

COMPRESSED AIR TREATMENT



hb ar comprimido

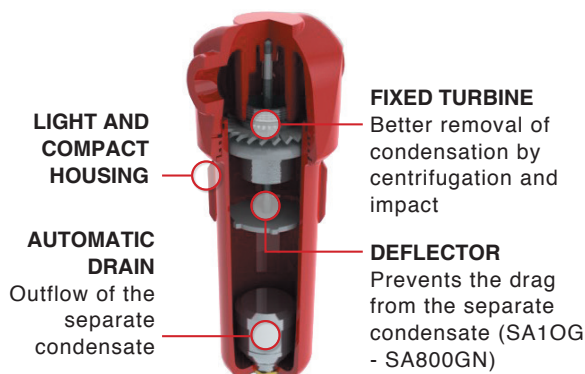
hb soluções em ar comprimido eireli

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SA Water Separator

BENEFITS

- High efficiency in condensation removal
- Simple maintenance
- Low head loss
- Automatic drain
- Aluminum or carbon steel housing
- Wide flow range

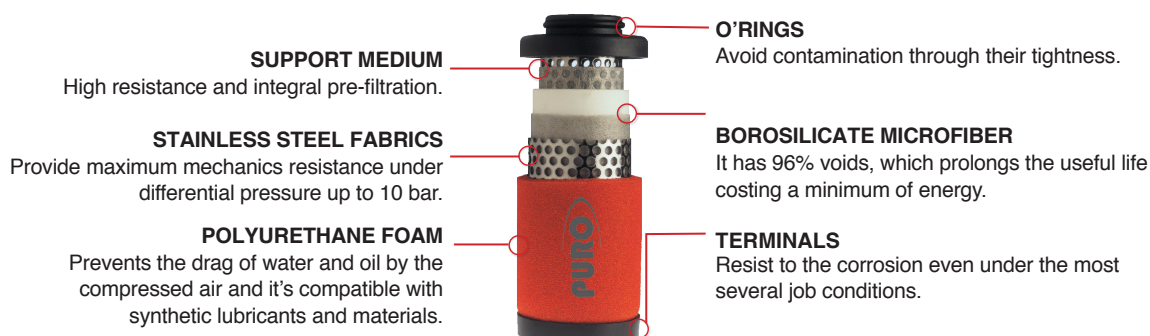


TECHNICAL SPECIFICATIONS

MODEL	CONNECTION	FLOW @7 BARG (102 psi g)	
		pcm	m ³ /h
SA10G	G 1/4	32	54
SA15G	G 1/2	85	144
SA25G	G 3/4	127	216
SA50G	G 1	159	270
SA100G	G 1 1/2	318	540
SA250G	G 2	742	1.260
SA800GN	G 3	1.695	2.880
SA800F	3 F	1.695	2.880
SA1000F	4 F	2.119	3.600
SA1800F	6 F	3.814	6.480
SA3000F	8 F	6.357	10.800
SA4800F	10 F	10.171	17.280
SA7200F	12 F	14.885	25.920

G - BSPP Female Thread, F - Flange according to ANSI B16.5 150 lbs SORF

PURO Coalescent Filter



1 INDICATOR OF THE ELEMENT SATURATION

DPG

Standard components in the filters model A1, A2, A3 and A7 with connection from the G 3/4.

DPS

Standard components in the filters model A1, A2, A3 and A7 with connection from the G 1/2.

2 FIXING OF FILTERS ELEMENTS

Element fixed to a steel tether treated to prevent corrosion.

3 HOUSING

Aluminum (for filters up to model 0620GN) with electrostatic paint of epoxy powder.

4 PRESSURE RELIEF HOLE

Send an alarm sound in case of attempt of opening the housing of the filter when is under pressure.

SIMPLE AND FAST MAINTENANCE

The body ribs facilitate the opening of the cup without the need of tools.

5 AUTOMATIC DRAIN

Standard components, which makes the accumulate condensate to be continually removed. Manual drain only in the models A3, A4, A6 and A7.

SELECTION CRITERIA

The capacities indicated were calculated for 0 barg (atmospheric pressure) and 20°C, for an operation pressure of 7 barg. To calculate the flow in different pressures, it's necessary to apply the correction factor indicated.

