



CATALOGUE 2026

series 28 bar • series 45 bar (R410A)



Linear components

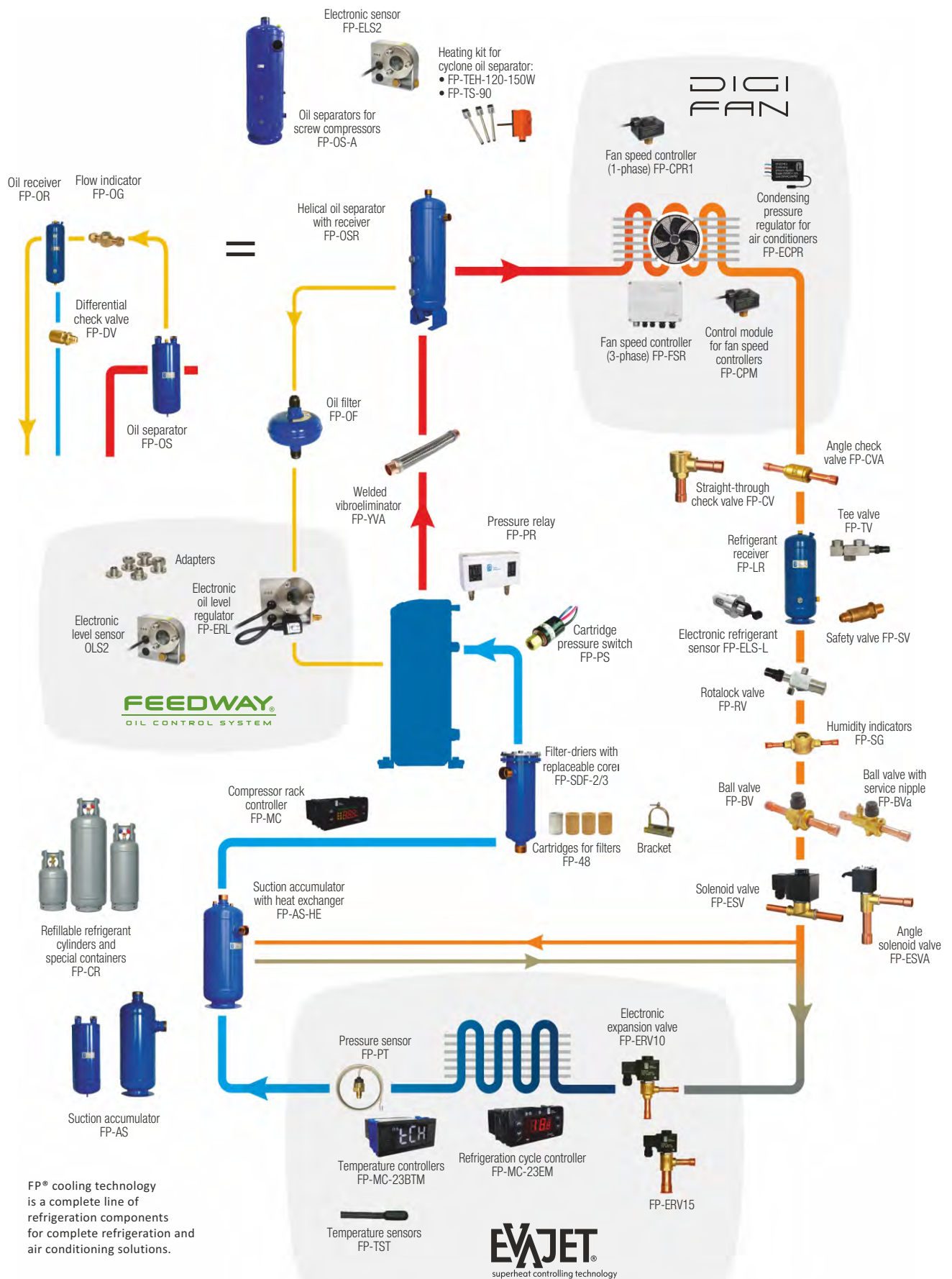


Electronic components



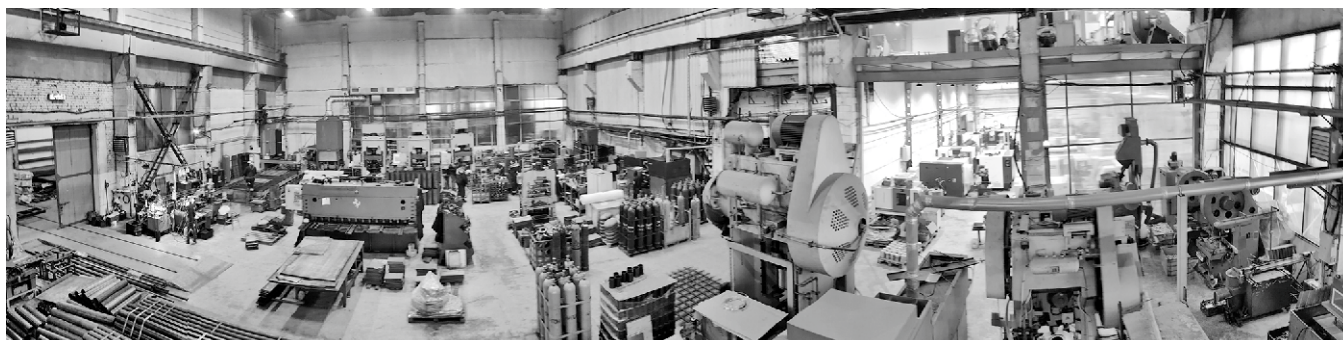
Pressure vessels

FP refrigeration system



Content

GENERAL INFORMATION	2
TYPE CODE	3
PRESSURE VESSELS	4
Refrigerant receivers FP-LR, FP-LRH	4
Suction accumulators FP-AS	5
Suction accumulators with heat exchanger FP-AS-HE	5
Oil separators FP-OS	6
Oil receivers FP-OR	6
Oil filters FP-OF	6
Helical oil separators with receiver FP-OSR	7
Oil separators for screw compressors FP-OS	7
Refillable refrigerant cylinders and special containers FP-CR	7
Filter driers housings FP-SDF	8
Cartridges for Filter driers FP-48	8
Bracket for Filter driers FP-SDF	9
FeedWay. Electronic freon/oil level sensors FP-ELS-L	9
FeedWay. Electronic freon/oil level sensors. Adapters	9
FeedWay. Power supply for electronic level sensors FP-PSU	9
Differential check valve FP-DV	9
Safety valves FP-SV	10
Adapters FP-A	10
Heating kit for cyclone oil separator	10
Stands for receivers FP-ST-LR	10
Stands for horizontal receivers FP-ST-LRH	11
LINEAR COMPONENTS	11
Rotalock valves FP-RV	11
Tee valves FP-TV	12
Ball valves FP-BV, FP-BVa	12
Check valves FP-CV, FP-CVa	13
Flow indicator FP-OG	13
Humidity indicators FP-SG	13
Solenoid valves FP-ESV	14
Coils for FP-ESV, FP-ESVa and FP-ERV	14
Pressure relays FP-PRL, FP-PRH	15
Dual pressure relays FP-PRHL	15
Cartridge pressure switch FP-PS	15
Welded vibroeliminators FP-VA, FP-YVA	15
ELECTRONIC COMPONENTS	16
FeedWay. Electronic oil level regulators FP-ERL4	16
FeedWay. Electronic refrigerant sensors FP-ELS2	16
FeedWay. Electronic oil level sensors FP-OLS2.....	16
FeedWay. Electronic level sensors with adapters	16
FeedWay. Electronic oil level regulators with adapters	17
Digifan. Fan speed controller (3-phase) FP-FSR-8	18
Digifan. Fan speed controller (1-phase) FP-CPR1-4	18
Digifan. Bracket for mounting FP-CPM and FP-CPR1-4 regulators on a frame	18
Digifan. Control module for fan speed controllers FP-CPM	19
Digifan. Condensing pressure regulator for air conditioners FP-ECPR-2	19
Evajet. Temperature controllers FP-MC-R11BTM, FP-MC-R23BTM	20
Evajet. Refrigeration cycle controller FP-MC-R23EM	20
Evajet. Temperature sensors FP-TST	20
Compressor rack controller FP-MC-CR8220LM	21
Evajet. Pressure sensors FP-PT	21
Evajet. Pressure sensors FP-PTR (Ratiometric 0,5-4,5 V)	21
Evajet. Electronic expansion valves FP-ERV10	22
Evajet. Electronic expansion valves FP-ERV15	22
DRAWINGS, CHARTS, TABLES	23



COMPANY HISTORY

The history of the FP Cooling Technologies™ brand in Russia began in 2000 with a small workshop producing pressure vessels—refrigerant receivers for use in refrigeration systems. Today, the product range comprises over 500 models of refrigeration system components. The company has two factories producing pressure vessels and linear components. These factories cover over 20,000 square meters and employ over 150 people. Frigopoint supplies products to 25 countries in Europe, Asia, and the Americas. The quality of FP products is recognized by consumers in many countries and confirmed by global certification leaders.

RANGE OF PRODUCTS

The following cooling system components are currently mass-produced under the FP brand:

- FeedWay® electronic oil level controllers;
- Receivers, liquid separators, liquid separators with heat exchangers;
- Oil separators, oil receivers, oil filters;
- Cyclone oil separators with oil receivers;
- Relief valves;
- Differential check valves;
- Rotalock valves and changeover valves;
- Ball valves;
- Check valves;
- Dismountable filter driers, filter driers cartridges;
- Evajet® electronic expansion valves;
- Refrigeration cycle controllers, capacity controllers (centrals);
- Electronic oil/freon level sensors;
- Pressure sensors, pressure switches, cartridge pressure switches;
- Welded vibration dampers;
- Reusable cylinders;
- Digifan® fan speed controllers;
- Condensation pressure controllers for air conditioning systems;
- Humidity indicators;
- Solenoid valves.

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PRESSURE VESSELS

FP-XX(XX)-XXX,X-XX

- connection size inlet/outlet, inch (mm)
- internal volume, dm³
- MP series 45 bar (R410A)
- LR – vertical refrigerant receiver
- LRH – horizontal refrigerant receiver
- AS – suction accumulator
- AS-HE – suction accumulators with heat exchanger
- OS – oil separators
- OR – oil receivers
- OSR – helical oil separators with receiver
- CR – refillable refrigerant cylinders and containers

COMPONENTS OF THE OIL RETURN LINE

FP-XXX(XX)-XXX-(XX)

- differential pressure, bar
- connection size, inch
- connection type
- MP series 45 bar (R410A)
- ERL – electronic oil level regulator
- OF – oil filter
- DV – dif. check valve
- ELS – electronic level sensor
- OLS – electronic oil level sensor

LINEAR COMPONENTS

FP-XX-XXX-XXX

- connection size, inch
- connection size, inch (rotalock connection, FP-RV)
- YVA – vibroeliminator
- RV – rotalock valve
- SV – safety valve
- TV – safety valve
- BV – ball valve
- SG – humidity indicator
- OG – sight glass
- ESV – electromagnetic valve

FP-SDF-X-XXX

- connection size, inch
- number of cartridges
- SDF – filter-drier with replaceable core

EVAPORATOR MANAGEMENT SYSTEM AND FAN SPEED CONTROLLERS

FP-MCXXXX

- protocol (T – TTL, M – Modbus RTU)
- type of controller (B-base, E-ERV)
- quantity of relay output
- quantity of analogue input (in base model)
- MC – refrigeration controller

FP-PT-XXX(W)

- integrated cable
- type of connection (A – male, B – female)
- pressure, bar
- PT – pressure sensor
- PRL – pressure relay
- PRH – pressure relay
- PRHL – double pressure relay
- PSL – cartridge pressure switches
- PSH – cartridge pressure switches

FP-XXX-X

- maximum current, amperes
- FSR – fan speed controller (3-phase)
- CPR1 – fan speed controller (1-phase)
- ECRP-2 – condensing pressure regulators
- CPM – control module for fan speed controllers

FP-ERVXX-X

- number of orifice
- case size
- ERV – electronic expansion valve

REFRIGERANT RECEIVERS

A receiver is a container for storing liquid refrigerant. Receivers are designed to collect liquid after the condenser, create a reserve of refrigerant in the system, and evenly distribute it to the evaporators. The design and technical specifications of FP receivers allow them to be used with any refrigerant within their permissible operating pressures, except NH₃. Refrigerant receivers are supplied with sight glasses and a nut for the relief valve port (without a plug).



Vertical refrigerant receivers

Type	Model	Ø D, mm	H, mm	A, mm	In/Out	SG ^[1] , шт.	SVP ^[2]	Volume, dm ³	Notes
 28 bar 45 bar	FP-LR(MP)-1,0	102	121	27	3/8" (10 mm) ODS(Cu)	—	—	1,0	Draw. 1 Table 1
	FP-LR(MP)-1,6	133	139	37	3/8" (10 mm) ODS(Cu)	—	—	1,6	
 28 bar 45 bar	FP-LR(MP)-2,5	159	170	—	1/2" (12,7 mm) / 1" – 14 UNS	—	—	2,5	Draw. 2 Table 1
	FP-LR(MP)-4,0	159	245	—	1/2" (12,7 mm) / 1" – 14 UNS	—	—	4,0	
	FP-LR(MP)-6,3	159	370	—	1/2" (12,7 mm) / 1" – 14 UNS	—	—	6,3	
	FP-LR(MP)-8,0	159	470	—	1/2" (12,7 mm) / 1" – 14 UNS	—	+	8,0	
 28 bar 45 bar	FP-LR(MP)-10,0	190	401	120	1" – 14 UNS	—	+	10,0	Draw. 3
	FP-LR(MP)-12,5	190	505	120	1" – 14 UNS	—	+	12,5	
	FP-LR(MP)-16,0	190	610	120	1" – 14 UNS	—	+	16,0	
 28 bar 45 bar	FP-LR(MP)-20,0	240	551	160	1 1/4" – 12 UNF	—	+	20,0	Draw. 4, 6
	FP-LR(MP)-24,8	240	638	160	1 1/4" – 12 UNF	—	+	24,8	
	FP-LR(MP)-25,0	240	638	160	1 1/4" – 12 UNF	1	+	25,0	Draw. 5, 6
	FP-LR(MP)-32,5	240	847	160	1 1/4" – 12 UNF	1	+	32,5	
	FP-LR(MP)-40,0	240	964	160	1 1/4" – 12 UNF	2	+	40,0	
	FP-LR(MP)-50,0	325	731	170	1 3/4" – 12 UN	2	+	50,0	
	FP-LR(MP)-63,0	325	876	170	1 3/4" – 12 UN	2	+	63,0	
	FP-LR(MP)-80,0	325	1111	170	1 3/4" – 12 UN	2	+	80,0	
	FP-LR(MP)-100,0	325	1301	170	1 3/4" – 12 UN	3	+	100,0	
	FP-LR(MP)-120,0	325	1551	170	1 3/4" – 12 UN	3	+	120,0	
	FP-LR(MP)-160,0 ^[3]	460	1140	220	2 1/4" – 12 UN	3	+	160,0	
	FP-LR(MP)-200,0 ^[3]	460	1430	220	2 1/4" – 12 UN	3	+	200,0	
	FP-LR(MP)-250,0 ^[3]	460	1590	220	2 1/4" – 12 UN	3	+	250,0	
	FP-LR-300,0 ST	460	2056	250	81 mm ODS(St)	4	+	300,0	
	FP-LR-350,0 ST	460	2356	250	81 mm ODS(St)	4	+	350,0	

Horizontal refrigerant receivers

Type	Model	Ø D, mm	L, mm	L1, mm	A, mm	A1, mm	H, mm	In/Out	SG ^[1] , шт.	SVP ^[2]	Volume, dm ³	Notes
 28 bar 45 bar	FP-LRH(MP)-16,0	159	938	850	258	198	219	1" – 14 UNS	—	+	16,0	Draw. 7
	FP-LRH(MP)-25,0	190	982	850	340	280	250	1 1/4" – 12 UNF	1	+	25,0	
	FP-LRH(MP)-40,0	240	976	850	365	305	296	1 1/4" – 12 UNF	1	+	40,0	
	FP-LRH(MP)-70,0	325	1011	850	365	305	385	1 3/4" – 12 UN	1	+	70,0	
 28 bar 45 bar	FP-LRH(MP)-100,0	325	1310	750	500	420	375	1 3/4" – 12 UN	2	+	100,0	Draw. 8
	FP-LRH(MP)-120,0	325	1560	1000	500	420	375	1 3/4" – 12 UN	2	+	120,0	
	FP-LRH(MP)-160,0 ^[3]	460	1165	510	600	520	520	2 1/4" – 12 UN	2	+	160,0	
	FP-LRH(MP)-200,0 ^[3]	460	1455	800	600	520	520	2 1/4" – 12 UN	2	+	200,0	
	FP-LRH(MP)-250,0 ^[3]	460	1615	960	600	520	520	2 1/4" – 12 UN	2	+	250,0	
	FP-LRH-300 ST	460	2025	1060	600	520	578	81 mm ODS(St)	3	+	300,0	Draw. 9
	FP-LRH-350 ST	460	2325	1400	600	520	578	81 mm ODS(St)	3	+	350,0	

NOTES: SG^[1] – Sight glass, M24×1;
SVP^[2] – Safety valve port, 1 1/4"–12UNF;

FP-LR; FP-LRH – series 28 bar;
FP-LR(MP) – series 45 bar;
FP-LR(MP)-160...250^[3] – 40 bar;
FP-LRH(MP)-160...250^[3] – series 40 bar.

Cu – Copper connections;
St – Steel connections;

SUCTION ACCUMULATORS

The main function of the liquid separator is to prevent "wet running of the compressor". This unit is necessary not only in all units with flooded evaporators, but also in units equipped with superheated evaporators, to prevent accumulation of refrigerant in the liquid phase on the suction line.



Suction accumulators							
Type	Model	Ø D, mm	H, mm	A, mm	In/Out	Volume, dm ³	Notes
 Cu-St WELD 28bar SERIES 45bar SERIES	FP-AS(MP)-2,0-012	102	319	55	1/2" (12,7 mm) ODS(Cu)	2,0	Draw. 10 Table 1 Table 2 Table 3
	FP-AS(MP)-2,0-058	102	319	55	5/8" (16,0 mm) ODS(Cu)	2,0	
	FP-AS(MP)-3,5-078	102	520	55	7/8" (22,3 mm) ODS(Cu)	3,5	
	FP-AS(MP)-3,5-118	102	520	55	1 1/8" (28,6 mm) ODS(Cu)	3,5	
	FP-AS(MP)-5,0-118	133	437	70	1 1/8" (28,6 mm) ODS(Cu)	5,0	
	FP-AS(MP)-5,0-138	133	442	70	1 3/8" (35,0 mm) ODS(Cu)	5,0	
	FP-AS(MP)-7,0-138	159	441	90	1 3/8" (35,0 mm) ODS(Cu)	7,0	
	FP-AS(MP)-7,0-158	159	443	90	1 5/8" (42,0 mm) ODS(Cu)	7,0	
 Cu-St WELD 28bar SERIES 45bar SERIES	FP-AS(MP)-9,0-158	159	563	90	1 5/8" (42,0 mm) ODS(Cu)	9,0	Draw. 11
	FP-AS(MP)-12-218	190	535	310	2 1/8" (54,0 mm) ODS(Cu)	12,0	
	FP-AS(MP)-12-258	190	539	310	2 5/8" (67,0 mm) ODS(Cu)	12,0	Draw. 12, 6 Table 1 Table 2 Table 3
	FP-AS(MP)-25-218	240	677	455	2 1/8" (54,0 mm) ODS(Cu)	25,0	
	FP-AS(MP)-25-258	240	682	455	2 5/8" (67,0 mm) ODS(Cu)	25,0	
	FP-AS(MP)-45-258	325	655	412	2 5/8" (67,0 mm) ODS(Cu)	45,0	
	FP-AS(MP)-45-318	325	655	412	3 1/8" (79,4 mm) ODS(Cu)	45,0	
	FP-AS(MP)-60-114 ST	325	900	608	108 mm (St)	60,0	

SUCTION ACCUMULATORS WITH HEAT EXCHANGER

The main purpose of the liquid separator is to prevent "wet running" of the compressor. This vessel is necessary not only in all units with flooded evaporators, but also in units equipped with superheated evaporators, to prevent the accumulation of liquid refrigerant in the suction line. "HE" models additionally feature a built-in internal copper heat exchanger for connecting the liquid line, which increases the efficiency of the overall refrigeration unit.



