



SCREW COMPRESSOR WITH INTEGRATED DRYER & FILTERS



METALPLAN IS NUMBER ONE IN ENERGY EFFICIENCY

As the absolute leader in screw compressors up to 25 hp in Brazil, Metalplan is the world's first* compressor manufacturer accredited in ISO 50001 - Energy Management, demonstrating its commitment to energy efficiency, the foundation for sustainability and competitiveness of companies.

Founded in 1986, Metalplan has a production area of 6.000 m², developing innovative equipment with a high level of nationalization, exporting to over 20 countries.

Its network of authorized distributors and service centers includes over 300 highly specialized companies with extensive geographic coverage, capable of servicing over 100.000 operating equipment.

In recent years, Metalplan has been expanding its horizons to disruptive technologies in gases and renewable energies, such as on-site generation and compression of nitrogen, oxygen, biogas, biomethane, CO2 and CNG.





"Since they started operating, Metalplan screw compressors have greatly contributed to the success of **Cacau Show**!"



1 6

See.

Alexandre Costa President



FLEX TECHNOLOGY

FLEX technology - variable speed ensures up to 35% energy consumption reduction compared to conventional compressors.



SCREW COMPRESSOR TOTALPACK FLEX DD WITH INTEGRATED DRYER & FILTERS



Over twenty thousand installed units attest to the reliability of Metalplan compressors, recognized for their energy efficiency, simplicity, robustness, embedded electronics, and low maintenance costs.

TOTALPACK FLEX DD

FREQUENCY INVERTER MODULE

SPEED CONTROLLER

Controls the rotation of the electric motor and produces compressed air according to user demand, with proportional energy savings.

CONTROL MASTER

frequency

inverter

MASTERCONTROL

Microprocessed panel with intuitive HMI. Allows the operator comprehensive vision and control, with memorization of fundamental data.

COOLING

Airflow is independent in each module. The exhaust of hot air occurs on the upper face, avoiding recirculation and facilitating its extraction.

NOISE LEVEL

In compliance with current legislation, Metalplan compressors provide a noise level of 72 ± 3 dBA, according to ISO 2125. This allows them to be installed close to users.





FULLY INTEGRATED MODULES



INTEGRATED VALVES

Few moving parts contribute to the reliability of the assembly and ease of repair. Contains the thermostatic valve, minimum pressure valve, and thermal probe.



HIGH-EFFICIENCY MOTOR

Standard market motors (IR2 and IR3): reduce energy consumption between 7% and 14%. Attention to compressors that use motors with customized housings that are difficult to replace.



DIRECT COUPLING

1 x 1 SPEED RATIO Electric motor RPM = Compressor unit RPM.



INTAKE FILTER HEAVY DUTY

With three stages of filtration, it presents high separation efficiency, low flow restriction, and maximum protection for the compressor, even in contaminated environments.



SPIN ON FILTERS

Oil filter and coalescing separator located away from the oil tank: quick maintenance and maximum purity of compressed air.

ROTOR OIL EXTRA ECOBLUE

High-durability synthetic lubricant (8000 hours), with additives to operate in **hot climates and high humidity**.

ROTOR OIL EXTRA FOOD GRADE

100% oil-free equivalent. Non-toxic and indispensable in the food industry.

COMPRESSOR MODULE

THE HIGHEST ISOTHERMAL EFFICIENCY IN ITS CATEGORY

HEAT EXCHANGERS

Brazed aluminum, oversized, and responsible for the low temperatures of the system. Alongside the large compressor unit, they ensure maximum isothermal efficiency and unbeatable energy efficiency.



COMPRESSOR UNIT

Made in Italy since 1912, one of the most efficient in the world, with the first overhaul capable of reaching up to 48,000 hours of operation¹. Due to its large size and low rotation, it operates at lower temperatures in the compression chamber and also facilitates heat transfer to the lubricating oil, legitimizing the reputation for high isothermal efficiency of the assembly. This implies a higher airflow per kWh consumed.



fine coalescing prefilter -

refrigeration dryer -

ultra-thin coalescent post-filter



EXCLUSIVITY TECHNICAL Unique in the correct sequence of ISO 8573 [1.4.1].



