration foam

Dust protection for internal components ensuring maximum lifetime and reliability. Easy to clean.
Inverter protection for IVR units.

2 High efficiency encapsulated air filter

Protection of the screw element thanks to a 2 µm pleated filtration media against small dust particles.
Air supplied from cold area for improved compression efficiency.

3 Asymmetrical oil lubricated screws

High efficiency element built with low-wear bearings and exact tolerances for long term performance.

4 Oil filter and Air/Oil separator cartridge

Easy removal for quick servicing. Ensuring less than 3 ppm of oil content in the compressed air.
Extending network filter protection and reduced service costs (oil refill).

5 Aluminium combined Air/Air and Air/Oil cooler

Mounted on roof for easy ducting.
Sized to ensure low oil temperature and low compressed air temperature even in maximum ambient conditions.

6 Electronic controller ES3000

User friendly and comprehensive information display.

7 Oil tank

Vertical vessel for initial gravity separation.
Oil sight glass visible through canopy and drain valve on oil outlet for easy servicing.

8 Cooling turbine

Improved efficiency compared to a conventional fan and low noise levels.

9 Electric motor

Class F, IP55 for protection – greased for life – protected by thermal relay – Efficiency 1 on IVR units for improved energy savings.

10 Pulley-belt assembly

Guided alignment for efficiency.
Easy tensioning system.



Easy Maintenance & Handling

Because high performance, simple intervention and reliability contribute to reduced operating costs, MSB has been designed in a way that all internal parts are easily accessible, whether for a simple check or the most important maintenance operations.

Large service accessibility

- Side panel: filtration foam can easily be removed without tools and cleaned.
- Oil sight glass is visible through the front panel, allowing easy oil level inspection without opening.
- Removal of the front panel 2 locks, allows air filter media exchange, oil filter exchange, and an oil change, simplified by the fitting of an oil drain valve.
- Removal of one side of the roof 2 screws allows the exchange of the oil separation cartridge.
- Rear panel 3 screws gives access to the drive:
 - belts tensioning is made easy thanks to a simple screw tensioning system,
 - by removing the belt guard 2 screws a belt change can also be performed easily.

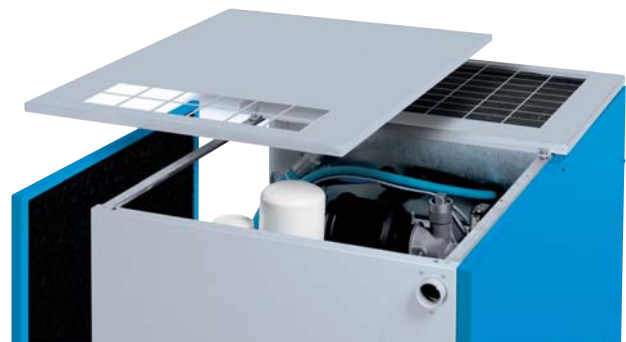


Smart ducting capability

Each machine has been designed to allow easy ducting at the cooling air inlet and outlet.

Inlet air can be ducted from the left side of the compressor and outlet from the top.

Permanent ducting will not interfere with routine operations needed by panel removal.



Simple handling

Three forklift openings have been designed in the canopy frame (front/rear/right) and are located in order to keep the machine well balanced. Installation of the unit is safe and easy as manoeuvrability is possible with a simple pallet truck.

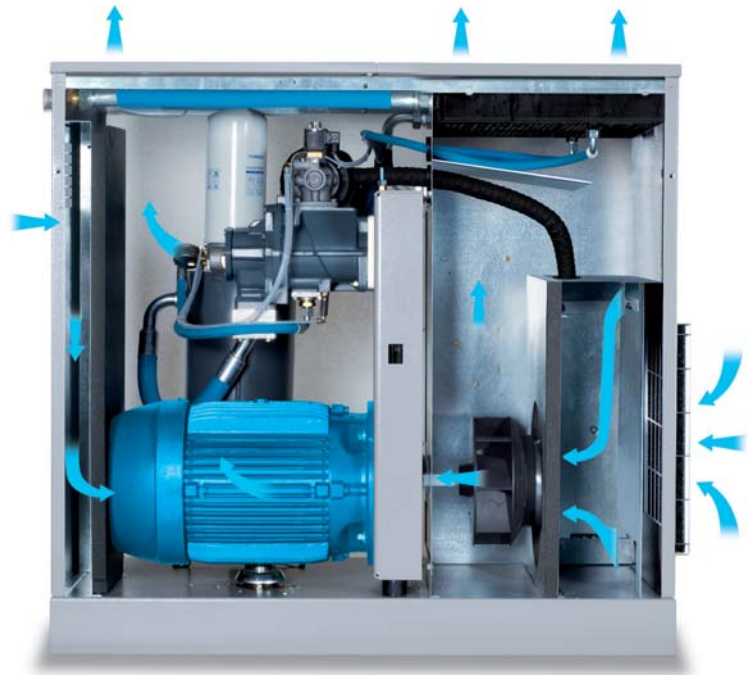


Cooling • Maintenance

Efficient cooling

Cooling has been given a special attention in order to increase life time of internal components, to optimize the compression efficiency, and to guarantee optimum compressed air outlet temperature.

