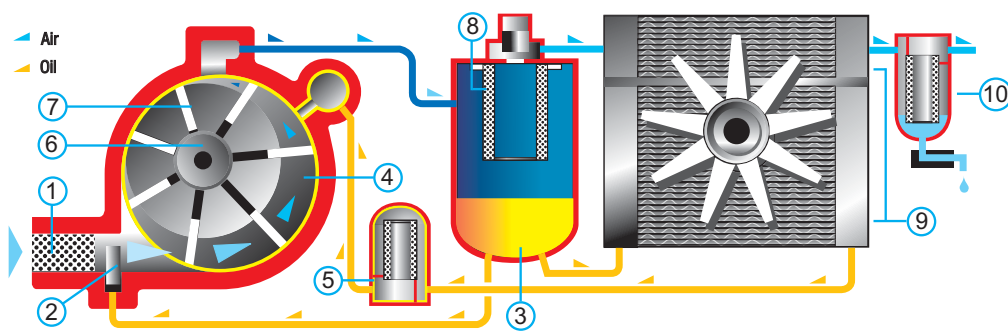


## OPERATION PRINCIPLE

The air is sucked through a filter and passes through a modulating proportional valve which regulates air delivery according to air requirement. This valve allows to maintain a constant working pressure. The air goes into the compression chamber where the stator, rotor and blades create a series of vanes (or volumes). The rotor rotates eccentrically to the stator and is characterised by vertical slots in which the blades are placed and are pushed against the stator's wall by centrifugal force.

Lubrication and cooling are guaranteed by an efficient injection system which allows perfect hold and a lower lubricant consumption. A thin film of oil on the stator's wall avoids direct



contact of the metal parts giving no wear. During the rotation the compression occurs with the volume reduction of the spaces between the rotor-blades and the stator. The compressed air and oil mixture passes through various separating phases mechanical and coalescent, leaving less than 3 ppm (parts per million) of oil in the air. The purified air leaves the compressor and is cooled in the radiator. The condensate which is produced is eliminated by a separator with an electronic condensate drain.

1. Air filter
2. Automatic intake valve
3. Oil chamber
4. Compression chamber
5. Oil filter
6. Rotor
7. Blades
8. Coalescing separator
9. Air/oil cooler (radiator)
10. Condensate drain (optional)

50 Hz L = 8 bar H = 10 bar HH = 13 bar  
60 Hz LX = 8 bar HX = 10 bar

## TECHNICAL FEATURES

| Model   | Rated Motor Power<br>KW | Free Air Delivery* |       |       |       |       | Sound Pressure Level** |       |
|---------|-------------------------|--------------------|-------|-------|-------|-------|------------------------|-------|
|         |                         | L                  | H     | HH    | LX    | HX    | 50 Hz                  | 60 Hz |
| AC 55   | 55                      | 10,67              | 9,5   | 8,37  | 10,68 | 10    | 68                     | 70    |
| AC 75   | 75                      | 14,32              | 12,66 | 11,18 | 13,56 | 12,41 | 68                     | 70    |
| AC 90   | 90                      | 16,79              | 14,12 | 12,49 | 16,49 | 14,93 | 69                     | 71    |
| AC 110s | 110                     | 19,2               | 16,5  | 13,8  | -     | -     | 69                     | -     |

Working pressures: 7.5 bar for 8 bar version - 9.5 bar for 10 bar version - 12.5 bar for 13 bar version

(\*) Free air delivery as per ISO 1217: 1996 annex "C"

(\*\*) Sound pressure level as per PN8NTC2.3; average value measured from a distance of 1 m