Instructions
Certificates

Suction accumulators with heat exchanger									
Type	Model	Ø D, mm	H, mm	A, mm	B, mm	In/Out Low pressure ODS(Cu)	In/Out High pressure ^[1] ODS(Cu)	Volume, dm³	Notes
 Cu-St WELD 28bar SERIES 45bar SERIES	FP-AS(MP)-HE-12-218	190	557	334	132	2 1/8" (54,0 mm)	5/8" (16 mm)	12,0	Draw. 13
	FP-AS(MP)-HE-12-258	190	562	334	132	2 5/8" (67,0 mm)	5/8" (16 mm)	12,0	
 Cu-St WELD 28bar SERIES 45bar SERIES	FP-AS(MP)-HE-25-218	240	677	455	144	2 1/8" (54,0 mm)	3/4" (19,1 mm)	25,0	Draw. 14 Table 1
	FP-AS(MP)-HE-25-258	240	682	455	144	2 5/8" (67,0 mm)	3/4" (19,1 mm)	25,0	
	FP-AS(MP)-HE-45-258	325	655	412	200	2 5/8" (67,0 mm)	7/8" (22,3 mm)	45,0	
	FP-AS(MP)-HE-45-318	325	655	412	200	3 1/8" (79,4 mm)	7/8" (22,3 mm)	45,0	

NOTES: High pressure^[1] – outer diameter of the inlet/outlet of high-pressure lines;

Cu – Copper connections;

St – Steel connections;

FP-AS – series 28 bar;

FP-AS(MP) – series 45 bar.

OIL SEPARATORS

Oil separators are designed to separate oil dissolved in the refrigerant and return it to the compressor crankcase. FP oil separators are over 90% efficient, increasing system performance by preventing excess oil circulation.



Oil separators										
Type	Model	Ø D, mm	H, mm	A, mm	B, mm	In/Out ODS(Cu)	ORP ^[1] , inch	Volume, dm ³	OSP ^[2] , liter	Notes
 Cu-St WELD 28bar SERIES 45bar SERIES	FP-OS(MP)-2,0-012	102	319	55	30	1/2" (12,7 mm)	3/8 SAE	2,0	0,5	Draw. 15 Table 1 Chart 1
	FP-OS(MP)-2,0-058	102	319	55	30	5/8" (16,0 mm)	3/8 SAE	2,0	0,5	
	FP-OS(MP)-3,5-078	102	520	55	30	7/8" (22,3 mm)	3/8 SAE	3,5	0,5	
	FP-OS(MP)-3,5-118	102	520	55	30	1 1/8" (28,6 mm)	3/8 SAE	3,5	0,5	
	FP-OS(MP)-5,0-118	133	437	70	40	1 1/8" (28,6 mm)	3/8 SAE	5,0	1,0	
	FP-OS(MP)-5,0-138	133	442	70	40	1 3/8" (35,0 mm)	3/8 SAE	5,0	1,0	
	FP-OS(MP)-7,0-138	159	441	90	45	1 3/8" (35,0 mm)	3/8 SAE	7,0	1,5	
	FP-OS(MP)-7,0-158	159	443	90	45	1 5/8" (42,0 mm)	3/8 SAE	7,0	1,5	
 Cu-St WELD 28bar SERIES 45bar SERIES	FP-OS(MP)-12-218	190	535	310	140	2 1/8" (54,0 mm)	3/8 SAE	12,0	1,8	Draw. 16
	FP-OS(MP)-12-258	190	535	310	140	2 5/8" (67,0 mm)	3/8 SAE	12,0	1,8	
	FP-OS(MP)-25-218	240	678	455	170	2 1/8" (54,0 mm)	3/8 SAE	25,0	2,5	Draw. 17, 6 Table 1 Chart 1
	FP-OS(MP)-25-258	240	682	455	170	2 5/8" (67,0 mm)	3/8 SAE	25,0	2,5	
	FP-OS(MP)-45-258	325	660	412	170	2 5/8" (67,0 mm)	3/8 SAE	45,0	2,5	

OIL RECEIVERS

Oil receivers are designed for the temporary storage of unused oil in the refrigeration system. Two sight glass ports and an SAE port for connecting a differential check valve are provided for monitoring the oil level.



Oil receivers									
Type	Model	Ø D, mm	H, mm	A, mm	In/Out	SG ^[3] , шт.	DVP ^[4]	Volume, dm ³	Notes
 28bar SERIES 45bar SERIES	FP-OR(MP)-5,0	102	634	504	1" – 14 UNS	2	+	5,0	Draw. 18 Chart 2
	FP-OR(MP)-8,0	133	650	512	1" – 14 UNS	2	+	8,0	
	FP-OR(MP)-12,0	159	665	520	1" – 14 UNS	2	+	12,0	
	FP-OR(MP)-16,0	190	643	—	1" – 14 UNS	2	+	16,0	Draw. 19 Chart 2
	FP-OR(MP)-25,0	240	670	—	1" – 14 UNS	2	+	25,0	
	FP-OR(MP)-40,0	240	970	—	1" – 14 UNS	2	+	40,0	

OIL FILTERS

FP-OF filters are designed to protect oil circuit elements from foreign particles.



Oil filters						
Type	Model	L, mm	L ₁ , mm	D, mm	Connection A, inch	Notes
 45bar SERIES Cu-St WELD	FP-OF-038	102	46	75	5/8"-18 UNF (3/8" SAE)	Draw. 20 Table 1
	FP-OF-038S	104	46	75	3/8" (10 mm) ODS(Cu)	

NOTES: ORP^[1] – Oil return port;
OSP^[2] – Oil separator pre-charge;
SG^[3] – Sight glass, M24x1;
DVP^[4] – Diff. valve port, 3/8" SAE.

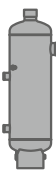
P-OS – series 28 bar;
FP-OS(MP) – series 45 bar;
FP-OR – series 28 bar;
FP-OR(MP) – series 45 bar;

Cu – Copper connections;
St – Steel connections.

HELICAL OIL SEPARATORS WITH RECEIVERS

The primary purpose of cyclone oil separators with an integrated oil receiver is to effectively separate oil from the refrigerant, store it, and return it to the compressor. These oil separators are designed for high-pressure oil return systems in multi-compressor refrigeration units. They are equipped with an oil refill port. A valve is integrated into the bottom.



Helical oil separators with receivers										
Type	Model	Ø D, mm	H, mm	h1, mm	In/Out High pressure	A, mm	B, mm	Volume, dm ³	Oil receiver volume, dm ³	Notes
 Cu-St WELD 28bar SERIES 45bar SERIES	FP-OSR(MP)-6-034	133	601	495	3/4" (19,1 mm)	60	100	6,0	4,0	Draw. 21 Table 1 Table 4
	FP-OSR(MP)-6-078	133	608	495	7/8" (22,3 mm)	60	100	6,0	4,0	
	FP-OSR(MP)-8-078	159	615	481	7/8" (22,3 mm)	60	100	8,0	5,5	
	FP-OSR(MP)-8-118	159	620	481	1 1/8" (28,6 mm)	60	100	8,0	5,5	
	FP-OSR(MP)-12-138	159	767	621	1 3/8" (35,0 mm)	60	100	12,0	9,0	
	FP-OSR(MP)-12-158	159	768	616	1 5/8" (42,0 mm)	60	100	12,0	9,0	
	FP-OSR(MP)-16-218	190	726	546	2 1/8" (54,0 mm)	90	100	16,0	12,0	Draw. 23 Table 1, 4
	FP-OSR(MP)-40-258	240	1140	910	2 5/8" (67,0 mm)	160	160	40,0	25,0	

OIL SEPARATORS FOR SCREW COMPRESSORS

Cyclone oil separators are designed to separate oil from refrigerant vapors under pressure and return it to the compressor crankcase in systems with oil-flooded screw compressors.



Oil separators for screw compressors											
Type	Model	∅ D, mm	H, mm	A, mm	B, mm	∅D2 outer In/Out ODS	ORP ^[1] , inch	SVP ^[2]	Oil receiver volume, dm ³	Volume, dm ³	Notes
 28bar SERIES	FP-OS-40-57 ST	325	700	180	445	57	1 1/4" UNF	+	14,0	40,0	Draw. 6 Draw. 22 Table 5 Chart 1
	FP-OS-80-76 ST	325	1150	178	855	76	1 3/4" UN	+	35,0	80,0	
	FP-OS-200-114 ST	460	1500	266	1126	114	2 1/4" UN	+	80,0	200,0	
	FP-OS-400-114 ST	612	1630	295	1260	114	2 1/4" UN	+	178,0	400,0	
	FP-OS-600-140 ST	716	1790	320	1360	140	67 mm ODS(St)	+	278,0	600,0	

REFILLABLE REFRIGERANT CYLINDERS

These cylinders are designed for storing and transporting CFCs, HCFCs, and HFCs. They are equipped with a shut-off valve with a safety device and a data sheet, and comply with all TR CU 032/2013 standards. The "Y" symbol indicates a combined dual valve for dispensing liquid and gaseous refrigerant.



Refillable refrigerant cylinders									
Type	Model	Ø D, mm	H, mm	Ød, mm	Out, inch	Weight of refrigerant R22, kg	Volume, dm ³	Working press, MPa	Notes
 35bar SERIES	FP-CR-15	240	475	220	1×7/16"-20 UNF (1/4 SAE)	12,1	12,5	3,5	Draw. 24 Table 6
	FP-CR-15Y	240	475	220	2×7/16"-20 UNF (1/4 SAE)	12,1	12,5	3,5	
	FP-CR-30Y	240	825	220	2×7/16"-20 UNF (1/4 SAE)	26,0	30,0	3,5	
	FP-CR-60Y	325	1005	260	2×7/16"-20 UNF (1/4 SAE)	52,0	60,0	3,5	

The period of technical examination of reusable freon cylinders and containers is 5 years.

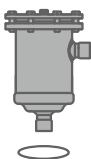
NOTES: ORP^[1] – Oil return port;
SVP^[2] – Safety valve port, 1 1/4" – 12UNF

FP-OSR – series 28 bar;
FP-OSR(MP) – series 45 bar.

FILTER DRIERS HOUSINGS

The FP-SDF filter drier housing is designed to accommodate a cartridge to protect refrigeration and air conditioning systems from solid particles, moisture, and acid. The filter drier is typically installed on the liquid line before the expansion valve or on the suction line before the compressor. The filter drier housing includes a cartridge holder, end cap gasket, and holder gasket, but does not include a cartridge.



Filter driers housings							
Type	Model	Connection Ød ODS	Overall dimensions		Number of cores	H ₁ , mm	Notes
			L, mm	L ₁ , mm			
 PTFE seal	FP-SDF-058	5/8" ODS(Cu) (16,0 mm)	231	147	1	84	Draw. 25 Table 1
	FP-SDF-078	7/8" ODS(Cu) (22,3 mm)	238	154	1	91	
	FP-SDF-118	1 1/8" ODS(Cu) (28,6 mm)	241	157	1	92	
	FP-SDF-138	1 3/8" ODS(Cu) (35,0 mm)	247	163	1	96	
	FP-SDF-158	1 5/8" ODS(Cu) (42,0 mm)	248	164	1	96	
	FP-SDF-218	2 1/8" ODS(Cu) (54,0 mm)	258	159	1	103	
	FP-SDF-258	2 5/8" ODS(Cu) (67,0 mm)	268	169	1	109	
	FP-SDF-2-118	1 1/8" ODS(Cu) (28,6 mm)	386	302	2	92	
	FP-SDF-2-138	1 3/8" ODS(Cu) (35,0 mm)	392	308	2	96	
	FP-SDF-2-158	1 5/8" ODS(Cu) (42,0 mm)	393	309	2	96	
	FP-SDF-2-218	2 1/8" ODS(Cu) (54,0 mm)	403	299	2	103	
	FP-SDF-2-258	2 5/8" ODS(Cu) (67,0 mm)	413	309	2	109	
	FP-SDF-3-138	1 3/8" ODS(Cu) (35,0 mm)	537	453	3	96	
	FP-SDF-3-158	1 5/8" ODS(Cu) (42,0 mm)	538	454	3	96	
	FP-SDF-3-218	2 1/8" ODS(Cu) (54,0 mm)	548	444	3	103	
	FP-SDF-3-258	2 5/8" ODS(Cu) (67,0 mm)	558	454	3	109	

The lid thickness is 12 mm.

CARTRIDGES FOR FILTER DRIERS

Cartridges for dismountable filters are designed to protect the system from mechanical contaminants (48F), moisture (48DM), and acids (48DC, 48DA). Depending on their intended use, the filters have different ratios of desiccant (molecular sieve) and anti-acid (activated aluminum). Cartridges are supplied with two felt gaskets and one gasket for the filter cover.



Cartridges for Filter driers						
Type	Model	Material	Overall dimensions			Notes
			L, mm	D, mm	d, mm	
	FP-48DM (Moisture removal)	100% molecular sieve	140	95	44	Draw. 26
	FP-48DC (Moisture and acid remove)	80% molecular sieve 20% activated aluminum	140	95	44	
	FP-48DA (Acid remove)	30% molecular sieve 70% activated aluminum	140	95	44	
	FP-48F (Dirt protection)	filter. paper	140	95	64	Draw. 27

BRACKET FOR FILTER DRIERS

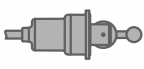
The bracket is designed for installing FP-SDF filters on a flat surface.

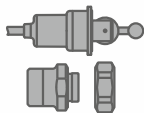
Bracket for Filter driers						
Type	Compatibility	B, mm	Overall dimensions			Notes
			L, mm	D, mm	H, mm	
	FP-SDF, FP-SDF-2, FP-SDF-3	114	145	60	173	Draw. 28

ELECTRONIC FREON/OIL LEVEL SENSORS

The FP-ELS-L level sensors are designed for use as electronic meters for measuring the limit values of levels (interfaces) of working environments in capacitive equipment – vessels and apparatuses operating under pressure.



Electronic freon/oil level sensors				
Type	Model	Parameter	Value	Notes
 	FP-ELS-L	Max. operating pressure PS	4,5 MPa	Draw. 29
		Test pressure PT	5,0 MPa	
		Burst pressure	20,0 MPa	
		Power supply	15...30 V DC	
		Energy consumption	1 VA	
		Ambient / storage temperature	-40...+50 °C	
		Working environment temperature	-40...+80 °C	
		Protection class	IP65	
		Alarm relay contacts	max. 1A, 30VDC (30 W); 0,25A 250VAC (62,5 VA)	
		Electrical connection	Cable PVC 5×0,25 (AWG23)	
		Power cable length	2 m	

Electronic freon/oil level sensors. Adapters			
Type	Model	Description	Notes
	FP-ELS-L + M24-114 (L) Thread adapter M24 - 1 1/4", gasket and nut included	The adapter is required when installing on refrigerant receivers of the FP-LR, FP-LRH, FP-OR series after 01.2019 and FP-OS oil separators before 01.2023. In all other cases, the sensor is mounted without an adapter.	Draw. 30

Power supply for electronic level sensors					
Type	Model	Input voltage	Output voltage	Power	Notes
	FP-PSU-1-24	180...242 V, 50/60 Hz	18...30 V DC	1 W	Draw. 31

DIFFERENTIAL CHECK VALVE

The FP-DV differential check valve is designed to maintain a pressure differential in the oil circuit of low-pressure systems. The valve is installed in the oil return line between the oil receiver and the suction line.



Differential check valve				
Type	Model	Connection	Pressure difference, bar	Notes
	FP-DV-038-35	5/8"-18UNF (3/8 SAE)	3,5	Draw. 35

SAFETY VALVES

A pressure relief valve must be installed on all vessels with a pressure relief valve port. It is designed to protect pressure vessels from unacceptable pressure increases by releasing excess working fluid.



Safety valves						
Type	Model	Connection		Nominal pressure, MPa	Setting pressure, MPa	Notes
		d	D			
 28bar 45bar	FP-SV-038	3/8" NPT	5/8"-18UNF (3/8 SAE)	2,8	3,0	Draw. 32
	FP-SV(MP)-038	3/8" NPT	5/8"-18UNF (3/8 SAE)	4,5	4,8	

ADAPTERS FOR SAFETY VALVES AND LEVEL SENSORS

The adapter is used to connect a relief valve port with a 1 1/4" thread to a relief valve with an internal tapered thread of 1/2" NPT or 3/8" NPT.

Adapters for safety valves and level sensors				
Type	Model	Connection	Description	Notes
	Adapter FP-A-012 (1/2")	1/2" NPT	Adapter for mounting a valve with 1/2" NPT thread on an FP vessel	Draw. 33
	Adapter FP-A-038 (3/8")	3/8" NPT	Adapter for mounting a valve with 3/8" NPT thread on an FP vessel	
	Adapter FP-A-038-012	1/2" – 3/8" NPT	Adapter for mounting the FP-SV and FP-SV(MP) valve on a vessel with SVP 1/2" NPT	Draw. 34

HEATING KIT FOR CYCLONE OIL SEPARATOR

These units are designed for heating oil in cyclone oil separators. They are supplied as a complete heating kit for the OS-40, OS-80, OS-200, OS-400, and OS-600 models. They do not include liners. Liners are integrated into the cyclone oil separators.



Heaters					
Type	Model	Length, mm	Voltage, V	Power, W	Notes
	FP-TEH-120-150W	120	~230	150	Draw. 36 Table 5

Thermostats					
Type	Model	Temperature, °C	Voltage, V	Load, A	Notes
	FP-TS-90	6...90	~230	10 (2,5)	Draw. 37 Table 5

STANDS FOR RECEIVERS

Receiver stands are used for vessels with a diameter of 190 mm; if necessary, they can be installed on a support platform (profile pipe) - vertical receivers LR-10.0; LR-12.5; LR-16.0; liquid separators AS-12 and oil separators OS-12.

Stands for receivers						
Type	Model	Length, mm	Width, mm	Height, mm	Protrusion length, mm	Notes
	FP-ST-LR-D190	224	70	30	150	Draw. 38

STANDS FOR HORIZONTAL RECEIVERS

Stands for horizontal receivers are used to install the compressor on horizontal receivers FP-ST-LRH-16, FP-ST-LRH-25, FP-ST-LRH-40, FP-ST-LRH-70.

Stands for horizontal receivers

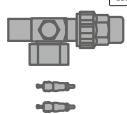
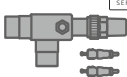
Type	Model	Dimensions			Mounting dimensions			Compressor models	Notes
		L, mm	B, mm	H, mm	l1, mm	b1, mm	b2, mm		
	FP-ST-LRH-16	800	270	42	736	—	198	Bitzer: 2EES-2(Y)...2CES-4(Y), 2KES-05(Y)...2FES-3(Y), 4FES-3(Y)...4CES-9(Y) Dorin: H11, H35 Frascold: A, B, D	Draw. 39
	FP-ST-LRH-25	800	352	42	736	—	280	Bitzer: 2EES-2(Y)...2CES-4(Y), 2KES-05(Y)...2FES-3(Y), 4FES-3(Y)...4CES-9(Y), 4VES-6Y...4NE-20(Y) Dorin: H2, H11, H33, H35, H41 Frascold: A, B, D, S, Q	
	FP-ST-LRH-40-70	800	384	42	736	220	305	Bitzer: 2KES-05(Y)...2FES-3(Y), 2EES-2(Y)...2CES-4(Y), 4FES-3(Y)...4CES-9(Y), VES-6Y...4NE-20(Y), EJE-13Y...4FE-35(Y) Dorin: H2, H5, H11, H33, H35, H41 Frascold: A, B, D, Q, S, V	

ROTALOCK VALVES

The Rotalock valve is designed to lock and shut off devices (compressors, receivers), allowing for timely maintenance and facilitating equipment replacement. Two 1/4" SAE service ports are provided for connecting control and measuring equipment and automation.



Rotalock valves

Type	Model	Connection		L, mm	L1, mm	□, mm	Notes
		Ø D, inch	Ø d, inch				
	FP-RV-014 SAE (FP-ERL)	7/16" – 20UNF (1/4" SAE)	7/16" – 20UNF (1/4" SAE)	72	39	—	Draw. 40
	FP-RV-038 SAE (FP-DV)	5/8" – 18UNF (3/8 SAE)	5/8" – 18UNF (3/8 SAE)	72	40	—	
	FP-RV-034-012	3/4" UN	1/2" ODS	106	33	SW 20	Draw. 41 Table 1
	FP-RV-1-038	1" – 14 UNS	3/8" ODS	106	34	SW 20	
	FP-RV-1-012	1" – 14 UNS	1/2" ODS	106	35	SW 20	
	FP-RV-1-058	1" – 14 UNS	5/8" ODS	106	35	SW 20	
	FP-RV-114-058	1 1/4" – 12 UNF	5/8" ODS	109	34	SW 22	
	FP-RV-114-034	1 1/4" – 12 UNF	3/4" ODS	142	49	SW 22	
	FP-RV-114-078	1 1/4" – 12 UNF	7/8" ODS	142	49	SW 30	
	FP-RV-114-118	1 1/4" – 12 UNF	1 1/8" ODS	145	52	SW 30	
	FP-RV-134-078	1 3/4" – 12 UN	7/8" ODS	142	48	SW 30	
	FP-RV-134-118	1 3/4" – 12 UN	1 1/8" ODS	185	59	SW 36	
	FP-RV-134-138	1 3/4" – 12 UN	1 3/8" ODS	187	60	SW 36	
	FP-RV-134-158	1 3/4" – 12 UN	1 5/8" ODS	191	68	SW 36	
	FP-RV-214-138	2 1/4" – 12 UN	1 3/8" ODS	201	61	SW 50	
	FP-RV-214-158	2 1/4" – 12 UN	1 5/8" ODS	203	78	SW 50	
	FP-RV-214-218	2 1/4" – 12 UN	2 1/8" ODS	205	80	SW 50	
	FP-RV-318-318 для LR(H)-300/350 ST	3 1/8" ODS	3 1/8" ODS	288	92	SW 100	Draw. 42

TEE VALVES

FP-TV changeover valves are designed for installation on pressure vessels. The changeover valve has two connection ports for safety devices. Using changeover valves allows one of the safety devices to be removed for testing and calibration (after activation) without shutting down the entire refrigeration system.