MODEL	CONNECTION	CAPACITY ⁽¹⁾		REPOSITION	
		pcm	m³/h	Model	QTD
(grade)-0010G	G 1/4	21	36	E010 - (grade)	1
(grade)-0017G	G 3/8	36	61	E017 - (grade)	1
(grade)-0030G	G 1/2	64	108	E030 - (grade)	1
(grade)-0058G	G 3/4	127	216	E058 - (grade)	1
(grade)-0080G	G 1	170	288	E145 - (grade)	1
(grade)-0125G	G 1 1/4	254	432	E145 - (grade)	1
(grade)-0145G	G 1 1/2	307	522	E145 - (grade)	1
(grade)-0205G	G 1 1/2	424	720	E220 - (grade)	1
(grade)-0220G	G 2	466	792	E220 - (grade)	1
(grade)-0330GN	G 2	699	1.188	E330 - (grade)	1
(grade)-0430GN	G 3	911	1.548	E430 - (grade)	1
(grade)-0620GN	G 3	1.314	2.232	E620 - (grade)	1
(grade)-1000F	4 F	2.119	3.600	E330 - (grade)	3
(grade)-1300F	4 F	2.755	4.680	E330 - (grade)	4
(grade)-1950F	6 F	4.132	7.020	E330 - (grade)	6
(grade)-2600F	8 F	5.509	9.360	E330 - (grade)	8
(grade)-3250F	8 F	6.886	11.700	E330 - (grade)	10
(grade)-5200F	10 F	11.018	18.720	E330 - (grade)	16
(grade)-7800F	12 F	16.527	28.080	E330 - (grade)	24

G - Female Screw BSPP

F - Flange according to ANSI B 16.5 150 lbs SORF

(1) - Superior capacities under consultation

FILTRATION LEVELS

Grade A1 - High efficiency filtration — General use

Remove particles up to 1 µ, including aerosols of water and oil. Maximum oil residual is 0,5 mg/m³ at 21°C.

Grade A2 - Oil removal

Remove particles up to 0,01 µ, including aerosols of water and oil. Maximum oil residual is 0,01 mg/m³ at 21°C (Precede with water A1 level filter).

Grade A3 - Particle filtration — General use

For the removal of particles up to 1 µ.

Grade A4 - Filtration of activated carbon

For the removal of oil vapors, providing a maximum remaining oil Amount of <0,003 mg/m³ (<0,003 ppm), except methane at 21°C. Doesn't remove CO/CO2 or any other type of gas or toxic smoke. (Precede with the A2 level filter).

Grade A5 - Ultra-high efficiency filtration

Remove particles up to 0,01 µ, including aerosol of water and oil, Allowing a maximum oil content of 0,001 mg/m³ at 21°C. (Precede with A1 level filter).

Grade A6 - Particle filtration - Thin

Remove particles up to 0,01 µ. (Precede with A1 and A3 level filters).

Grade A7 - Particle filtration - Heavy

Remove particles up to 25 µ.

Other filtration levels under consultation.

TECHNICAL SPECIFICATIONS

Operational Pressure	barg	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	psig	15	29	44	58	73	87	102	116	131	145	160	174	189	203	218	232	250	265	279	294
Correction Factor		0,38	0,53	0,65	0,76	0,85	0,93	1,00	1,07	1,13	1,19	1,25	1,31	1,36	1,41	1,46	1,51	1,56	1,60	1,65	1,69

Example: If the flow of the compressed air is 132 m³/h, in a pressure of 15bargs, split the flow by the correction factor 132 m³/h / 1,46 = 90 m³/h Consulting the table of technical specifications, we have the model 0030G.

In case of necessity for a filter with pressure higher than 16 barg, sign the code X in the end.

Example: A2-0058GX. The filter will be provided with manual drain and without DPS or DPG.

Minimum operational Pressure (Grade A1/A2/A3/A4/A5/A6 e A7)	1 barg	Minimum operational Temperature (Grade A1/A2/A3/A4/A5/A6/A7)	1,5 °C	Differences of initial pressure Grade A1/A3/A4/A7 ~70 mbar Grade A2 /A6 ~100 mbar Grade A5 ~200 mbar	Differences of operational pressure Grade A1 ~140 mbar Grade A2 ~200 mbar Grade A5 ~400 mbar Grade A3/A4/A6/A7 Não aplicável
Maximum operational Pressure (Grade A1/A2/A3/A5/A6 e A7) ⁽¹⁾	16 barg	Maximum operational Temperature (Grade A1/A2/A3/A5/A6/A7) ⁽²⁾	66 °C		
Maximum operational Pressure (Grade A4/)	20 barg	Minimum operational Temperature (Grade A4)	30 °C	Maximum difference of pressure recommended to change the element: (Only for the filters A1/A2/A3/A7) - 340 mbar (Only for the filters A5/A6) - 700 mbar	

(1) With automatic drain. Using a manual drain the maximum pressure would be 20 barg and the filter would be provided without DPS or DPG.