HIGH TEMPERATURE DESIGN

The most resistant at high temperatures. Designed for all climates (ISO 7183-A2).



TRIPLE INSULATION

The **dryer & filters module** is insulated from the **compresso**r **module** by a steel plate and two layers of thermal insulation, with a thickness of 60 mm.

DRYER & FILTERS MODULE



DIRECT COUPLING: HIGHER ENERGY EFFICIENCY Unit RPM = Motor RPM

- Eliminates losses from traditional transmissions.
- Allows low speeds in the compressor unit.
- Results in lower oil and air temperatures.
- Provides high energy efficiency.
- Ensures the highest flow per horsepower in the market.



ADVANTAGES OF DIRECT COUPLING

The direct coupling of Metalplan's TotalPack DD compressors represents the latest in transmission technology, approaching 100% efficiency, while gears do not exceed 97%. The box where the direct coupling is located is limited to a depressurized and lubrication-free structure.

DISADVANTAGES OF "DIRECT TRANSMISSION"

The so-called direct transmission is nothing more than a lubricated and pressurized gear case, in direct contact with the electric motor. Sealing is done by seals and seals subject to rupture, causing motor burnout. Since it is a motor with a specific housing and attached gears, its cost is at least 4 times higher than a conventional motor and cannot be purchased from retailers.







MASTERCONTROL

Comprehensive and user-friendly, the MasterControl allows the user fast, intuitive, and secure navigation, simplifying the operation and maintenance of the compressor.

MAN-MACHINE INTERFACE

Permanent display of the compressor's main functions:

- Off/Starting/Stopped
- Load/Relief-Maintenance/Failures
- Standby
- Compressed air inlet temperature
- Condensation temperature
- Discharge pressure/temperature
- Dew Point (TotalPack)
- Load/Relief hour meter
- Pressures and temperatures in graphic format
- AUDIBLE AND VISUAL MAINTENANCE
- AND FAULT ALARM

DUAL CONTROL FUNCTION

When there is air consumption, the Dual Control function operates the compressor in the load/relief system. When the compressed air consumption ceases, Dual Control automatically shuts down the compressor, provided a pre-defined minimum time has been reached. This feature saves energy and extends compressor life.

ENERGY OPTIMIZATION SETTINGS

- Load/Relief pressure adjustment
- Pressure set point adjustment (Flex only)
- Motor rotation control
- Automatic flow adjustment based on set point
- Standby mode switching to continuous mode
- Stepped operation with more than one compressor
- Timing for low-pressure alarm in case of major leaks in the compressed air network

PREVENTIVE MAINTENANCE WARNING

Text messages based on countdown time indicate the correct time for part and component replacement, component cleaning, and overall compressor inspection.

GENERAL DIAGNOSTIC

- Failure and alert history of the last 50 records
- Overcurrent of all electric motors
- High oil and dew point temperatures
- High compressed air pressure
- High/Low pressure of the integrated dryer
- Pre-cooling timing of the integrated dryer
- Sensor failure/Calibration of temperature and pressure sensors
- Optimized timing of main motor/purge start
- General failure (via terminals)

SPECIAL FUNCTIONS

- Temperature and pressure calibration
- Optimized motor start timing
- Remote start/stop Remote load/relief
- 100% communication via modbus
- Unit conversion (°C/°F) (bar/psi)
- Languages: Portuguese/English/Spanish