Tee valves						
Type	Model	Ø D, inch	Ø d, inch	L, mm	□, mm	Notes
 45bar SERIES	FP-TV-114-038	1 1/4" – 12 UNF	3/8" NPT	147	SW 22	Draw. 43

BALL VALVES

The FP-BV ball valve is designed to shut off and isolate refrigeration circuit components, enabling timely maintenance and facilitating equipment replacement in the suction, discharge, and liquid lines. All ball valves are tested for strength and tightness, ensuring a tight seal.



Ball valves FP-BV									
Type	Model	Ø D, mm	Ø d, inch	L, mm	Ø DN, mm	l ₁ , mm	H, mm	C, mm	Notes
 45bar SERIES	FP-BV-014	32	1/4" (6,4 mm)	138	12,7	69	56,0	16	Draw. 44 Table 1
	FP-BV-038	32	3/8" (10,0 mm)	138	12,7	69	56,0	16	
	FP-BV-012	32	1/2" (12,7 mm)	138	12,7	69	56,0	16	
	FP-BV-058	32	5/8" (16,0 mm)	138	12,7	69	56,0	16	
	FP-BV-034	42	3/4" (19,1 mm)	156	19	78	70,0	22	
	FP-BV-078	42	7/8" (22,3 mm)	156	19	78	70,0	22	
	FP-BV-118	52	1 1/8" (28,6 mm)	200	25	100	79,0	27	
	FP-BV-138	76	1 3/8" (35,0 mm)	235	38	118	109,0	40	
	FP-BV-158	76	1 5/8" (42,0 mm)	235	38	118	109,0	40	
	FP-BV-218	96	2 1/8" (54,0 mm)	270	50	135	134,0	50	
	FP-BV-258	96	2 5/8" (67,0 mm)	300	50	150	134,0	50	
	FP-BV-318	116	3 1/8" (79,4 mm)	326	60	163	154,0	60	

Ball valve with service nipple FP-BVa										
Type	Model	Ø D, mm	Ø d, inch	L, mm	Ø DN, mm	l ₁ , mm	l ₂ , mm	H, mm	C, mm	Notes
 45bar SERIES	FP-BVa-014	32	1/4" (6,4 mm)	138	12,7	69	25	56,0	16	Draw. 45 Table 1
	FP-BVa-038	32	3/8" (10,0 mm)	138	12,7	69	25	56,0	16	
	FP-BVa-012	32	1/2" (12,7 mm)	138	12,7	69	25	56,0	16	
	FP-BVa-058	32	5/8" (16,0 mm)	138	12,7	69	25	56,0	16	
	FP-BVa-034	42	3/4" (19,1 mm)	156	19	78	32	70,0	22	
	FP-BVa-078	42	7/8" (22,3 mm)	156	19	78	32	70,0	22	
	FP-BVa-118	76	1 1/8" (28,6 mm)	200	25	100	34	79,0	27	

CHECK VALVES

The FP-CV and FP-CVA piston spring-loaded check valves are designed for installation in liquid and suction lines of refrigeration systems. They ensure refrigerant flow in the specified direction and prevent backflow.



Straight-through check valve FP-CV

Type	Model	kv, m ³ /hour	Ø d, inch	Operating principle	Opening pressure drop, bar	D, mm	H, mm	Notes
	FP-CV-012	2,05	1/2" (12,70 mm)	Straight-through	0,05	28,0	132,5	Draw. 46 Table 1
	FP-CV-058	3,6	5/8" (16,00 mm)	Straight-through	0,05	42,5	155,0	
	FP-CV-034	5,5	3/4" (19,05 mm)	Straight-through	0,05	42,5	155,0	
	FP-CV-078	5,5	7/8" (22,30 mm)	Straight-through	0,05	42,5	155,0	

Angle check valve FP-CVA

Type	Model	kv, m ³ /hour	Ø d, inch	Operating principle	Opening pressure drop, bar	L, mm	H, mm	Notes
	FP-CVA-078	8,5	7/8" (22,30 mm)	Angular	0,3	104	108,0	Draw. 47 Table 1
	FP-CVA-118	19	1 1/8" (28,60 mm)	Angular	0,3	104	108,0	
	FP-CVA-138	29	1 3/8" (35,00 mm)	Angular	0,3	144	137,0	
	FP-CVA-158	30	1 5/8" (42,00 mm)	Angular	0,3	148	142,0	

FLOW INDICATOR

The FP-SG moisture indicator is designed for visual monitoring of oil flow.



Flow indicator

Type	Model	L, mm	L _i , mm	H, mm	H _i , mm	ØD, mm	Ød, mm	Connection dimensions, inch	Notes
	FP-OG-038	82	—	28	14	27	—	5/8" 18 UNF (3/8" SAE)	Draw. 48 Table 7

HUMIDITY INDICATORS

The FP-SG humidity indicator is designed for visual monitoring of refrigerant conditions in liquid lines of refrigeration units. The primary function of the humidity indicator is to indicate the moisture content of the refrigerant, allowing for monitoring of the filter drier's drying capacity. The indicator's color changes from green ("dry") to yellow ("wet") depending on the amount of moisture in the refrigerant.



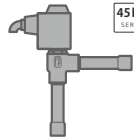
Humidity indicators

Type	Model	L, mm	L _i , mm	H, mm	H _i , mm	ØD, mm	Ød, mm	Connection dimensions, inch	Notes
	FP-SG-038	119	9	24	14	27	9,53	3/8" (10 mm) ODS (Cu)	Draw. 49 Table 1, 7
	FP-SG-012	146	10	29	17	27	12,7	1/2" (12,7 mm) ODS (Cu)	
	FP-SG-058	146	12	31	19	27	15,9	5/8" (16 mm) ODS (Cu)	
	FP-SG-078	173	14	38	22	32	22,3	7/8" (22 mm) ODS (Cu)	

SOLENOID VALVES

FP-ESV solenoid valves are normally-closed solenoid valves designed to shut off refrigerant flow in the liquid and suction lines of refrigeration and air conditioning systems. The valve is actuated by a coil using a control voltage. They can be used with HFC, CFC, and HCFC refrigerants within the permissible operating pressures. The kit includes a valve and a coil with a connector.



Solenoid valves with coil								
Type	Model	Ø d, inch		Operating principle	L, mm	H, mm	Notes	
	FP-ESV2-014	1/4" (6,4 mm)		Direct	125	61	Draw. 50	
	FP-ESV4-038	3/8" (10,0 mm)		Pilot	125	61		
	FP-ESV3-014	1/4" (6,35 mm)		Direct	148	84	Draw. 51	
	FP-ESV3-038	3/8" (10,0 mm)		Direct	148	84		
	FP-ESV6-038	3/8" (10,0 mm)		Pilot	148	85		
	FP-ESV6-012	1/2" (12,7 mm)		Pilot	148	85		
	FP-ESV10-012	1/2" (12,7 mm)		Pilot	148	85		
	FP-ESV10-058	5/8" (16,0 mm)		Pilot	148	85		
	FP-ESV15-034	5/8" (16,0 mm)		Pilot	168	96		
	FP-ESV15-078	5/8" (16,0 mm)		Pilot	168	96		
Angle solenoid valves with coil								
Type	Model	Ø d, inch		Operating principle	L, mm	H, mm	Notes	
	FP-ESVA2-014	1/4" (6,4 mm)		Direct	111	94	Draw. 52	
	FP-ESVA4-038	3/8" (10,0 mm)		Pilot	111	94		
Coils for solenoid valves FP-ESV, FP-ESVA and electronic expansion valves FP-ERV								
Type	Model	Current	Voltage, V	Power, VA	Compatibility			Notes
					ESV3, ESV6, ESV10, ESV15	ESV2, ESV4, ESVA2, ESVA4*	ERV	
	FP-CL-230AC10W	AC	230	10	+	—	—	Draw. 53
	FP-CL-230AC20W	AC	230	20	+	—	+	
	FP-CL-230AC25W	AC	230	25	—	—	+	
	FP-CL-24DC20W	DC	24	20	+	—	+	
	FP-CLS-230AC10W	AC	230	10	—	+	—	Draw. 54

*) Cable length 0.2 m.

PRESSURE RELAYS

FP-PR pressure switches are designed for use in refrigeration and air conditioning systems to protect against low suction pressure or high discharge pressure. Pressure switches are also used to start and stop refrigeration compressors.



Pressure relays / Dual pressure relay								
Type	Model	Low pressure (LP)		High pressure (HP)		Reset	Max. working pressure (MWP), bar	Notes
		Control range, bar	Differential Δp , bar	Control range, bar	Differential Δp , bar			
	FP-PRL-06M	-0,5 ... 6,0	0,6 ... 4,0	—	—	Manual	17,0	Draw. 55
	FP-PRL-06A	-0,5 ... 6,0	0,6 ... 4,0	—	—	Auto	17,0	
	FP-PRH-30M	—	—	8 ... 30	3 ... 10	Manual	35,0	
	FP-PRH-30A	—	—	8 ... 30	3 ... 10	Auto	35,0	
	FP-PRH-42A	—	—	8 ... 42	4 ... 10	Auto	45,0	
	FP-PRHL-32A	-0,2 ... 7,5	0,7 ... 4,0	8 ... 32	4	Auto	35,0	Draw. 56

CARTRIDGE PRESSURE SWITCH

FP-PS fixed-set diaphragm-type cartridge pressure switches are designed for use in refrigeration units and air conditioning systems with CFC, HCFC and HFC refrigerants as high and low pressure safety switches.



Cartridge pressure switch					
Type	Model	Response pressure		Max. working pressure (MWP), bar	Notes
		Off, bar	On, bar		
	FP-PSL-1,7	1,7	2,7	15	Draw. 57
	FP-PSH-28	28,0	21,0	45	

WELDED VIBROELIMINATORS

Vibration dampers are designed for installation in stationary and mobile cooling systems. Thanks to Cu-St FP weld technology, vibration damper joints are heat-resistant and durable.



Welded vibroeliminators							
Type	Model	Overall dimensions		Connection		Max. working pressure, MPa	Notes
		L, mm	Ø D, mm	l, mm	Ød ODS, inch		
	FP-YVA-038	205	24	23	3/8" (10,0 mm)	4,5	Draw. 58 Table 1
	FP-YVA-012	205	24	23	1/2" (12,7 mm)	4,5	
	FP-YVA-058	218	29	17	5/8" (16,0 mm)	4,5	
	FP-YVA-034	218	29	17	3/4" (19,1 mm)	4,5	
	FP-YVA-078	242	34	20	7/8" (22,3 mm)	4,5	
	FP-YVA-118	281	40	21	1 1/8" (28,6 mm)	4,5	
	FP-YVA-138	320	47	26	1 3/8" (35,0 mm)	4,5	
	FP-YVA-158	371	58	27	1 5/8" (42,0 mm)	4,5	
	FP-YVA-218	456	67	33	2 1/8" (54,0 mm)	4,0	
	FP-YVA-258	612	85	40	2 5/8" (67,0 mm)	3,5	
	FP-YVA-318	690	105	35	3 1/8" (79,4 mm)	3,0	

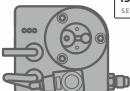
FEEDWAY. ELECTRONIC OIL LEVEL REGULATORS

The Feedway electronic oil level controller is designed for installation in the oil circuit of compressor stations to monitor and maintain the oil level in the compressor crankcase, provide an emergency alarm, and shut down the compressor in the event of low oil levels.

The electronic controller is based on an electromechanical operating principle using a Hall sensor as the sensing element, preventing false alarms and effectively monitoring the oil level in the compressor.



FeedWay. Electronic oil level regulators

Type	Model	Parameter	Value	Notes
 FEEDWAY OIL LEVEL CONTROL	FP-ERL4	Max. working pressure	4,5 MPa	Draw. 59, 61
		Test pressure	5,0 MPa	
		Power supply	230 V; 50/60 Hz; 0,04 A	
		Oil level maintenance range	40%...60% of the viewing glass height	
		Protection class	IP67	
		Delay in turning on oil supply	10 sec	
		Delay in turning on the emergency relay	120 sec	
		Emergency relay	max 3 A; 230 V; 50/60 Hz	
		Length of power supply cable/emergency relay	2 meters. 1 integrated cable	
		Oil line connection adapter	Thread 7/16"-20UNF external (1/4"SAE)	

ELECTRONIC FREON/OIL LEVEL SENSORS

The FP-ELS2/OLS2 electronic level sensors are designed for use as electronic level sensors for measuring interface levels (limits) of working fluids in capacitive equipment such as vessels, compressors, flooded evaporators, circulation receivers, and pressure vessels. They are designed for installation on the connection ports of visual level (interface) monitoring devices.

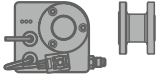
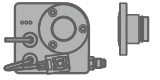
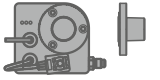
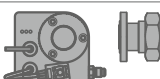
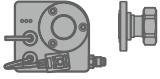


Electronic freon/oil level sensors

Type	Model	Parameter	ELS2	OLS2	Notes
 FEEDWAY OIL LEVEL CONTROL	FP-ELS2	Max. working pressure PS	4,5 MPa	4,5 MPa	Draw. 60, 62
	FP-OLS2	Max. test pressure PT	5,0 MPa	5,0 MPa	
		Power supply	230 V; 50/60 Hz; 0,04 A	230 V; 50/60 Hz; 0,04 A	
		Protection class	IP67	IP67	
		Delay in turning on the emergency relay	20 sec	120 sec	
		Emergency relay	max. 3 A; 230 V; 50/60 H	max. 3 A; 230 V; 50/60 H	
		Length of power cables	2 m. 1 integrated cable	2 m. 1 integrated cable	
		Emergency level	40 %	25 %	
		Recommended control environment	refrigerants	oil	

Electronic level sensors with adapters

Type	Model	Manufacturer – Type of compressor	Notes
	FP-ELS2/OLS2 + FA M24 thread adapter, flange and two O-rings included	Refrigerant receiver series FP-LR, FP-LRH, FP-OR after 01.2019. Oil separators FP-OS until 01.2023. For a list of adapters for installing FP-OLS2 on a compressor, see page 17.	Draw. 63
	FP-ELS2/OLS2 + CE Rotalock adapter 1 1/4"-12UNF (loose flange)	Refrigerant receivers of the FP-LR, FP-LRH, FP-OR, and FP-OS series until 01.2019. For a list of adapters for installing FP-OLS2 on a compressor, see page 17.	Draw. 64

Electronic oil level regulators with adapters			
Type	Model	Manufacturer – Type of compressor	Notes
	FP-ERL4 + UA Flange adapter 3 holes Ø 6,7 mm, D 47,6 mm 4 holes Ø 6,7 mm, D 50,0 mm	Copeland: D2, D3, D4, D6, D9, 4CC, 6CC, ZBH, 4M, 6M Bitzer: 4VC, 4TC, 4PC, 4NC, 4J, 4H, 4G, 6J, 6H, 6G, 6F, 8GC, 8FC, 4VHC-10K, 4THC-12K, 4PHC-15K, 4NHC-20K, 4VSL-15K...4NSL-30K, 4VES-8F, 4VES-7Y...4NES-20(Y), 4VE-7Y...4NE-20(Y), 4JE-13Y...4FE-35(Y), 4VSL-15K...4TSL-20K, 4PSL-25K...4NSL-30K, 4VES-7Y...4NESP-20(Y), 4VEP-7Y...4NEP-20(Y), 4JEP-13Y...4FEP-35(Y), 4VES-7.F3Y...4NES-20.F4Y Dorin: all K, KP (except those specified below) SCC 500B, 750B, 1500B, 1900B, 2000B, 2500B, H41, H5, H6, H7, SCC_1, SCC_32, SCC_4, CDSW_35, CDS_41, H2000-9000CC/CS, HI1201CC, HI1501CC, 41VS-90VS, SCS340-D, SCS351-D, SCS362-D, SCS 373-D, SCS 385-D, SCS 3K8-D Frascold: A, B, D, F, S, V, Z Series A-SK, D-SK, F-SK, Q-SK, S-SK Bock: HA, HG, O-Serie, HGX4/310-4, 385-4, 464-4, 555-4 (CO ₂), HAX, HGX88, HGX44e, HGX4...HGX7 Carrier: 06E Arctic Circle: G2, G4, G6 Panasonic: 3CC149LA0M, 2CC171LA0M, 3CC171LA0M, 2CC205SA0M, 3CC205LA0M RefComp: SP4...SP 6 (single-stage); SBC4...SBC6 (two-stage)	Draw. 65
	FP-ERL4 + BBL Thread adapter 1 1/8"-18UNEF, flange and 2 O-rings included	Bitzer: tentire series 2...C; 4FC, 4EC, 4DC, 4CC2KHC, 4FHC, 4EHC, 4DHC, 4CHC, 2MSL- 07K...4CSL-12K, 2KES – 4BES, 2CHC, 2DHC, 2EHC, 2FHC, 2GHC, 2HHC, 2JHC, 2KHC, 2MHC, 4DC, 4EC, 4FC, 4CHC-9K, 4DHC-7K, 4EHC-6K, 4FHC-5K, 2KES-05(Y)...2FES-3(Y), 2EES-2(Y)...2CES-4(Y), 2ESL-4K...2CSL-6K, 2MTE- 4K...6CTE-50K, 2MME-07K...2DME-7K, 2NSL-05K...2FSL-4K, 2MME-07K...2DME-7, 4FES-3(Y)...4CES-9(Y), 4PTEU-6LK...6CTEU-50LK, 4PTE-7.F3K, 4MTE-10.F4K, 4KTE-10.F4K, 4TME-20K...4PME-25K, 4FSL-7K...4CSL-12K, 4DES-7.F3Y...4CES-9.F3Y, 4MTC-10.F4K...4KTC-10.F4K, 6TME-35K...6PME-40K, CKH4, Dorin: H11, H2, H32, H35, K100CC/CS, K150CC/CS, K180CC/CS, K200CC, K230CS, K235CC, K240SB, K40CC, K50CS, K75CC/CS- SCC 250B, 300B, 350B, 380B, CDS_11, H400-650EP, H1-1003CC/CS, HI1-HI751CC, K200CC Bock: HA12/22/34, HG12/22/34 HGX12P/40-4, 50-4, 60-4, 75-4 (CO ₂) HGX22P110-4, HGX22P125-4, HGX22P160-4...HGX22P190-4 (CO ₂), HGX34P/215-4, HGX34P/255-4 (CO ₂) Copeland: 4MSL, 4MTL Tecumseh: TAG Maneurop: LT; MT; NTZ; SM; SZ Danfoss: LFZ, MFZ, MLM, MT, SM, SZ, LT Dorin: H11, H2, H32, H35, K100CC/CS, K150CC/CS, K180CC/CS, K200CC, K230CS, K235CC, K240SB, K40CC, K50CS, K75CC/CS- SCC 250B, 300B, 350B, 380B, CDS_11 Bock: HA/HG 22/34, HGX12e...HGX34e RefComp: SP2L, SP2H, SPC Frascold: S8-8TK...S30-26TK	Draw. 66
	FP-ERL4+BBL+MLZ	Danfoss: LLZ; MLZ	
	FP-ERL4+AA Thread adapter 3/4"-14NPTF, flange and 1 O-ring included	Copeland: ZF06 – ZF18, ZS21-45, ZB 21-45 production until 06.2014 Bitzer: ZL, ZM Bristol: H29, H2, H7, H79 InvoTech: YSM, YSH	Draw. 67
	FP-ERL4 + CD Rotalock adapter 1 3/4"-12UNF	Copeland: ZR 90 - ZR 19, ZR 250 - ZR 380, ZB 56 - ZB 11M, ZS 56 - ZS 11M, ZF 24 - 48 ZH, ZB 220	Draw. 68
	FP-ERL4 + CE Rotalock adapter 1 1/4"-12UNF (free flange)	Bitzer: GSD60182 ... 60235, GSD80182, GSD80235, GSD80295... 80485 Copeland: Summit: ZR 94-ZR190 ZB 50, ZB 58-ZB 114, ZF-25 - ZF49, ZB 15-45 , ZF06 - ZF18 production since 06.2014, ZBD, ZFD, ZB15...ZB57, ZB(D)66...ZB(D)114, ZF06...ZF18, ZF25...ZF54, ZS21...ZS45, ZO21...ZO104, ZF(D)18 – after 06.2014, ZP90, ZP 103, ZP 104, ZP 120, ZP 122, ZP 137, ZP 154, ZP 182 FP: FP-SH, FP-SL, FP-SM InvoTech: YM, YF, YH230-355 Belief: BS-CM-200...BS-CM-500	Draw. 64

DIGIFAN. FAN SPEED CONTROLLER (3-PHASE)

The FP-FSR-8 fan speed controllers are designed for installation on refrigeration units to maintain a set condensing pressure level in the system by varying the condenser fan speed through voltage regulation. The FSR-8 is a slave device, controlled by the master unit.



