

Series:

## ERGO PRIME

rev.09 07/11/2018

## FILLING STATION COMPRESSORS

### Breathing air compressor

Types:

**MCH 13/16/21/23 ET ERGO PRIME**



MCH 16 ET ERGO PRIME

# Technical Data Sheet

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rev.09 07/11/2018



General	
Type of gas	Air
Intake Pressure	Max 300 mbar
Nominal pressure	250 bar / 330 bar / 360 bar
Filling pressure	232 bar / 300 bar / 330 bar
Max working pressure	420 bar
Permissible ambient temperature range	+5 ÷ +50°C
Permissible altitude	0 ÷ 1,500 m AMSL
Max. permissible tilt	15°
System design	Open
Operating voltage, standard	400 V; 50 Hz
Other operating voltage	230V 50 Hz / 440V 60 Hz / 230V 60Hz
Compressor oil	Coltrioil 157
Oil change interval	every year/ 1,000 h
Frame	Steel 1,5 mm thickness -colour RAL 5002 - 7016 Powder coating painting – scratch proof

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Compressor system	MCH13 ET ERGO TPS	MCH16 ET ERGO TPS	MCH21 ET ERGO TPS	MCH23 ET ERGO TPS
Charging rate <sup>1</sup>	235 l/min	315 l/min	345 l/min	380 l/min
Purification	2 X HYPERFILTER			
Cooling air flow,	1,960 m <sup>3</sup> /h	2,400 m <sup>3</sup> /h	1,960 m <sup>3</sup> /h	2,180 m <sup>3</sup> /h
Weight in kg <sup>2</sup>	153 kg	163 kg	164 kg	164 kg
Dimensions	1120 x 625 x 770 mm			

1 Measured during 10 liter cylinder filling from 0-200 bar tolerance +/- 5% at + 20°C ambient

temperature. 2 Standard model. Weight and dimensions may vary depending on accessories.

Drive system (three-phase motor)	MCH13 ET ERGO TPS	MCH16 ET ERGO TPS	MCH21 ET ERGO TPS	MCH23 ET ERGO TPS
Power	4 kW	5.5 kW	7.5 kW	
Model	MEC 100		MEC 112	
Type of	B3			
Type	Three-phase Squirrel-Cage-Motor			
Operating voltage /	400 V, 50 Hz			
Speed	2,815 1/min	2,910 1/min		
Protection class	IP55 (TEFC)			
Pumping group	1240	1600	1240	1400