TECHNICAL DATA

TOTALPACK FLEX DD/ POWERPACK FLEX DD FLOW RATES X PRESSURES

Power	Effective Flow Rate		Pressure		
hp (kW)	pcm	m³/h	bar(e)	psig	
50 (37)	83 – 245	141 – 416	7,5	109	
	82 – 231	139 – 393	9	131	
	81 – 212	138 – 361	11	160	
	80 – 197	136 – 336	12,5	181	
60* (45)	115 - 302	196 - 514	7,5	109	
	114 - 284	194 - 482	9	131	
	111 - 257	189 - 437	11	160	
	109 - 237	185 - 403	12,5	181	
75* (55)	115 – 378	196 – 643	7,5	109	
	114 – 351	194 – 596	9	131	
	111 – 315	189 – 536	11	160	
	109 – 288	185 – 489	12,5	181	
100° (75)	212 - 529	360 - 900	7,5	109	
	210 - 476	357 - 809	9	131	
	208 - 404	354 - 687	11	160	
	205 - 352	349 - 598	12,5	181	
125* (90)	212 - 625	360 - 1063	7,5	109	
	210 - 588	357 - 1000	9	131	
	208 - 538	354 - 914	11	160	
	205 - 499	349 - 849	12,5	181	
150* (110)	303 - 791	515 - 1345	7,5	109	
	297 - 738	505 - 1255	9	131	
	295 - 668	502 - 1135	11	160	
	293 - 615	498 - 1045	12,5	181	
200° (150)	435 –1075	740 - 1828	7,5	109	
	362 – 867	615 - 1475	9	131	
	324 – 770	550 - 1308	11	160	
	307 – 709	522 - 1205	12,5	174	
250° (185)	497 – 1202	845 - 2044	7,5	109	
	443 – 987	753 - 1678	9	131	
	397 – 859	675 - 1460	11	160	
	359 – 768	610 - 1306	12,5	174	
*Available only in 380V and 440V for FLEX models (frequency inverter)					

TOTALPACK FLEX DD/ POWERPACK FLEX DD DIMENSIONS

Modol	Dimensions (mm)				
Model	length	height	width		
PowerPack Flex DD 050	1084	1725	1782		
TotalPack Flex DD 050	1084	1725	2272		
PowerPack Flex DD 060	1084	1725	1782		
TotalPack Flex DD 060	1084	1725	2272		
PowerPack Flex DD 075	1084	1725	1782		
TotalPack Flex DD 075	1084	1725	2272		
PowerPack Flex DD 100	1287	1857	1867		
TotalPack Flex DD 100	1287	1857	2452		
PowerPack Flex DD 125	1653	1915	2396		
TotalPack Flex DD 125	1653	1915	2954		
PowerPack Flex DD 150	1653	1915	2396		
TotalPack Flex DD 150	1653	1915	2954		
PowerPack Flex DD 200	1965	2224	2692		
TotalPack Flex DD 200	1965	2224	3546		
PowerPack Flex DD 250	1965	2224	2692		
TotalPack Flex DD 250	1965	2224	3546		

OPTIONAL ITEMS & ENGINEERED EQUIPMENT

Metalplan compressors can be customized according to your application. Special colors, weather protection, extended sound insulation, heat exchangers, filters for aggressive environments, and many other items are available for consideration.