(2) For temperatures higher than 60°C and lower than 121 °C, the filter element used would be the AT and the filter would be provided with manual drain and without DPS or DPG.

COALESCENT FILTER AND HIGH PRESSURE CONDENSATION SEPARATOR

The indicated capacities were calculated at 0 barg (atmospheric pressure) and 20°C.

MODEL	CONNECTION	CAPACITY (m³/h) ⁽¹⁾				DIMENSIONS (mm)					WEIGHT (kg)	MODEL OF ELEMENT ⁽²⁾
		20 barg	30 barg	40 barg	50 barg	A	B	C	D	E		
(grade)-06060HF12	G 1/2	175	255	340	420	103	29	250	85	80	3,5	E06060-(grade)
(grade)-07060HF18	G 3/4	275	405	535	665	103	29	250	85	90	3,5	E07060-(grade)
(grade)-12060HF25	G 1	500	740	975	1210	103	29	250	85	140	3,5	E12060-(grade)
(grade)-22090HF38	G 1 1/2	690	1020	1350	1680	175	40	538	95	260	12	E22090-(grade)
(grade)-32090HF38	G 1 1/2	980	1450	1910	2380	175	40	538	95	360	12	E32090-(grade)
(grade)-50090HF50	G 2	1210	1800	2360	2950	175	40	721	95	540	15	E50090-(grade)
(grade)-51090HF50	G 2	1960	2900	3820	4750	175	40	721	95	550	15	E51090-(grade)

G - Female BSPP thread;

(1) - Higher capacities consult;

(2) The filter elements shall apply to the Filters Level A1 / A2 / A4 - Housing material - Aluminum; Filters are supplied with manual drain



DPR Refrigeration Compressed Air Dryer

DPRC

Advantages

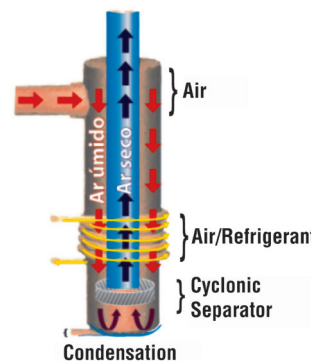
- On/off button
- Monoblock structure,
- Ergonomic design for quick access to key components,
- Inlet and outlet on top of the equipment for easy operation,
- Operation instructions written on the outside



ADVANTAGES OF VERTICAL HEAT EXCHANGER

Patented by **HB Ar Comprimido** the vertical heat exchanger is fully manufactured in copper, it does not corrode and it increases the lifetime of the air dryer versus the traditional dryers.

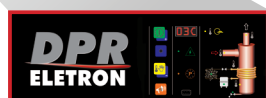
- Leak detector set to detect 7g of gas per year
- **5 year warranty** of no gas leaks in the evaporator



DPRELETRON

The following monitored functions are:

- Energy on
- Refrigeration compressor on
- Motorised fan on
- Timed drain on
- Pressure alarm and operating temperatures
- Ambient temperature
- Compressed air temperature at the dryer inlet
- Compressed air temperature at the dryer outlet
- Cooling temperature of compressed air
- Evaporation temperature of the refrigerant



Microprocessed Panel

SELECTION OF A REFRIGERATION AIR DRYER

Calculation

Formula:

$$C = \frac{V}{f(P) \times f(Tf)}$$

C = Capacity from table (in m3/h or pcm)

V = Flow of compressed air to be treated

f(P) = Pressure correction factor

f(Tf) = Temperature correction factor

COMPRESSED AIR PRESSURE AT DRYER INPUT	PRESSURE CORRECTION FACTOR	TEMPERATURE OF COMPRESSED AIR IN ENTRY	TEMPERATURE CORRECTION FACTOR
4	0,86	35	1,11
5	0,92	38	1
6	0,96	40	0,92
7	1	45	0,77
8	1,03	50	0,64
9	1,05	55	0,54
10	1,08	60	0,45
12	1,11		
14	1,14		
16	1,16		
20	1,19		
30	1,23		
40	1,27		
50	1,28		