1 Different voltage / frequency available on request.

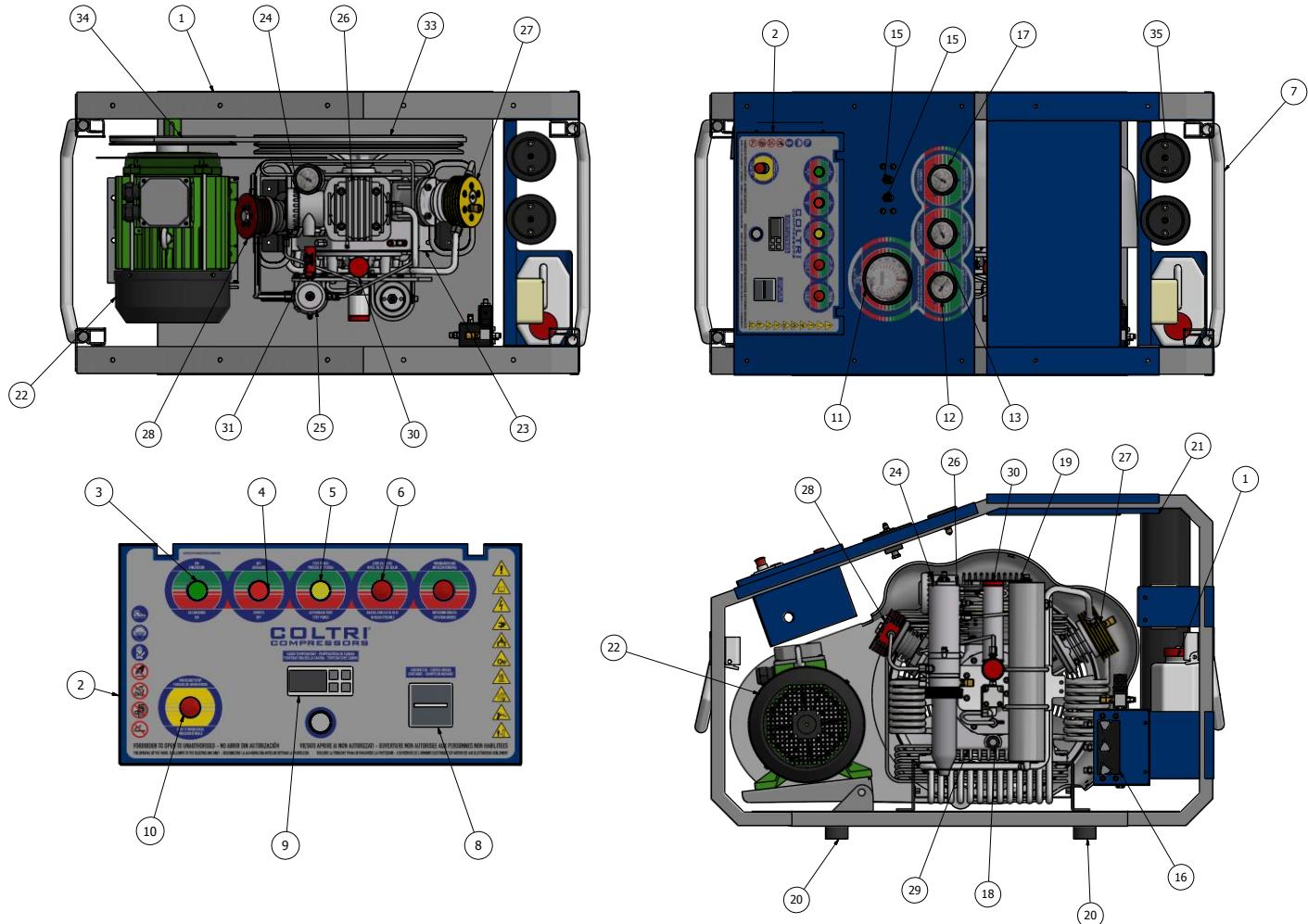
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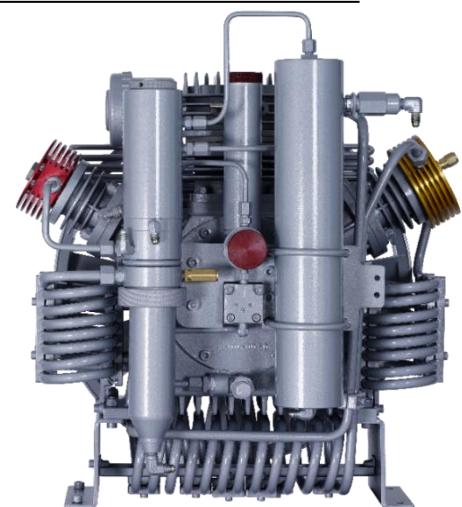


- 1. Condensate collection canister
- 2. Control panel
- 3. ON pushbutton
- 4. OFF pushbutton
- 5. Condensate discharge pushbutton
- 6. Oil level warning light
- 7. Handless
- 8. Hour counter
- 9. Cooling air temperature
- 10. Emergency pushbutton
- 11. Automatic shutdown pressure switch
- 12. 3rd stage pressure gauge / final pressure
- 13. 2nd stage pressure gauge
- 14. 1st stage pressure gauge
- 15. Refill hoses connection
- 16. Condensate discharge valves
- 17. Oil level