TOTALPACK FLEX/ POWERPACK FLEX FLOW RATES X PRESSURES

Effective Flow Rate		Pressure	
pcm	m³/h	bar(e)	psig
39,8	67,7	7,5	109
36,5	62,1	9,0	131
34,9	59,3	11,0	160
32,2	54,7	12,0	174
61,4	104,4	7,5	109
55,9	95,0	9,0	131
51,3	87,2	11,0	160
47,6	80,9	12,0	174
108,2	183,9	7,5	109
96,6	164,2	9,0	131
87,6	148,9	11,0	160
80,6	137,0	12,0	174
127,3	216,4	7,5	109
116,7	198,4	9,0	131
106,1	180,3	11,0	160
95,5	162,3	12,0	174
179,5	305,2	7,5	109
167,1	284	9,0	131
157,7	268,1	11,0	160
142,1	241,6	12,0	174
116,5	198,8	16,0	232
216,9	368,7	7,5	109
201,3	342,2	9,0	131
188,9	321	11,0	160
176,4	299,9	12,0	174
250,7	426,2	7,5	109
233	396,1	9,0	131
212,5	361,3	11,0	160
199,4	339	12,0	174
330	561	7,5	109
303,2	515,4	9,0	131
284,4	483,5	11,0	160
265,6	451,5	12,0	174
429	729,3	7,5	109
398,8	677,9	9,0	131
368,6	626,6	11,0	160
328,6	558,6	12,0	174
	Effective pcm 39,8 36,5 34,9 32,2 61,4 55,9 51,3 47,6 80,6 87,6 80,6 87,6 80,6 87,6 80,6 127,3 116,7 106,1 105,5 179,5 167,1 157,7 142,1 116,5 216,9 201,3 188,9 176,4 250,7 233 188,9 176,4 250,7 233 199,4 330 302,2 284,4 265,6 429 398,8 368,6 328,6 328,6 328,6 328,6 328,6 328,6 328,6 328,6 34,9 35,9 36,9 36,9 36,9 36,9 36,9 37,7 37,7 37,7 38,9 38,9 38,9 38,9 38,9 38,9 38,9 38,9 38,9 38,9 38,9 38,9 38,9 38,9 38,9 38,9 38,9 38,9 38,9 39,7 30,7 30,7 30,7 30,7 30,7 30,9 32,8 34,9 30,9 30,9 30,9 32,8 32,8 32,8 32,9 32,9 33,9 32,8 32,8 32,9 33,9 32,8 32,9 32,9 33,9 32,9 33,9 32,9 32,9 32,9 32,9 33,9 32,9 32,9 32,9 33,9 32,9 32,9 33,9 32,9 32,9 33,9 32,9 32,9 32,9 33,9 32,9 34,9 34,9 34,9 34,9 34,9	Effective Flow Rate pcm m³/h 39,8 67,7 36,5 62,1 34,9 59,3 32,2 54,7 61,4 104,4 55,9 95,0 51,3 87,2 47,6 80,9 108,2 183,9 96,6 164,2 87,6 148,9 80,6 164,2 87,6 148,9 80,6 164,2 81,6 164,2 81,6 164,2 81,6 180,3 95,5 162,3 95,5 162,3 95,5 162,3 95,5 162,3 116,7 198,4 106,1 180,3 95,5 162,3 114,2,1 268,1 114,2,1 284,1 114,2,1 284,1 114,5 198,8 116,5 198,8 106,1 19	Effective Flow Rate Pres pcm m³/h bar(e) 39,8 67,7 7,5 36,5 62,1 9,0 34,9 59,3 11,0 32,2 54,7 12,0 61,4 104,4 7,5 36,5 87,2 11,0 47,6 183,9 9,0 108,2 183,9 9,0 87,6 164,2 9,0 10,6,1 198,4 9,0 10,6,1 180,3 1,0 80,6 164,2 9,0 127,3 216,4 7,5 167,1 198,4 9,0 10,0 10,0 12,0 142,1 241,6 12,0 142,1 241,6 12,0 144,1 12,0 11,0 142,1 241,6 12,0 144,2 342,2 9,0 120,3 342,2 9,0 120,5 368,7 25,9

TOTALPACK FLEX/ POWERPACK FLEX DIMENSIONS

Model	Dimensions (mm)					
Model	length	height	width			
PowerPack 010	452	1022	1027			
TotalPack 010	452	1022	1344			
PowerPack Flex 010	452	1022	1027			
TotalPack Flex 010	452	1022	1344			
PowerPack 015	500	1191	1027			
TotalPack 015	500	1191	1394			
PowerPack Flex 015	500	1191	1027			
TotalPack Flex 015	500	1191	1394			
PowerPack 025 TotalPack 025 PowerPack Flex 025 TotalPack Flex 025	532 532 532 532 532	1380 1380 1380 1380	1307 1674 1277 1674			
PowerPack 030	1142	1465	1098			
TotalPack 030	1142	1465	1554			
PowerPack Flex 030	1142	1465	1098			
TotalPack Flex 030	1142	1465	1554			
PowerPack 040	1142	1465	1098			
TotalPack 040	1142	1465	1554			
PowerPack Flex 040	1142	1465	1098			
TotalPack Flex 040	1142	1465	1554			
PowerPack 050	1142	1465	1098			
TotalPack 050	1142	1465	1554			
PowerPack Flex 050	1142	1465	1098			
TotalPack Flex 050	1142	1465	1554			
PowerPack 060	1468	1633	1405			
TotalPack 060	1468	1633	1877			
PowerPack Flex 060	1468	1633	1865			
TotalPack Flex 060	1468	1633	2337			
PowerPack 075	1468	1633	1405			
TotalPack 075	1468	1633	1877			
PowerPack Flex 075	1468	1633	1865			
TotalPack Flex 075	1468	1633	2337			
PowerPack 100	1468	1633	1405			
TotalPack 100	1468	1633	1877			
PowerPack Flex 100	1468	1633	1865			
TotalPack Flex 100	1468	1633	2337			

*Available only in 380V and 440V for FLEX models (frequency inverter)

Performance according to ISO1217:2009, Annexes C and E

IMPORTANT

- The compressor should never be exposed to adverse weather conditions (rain, sun, snow, etc.).
- 2 -The ambient temperature at the chosen compressor installation site should always be within the limits indicated in the instruction manual.
- 3 Have a backup compressor in case the main compressor stops due to malfunction or activation of its protection devices.