DPRMAXI

In addition to the functions already monitored by **ELETRON DPR**, The new **DPRMaxi** dashboard has the following differentials:

- Two lines liquid crystal display with 16 characters each one
- Alarm indicating the need to change the filter element of the pre-filter and/or post-filter after 8000 hours of operation
- Modbus communication system with serial outpy RS-485 with Rj45 connector



Microprocessed Panel



Liquid crystal display

TECHNICAL ESPECIFICATIONS

		DPRC						DPRE								DPRM											
		0006	0015	0020	0025	0036	0050	0075	0100	0130	0160	0200	0270	0320	0400	0500	0600	0800	1000	1200	1400	1600	1800	2000	2400	2800	3200
CAPACITY (m³/h) ⁽¹⁾		20	55	70	90	130	180	270	360	465	575	720	970	1150	1440	1800	2160	2880	3600	4300	5000	5760	6480	7200	8600	10000	11500
CAPACITY (pcm) ⁽¹⁾		12	32	42	53	76	105	160	210	275	340	425	570	675	845	1060	1270	1690	2110	2540	2960	3390	3810	4230	5080	5930	6980
FLUID COOLANT R134a		PP	PP	PP	PP	PP	OO	OO	OO	OO	OO	OO	OO	OO	OO	OO	OO	OO	OO	OO	OO	OO	OO	OO	OO	OO	OO
FLUID COOLANT R22		--	--	--	--	--	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP
FLUID COOLANT R407C		--	--	--	--	--	--	OO	OO	OO	OO	OO	OO	OO	OO	OO	OO	OO	OO	OO	OO	OO	OO	OO	OO	OO	OO
WATER CONDENSATE ⁽²⁾		--	--	--	--	--	--	--	--	--	--	OO	OO	OO	OO	OO	OO	OO	PP	PP	PP	PP	PP	PP	PP	PP	PP
ELECTRICAL POWER SUPPLY	220V/11/60Hz	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	380V/31/60Hz	--	--	--	--	--	--	OO	OO	OO	OO	OO	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP	PP
	440V/31/60Hz	--	--	--	--	--	--	OO	OO	OO	OO	OO	OO	OO	OO	OO	OO	OO	OO	OO	OO	OO	OO	OO	OO	OO	OO
DIMENSIONS	Front (mm)	466	466	466	466	466	466	658	658	658	700	700	860	860	860	1250	1250	1250	1500	1200	1550	1550	2190	2190	2500	2615	2544
	Depth (mm)	406	406	406	406	406	406	609	609	609	630	630	760	900	960	1000	1000	1150	1100	1500	1350	1350	2010	2010	1750	1750	2748
	Height (mm)	964	964	964	964	964	1231	1230	1441	1441	1390	1390	1630	1560	1630	1630	1630	1630	1870	1870	1870	1870	1980	1980	1980	1980	1980
CONNECTION AIR IN / OUT ⁽³⁾		1/4"G	3/4"G	3/4"G	1"G	1"G	1"G	1½"G	1½"G	2"G	2"G	2"G	3"F	3"F	3"F	4"F	4"F	4"F	4"F	6"F	6"F	6"F	6"F	6"F	8"F	8"F	10"F
WEIGHT (kg)		40	44	44	46	46	82	82	111	119	190	190	225	250	275	295	350	410	550	700	780	780	1200	1400	1600	2000	3000

OO - **Optional**
PP - **Standard**
-- - **Not feasible or evaluated**

(1) Dryer with standard input conditions: Pressure: 7barg; Compressed Air Temperature: 38 °C; U.R.: 100% (ISO 7183 - Option A2) has the flow indicated in the reference conditions

(2) Condensing water pressure: Pmin = 2 bar Pmax = 6 bar Condensation inlet and outlet temperature: 30 °C / 35 °C

(3) G- BSPP female thread, F- Flange according to ANSI B16.5 150 lbs, SORF
Standard Maximum Pressure = 16barg (optional 50barg); Maximum ambient temperature = 38°C (optional 45°C)