- 18. Oil discharge
- 19. Separator
- 20. Vibration dumpers
- 21. Frame
- 22. Motor
- 23. Compressor
- 24. Air filter
- 25. Final condensate separator
- 26. 1st stage
- 27. 2nd stage
- 28. 3rd stage
- 29. Monobloc
- 30. Oil filler plug
- 31. Safety valve (final overpressure)
- 32. PMV
- 33. Cooling fan
- 34. Belt
- 35. Hyperfilter

### » Compressor block with following features:

- Forced oil lubrication with LP gear pump.
- Micronic intake filter: 10 µm
- All coolers and pipes, stainless steel AISI 316 and s.s fittings and nuts.
- Outlet temperature approx. 5 °C above cooling air temperature.
- Intermediate separator after 2<sup>nd</sup> stage and double separator after 3<sup>rd</sup> stage.
- Sealed safety valves after each stage.
- Pressure maintaining and check valve after the final air filter purification.
- Aluminum cylinders with galvanic surface coating.
- Forged aluminum conrods.
- Forged steel crankshaft.
- Stainless steel 2<sup>nd</sup>-3<sup>rd</sup> stage valves.
- Heavy duty roller bearing.
- Tempered steel 3<sup>rd</sup> stage with 5 cast iron piston rings.
- 2<sup>nd</sup> – 3<sup>rd</sup> stages with pushing pistons to eliminate side forces.



TROPICAL PLUS SUPERDRY

Compressor block	MCH16	MCH23
Charging rate <sup>1</sup>	235 - 330 l/min	345 - 380 l/min
Speed	1,240 1/min (MCH 13) 1,600 1/min (MCH 16)	1,240 1/min (MCH 21) 1,400 1/min (MCH 23)
Number of stages	3	3
Number of cylinder	3	3
Cylinder bore 1st stage	95 mm	95 mm
Cylinder bore 2nd stage	38 mm	38 mm
Cylinder bore 3rd stage	14 mm	14 mm
Stroke	40 mm	50 mm
Direction of rotation (from)	Left – counter clockwise	Left – counter clockwise
Drive type	V-belt A type	V-belt A type
Intermediate pressure 1st	Approx. 6 bar	Approx. 6 bar
Intermediate pressure 2nd	Approx. 45 bar	Approx. 45 bar
Amount of oil	1.8 Liters	1.8 Liters
Intake pressure	1.3 bar <sub>a</sub> - 300 millibar	1.3 bar <sub>a</sub> - 300 millibar

1 Measured during 10 liters cylinder filling from 0-200 bar tolerance +/- 5% at + 20°C ambient temperature.

### » Purification system HYPERFILTER

- HYPERFILTER polypropylene cartridge repackable or disposable



Felter disc set



Activated carbon



Molecular sieve



Purification System	DOUBLE HYPERFILTER
Operating pressure (Standard)	250 bar / 330 bar / 360 bar
Operating pressure max. (PS)	420 bar
Processable air capacity (at ambient temperature 20°C and 200 bar) <sup>1</sup>	880 m <sup>3</sup>

1 When using a filter cartridge without **CARULITE® 300 CATALYST**. When using a cartridge with CO-removal, the processable air capacity is reduced by ca. 20%.

### » Separator system

- Interstage separator after 2<sup>nd</sup> stage ,stainless steel AISI 316
- Double final separator for the removal of oil-/ water condensate
- Final safety valve, fitted to separator housing
- Pressure maintaining / non return valve, fitted to filter bracket

Contamination	Maximum content as per DIN EN 12021:2014	Air quality *
H <sub>2</sub> O	25 mg/m <sup>3</sup>	≤ 10 mg/m <sup>3</sup>
CO	5 ppm(v)	≤ 4
CO <sub>2</sub>		≤ 500
Oil	0.5 mg/m <sup>3</sup>	≤ 0.5 mg/m <sup>3</sup>

1 Only with special filter cartridge with **CARULITE® 300 CATALYST** and up to a maximum concentration of 25 ppm CO in intake air. The compressed clean breathing air then contains a maximum of 5 ppm CO.