## OPTIONAL

### CONDENSATE SEPARATOR AND DRAIN KIT

### HEAT RECOVERY KIT

Recoverable heat 80% of shaft power

### OIL-WATER SEPARATOR

Max oil content < 5 mg/l

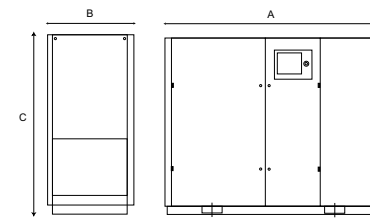
## PLUS VERSION

### DRYER

Dew point refrigerant

Refrigerant gas + 3 °C

Refrigerant gas R404 A



## DIMENSIONS (mm) - WEIGHT (kg)

| Model         |    | 55   | 75   | 90   | 110s |
|---------------|----|------|------|------|------|
| A             | mm | 2150 | 2150 | 2150 | 2150 |
| B             | mm | 1200 | 1200 | 1200 | 1200 |
| C             | mm | 1890 | 1890 | 1890 | 1890 |
| <b>Weight</b> |    |      |      |      |      |
| Standard      | kg | 1580 | 1610 | 1640 | 1710 |
| Plus          | kg | 1750 | 1780 | 1810 | 1880 |

Ing. Enea Mattei SpA reserves the right to change or replace the data contained in this catalogue at any moment and without notice.

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COMPANY  
WITH QUALITY MANAGEMENT  
SYSTEM CERTIFIED BY DNV  
= ISO 9001:2000 =



**4000**  
AC Series



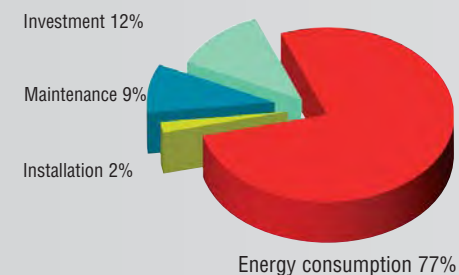
# The Best Solution for Your Company

The 4000 series centres adopt the exclusive Mattei vane technology and are designed to work 24 hours a day. The 4000 series centres are solid and reliable and offer excellent performance in terms of air delivery and low energy consumption. Maximum care is given to details in the design and the components are of the highest quality. Maintenance intervals are limited and are reduced to the sole oil change and filter cleaning or substitution. The centres are designed to enable easy access to all its components.

These are a few of the 4000 series unique characteristics:

- Long-life blades.
- Maximum 1 to 3 p.p.m. of oil in the outlet air.
- Low compressor rotational speed (only 1500 r.p.m.).
- The outlet air temperature is less than 11 K above room temperature.

## Energy costs are more relevant than the initial investment



The energy cost of a compressed air installation can reach 80% of total costs. All other costs such as ordinary and extraordinary maintenance or the buying cost are relevant but become secondary when compared to electric energy as illustrated in the diagram. The diagram underlines a clear truth: even a small percentage of saving in energy will produce important economic benefits.

The diagram refers to a system with a 45 kW compressor, 5 year depreciation, 4000 hours/year, operating pressure 7 bar.



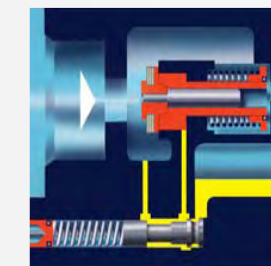
## AIR/OIL SEPARATION

The air/oil separation occurs in different stages and ensures exceptionally low oil consumptions. The main mechanical separation occurs in the oil receiver, before the filter, due to slowing down and change of direction of the flow. The last separation occurs through the coalescing filter, removing the remaining oil vapours from the air. This particular oil separation system brings to a very reduced oil consumption. The large size of the filter and quality of materials ensure a long life of the filter itself.



## REGULATION SYSTEMS

Thanks to a modulating proportional intake valve that supplies air at constant pressure, these compressors can even work without a receiver. With this regulation air delivery is automatically adapted to the system demand.