DPA Adsorption Compressed Air Dryer

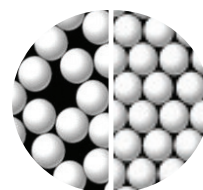
ADVANTAGES

- Construction in extruded aluminum profiles
- Double anti-corrosion protection - anodizing and epoxy paint
- Compact and lightweight
- Single fill technique
- Constant height of 1.70 m
- Lower soil area
- Reduction of operating costs and savings with the GPO
- Fully modular
- MODBUS communication
- Pneumatic cylinders control the opening and closing of the columns making the system watertight
- Bi-directional flow control valve provides correct flow rate for regeneration of each column
- Equipped with market CLP
- Totally in english

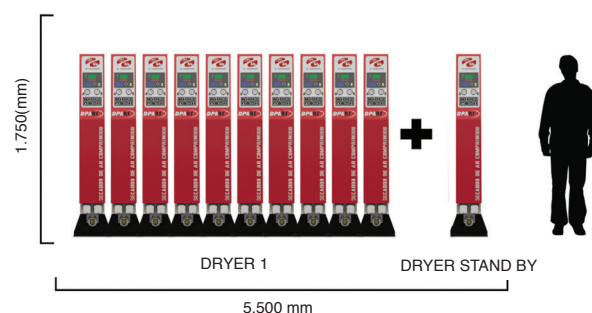
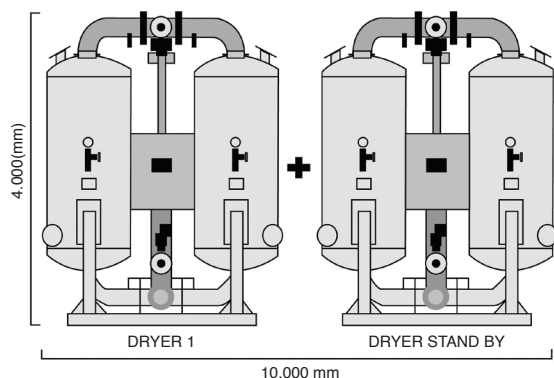


TURBULENCE FILLING TECHNIQUE

The use of filling technique, through a special funnel, in the filling of the adsorption columns ensures the maximum compaction of the bed of adsorbent material, avoiding that compressed air use preferred channels and that there is a compromise of the desired dew point.



STAND BY SYSTEM



Data for the selection : Flow 12.000 m³/h ; Pressure 7 barg ; Temperature 38 °C

Data subject to change - ABR/2018

TECHNICAL ESPECIFICATIONS AND LIMIT CONDITIONS

REGENERATION		COLD					HOT				
Quantity column pairs		02	04	06	08	10	02	04	06	08	10
Capacity (pcm)		160	320	480	640	800	120	240	360	480	600
Capacity (m³/h)		270	540	800	1080	1340	200	400	600	800	1000
Regeneration rate (pcm)		22,5	45	67,5	90	112,4	7,2	14,4	21,5	28,7	36
Regeneration rate (m³/h)		38,2	76,4	114,6	152,6	191	12,2	24,4	36,6	48,8	61
Energy consumed (kwh)		0,05	0,05	0,05	0,05	0,05	1,28	2,56	3,84	5,12	6,4
Installed power (kw)		0,05	0,05	0,05	0,05	0,05	1,6	3,2	4,8	6,4	8
DIMENSIONS	C - Height (mm)	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720
	B - Width (mm)	350	350	350	350	350	350	350	350	350	350
	A - Depth (mm)	690	930	1170	1410	1650	690	930	1170	1410	1650
ELECTRICAL	220V/1f/60Hz	PP	PP	PP	PP	PP	--	--	--	--	--
	380V/3f/60Hz +Neutral	--	--	--	--	--	PP	PP	PP	PP	PP
Weight (kg)		150	240	320	405	510	150	240	320	405	510
Connections entrances/output air(*)		G2	G2	G2 1/2	G2 1/2	G2 1/2	G2	G2	G2 1/2	G2 1/2	G2 1/2

DPA-CP	002	003	006	008	012	015	020	025	030	040
Capacity (pcm)	3	6	13	17	24	32	42	53	65	88
Capacity (m³/h)	5	10	22	28	41	54	71	90	110	150
Regeneration rate (pcm)	0,6	1,2	2,6	3,2	4,3	5,8	7,6	9,5	11,7	15,8
Regeneration rate (m³/h)	1,1	2,2	4,3	5,4	7,2	9,7	13	16	20	27
Energy consumed (kwh)	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01
DIMENSIONS	C - Height (mm)	358	427	640	842	561	758	935	1100	1314
	B - Width (mm)	542	542	542	600	542	542	542	542	542
	A - Depth (mm)	102	102	102	102	127	127	127	127	127
ELECTRICAL	220V/1f/60Hz	PP	PP	PP	PP	PP	PP	PP	PP	PP
Weight (kg)		13	14	17	29	38	45	54	62	81
Connections entrances/air(*)		G 1/4	G 1/4	G 1/4	G 1/4	G 1/2	G 1/2	G 1/2	G 1/2	G 3/4