ISO 8573 STANDARD INSTALLATION



CONTAMINANTS & QUALITY CLASSES

class	SOLID maximum nu (d 0,1µm < d ≤ 0,5µm	PARTICLE umber of partic = particle size) 0,5µm < d ≤ 1µm	S es per m³ 1µm < d ≤ 5µm	class	WATER moisture dew point (°C)	class	OIL - total concentration (liquid/aerosol/vapor) (mg/m³)
0	0 CLASS ZERO - as specified by the user or equipment supplier and stricter than Class 1						
1	≤ 20.000	≤ 400	≤ 10	1	-70	1	≤ 0,01
2	≤ 400.000	≤ 6.000	≤ 100	2	-40	2	≤ 0,1
3	-	≤ 90.000	≤ 1.000	3	-20	3	≤ 1
4	-	-	≤ 10.000	4	+3	4	≤ 5
5	-	-	≤ 100.000	5	+7	5	-
	Mass	s concentration	- C _p	6	+10	6	-
		(mg/m ^s)			Liquid Water C _w		
6		$0 < C_p \le 5$			9/11)		
7		$5 < C_{p} \le 10$		7	C _w ≤ 0,5	7	-
8		-		8	$0.5 < C_w \le 5$	8	-
9		-		9	$5 < C_w \le 10$	9	-
X		C _p > 10		X	C _w > 10	X	> 5

ISO 8573 COMPRESSED AIR FOR GENERAL USE

ISO

ISO 8573 is the international reference for compressed air systems, focusing on contamination levels.

The standard has various quality classes that serve multiple applications in industry and services, excluding human breathing and medicinal use.

Published in 1991, it was translated by Metalplan in 1992, positioning Brazil at the forefront of its utilization.

Its 3rd edition is from 2010, when Class Zero was introduced, with purity levels stricter than those found in Class One.



DECIPHERING CLASS ZERO

When drafting Class Zero, ISO 8573 **failed to adopt the necessary clarity**. See the original text:

"Class 0: as specified by the equipment user or supplier and more stringent than Class $I^{\prime\prime*}$

The standard requires that the contamination levels of Class Zero be **lower** – "more stringent" – than the levels of Class One, meaning, **the maximum levels of Class Zero must be below the lowest levels of Class One**. However, the standard does not establish the limit between these levels. When referring to the oil contaminant, we know that the most sophisticated instruments can detect up to 0.003 mg of oil in each m³ of compressed air. Therefore, this is the value that should be adopted as the minimum level of Class One and the maximum of Class Zero.

CHOOSE THE MOST SUITABLE CLASS FOR YOUR APPLICATION

When specifying the quality of compressed air, never go beyond the user's needs, avoiding high costs and inconveniences.

An example is the increasing demand for "100% oilfree/Class Zero" compressed air, even when there is no basis for it. There are specifications that opt for excessive caution, without considering that it is easy to eliminate the risk of contamination with very affordable devices.

It is up to the user, with the support of experts, to define the necessary and sufficient technical requirements for their application.

For situations where even the slightest presence of oil is not tolerable, a synthetic, non-toxic, colorless, and odorless lubricant can be used, of the food-grade type, approved and recommended by : National Health Surveillance Agency



OIL RESIDUE - ISO 8573



CASE STUDY

COMPRESSOR POWER	100 hp
TOTAL FLOW OF COMPRESSED AIR	7.7 million m³/year
TOTAL MASS OF COMPRESSED AIR	10 thousand tons/year
OIL RESIDUE IN CLASS ONE	86 grams/year
OIL RESIDUE IN CLASS ZERO	26 grams/year

OIL-FREE COMPRESSED AIR: DEBUNKING MYTHS

Air compressors draw in ambient air and all contamination around them: water vapor, oil vapor, and solid particles.