## ENERGY SAVING AUTOMATIC ON LOAD / OFF LOAD

This regulation maintains the line pressure within a range of minimum and maximum pressure set by the pressure switch and the compressor may stop and restart according to air demand. When the line pressure reaches the minimum value the compressor will run on load delivering 100% of its capacity. When the pressure reaches the maximum value the compressor will run off load with the immediate closure of the intake valve, which sets off the rapid decompression phase, allowing a significant reduction of the absorbed power consumption. Should the pressure continue to remain high, the compressor will stop.

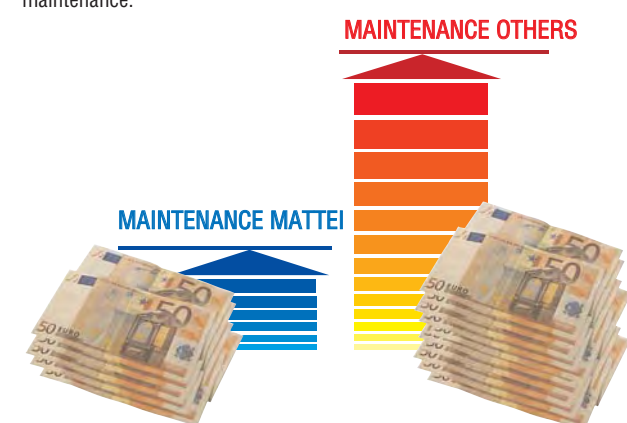
When the pressure reaches the maximum value the compressor will run off load with the immediate closure of the intake valve, which sets off the rapid decompression phase, allowing a significant reduction of the absorbed power consumption. Should the pressure continue to remain high, the compressor will stop.

## COMBINED ON/OFF LOAD AND MODULATION REGULATION

This regulation allows Mattei compressors to modulate within a set pressure range (for example,  $\pm 0.3$  bar). Should the air demand decrease, this regulation also allows the compressor to run off load and stop, with evident energy savings.

## SIMPLE AND ECONOMIC MAINTENANCE\*

Maintenance operations only include changing the oil at predetermined intervals, cleaning or replacing the air filter and cleaning the radiator. The separator filters are substituted every 10,000 working hours, with significant savings. The absence of roller bearings helps to reduce significantly the cost for maintenance.



\* with Mattei Rotoroil

## ENERGY SAVING



The range is equipped with energy saving EFF 1 electric motors. The electric motor is directly coupled to the airend, allowing great advantages in overall efficiency of the compressed air unit, meaning less kW per m<sup>3</sup>/min.

## DIRECT COUPLING



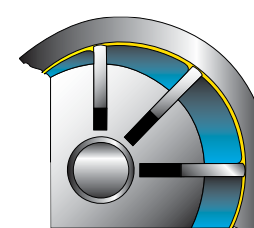
The electric motor and the compressor are coupled directly by means of flexible coupling and turn at only 1500 rpm. Direct coupling determines a remarkable "energy saving" because there are no energy losses caused by gears or V belts.

## COOLING



The compressor is complete with two coolers, entirely made of aluminium and suitable to cool the oil and the compressed air. An air flow, produced by two centrifugal fans placed inside the soundproof canopy flows through the coolers and cools the same. The compressed air cooling system is arranged for the fitting, externally to the soundproof enclosure, of a condensate separator and electronic drain with timer. The compressed air outlet temperature is < 11 K over the ambient temperature.

## BLADES DESIGNED FOR OVER 100,000 HOURS LIVE\*



An oil film on the stator's inside surface prevents the moving parts from wearing out by avoiding a direct contact with the blades.

\* with Mattei Rotoroil

## MAESTRO



The AC 4000 series is equipped with an exclusive state-of-the-art computerised controller, Maestro. This system automatically controls, monitors and programmes the unit's operation, and can be connected to a PC for a remote control. If connected to other compressed air packages equipped with Maestro, the unit can become master of a compressed air plant, thus saving on the installation

of a superior controller. Maestro can be interfaced via web or cellular technology to provide remote service monitoring.