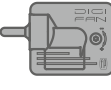
Fan speed controller (3-phase)				
Type	Model	Parameter	Value	Notes
 DIGI FAN	FP-FSR-8	Voltage	~400 V $\pm 10\%$, 50/60 Hz with automatic synchronization	Draw. 69 70, 71
		Output voltage range	25...99 % of supply voltage	
		Maximum connected power	5,5 kVA	
		Rated current	8 A	
		Minimum current	0,2 A	
		Maximum current*	12 A	
		Dissipation power	30 W	
		Analog inputs	0...10 V – 1 pcs, 4...20 mA – 1 pcs	
		Digital inputs	2 pcs, Dry contact	
		Output relay	Max 1 A, 250 VAC; 3 A, 30 V DC	
		Protection class	IP55	

* Ambient temperature - no more than +50 °C
maximum duration - no more than 10 seconds every 5 minutes.

DIGIFAN. FAN SPEED CONTROLLER (1-PHASE)

The FP-CPR1-4 fan speed controllers are designed for installation on refrigeration units to maintain a preset condensing pressure level in the system by varying the condenser fan speed through voltage regulation. The device is self-contained and features a pressure measurement port; the output voltage is adjusted proportionally to the setpoint (set screw on the front panel).



Fan speed controller (1-phase)				
Type	Model	Parameter	Value	Notes
 DIGI FAN	FP-CPR1-4	Voltage	~230 V $\pm 10\%$, 50/60 Hz with automatic synchronization	Draw. 72 73, 74
		Output voltage range	25...99 % of supply voltage	
		Maximum working pressure PS	4,5 MPa	
		Rated current	4 (3) A*	
		Minimum current	0,2 A	
		Setting range	5...35 bar (factory setting 20 bar)	
		Cable	PVC, 4x0,75 (length 1 m)	
		Controlled Environments	HCFCs, HFCs and other group 2 refrigerants	
		Operating ambient temperature	-25...55 °C	
		Working environment temperature	-25...70 °C	
		Protection class	IP67	

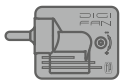
* 4 A at $t \leq 40^\circ \text{C}$; 3 A at $t 40...55^\circ \text{C}$

Bracket for mounting FP-CPM and FP-CPR1-4 regulators on a frame			
Type	Model	Compatibility	Notes
	Bracket for fixing the regulator	FP-CPM, FP-CPR1-4	Draw. 75

DIGIFAN. CONTROL MODULE FOR FAN SPEED CONTROLLERS

The FP-CPM control module is designed for installation on refrigeration units to maintain a set condensing pressure level in the system by sending a 0–10 V control signal to the condenser fan speed controllers and EC fans. The device features a pressure measurement port; the output control voltage varies proportionally to the setpoint (set by a screw on the front panel).



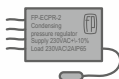
Control module for fan speed controllers				
Type	Model	Parameter	Value	Notes
 DIGI FAN	FP-CPM	Supply voltage	~230 V ±10%, 50/60 Hz with automatic synchronization	Draw. 72 73, 76
		Max. working pressure PS	4,5 MPa	
		Output signal	0 (1,5)...10 VDC	
		Setting range	5...35 bar (factory value 20 bar)	
		Operating ambient temperature	-25...55 °C	
		Cable	PVC, 5x0,25 (length 1 m)	
		Controlled environments	HCFCs, HFCs and other refrigerants of group 2	
		Working environment temperature	-25...70 °C	
		Protection class	I P67	

DIGIFAN. CONDENSING PRESSURE REGULATOR FOR AIR CONDITIONERS

The FP-ECPR-2 condensing pressure regulator for air conditioning systems is included in the winter kit and is designed to maintain a specific condensing pressure level in split air conditioning systems. It is primarily used in split systems that operate over a wide range of outdoor temperatures. The FP-ECPR-2 ensures reliable air conditioning operation in cold conditions during the winter by varying the condenser fan speed from 0 to 100 percent.



Instructions
Certificates

Condensing pressure regulator for air conditioners				
Type	Model	Parameter	Value	Notes
 DIGI FAN	FP-ECPR-2	Supply voltage	~230 V ±10%, 50/60 Hz with automatic synchronization	Draw. 77, 78
		Output voltage range	25...99 % from supply voltage	
		Maximum load current	2 A	
		Ambient operating temperature	-40...60 °C	
		Protection class	IP65	
		Sensor	FP-TST-PTC-10, 1 m	

EVAJET. TEMPERATURE CONTROLLERS

Temperature controllers FP-MC-R11BTM and FP-MC-R23BTM are designed to control the compressor (evaporator fan, defrost) of the system using 1 (2) analog sensors and 1 dry contact signal.



Evajet. Temperature controllers (1 and 2 sensors)						
Type	Model	Parameter	FP-MC-R11BTM		FP-MC-R23BTM	Notes
  	FP-MC-R11BTM	Supply voltage	~230 V ±10%; 50/60 Hz			Draw. 79, 80
	FP-MC-R23BTM	Dimension	Mounting hole 71×29 mm Panel 76×35 mm Overall 76×35×65 mm			
		Interface	RS-485 Modbus RTU			
		Copy port	TTL (miniUSB connector)			
		Terms of use	-5 ... +55 °C, relative humidity 10...90%			
		Protection class	IP65 front panel, IP20 case			
		Analog inputs	1 temperature sensor (in the chamber) FP-TST-NTC-20, range -45...+110 °C – 1 pcs	2 temperature sensors (in the chamber, evaporator) FP-TST-NTC-20, range -45...+110 °C – 2 pcs		
		Digital inputs	Dry contact, configurable			
		Digital outputs	1 relay (16 A, compressor)	3 relays: 10 (3) A, 240 V - compressor, fan and defrost		
		Connection	Power – screw terminals 2,5 mm ² with a pitch of 5 mm Control – screw terminals 1 mm ² with a pitch of 3,5 mm			
	Set	Controller, fasteners, temperature sensor - 1 (2) pcs				

EVAJET. REFRIGERATION CYCLE CONTROLLER

The refrigeration cycle controller FP-MC-R23EM is designed to control the compressor, evaporator fan, defrost and electronic expansion valve (ECV) of the system using 4 analog sensors (3 temperature sensors and 1 programmable temperature/pressure sensor) and 1 dry contact signal.



Evajet. Refrigeration cycle controller				
Type	Model	Parameter	Value	Notes
 	FP-MC-R23EM	Supply voltage	~230 V ±10%; 50/60 Hz	Draw. 81
		Dimension	Overall dimension 77×35,5×79(65,5) mm Panel 77×35,5 mm	
		Interface	RS485 Modbus RTU	
		Enviroment	-5...+55 °C, relative humidity 10...90%	
		Protection class	IP65 front panel, IP20 case	
		Analogue inputs	FP-TSN(PX3-42H) range-45...+110 °C — 4 pcs; 4...20 mA — 1 pcs	
		DIN	Dry contact, configured	
		Relay output	Inductive load (AC15) 250 V/3 A, (DC13) 30 V/3 A Resistive load (AC1) 250 V/8 A, (DC1) 30 V/8 A	
		ERV	Triac (AC15) 10...230 V/1 A	
		Connection	Connection till 1,5 mm²	
		Set	Controller, mounts, temperature sensor — 3 pcs	

Temperature sensors

Type	Model	Temperature range, °C	Accuracy, %	Protection class	Nominal resistance at 25 °C	Type	Wire length	Notes
	FP-TST-NTC-20	-45 ... 110	1	IP65	10 k	NTC 10k	2 m	—
	FP-TST-PTC-10	-45 ... 110	1	IP65	1 k	PTC 1k	1 m	

EVAJET. COMPRESSOR RACK CONTROLLERS

The central controller is a compact solution for managing multi-compressor central units and a condenser. It has 8 freely configurable inputs/outputs, and the actuator can be controlled using step-by-step and smooth algorithms.



Evajet. Compressor rack controllers				
Type	Model	Parameter	Value	Notes
 	FP-MC-CR8220LM	Supply voltage	~230 V $\pm 10\%$; 50/60 Hz	Draw. 82
		Dimensions	Mounting hole 71×29 mm Panel 77×35,5 mm Overall 77×35,5×79(65,5) mm	
		Interface	RS-485 Modbus RTU	
		Terms of use	-5...+50 °C, relative humidity 90%	
		Protection class	IP65 front panel, IP20 back	
		Analog inputs	0...20 mA – 1 pcs, 0...10 V – 1 pcs	
		Digital inputs	Dry contact – 11 pcs	
		Digital outputs	Triac (AC15) 10...230 V/1 A – 8 pcs Alarm relay (AC15) 250V/3A – 1 pcs	
		Connection	Detachable screw terminals up to 1,5 mm ²	

EVAJET. PRESSURE SENSORS

FP-PT pressure sensors are designed for installation on the discharge and suction sides of the refrigeration circuit to measure excess pressure. These sensors are compatible with all types of refrigerants and offer high vibration and impact resistance. The sensor housing is made of brass and is corrosion-resistant.



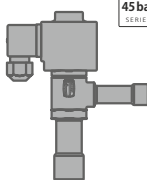
Evajet. Pressure sensors FP-PT						
Type	Model	Measuring range, bar	Connection	Output signal, mA	Power supply direct current, V	Notes
	FP-PT-10A (W)	-0,5...10	7/16-20UNF (A) (1/4 SAE) M 2 m integrated cable	4...20	11...36	Draw. 83
	FP-PT-35A (W)	0...35		4...20	11...36	
	FP-PT-45A (W)	0...45		4...20	11...36	
	FP-PT-10B (W)	-0,5...10	7/16-20UNF (B) (1/4 SAE) F 2 m integrated cable	4...20	11...36	Draw. 84
	FP-PT-35B (W)	0...35		4...20	11...36	
	FP-PT-45B (W)	0...45		4...20	11...36	

Evajet. Pressure sensors FP-PTR (Ratiometric 0,5-4,5 V)						
Type	Model	Measuring range, bar	Connection	Output signal, % of input voltage	Output signal at 5V, V	Notes
	FP-PTR-10A (W)	-0,5...10	7/16-20UNF (A) (1/4 SAE) M 2 m integrated cable	10...90	0,5...4,5	Draw. 85
	FP-PTR-35A (W)	0...35		10...90	0,5...4,5	
	FP-PTR-10B (W)	-0,5...10	7/16-20UNF (B) (1/4 SAE) F 2 m integrated cable	10...90	0,5...4,5	Draw. 86
	FP-PTR-35B (W)	0...35		10...90	0,5...4,5	

EVAJET. ELECTRONIC EXPANSION VALVES

FP-ERV electronic expansion valves are electronically controlled valves designed for use in refrigeration and air conditioning systems. They are controlled by the FP-MC-R23EM refrigeration system controller. Valve capacity ranges from 0.36 to 64 kW (R22) and is adjustable by changing the nozzles.



Evajet. Electronic expansion valves					
Type	Model	Parameter	FP-ERV10	FP-ERV15	Notes
 	45bar FP-ERV10 FP-ERV15	Coil voltage	~230V ±10%, 20 W		Draw. 87 Table 8
		Protection class	IP 67		
		Operating principle	PWM		
		Recommend period	6 sec		
		Capacity (R22)	0,36...16,3 kW	25,5...64,3 kW	
		Nozzles	1...8	1...3	
		Capacity range	10...100 %		
		Working temperature	-50...+50 °C		
		Max. working pressure differential MOPD*, bar	See table 8	30 bar	
		Plunger sealing leakage	<0,02 % from kv-value		
		Maximum operating pressure	45 bar		

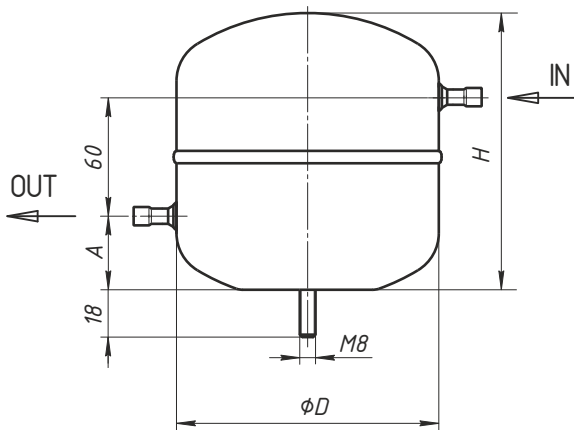
* Maximum operating differential pressure for the specified coil power (at AC230 50Hz supply voltage)

Dimensions of electronic expansion valves							
Type	Model	Height H, mm	A, mm	B, mm	d input, mm	d output, mm	Notes
	FP-ERV10	131,0	60	64	10,0	12,7	Draw. 87 Table 9
	FP-ERV15	144,2	73	68	16,0	22,3	



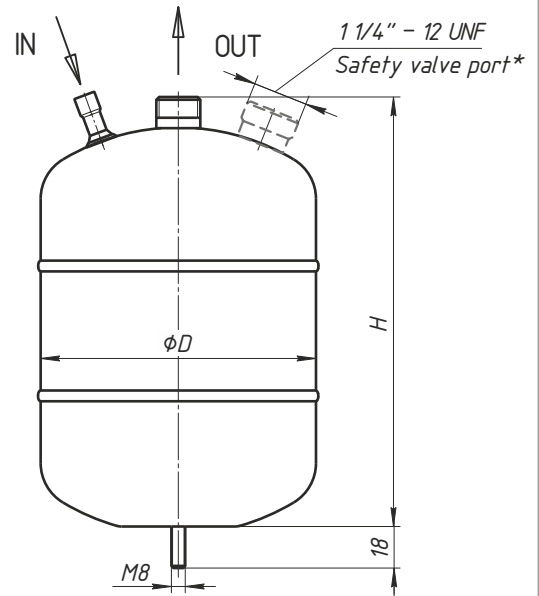
Drawing 1.

Vertical receivers FP-LR-1,0; FP-LR-1,6. Page 4



Drawing 2.

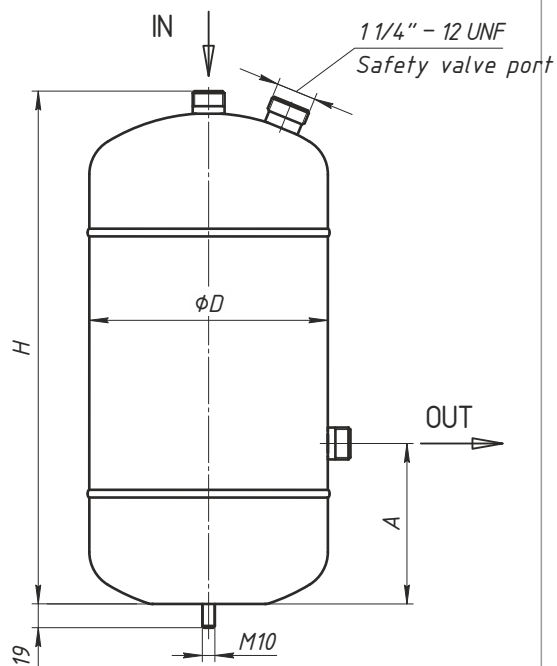
Vertical receivers FP-LR-2,5...8,0. Page 4



* Model FP-LR-2,5...6,3 without safety valve port
Model FP-LR-8,0 with safety valve port

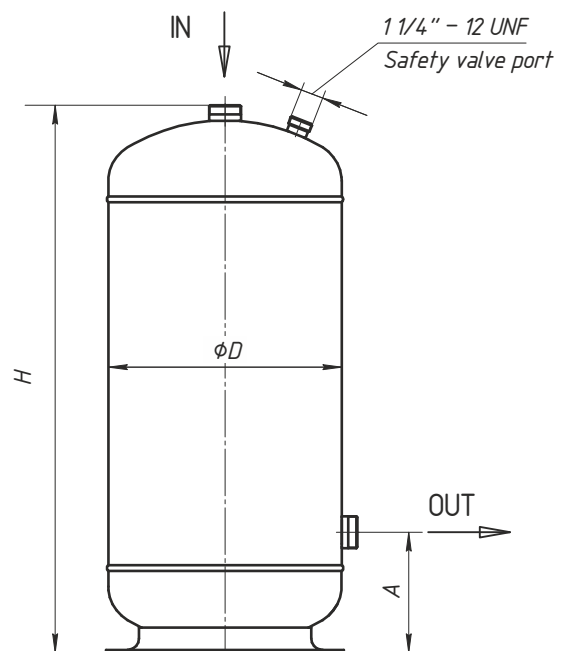
Drawing 3.

Vertical receivers FP-LR-10,0...16,0. Page 4



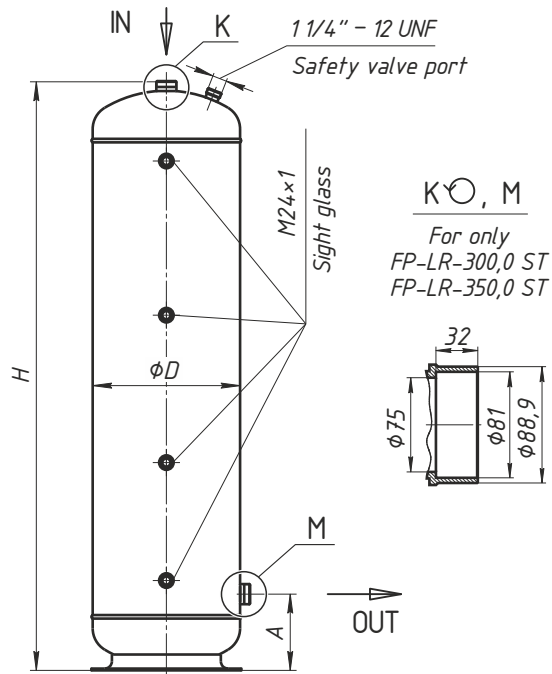
Drawing 4.

Vertical receivers FP-LR-20,0...24,8. Page 4



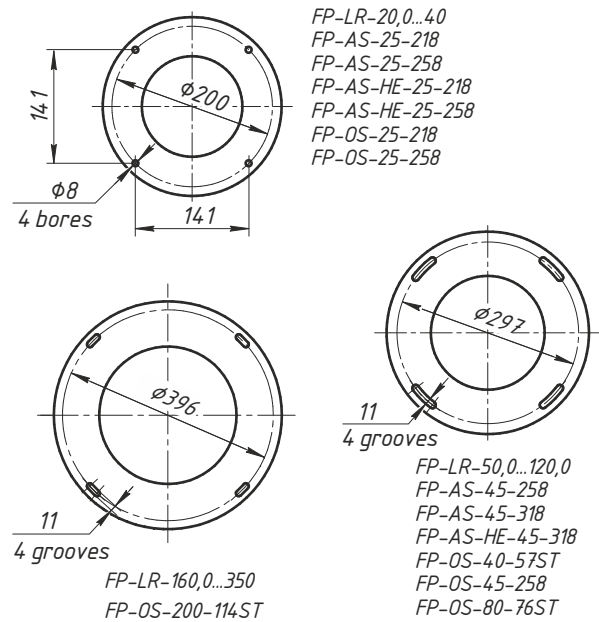
Drawing 5.

Vertical receivers FP-LR-25,0...350,0. Page 4



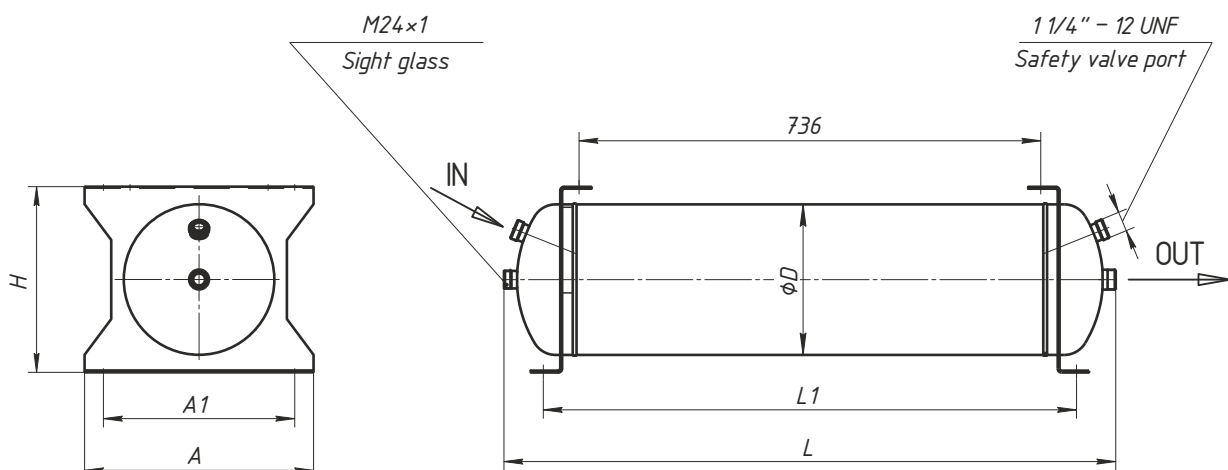
Drawing 6.