2 The level of CO<sub>2</sub> in the intake air must not exceed the maximum level of CO<sub>2</sub> as per EN 12021:2014

\* Measured at our facility using ASCO HORA 160 ANALYZER

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### » Presec system

The presec system is connected with a probe with the first filtering cartridge. Such device displays the saturation level of the cartridge and transmits the proper commutation signals based on the cartridge's status.

The presec system displays 4 levels of saturation of the cartridge by 3 relais connected to 3 leds:

Stable green light (a):

- System is operational; cartridge OK

Pulsing yellow light (b):

- Prealarm; cartridge is getting exhausted and it needs to be replaced in short time.

Pulsing red light (c):

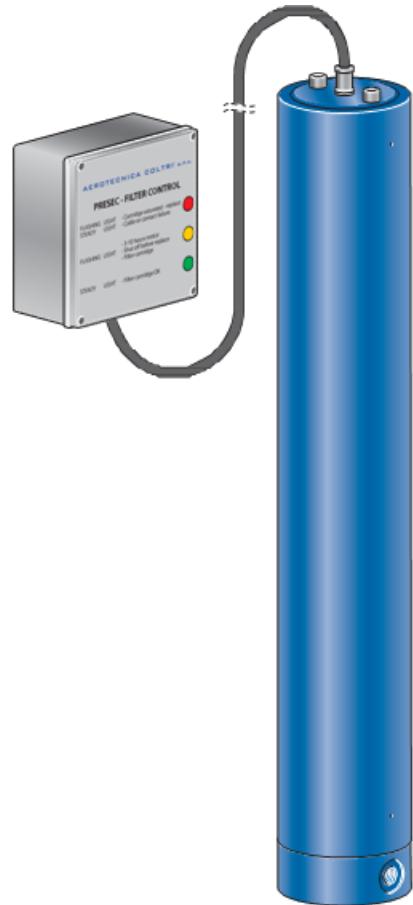
- Alarm; empty cartridge, replace it immediately.

Pulsing red light (c):

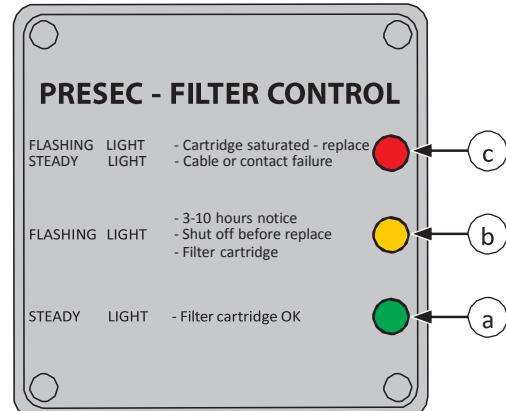
- Alarm; the filtering cartridge is missing or the filtering system is interrupted; compressor turns off and it is not possible to turn it on again without inserting a new cartridge or finding out the source of the alarm.

While the yellow light is pulsing (b), the green stable light (a) will be still turned on because the filtering cartridge will not be totally saturated.

If no led is turned on, it means that the PRESEC is missing electric tension or the electrical system is faulty.



Saturation filter values	
Light	Humidity (mg/m3)
Green	15 - 20
Yellow	20 - 25
Red	> 25



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### » Filling connections

#### 1 Filling pressure 232 bar



\* Optional not included



Standard

Filling device	BC DIN 232
Nominal pressure (PN)	250 bar
Valve design	1 filling valve with integrated ventilation, with cylinder connector G 5/8" according to EN 144-2 and 477 PN232
Filling hose	1200 mm stainless steel fittings – wp 420 bar