- A nozzle directs the air flow towards the turbine mounted on main motor shaft in order to get the most efficiency and the lowest noise levels.
- Main motor benefits from independent cooling.
- Ducting on the roof-mounted cooler is possible without compromising maintenance access.



Professional maintenance

Taking into account how costly a production stoppage can be, planning of the maintenance schedule is essential.

By using genuine MARK spare parts and FLUIDTECH oil, you are guaranteed that your compressor will operate efficiently and reliably in the long term. The ES3000 controller gives you extensive information on component renewal times. MARK has also defined a wide choice of kits, ensuring all parts are supplied for each service interval. Finally, should you require further peace of mind, MARK has also developed RELAXAIR: an exclusive maintenance and warranty programme for up to 5 years.



Energy Saving Fix Speed Regulation MSB 11-15-18-22-30



ES3000 Electronic controller

Complete compressor management with comprehensive information display

Management

- Start/Stop including stop after default and auto restart after power failure function.
- Intelligent control system that minimises unload time.
- Pressure control.
- Phase control (standard).
- Remote control (can be activated).
- Weekly/Daily planner.

Safety

- Status display (start-up, stop, stand-by).
- General alarm.
- Default (low or high temperature, turbine or main motor overload, wrong rotation, over pressure).
- Due maintenance and component change.
- History of last 4 alarms.

Communication

Soft touch keyboards with 2 digital screens and 15 fixed or blinking LED's.

8 digital and 4 analogical input connections.

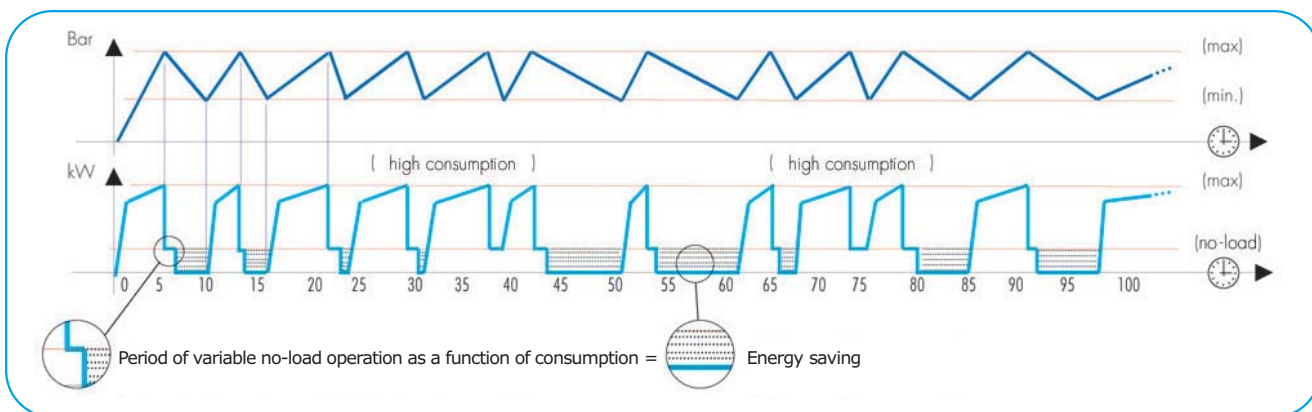
14 digital and 1 analogical (for IVR) connections.

1 serial port for communication with up to 5 other compressors in a network.

1 interface port (computer connection).

Energy savings with "Intelligent Shut-down" on fixed speed MSB

Regulation with the ES3000 controller allows the user to considerably reduce electrical energy consumption in the no – load phase, through the "intelligent shut down" feature, by automatically calculating, cycle by cycle, the minimum no – load functioning time, based on air consumption and the maximum number of start-ups per hour programmed.



Once maximum pressure has been reached, in the absence of air, even due to lack of need, the compressor switches to no – load. The energy saving is obtained by stopping the compressor, following the shortest possible no – load.