Circular platforms for receivers and separators. Page 4, 5, 6



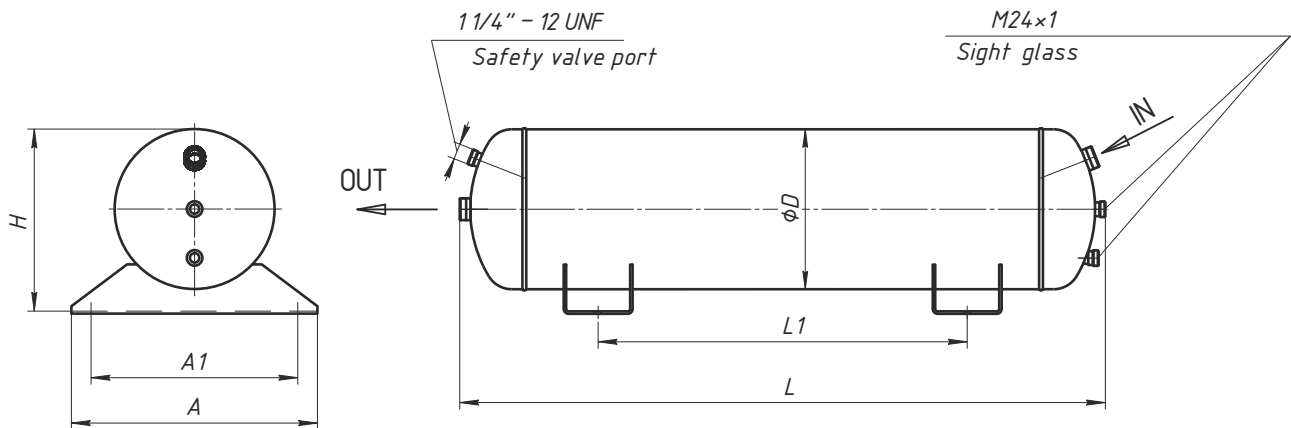
Drawing 7.

Horizontal receivers FP-LRH-16,0...70,0. Page 4



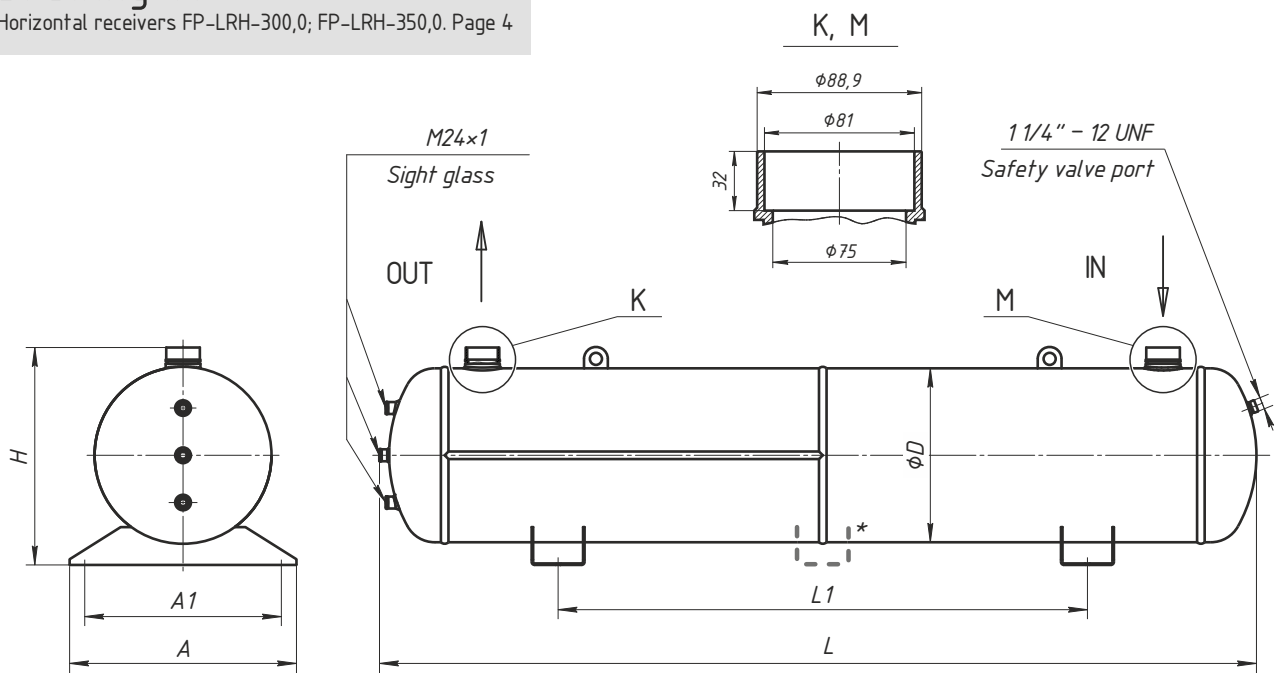
Drawing 8.

Horizontal receivers FP-LRH-100,0....250,0. Page 4



Drawing 9.

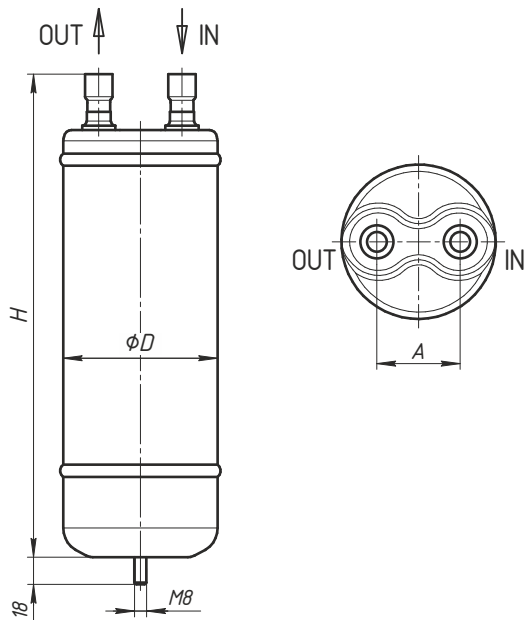
Horizontal receivers FP-LRH-300,0; FP-LRH-350,0. Page 4



* Three-legged model FP-LRH-350,0

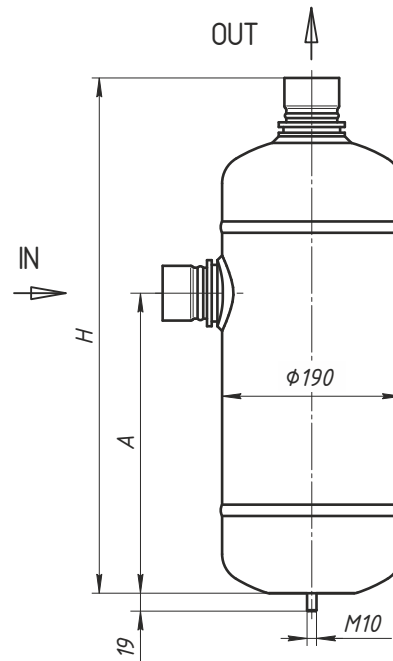
Drawing 10.

Suction accumulators FP-AS-2,0...9,0. Page 5



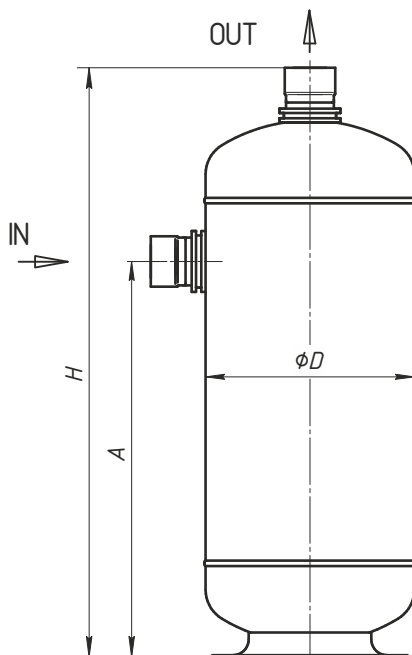
Drawing 11.

Suction accumulators FP-AS-12,0. Page 5



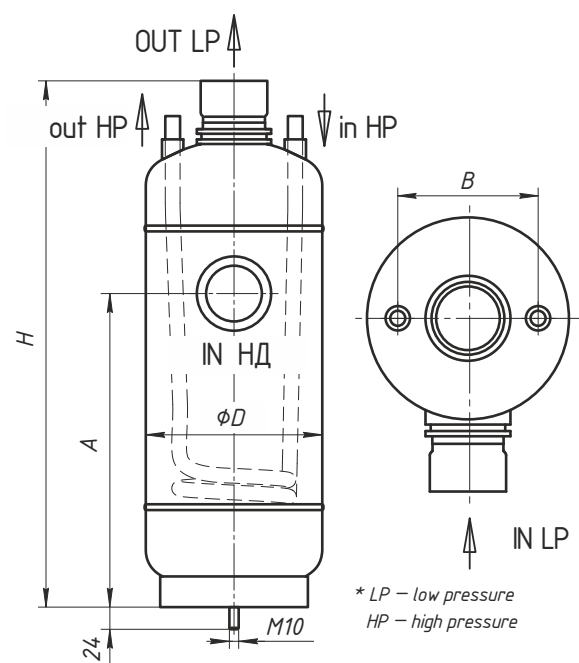
Drawing 12.

Suction accumulators FP-AS-25,0...45,0. Page 5



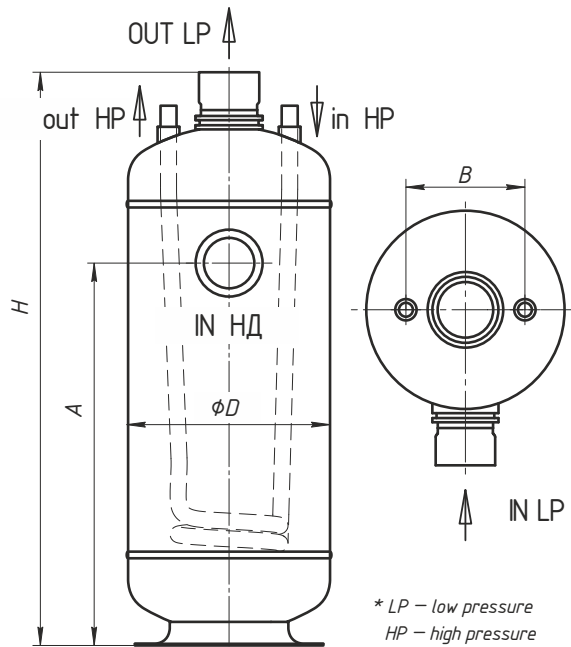
Drawing 13.

Suction accumulators FP-AS-HE-12. Page 5



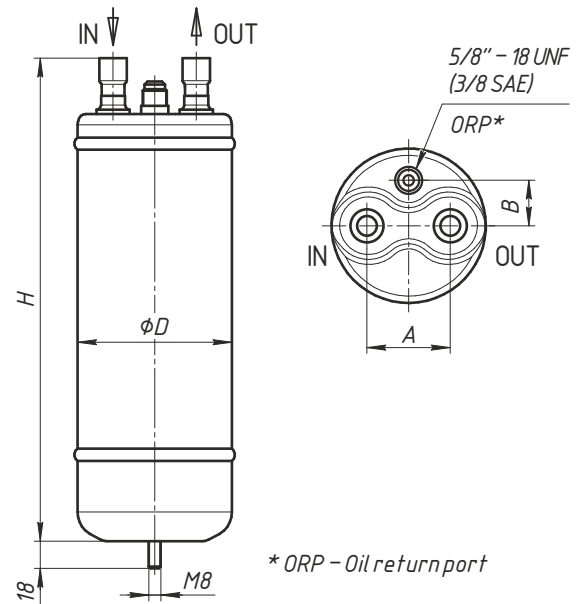
Drawing 14.

Suction accumulators FP-AS-HE-25...45. Page 5



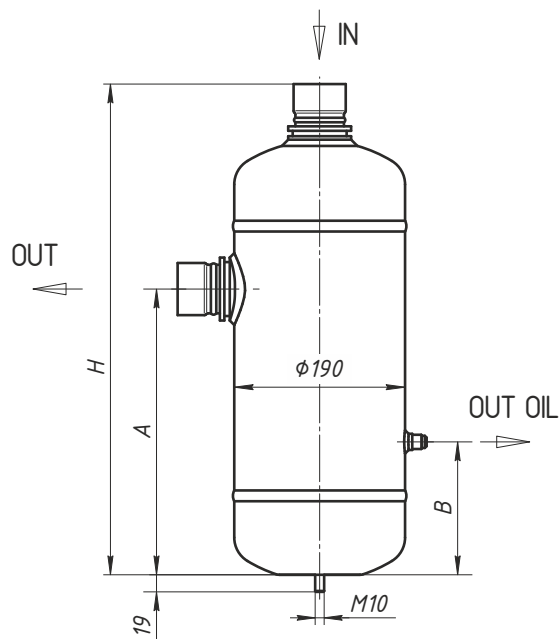
Drawing 15.

Oil separators FP-OS-2,0...7,0. Page 6



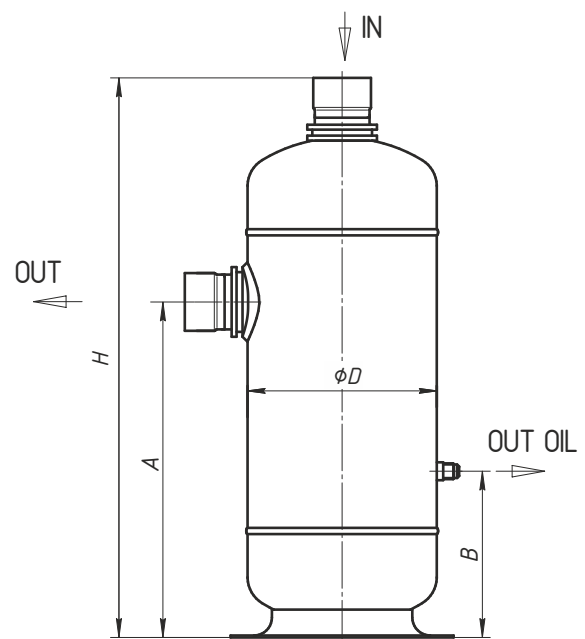
Drawing 16.

Oil separators FP-OS-12. Page 6



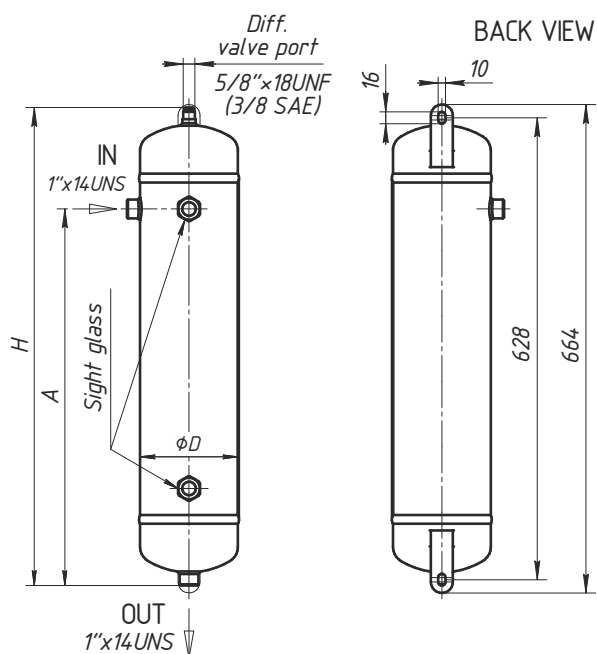
Drawing 17.

Oil separators FP-OS-25...45. Page 6



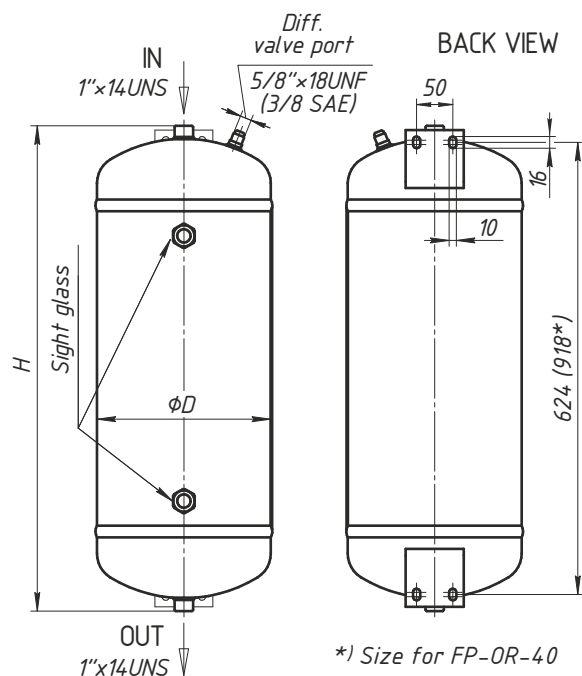
Drawing 18.

Oil receivers FP-OR-5...12. Page 6



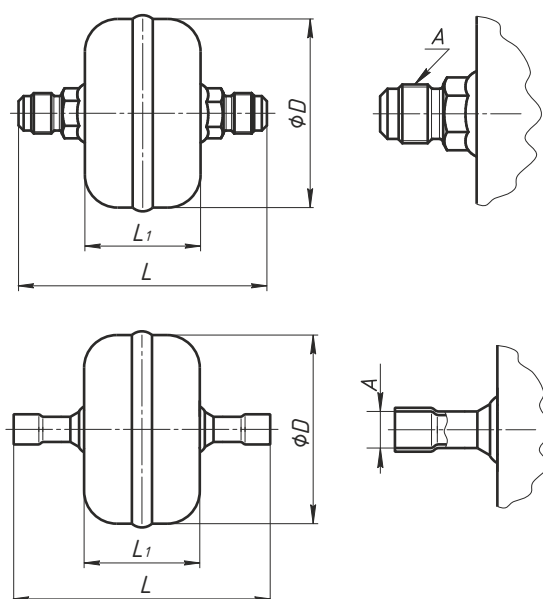
Drawing 19.

Oil receivers FP-OR-16...40. Page 6



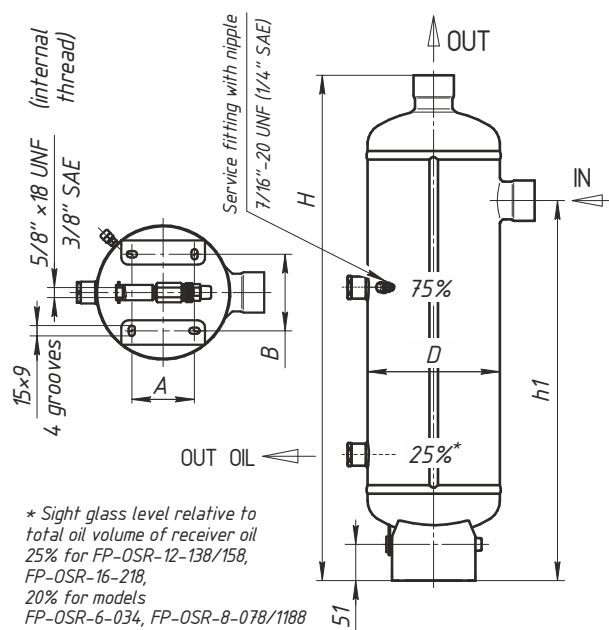
Drawing 20.