#### 2 Cylinder connection yoke clamp



Available on request

Filling device	BC INT 232
Nominal pressure (PN)	250 bar
Valve design	1 filling valve with integrated ventilation, with cylinder connector G 5/8" yoke clamp PN 232
Filling hose	1200 mm stainless steel fittings – wp 420 bar

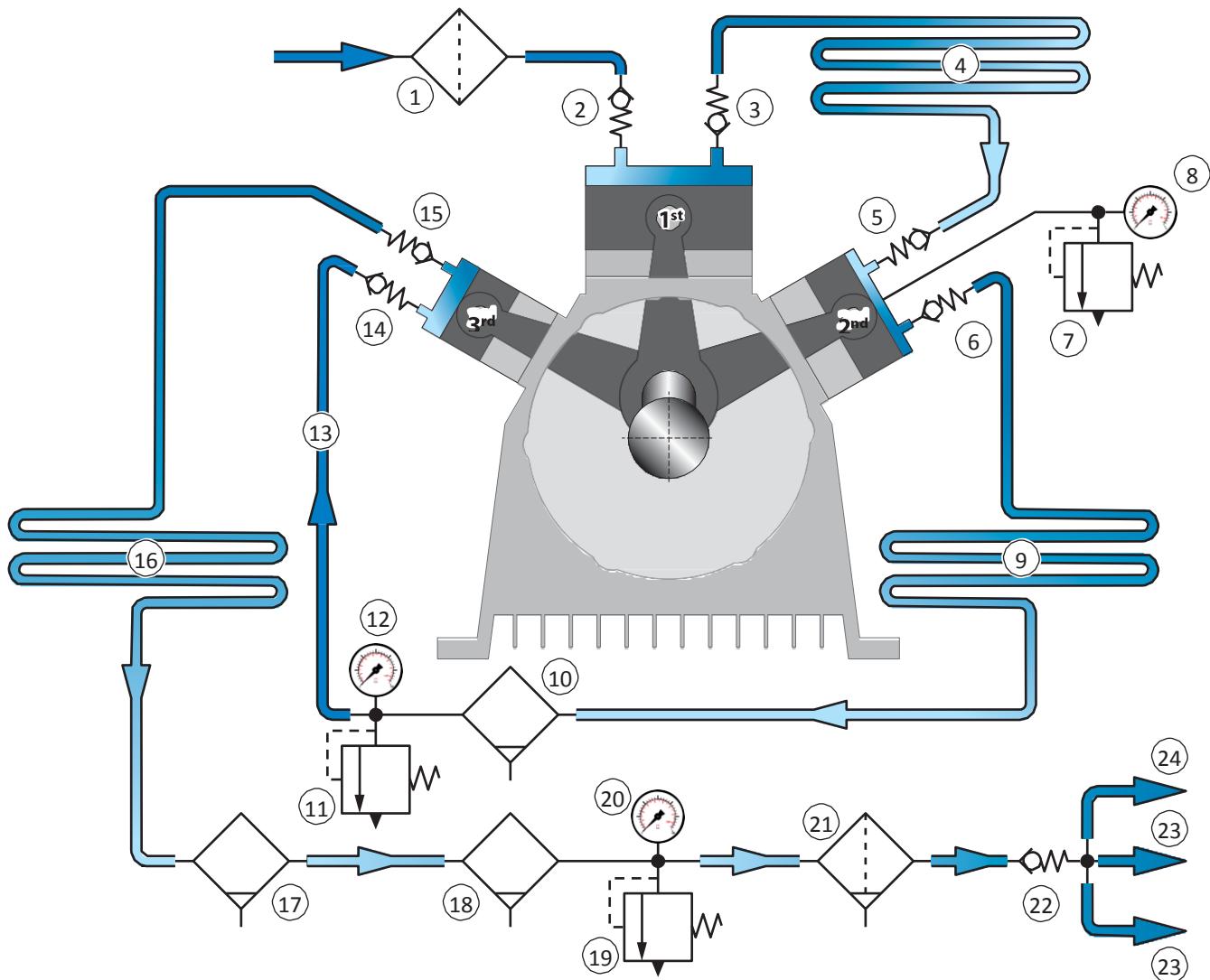
#### 3 PN300 filling device



Extra Europe available on request only 300 bar

Filling device	BC DIN 300
Nominal pressure (PN)	330 bar
Valve design	1 filling valve with integrated ventilation, with cylinder connector G 5/8" according to DIN EN 144-2 and DIN 477 , PN300