"Oil vapor" is the generic term for the combination of oil vapors, hydrocarbon vapors, and volatile organic compound (VOC) vapors present in the ambient air!.

The concentration of oil vapors in the atmosphere is typically between 0.05 mg/m³ and 5 mg/m³ but can reach even higher levels in dense industrial or urban areas. According to the UN, the ambient air in certain regions may contain a level 100 thousand times higher than Class Zero² of ISO 8573 Standard allows.

Conclusion: regardless of the type of compressor – **lubricated or oil-free** – the presence of oil in compressed air is inevitable, requiring appropriate treatment immediately after compression. Effectively, when using an oil-free compressor, achieving Class Zero is easier, while a lubricated compressor will require more safety devices.



THE AMBIENT AIR CAN CONTAIN UP TO 100 THOUSAND TIMES MORE OIL VAPORS THAN CLASS ZERO PERMITS



SOURCE	OIL CONCENTRATION - C	ISO 8573
CAGI – Compressed Air and Gas Institute (USA)	0.05 mg/m³ ≤ C ≤ 0.5 mg/m³	Classes 2 and 3
OSHA – Occupational Safety and Health Administration (USA)	C ≤ 5 mg/m³	Class 4
MTb – Ministry of Labor (Brazil)	C ≤ 5 mg/m³	Class 4
UN – United Nations Industrial Development Organization	C ≤ 300 mg/m³	Class X

GLOSSARY

'Hydrocarbon: organic compound formed by hydrogen and carbon atoms.

Oil: mixture of hydrocarbons formed by six or more carbon atoms (C6+).

Volatile Organic Compound: carbon compounds with a high vaporization rate (benzene, ethanol, acetone, formaldehyde, etc.) ² Class Zero: oil residue \leq 0.003 mg/m³

ACHIEVING ZERO CLASS WITH ZERO RISK

It is important to note that the presence of oil in the ambient air prevents any claims of "zero contamination risk" in a compressed air system, even when using oil-free compressors.

To fully mitigate this risk, there are devices' that ensure the retention of all oil, whether in liquid or gaseous form. These devices are monitored by oil sensors and equipped

1 - Activated carbon modules or catalytic converters

with backup and redundancy systems, ensuring a continuous supply of Zero Class compressed air.

It is thanks to these surveillance and protection mechanisms that, for example, gas oxygen plants (both medicinal and industrial) safely use lubricated compressors.





DOES A "ZERO CLASS COMPRESSOR" EXIST?

The ISO 8573 standard allows for the claim that "compressed air samples meet Zero Class," if these samples are collected and tested with the frequency required by the user. However, there is no part of the standard that contains the term

"Zero Class Compressor." This is self-evident, as no compressor can eliminate the oil present in the ambient air.

Whether lubricated or oil-free, any compressor will draw and compress the surrounding air, including the oil contained in it.

In installations with oil-free compressors, 100% of the oil in the compressed air will come from the surrounding environment.

In installations with lubricated compressors, the oil in the compressed air will be a combination of the oil present in the atmosphere and the oil released by the compressor itself, which is typically around 3 mg/m³ (*).

In both cases, the resulting contamination far exceeds Zero Class, requiring stringent treatment to meet the standard.

This treatment will also eliminate particles and moisture, which are inherent in any type of compressor.

In summary, the term "Zero Class Compressor" is a rhetorical construct with no real basis, regardless of how it is presented.

*Standard residual for oil-injected screw compressors.

IMPRINTS OF OUR HISTORY





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WE CALLED TO THE REPORT OF THE PARTY OF

5254

In an Annual ISO 9001 Audited Survey, we achieved a 96% customer satisfaction rate for Technical Assistance. This percentage corresponds to the evaluations above 7 (seven), on a scale of 0 (zero) to 10 (ten).

This success is due to over 70 authorized workshops and 200 accredited technicians throughout American continent, supported by an exclusive partnership with National Service for Industrial Training for mechanic training, making our After-Sales Service the most acclaimed in the market.





Typical facade

COMPREHENSIVE INVENTORY OF ORIGINAL PARTS



MAXIMUM EFFICIENCY IN AFTER-SALES SERVICE





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