Oil filters FP-OF-038/038S. Page 6



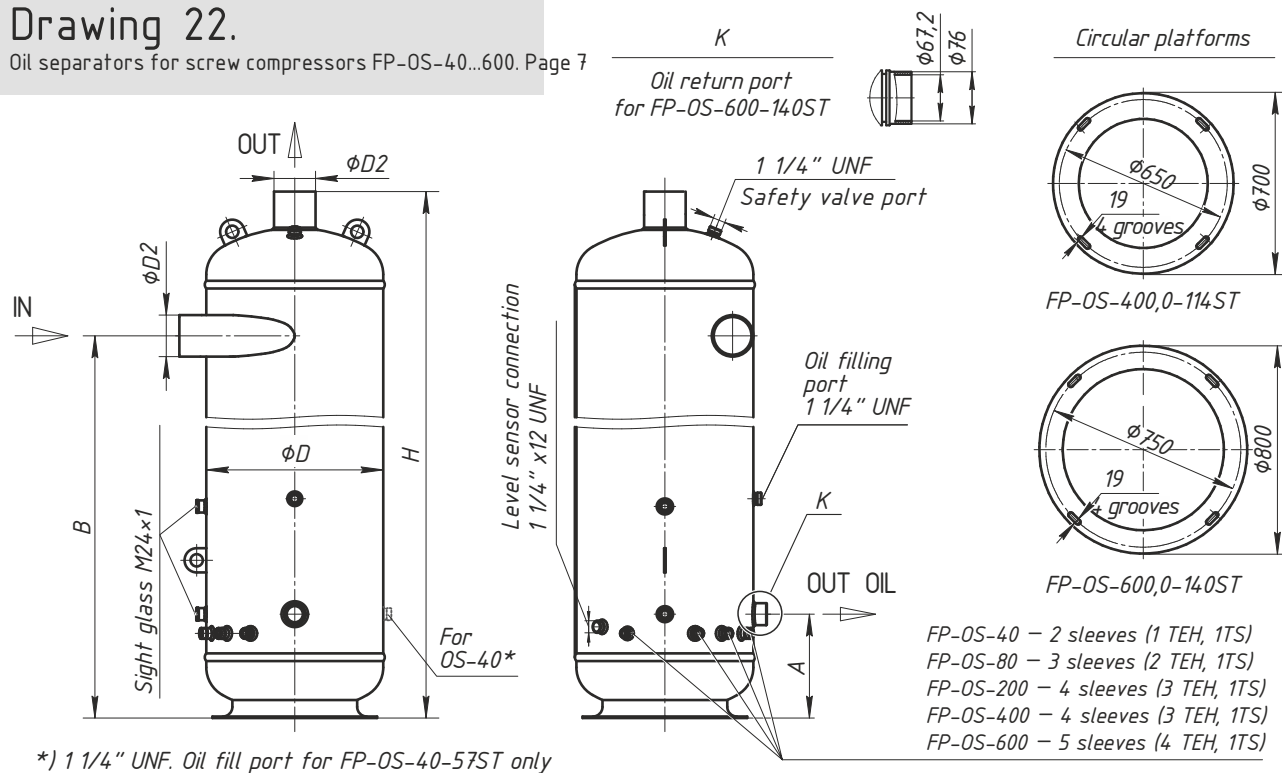
Drawing 21.

Oil separators with oil receiver FP-OSR(MP)-6...16. Page 7



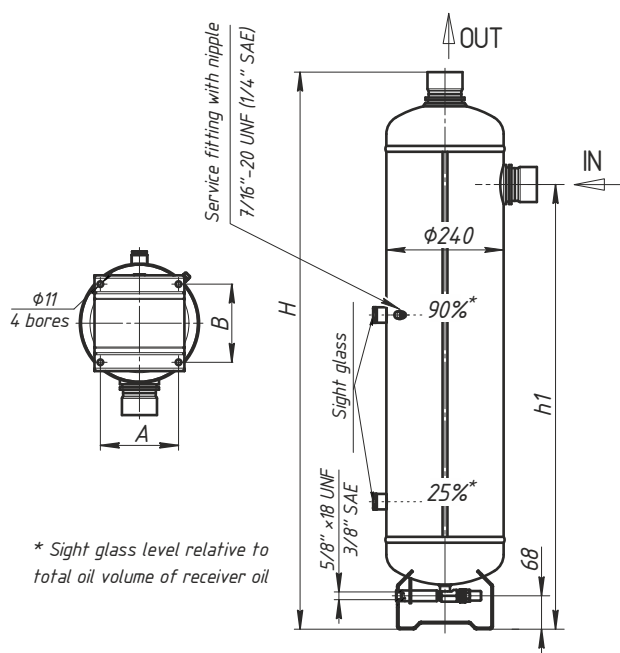
Drawing 22.

Oil separators for screw compressors FP-OS-40...600. Page 7



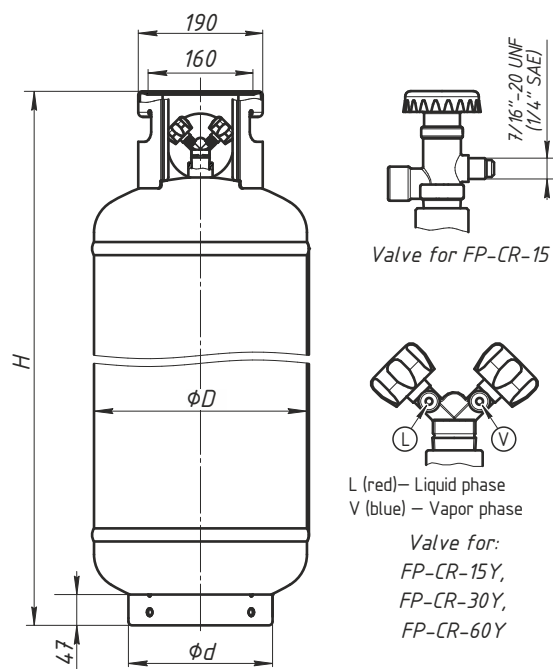
Drawing 23.

Helical oil separators with receiver FP-OSR(MP)-40. Page 7



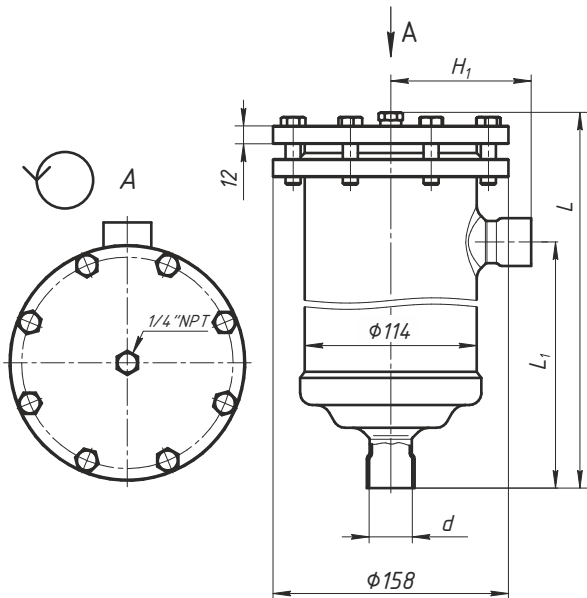
Drawing 24.

Refillable refrigerant cylinders. Page 7



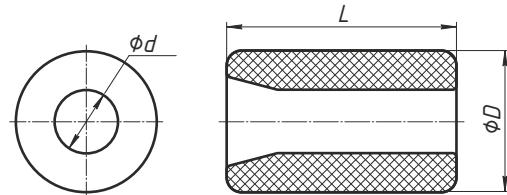
Drawing 25.

Filter driers housings. Page 8



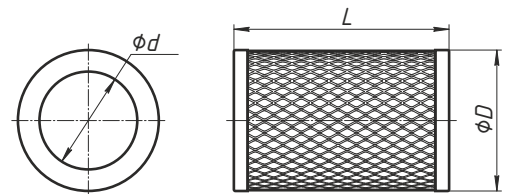
Drawing 26.

Cartridges FP-48DC, FP-48DA, FP-48DM. Page 8



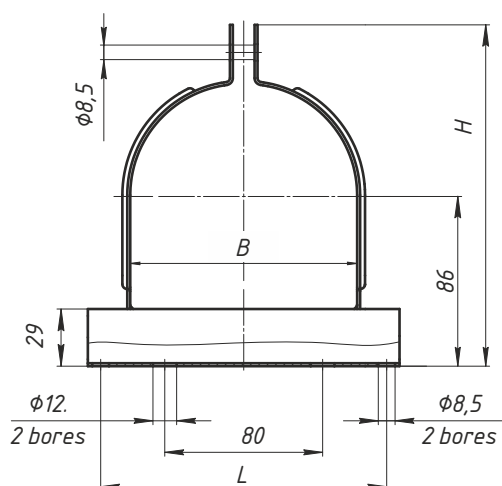
Drawing 27.

Cartridge for Filter driers FP-48F. Page 8



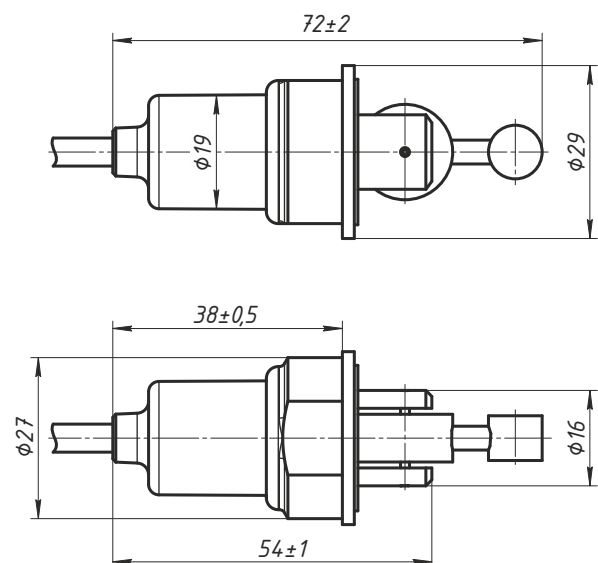
Drawing 28.

Bracket for Filter driers FP-SDF. Page 9



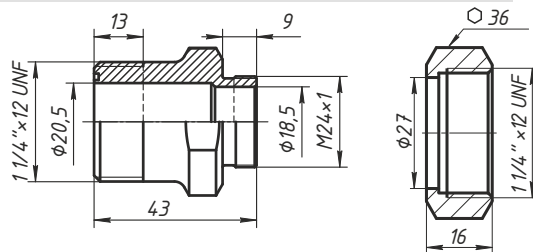
Drawing 29.

Electronic level sensors FP-ELS-L. Page 9



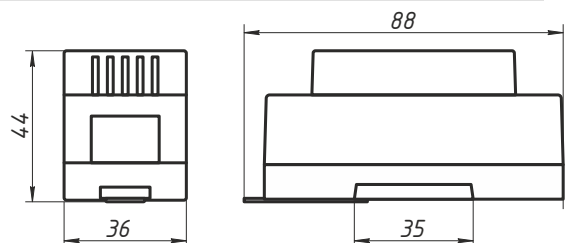
Drawing 30.

Adapter FP-A-M24-114L with nut.. Page 9



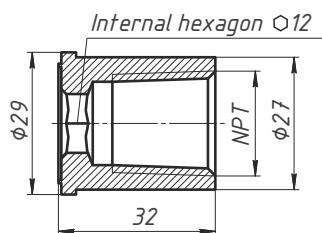
Drawing 31.

Power unit FP-PSU-1-24. Page 9



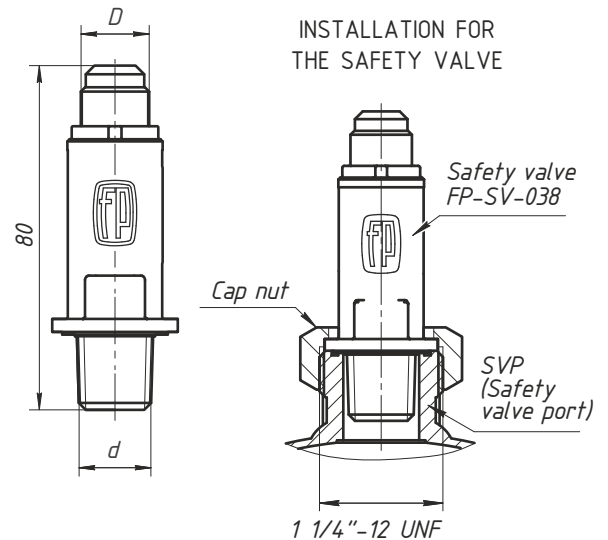
Drawing 33.

Adapters FP-A-012; FP-A-038. Page 10



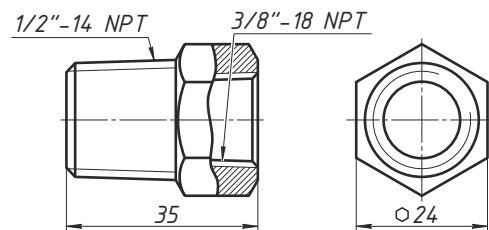
Drawing 32.

Safety valves FP-SV. Page 10



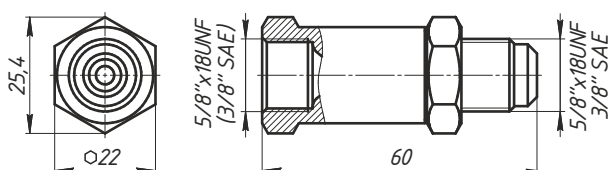
Drawing 34.

Adapters FP-A-038-012. Page 10



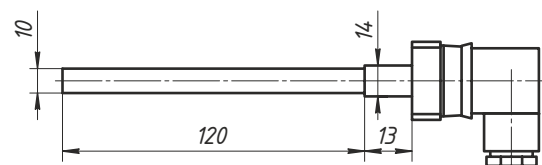
Drawing 35.

Differential check valve FP-DV. Page 9



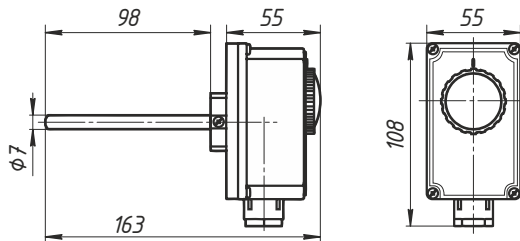
Drawing 36.

Heaters FP-TEH. Page 10



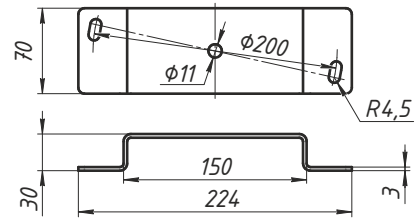
Drawing 37.

Thermostats FP-TS. Page 10



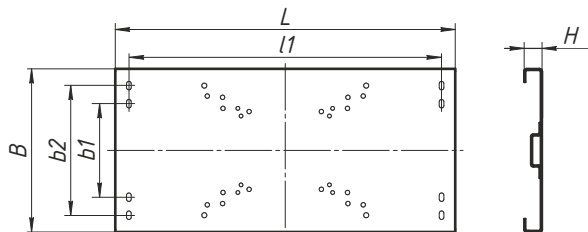
Drawing 38.

Stands for receivers FP-ST-LR. Page 10



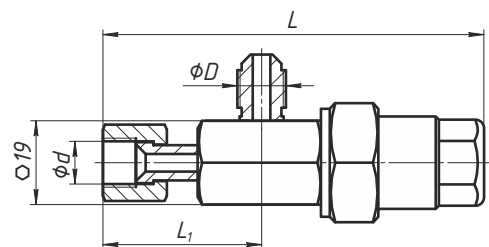
Drawing 39.

Stands for horizontal receivers FP-ST-LRH. Page 11



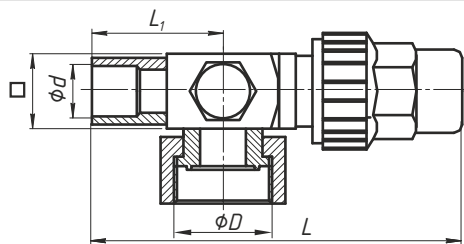
Drawing 40.

Rotolock valves FP-RV-014SAE/038SAE. Page 11



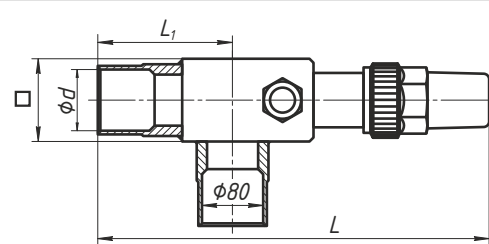
Drawing 41.

Rotolock valves FP-RV-034...214. Page 11



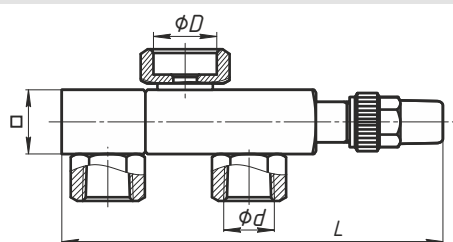
Drawing 42.

Rotolock valves FP-RV-318-318. Page 11



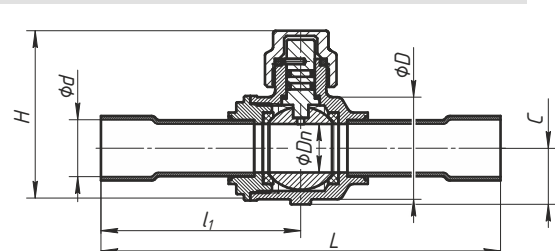
Drawing 43.

Tee valves FP-TV. Page 12



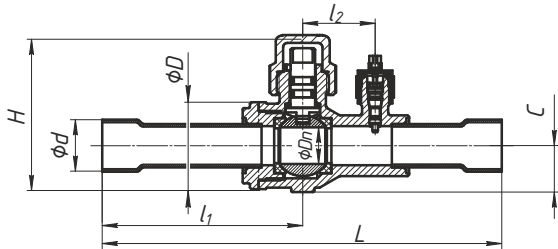
Drawing 44.

Ball valves FP-BV. Page 12



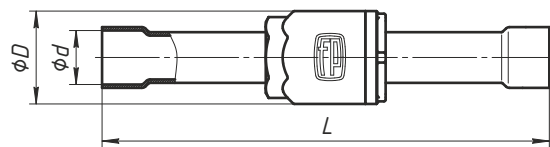
Drawing 45.

Ball valves FP-BVa. Page 12



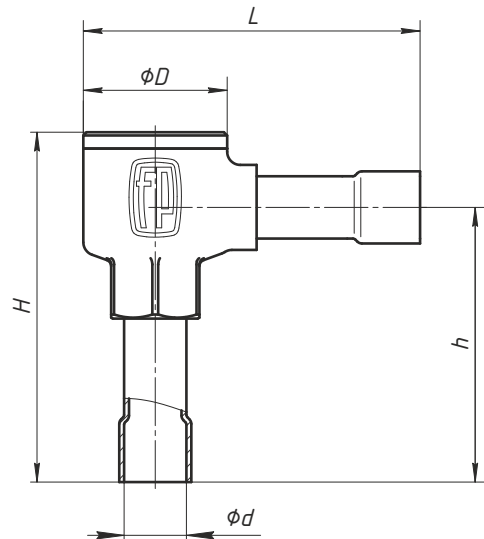
Drawing 46.

Check valves FP-CV. Page 13



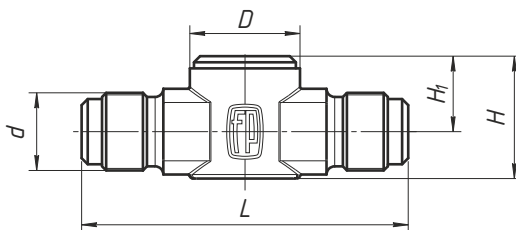
Drawing 47.

Check valves FP-CVA. Page 13



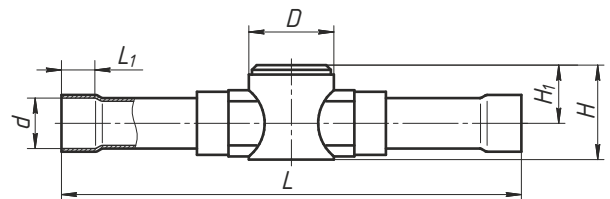
Drawing 48.

Flow indicator FP-OG. Page 13



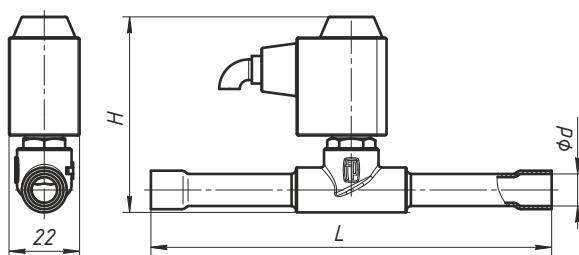
Drawing 49.