### » Piping and instrumentation diagram



1. Intake filter	13. Pipe separator/3rd stage
2. Intake valve 1st stage	14. Intake valve 3rd stage
3. Outlet valve 1st stage	15. Outlet valve 3rd stage
4. Cooling pipe 1st-2nd stage	16. Aftercooler
5. Intake valve 2nd stage	17. Condensate separator HP
6. Outlet valve 2nd stage	18. Condensate separator HP high efficiency
7. Safety valve 1st stage	19. Safety valve
8. Pressure gauge 1st stage	20. Pressure gauge
9. Cooling pipe 2nd/condensate separator LP	21. Double hyperfilter
10. Condensate separator LP	22. Pressure maintenance valve
11. Safety valve 2nd stage	23. Flex hoses
12. Pressure gauge 2nd stage	24. Pressure switch DAP

### » Compressor control and automatic condensate drain system



Compressor control



Automatic condensate drain system

- ON/OFF Switch with protective motor switch
- Optional: Autostart at 60 Bar hysteresis
- Transformer
- Pressure switch stops the compressor unit at final pressure
- Drainage of all separators between the individual stages and also the final separator during compressor operation (standard draining interval every 15 minutes for a 6 second period)
- Timer for automatic condensate drain device
- Unloaded start integrated (automatically draining at every shut-down of the unit)
- Condensate collecting tank 5 litre, with silencer; about 3 litre capacity, for the environmentally friendly disposal of the condensate
- Interstage pressure manometers display the operating pressure for the individual compression stages. This pressure information enables the sealing tightness of the valves (intake and outlet) of each stage to be checked and potential fault sources to be rapidly identified. The interstage pressure manometers are mounted in the compressor housing.

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EC DECLARATION OF CONFORMITY  
According to Annex II point A of Directive 2006/42/EC,  
Annex IV Directive 2014/30/EU,  
Annex II Directive 2000/14/EC (adopted in Italy with D.Lgvo 4/9/02 n. 262)

**The firm AEROTECNICA COLTRI S.p.A., as the manufacturer of the HIGH PRESSURE COMPRESSOR FOR BREATHING AIR**

Model	MCH 16		
Type	ERGO TPS PRIME		
Code			
Serial number			
Year	2018	Lwa guaranteed	dB(A)
Engine	THREE PHASE	Lwa measured	dB(A)
Power		Lpa measured	dB(A)

**Hereby declares under its sole responsibility that it complies with all the relevant provisions of the Directives:**

- 2006/42/EC (machinery Directive);
- 2014/30/EU (electromagnetic compatibility Directive);
- 2000/14/EC (Directive on noise emission in the environment by equipment for use outdoors).

**further, declares that the compressor complies with the relevant requirements described in the technical standards:**

EN ISO 12100:2010, EN 1012-1:2010, EN ISO 13857:2008, CEI EN 60204-1:2006,  
CEI EN 61000-6-4:2007/A1:2013, CEI EN 61000-6-2:2006

**finally, declares that:**

- any modification made to the compressor without written authorization from AEROTECNICA COLTRI S.p.A. shall void this declaration;
- extraordinary maintenance operations and supply of spare parts must always be requested to the manufacturer;
- the user's manual is an integral part of the machine, and a full knowledge and understanding of it are essential for a safe use.

**Person authorized to compile the technical file according to the above mentioned Directives: eng. Marco Corsini near Aerotecnica Coltri S.p.A.**



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