(*) BSPP Female Thread

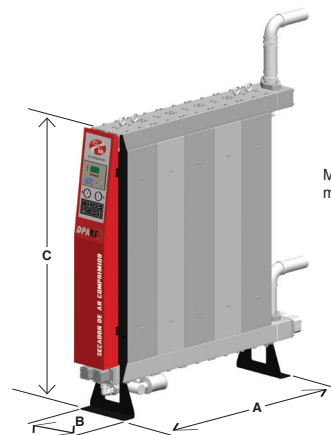
(1) Dryer with standard input conditions: Pressure: 7 barg; Compressed Air Temperature: 38 °C; U.R.: 100% (ISO 7183 - Option A2) has the flow rate indicated in the reference conditions [P: 1 bar [a]; Temp. Amb. 20 °C - ANR]. For flow rates at different pressures please contact hb.

(2) Optional -70 °C.

(3) Dew point at operating pressure.

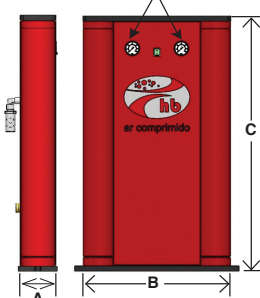
Calculation Formula:

$$C = \frac{\text{Flow at the entrance}}{FP \times FT \times FPO}$$



Operation Pressure	Máx.	10,5 barg
	Mín.	4 barg
Temperature to entry	Máx.	50 °C
	Mín.	5 °C
Sound level		75 dB(A)
Ambient Temp.	Máx.	45 °C
Score in Dew (3)	RF	-40°C (2)
	RQ	-40°C (2)
	CP	-20 °C

Manometers included from model DPA-CP-0101-012 on.



PRODUCT SELECTION - DPA

Maximum Temperature (°C) in the dryer input - FT	25	35	38	40	45	50
Cold & CP Reg.	1,02	1,02	1	0,99	0,90	0,74
Hot Reg.	1,17	1,17	1	0,89	0,68	0,53
Minimum Pressure (barg) in the dryer Input - FP	4	5	6	7	8	9
	0,62	0,75	0,87	1	1,12	1,25
Score in Dew (°C) - FPO (3)	-70	-40				
	0,70	1				



Compressed Air Monitoring and Control Center

Developed for monitoring and control, the **CMC** allows, in a simple and efficient way, a constant monitoring of the dew point, pressure and temperature of the Dry Compressed Air at your facility.



- Alarm configuration, minimum and maximum value
- Alarm history
- Service alarms for dew point sensor calibration
- 1 RS 485 interface with RJ45 connector
- 6 relays - dry contact NA
- MODBUS Communication Protocol

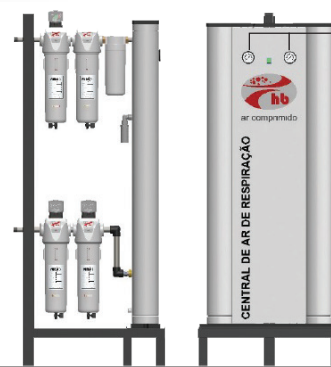


Breathing Air Central

Compatible with national and international standards, the concentration of respiratory contaminants present in compressed air,

such as smoke, oil, vapors, gases, solid particles and microorganisms. In this way, CAR compressed air is suitable for masks, closed chambers and other breathing

apparatus. The **CAR** Breathing Air Central was manufactured in accordance with Anvisa Resolution RDC nº 30.



Manometers included from model CAR010XX on.

XD Pneumatic Drain

APPLICATION

Pneumatic drain **XD** works on the removal of condensate from the compressed air system. Because it is a fully pneumatic equipment, it does not use electrical energy, which facilitates its installation at any point in the system, including in explosion proof areas. Tougher than the various types of existing drains in the market, the Drain **XD** perfectly meets any application of drainage, including the most demanding, leading to minimal maintenance.



ADVANTAGES

■ Energy saving

Fully automatic, doesn't waste compressed air and ensures fast return on investment.