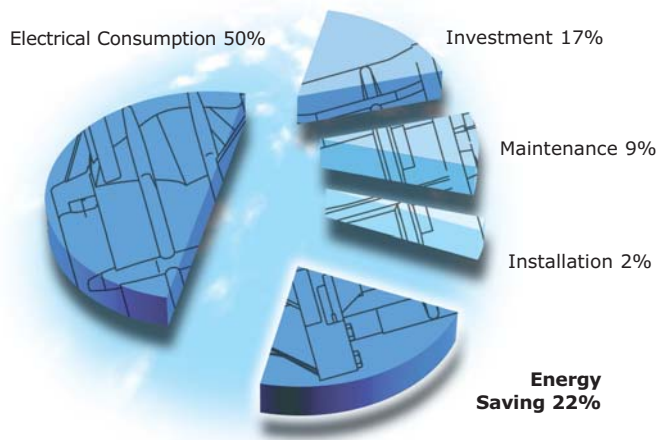
This ensures:

- that the maximum number of start-ups per hour programmed is not exceeded;
- immediate re-starting in order to satisfy a subsequent requirement of air.

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Optimum Savings With IVR Regulation

MSB IVR 15-18-22-30



IVR Principles

Most of the time, air demand is not constant in a network. The purpose of an inverter is to reduce the speed of the main motor to follow precisely the profile of the compressed air requirement. This results in reduced power consumption, bringing energy savings and a quick return on the investment incurred.

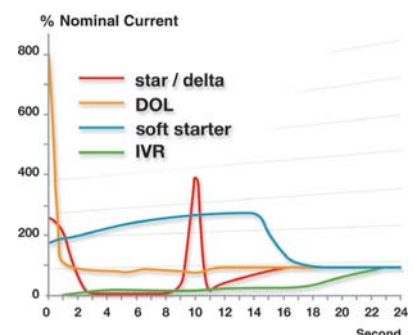
IVR Benefits:

Safe and easy operation

- **EMC compliant:** no electromagnetic interference to or from the electrical network.
- **ES3000 standard controller:** comprehensive display and automatic control of the inverter.
- **Standard inlet baffle:** protects the inverter against dust whilst allowing ventilation.
- **Standard components:** easy maintenance and availability.

Energy Savings:

- **Soft start:** protects the motor against stress at start up and avoids current peaks.
- **Efficiency 1 motor:** from a reputed European supplier, high efficiency for lower kW consumption. Speed regulation of the motor between minimum and maximum frequency brings maximum savings.
- **Constant pressure:** no fluctuation between load and unload pressures. (1 bar= 7% energy). No unload cycles and energy wastage.



TECHNICAL DATA (according to ISO 1217 and CAGI PNEUROP standards)												
Type												
	bar	psi	HP	kW		m³/min	m³/h	cfm				
MSB 11/8	8	116	15	11		1,82	109	64	62	400/50/3	1"	396
MSB 11/10	10	145	15	11		1,58	95	56	62	400/50/3	1"	396
MSB 11/13	13	188	15	11		1,19	71	42	62	400/50/3	1"	396
MSB 15/8	8	116	20	15		2,38	143	84	63	400/50/3	1"	405
MSB 15/10	10	145	20	15		2,12	127	75	63	400/50/3	1"	405
MSB 15/13	13	188	20	15		1,61	97	57	63	400/50/3	1"	405
MSB 15 IVR	8	116	20	15	max min	2,52 0,66	151 39	89 23	64	400/50/3	1"	432
	10	145	20	15	max min	2,21 0,47	132 28	78 17	64	400/50/3	1"	432
MSB 18/8	8	116	25	18,5		2,91	174	103	66	400/50/3	1"	414
MSB 18/10	10	145	25	18,5		2,62	157	92	66	400/50/3	1"	414
MSB 18/13	13	188	25	18,5		2,12	127	75	66	400/50/3	1"	414
MSB 18 IVR	8	116	25	18,5	max min	3,17 0,88	190 53	112 31	67	400/50/3	1"	452
	10	145	25	19	max min	2,73 0,67	164 40	96 23	67	400/50/3	1"	452
MSB 22/8	8	116	30	22		3,59	215	127	68	400/50/3	1"	430
MSB 22/10	10	145	30	22		3,10	186	109	68	400/50/3	1"	430
MSB 22/13	13	188	30	22		2,54	152	90	68	400/50/3	1"	430
MSB 22 IVR	8	116	30	22	max min	3,69 1,02	222 61	130 36	69	400/50/3	1"	458
	10	145	30	22	max min	3,24 0,85	194 51	114 30	69	400/50/3	1"	458
MSB 30/8	8	116	40	30		3,97	238	140	69	400/50/3	1"	458
MSB 30/10	10	145	40	30		3,54	212	125	69	400/50/3	1"	458
MSB 30/13	13	188	40	30		2,98	179	105	69	400/50/3	1"	458
MSB 30 IVR	8	116	40	30	max min	4,17 1,24	250 75	147 44	70	400/50/3	1"	504
	10	145	40	30	max min	3,64 0,98	218 59	129 35	70	400/50/3	1"	504

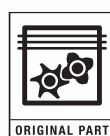


According to



The Company reserves the right to make changes, for the purpose of continually improving its products.

MARK



SOLD AT