Humidity indicators FP-SG. Page 13



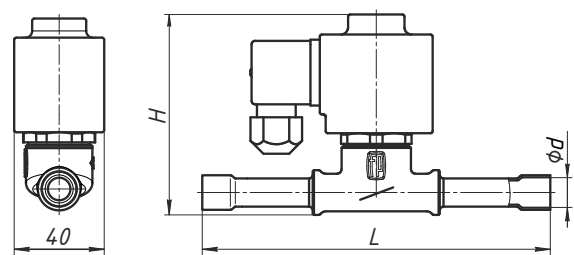
Drawing 50

Solenoid valves FP-ESV2, ESV4. Page 14



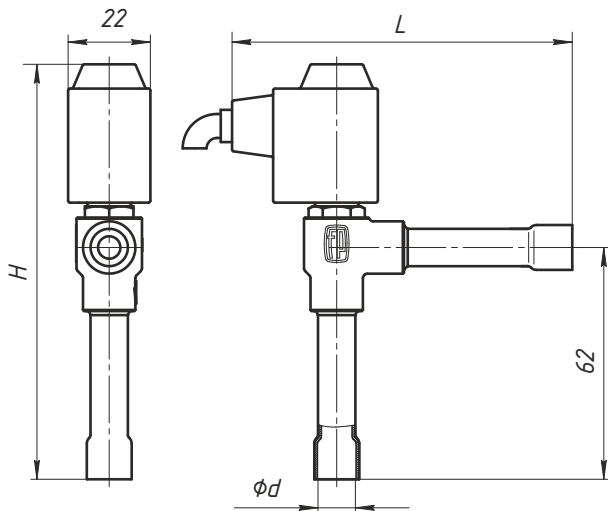
Drawing 51

Solenoid valves FP-ESV3, ESV6, ESV10, ESV15. Page 14



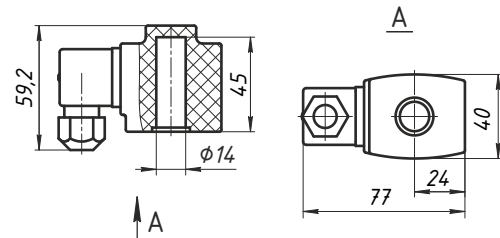
Drawing 52.

Angle solenoid valves FP-ESVA. Page 14



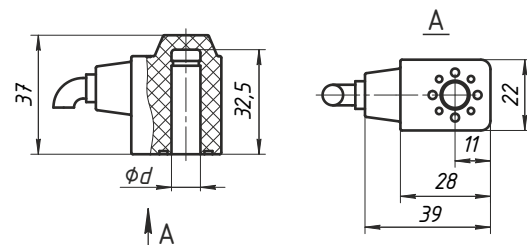
Drawing 53.

FP-CL coils for FP-ESV and FP-ERV. Page 14



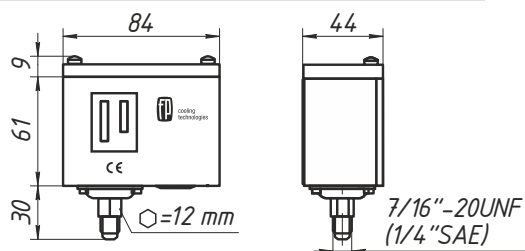
Drawing 54.

FP-CLS coils for FP-ESV. Page 14



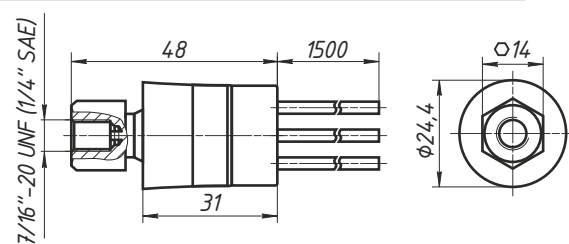
Drawing 55.

Pressure relays FP-PRL, FP-PRH. Page 15



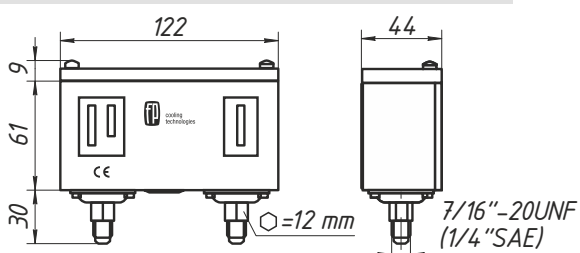
Drawing 57.

Cartridges pressure switch FP-PS. Page 15



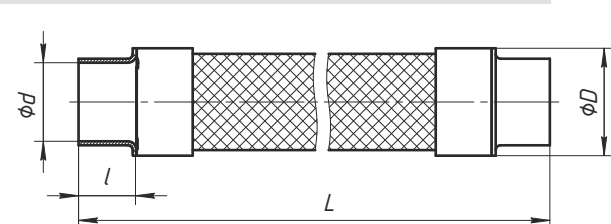
Drawing 56.

Dual pressure relays FP-PRHL. Page 15



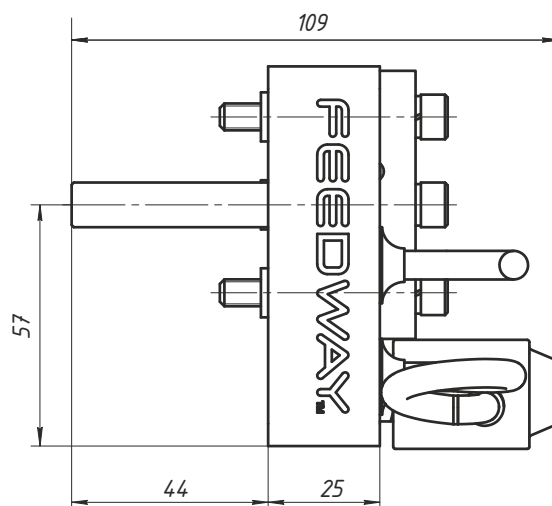
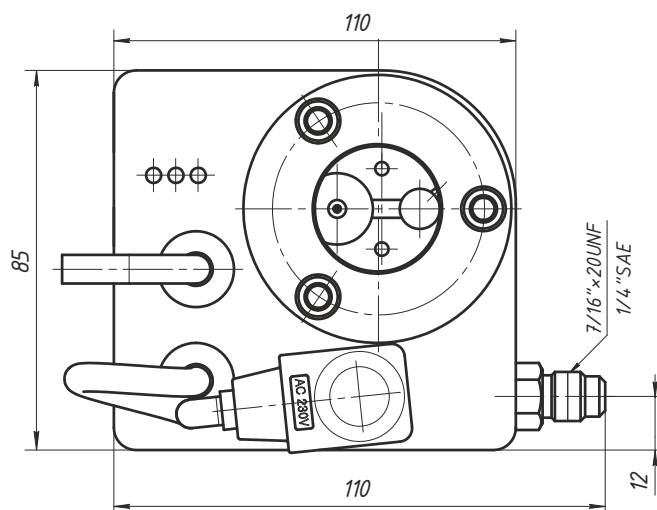
Drawing 58.

Welded vibroeliminators FP-YVA. Page 15



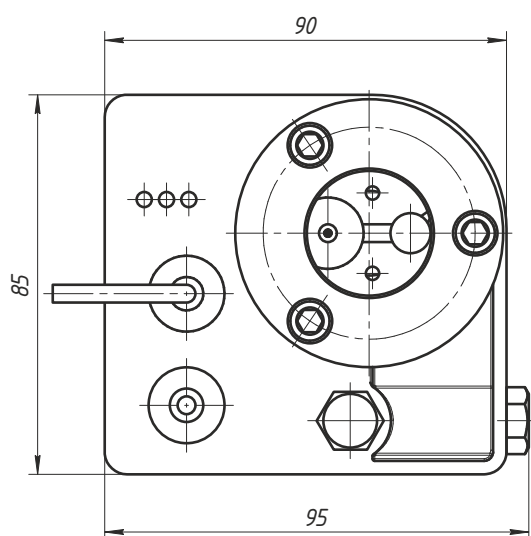
Drawing 59.

Electronic oil level regulators FP-ERL4. Page 16



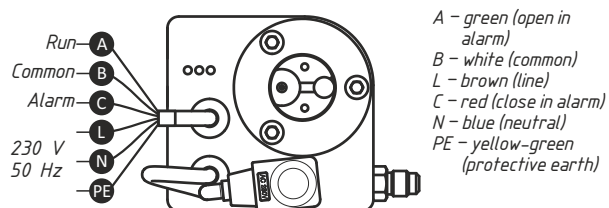
Drawing 60.

Electronic level sensors FP-OLS2/ELS2. Page 16



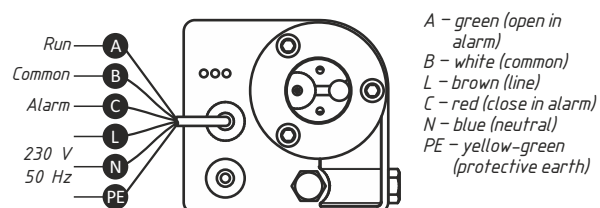
Drawing 61

Electrical connections FP-ERL4. Page 16



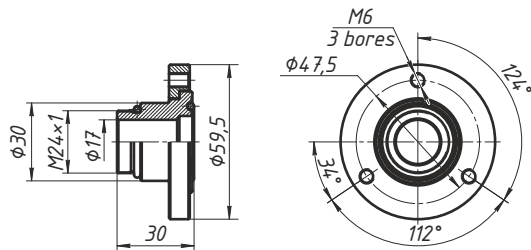
Drawing 62.

Electrical connections OLS2/ELS2. Page 16



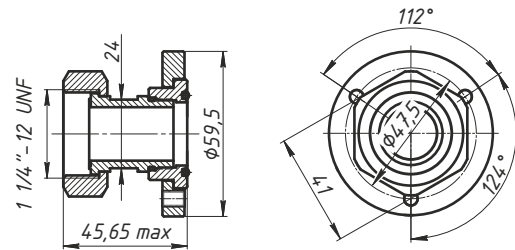
Drawing 63.

Adapter FP-FA. Page 16



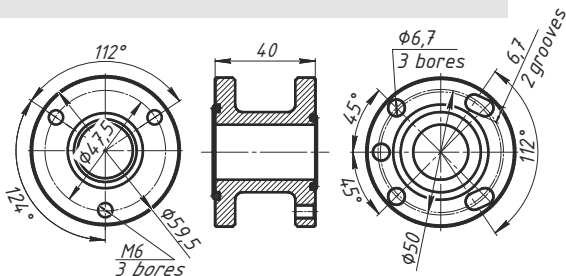
Drawing 64 .

Adapter FP-CE. Page 16, 17



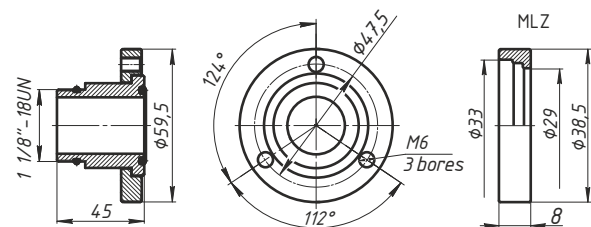
Drawing 65.

Adapter FP-ERL-UA. Page 17



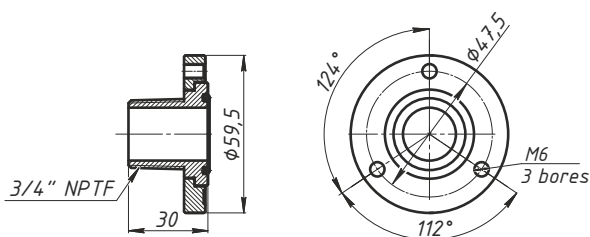
Drawing 66.

Adapter FP-BBL(+MLZ). Page 17



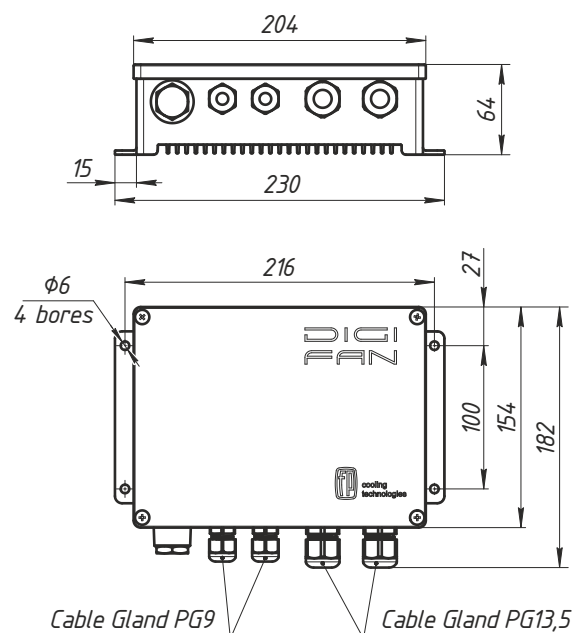
Drawing 67.

Adapter FP-AA. Page 17



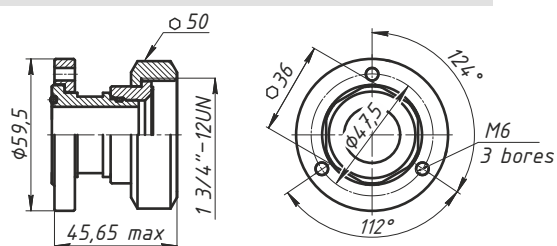
Drawing 69.

Fan speed controller FP-FSR-8. Page 18



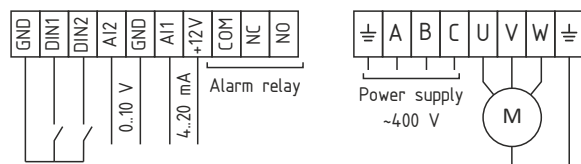
Drawing 68.

Adapter FP-CD. Page 17



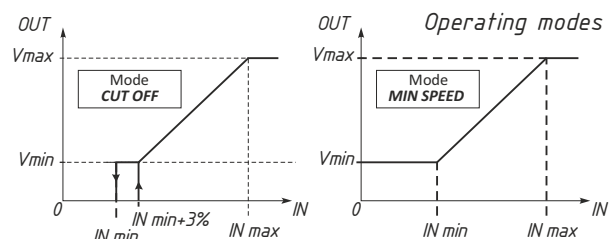
Drawing 70.

Fan speed controller FP-FSR-8 electrical conn. Page 18



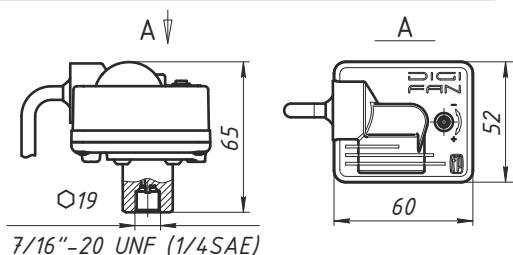
Drawing 71.

Fan speed controller FP-FSR-8. Page 18



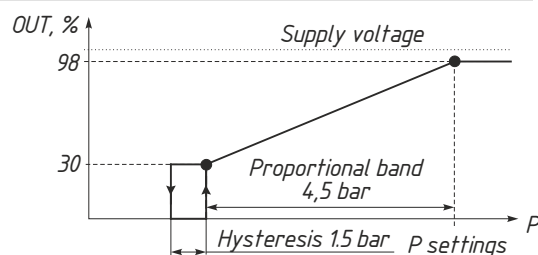
Drawing 72.

Controllers FP-CPR1-4 / FP-CPM. Page 18, 19



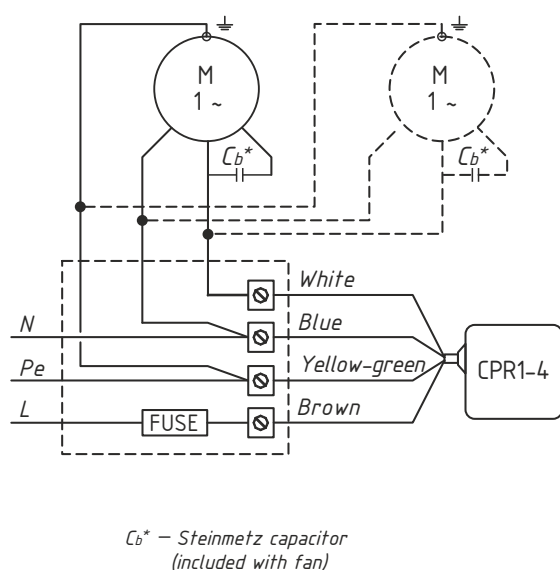
Drawing 73.

Operating principle of FP-CPR1-4 / FP-CPM. Page 18



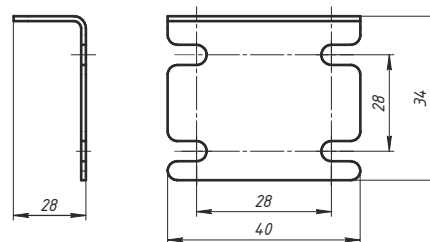
Drawing 74.

FP-CPR1-4 electrical connections. Page 18



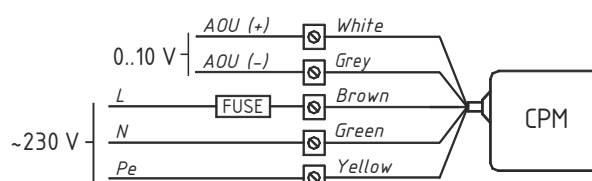
Drawing 75.

Bracket for fixing FP-CPR1-4 / FP-CPM. Page 18, 19



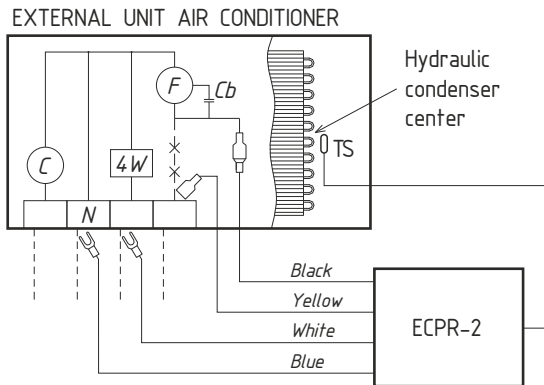
Drawing 76.

FP-CPM electrical connections. Page 19



Drawing 77 .

FP-ECPR-2 electrical connections. Page 19

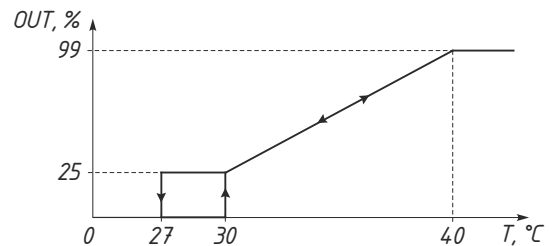


---- interconnections

TS – regulator temperature sensor,
F – condenser fan motor,
4W – 4 way valve,
C – compressor motor,
N – power supply neutral

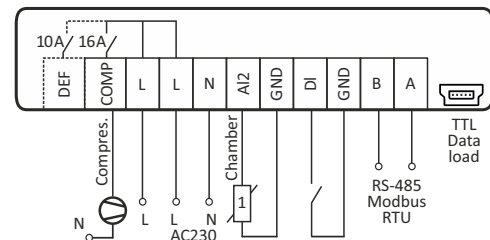
Drawing 78.

Operating principle FP-ECPR-2. Page 19



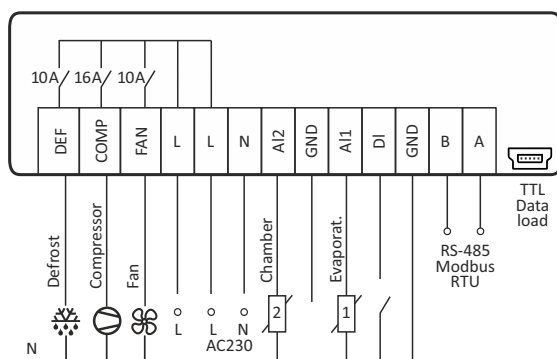
Drawing 79.

FP-MC-R11BTM electrical connections.. Page 20



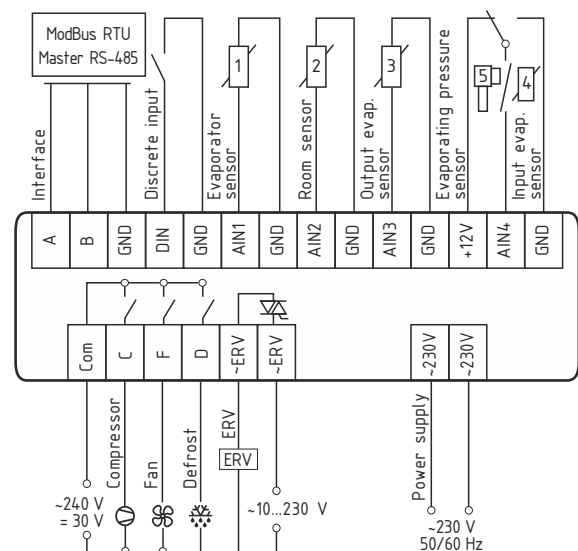
Drawing 80.

FP-MC-R23BTM electrical connections. Page 20



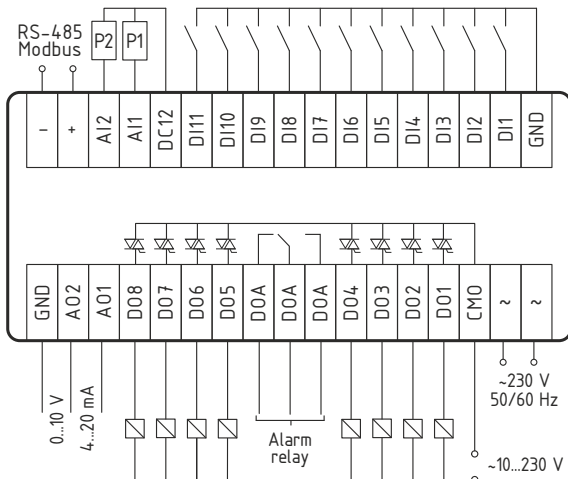
Drawing 81.