■ Easy viewing

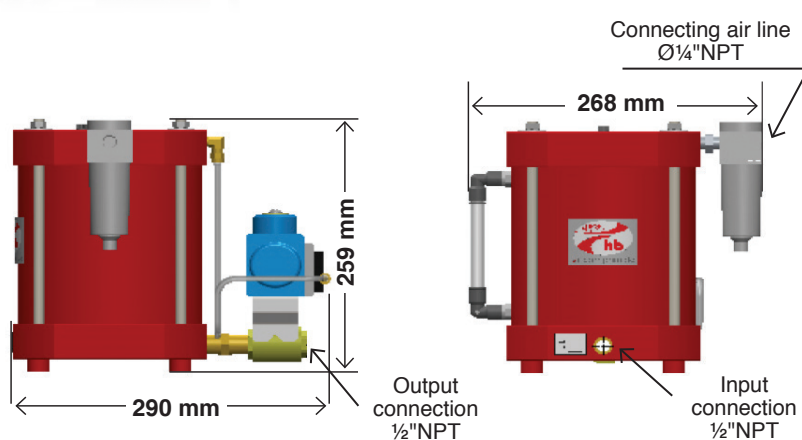
The condensate level is showed on the body made of high strength fiberglass.

■ No clogging

Totally immune to solid particulate that clogs other types of drains, in any type of oil or condensed water.

TECHNICAL SPECIFICATIONS

	XD
Input / Output connections	1/2"NPT
Minimum / Maximum pressure	3 barg / 12 barg
Minimum / Maximum Temperature	2°C / 76°C
Body material	Aluminium
Drain hole	12,5 mm
Total weight	14 kg
Degree of Protection	IP-68
Volume of condensate drained per cycle	1,7 liters
Control air line connection	1/4" NPT
Maximum control air pressure	8 barg
EQ line connection	1/8" NPT



OPERATION PRINCIPLE

Figure 1

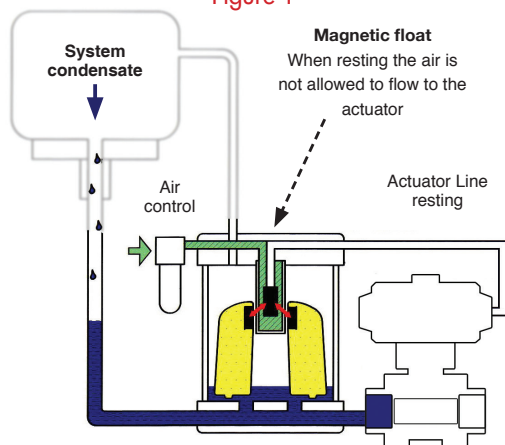
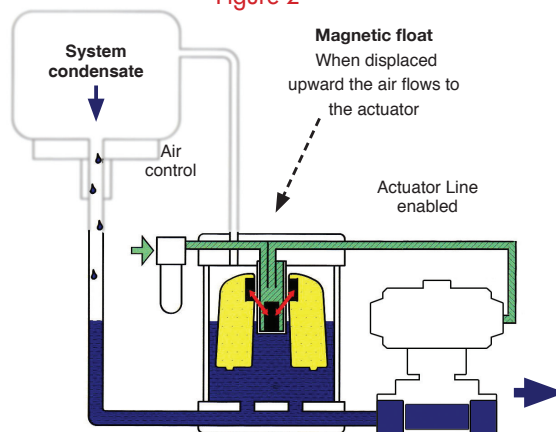


Figure 2



START OF CYCLE

The float with a magnet molded in is sitting on the base and is at the lowest level. The float magnet exerts a magnetic force repelling the center tube magnet upward, holding it seated against an orifice in the lower end of the valve stem. This retains the control air coming in through the control air filter in the center tube. The control air circuit including the center tube magnet and valve stem are isolated from the liquid held in the reservoir. The actuator is in the home position and the discharge ball valve is closed. There is always a residual sealing amount of liquid left in the bottom of the reservoir after each discharge cycle.

START OF DISCHARGE

The liquid flows in and raises the float to its highest position as shown. The float magnet is raised up past the center tube magnet and repels the center tube magnet downward opening the orifice in the valve stem. This allows the control air held in the center tube to flow through the control air circuit to the actuator. The actuator opens the discharge ball valve starting the discharge of accumulated liquid.

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