FP-MC-R23EM electrical connections. Page 20



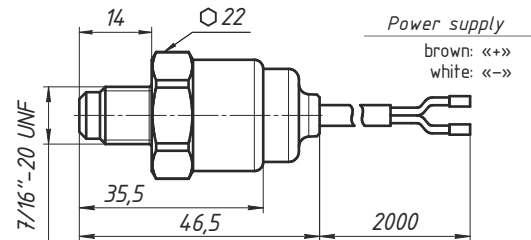
Drawing 82.

FP-MC-CR8220LM electrical connections. Page 21



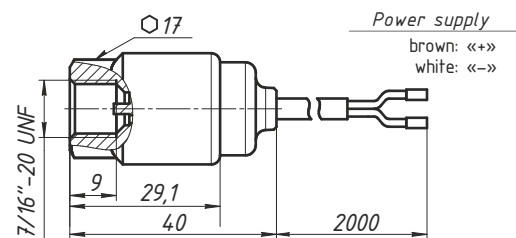
Drawing 83.

Pressure sensors FP-PT-10A(W); FP-PT-35A(W).. Page 21



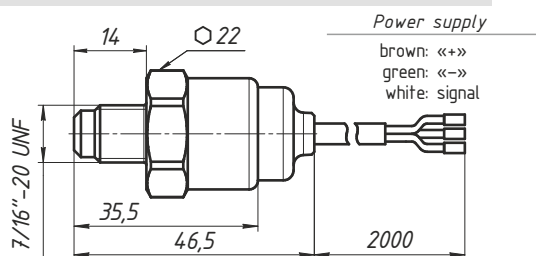
Drawing 84.

Pressure sensors FP-PT-10B(W); FP-PT-35B(W). Page 21



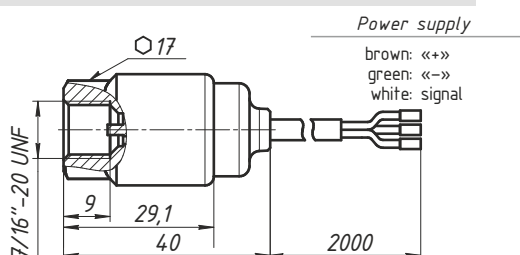
Drawing 85.

Pressure sensors FP-PTR-10(35) A(W). Page 21



Drawing 86.

Pressure sensors FP-PTR-10(35) B(W). Page 21



Drawing 87.

Electronic expansion valves. Page 22

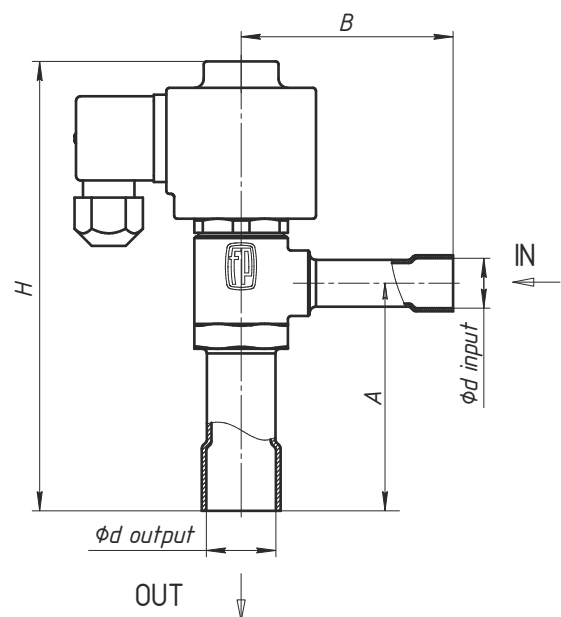


TABLE 1. Connection sizes for ODS (Cu) soldering connections

inchы	1/4	3/8	1/2	5/8	3/4	7/8	1 1/8	1 3/8	1 5/8	2 1/8	2 5/8	3 1/8
mm	6,4	10,0	12,7	16,0	19,1	22,3	28,6	35,0	42,0	54,0	67,0	79,4

TABLE 2. Nominal capacity of the suction accumulators, kW (boiling point = 4 °C), kW

Model	Q ₀ (R22/R407)	Q ₀ (R410A)	Q ₀ (R134A)	Q ₀ (R507)
FP-AS(MP)-2,0-012	7	9	4	4,5
FP-AS(MP)-2,0-058	10	13	6	7
FP-AS(MP)-3,5-078	25	33	15	16
FP-AS(MP)-3,5-118 / FP-AS(MP)-5,0-118	41	53	25	27
FP-AS(MP)-5,0-138 / FP-AS(MP)-7,0-138	65	85	37	43
FP-AS(MP)-7,0-158 / FP-AS(MP)-9,0-158	100	130	61	64
FP-AS(MP)-12,0-218 / FP-AS(MP)-25,0-218	144	187	105	112
FP-AS(MP)-12,0-258 / FP-AS(MP)-25,0-258 / FP-AS(MP)-45,0-258	159	207	117	127
FP-AS(MP)-45,0-318	315	410	256	266
FP-AS(MP)-60,0-114ST	646	840	254	560

TABLE 3. Correction coefficients for another working conditions

t ₀	4	0	-5	-10	-15	-20	-25	-30	-35	-40
K	1	1,1	1,3	1,7	2	2,5	3	3,5	5	6,5

Formula: $Q_k = Q_0 \cdot K$ (Q_0 – nominal capacity, K – correction factor, Q_k – given nominal capacity for selection)

Calculation example: Q_0 (R22) = 25 kW; $t_0 = -11$ °C; $K = 1,7 + (2 - 1,7) \cdot (-10 - (-11)) / (-10 - (-15)) = 1,76$; Q_k (R22) = $25 \cdot 1,76 = 44$ kW → FP-AS-5-138

TABLE 4. Selection of helical oil separators with receiver

Model	Cooling capacity at the nominal temperature of the evaporator, kW							
	R404A/507A		R410A		R134a		R407C	
	-30 °C	0 °C	-30 °C	0 °C	-30 °C	0 °C	-30 °C	0 °C
FP-OSR-6-034	16	20	22	27	11	13	19	24
FP-OSR-6-078	24	31	33	41	16	20	29	36
FP-OSR-8-078	27	35	38	47	18	23	30	38
FP-OSR-8-118	29	38	41	50	20	29	33	41
FP-OSR-12-138	39	49	54	61	38	42	46	54
FP-OSR-12-158	52	65	72	81	42	48	61	72
FP-OSR-16-218	94	118	126	153	75	93	105	122
FP-OSR-40-258	215	280	279	372	161	190	262	309

TABLE 5. Kit for oil separators for screw compressors

Model	TEH	Temperat. control	Oil level control	Oil return port	Oil filling port	SVP
FP-OS-40-57 ST	1×FP-TEH-120-150W	FP-TS-90	FP-ELS2+CE / FP-ELS-L / FP-OLS2+CE	FP-RV-114	FP-RV-114-118	FP-SV-038 or
FP-OS-80-76 ST	2×FP-TEH-120-150W	FP-TS-90		FP-RV-134	FP-RV-114-118	FP-TV-114-038+2×FP-SV-038
FP-OS-200-114 ST	3×FP-TEH-120-150W	FP-TS-90		FP-RV-214	FP-RV-114-118	FP-TV-114-038+2×FP-SV-038
FP-OS-350-114 ST	3×FP-TEH-120-150W	FP-TS-90		FP-RV-214	FP-RV-114-118	FP-TV-114-038+2×FP-SV-038
FP-OS-600-140 ST	4×FP-TEH-120-150W	FP-TS-90		67 mm ODS(St)	FP-RV-114-118	FP-TV-114-038+2×FP-SV-038

TABLE 6. Information about the mass of filling freon cylinders, kg

Model	R22	R134A	R404A	R407C	R410A	R507A	R290
FP-CR-15	12,1	12,3	10,1	10,2	9,1	10,1	4,4
FP-CR-15Y	12,1	12,3	10,1	10,2	9,1	10,1	4,4
FP-CR-30Y	26,0	26,4	21,6	24,4	21,8	21,5	10,8
FP-CR-60Y	52,0	52,9	43,2	48,8	43,6	43,1	21,6

* Weight of refrigerant taking into account the recommended filling – 80% of the internal volume of the cylinder

TABLE 7. Moisture content indication

Refrigerant	Moisture content, ppm			
	At a temperature of +25 °C		At a temperature of +43 °C	
	Green/dry	Yellow/wet	Green/dry	Yellow/wet
R22	< 30	> 120	< 50	> 200
R134a	< 30	> 100	< 45	> 170
R404A	< 20	> 70	< 25	> 100
R407C	< 30	> 140	< 60	> 225
R507	< 15	> 60	< 30	> 110
R410a	< 20	> 165	< 40	> 350

TABLE 8. Nominal capacity of electronic expansion valves FP-ERV10

Type	Nominal capacity*, kW						kv-value, m³/h	MOPD**, bar	
	R22	R134a	R404A/R507	R407C	R410A	R744		20 W	25 W
ERV10-1	0,36	0,32	0,29	0,39	0,46	0,42	0,003	60	60
ERV10-2	1,0	0,9	0,8	1,1	1,3	1,3	0,010	51	60
ERV10-3	1,6	1,4	1,3	1,7	2,0	2,1	0,017	36	48
ERV10-4	2,6	2,1	2,0	2,5	3,2	3,4	0,025	31	41
ERV10-5	4,1	3,4	3,1	4,0	5,1	5,3	0,046	24	31
ERV10-6	6,4	5,3	4,9	6,4	8,0	8,3	0,064	23	28
ERV10-7	10,2	8,5	7,8	10,1	12,7	13,2	0,114	22	27
ERV10-8	16,3	13,5	12,5	17,0	20,2	21,0	0,162	16	19

* Capacities are specified under the following conditions: condensing temperature $t_c=32$ °C, liquid temperature before ERV $t_l=28$ °C, evaporation temperature $t_e=5$ °C. The selection of ERV for design conditions is recommended to be carried out in the VesSel online servicelocated at <http://frigopoint.com/ru/vessel/online>

** Maximum operating differential pressure for the specified coil power (at AC230 50Hz supply voltage)

TABLE 9. Nominal capacity of electronic expansion valves FP-ERV15

Type	Nominal capacity*, kW						kv, m³/h
	R22	R134a	R404A/R507	R407C	R410A	R744	
ERV15-1	25,5	21,2	19,6	25,2	31,6	32,9	0,25
ERV15-2	40,8	33,8	31,4	40,4	50,6	52,6	0,40
ERV15-3	64,3	53,3	49,4	63,7	79,7	82,9	0,63

* Capacities are specified under the following conditions: condensing temperature $t_c=32$ °C, liquid temperature before ERV $t_l=28$ °C, evaporation temperature $t_e=5$ °C. The selection of ERV for design conditions is recommended to be carried out in the VesSel online servicelocated at <http://frigopoint.com/ru/vessel/online>

CHART 1. Selection of oil separators

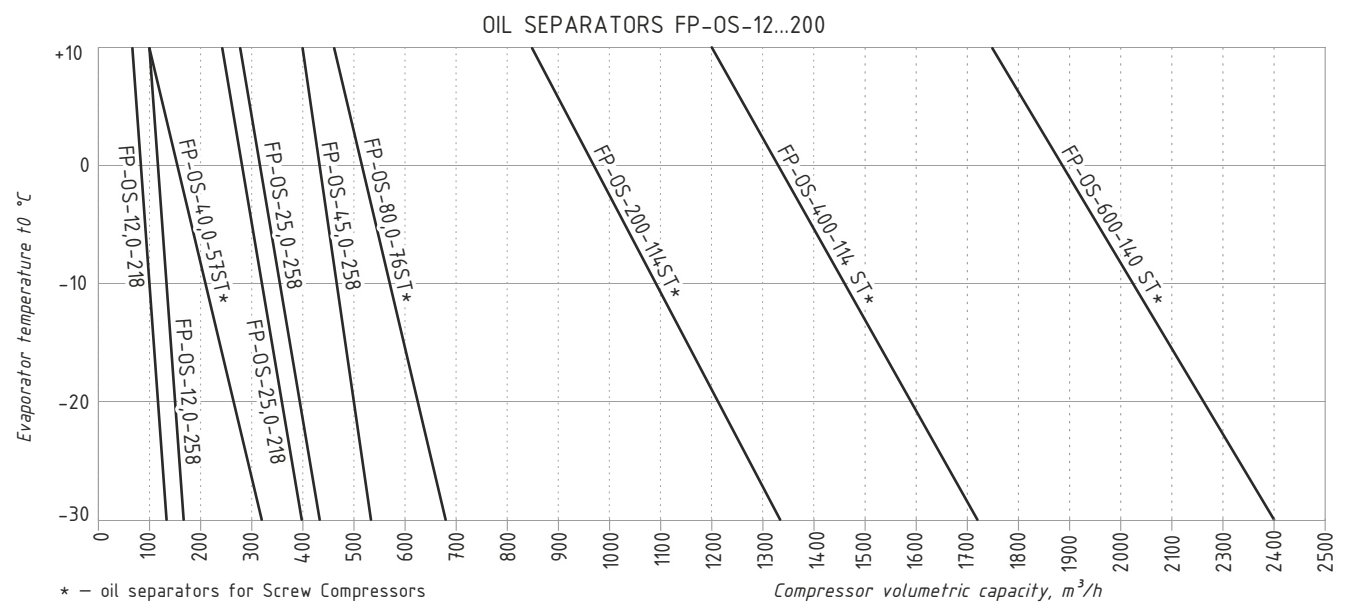
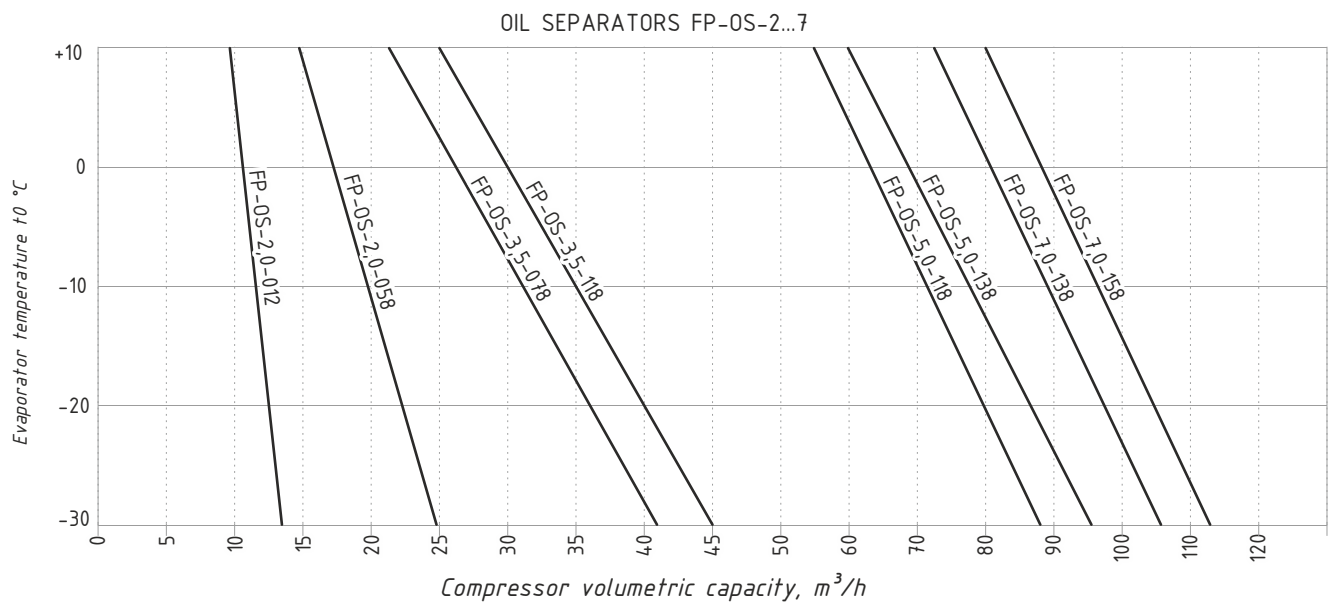
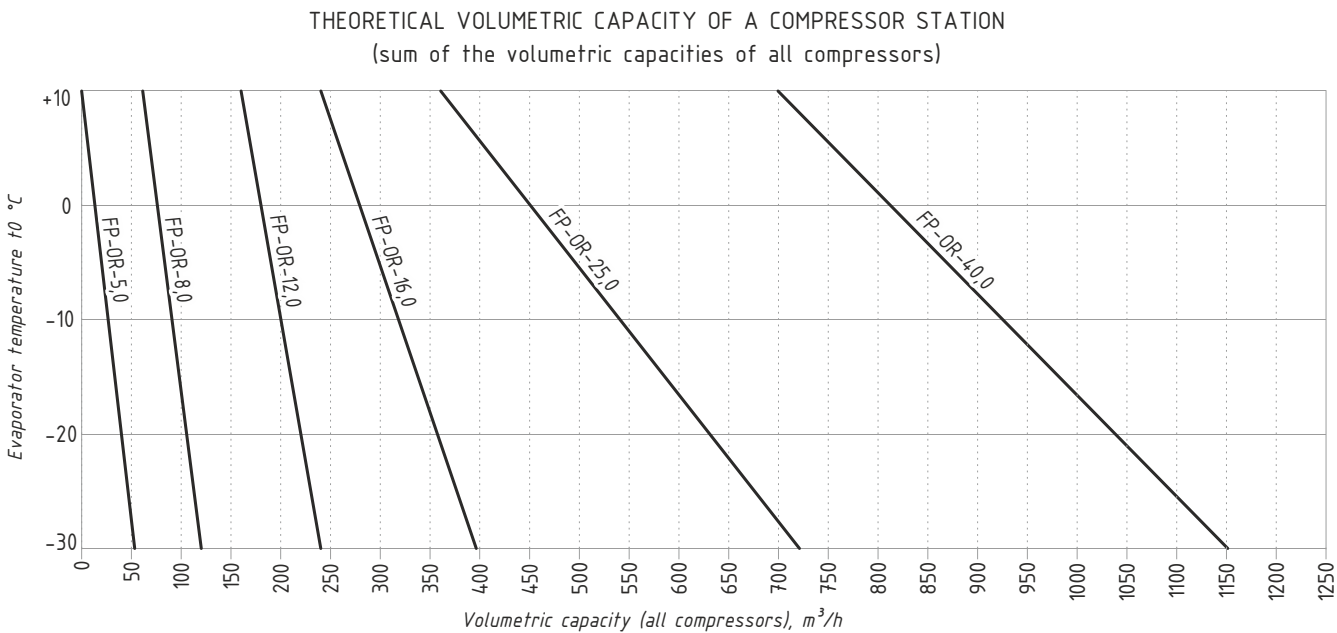


CHART 2. Quick selection chart for oil receivers



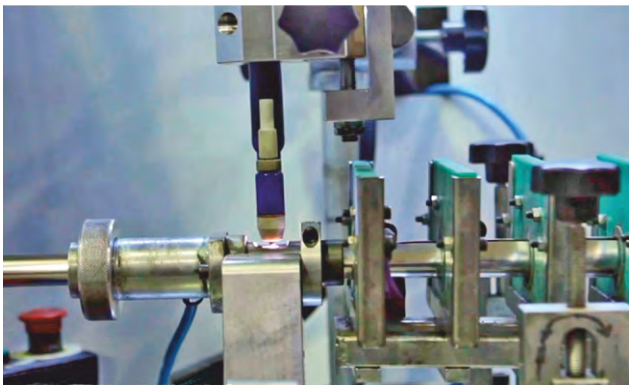
Produced by Frigopoint



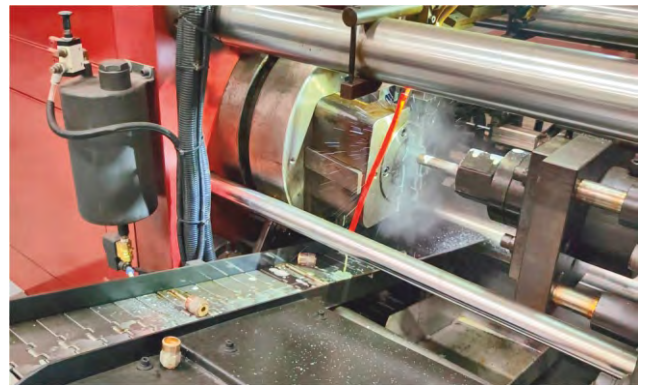
Production of pressure vessels



Foundry production



Production of corrugated pipes



Stamping production



Production of vibroeliminators



Application of Frigopoint products

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