



CATALOGUE 2023

series 28 bar • series 45 bar (R410A)



Pressure vessels



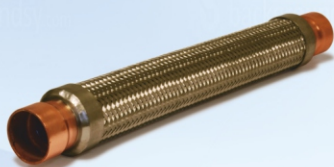
Oil control system



Linear components



Electronic components



Vibroeliminators



Special vessels

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 CONTROL SYSTEM	6
Oil separators FP-OS	6
Helical oil separators with flange FP-OSF	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
REUSABLE VESSELS / SPECIAL PURPOSE VESSELS	7
Refillable refrigerant cylinders and special containers FP-CR	7
Special vessels	7
FEEDWAY. OIL/FREON LEVEL CONTROL	8
FeedWay. Electronic oil level regulators FP-ERL4	8
FeedWay. Adapters	8
Electronic refrigerant sensors FP-ELS2	9
Electronic oil level sensors FP-OLS2.....	9
Electronic level sensors FP-ELS-L	9
Electronic level sensors. Adapter	9
ACCESSORIES FOR PRESSURE VESSELS	10
Safety valves FP-SV	10
Adapters FP-A	10
Differential check valve FP-DV	10
Heating kit for cyclone oil separator	10
Stands for receivers FP-DR	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	12
Welded vibroeliminators FP-VA	12
Filter-driers with replaceable core FP-SDF	13
Cartridges for filters FP-48	13
EVAJET. EVAPORATOR MANAGEMENT SYSTEM	14
Evajet. Refrigeration cycle controller FP-MC	14
Evajet. Pressure sensors FP-PT	14
Evajet. Electronic expansion valves FP-ERV	14
DIGIFAN. FAN SPEED CONTROLLERS	15
Fan speed controllers FP-FSR-8	15
Condensing pressure regulators for air conditioners FP-ECPR-2	15
DRAWINGS, CHARTS, TABLES	16



COMPANY HISTORY

The history of the plant began in 2000, with a small factory for the production of refrigeration receivers. Today the product range consists of more than 300 models of cooling system components. The factory area is 10000 square meters, the factory has more than 70 people. The quality of products recognized by FP customers around the world and confirmed by the world leader in certification – TÜV Nord.

RANGE OF PRODUCTS

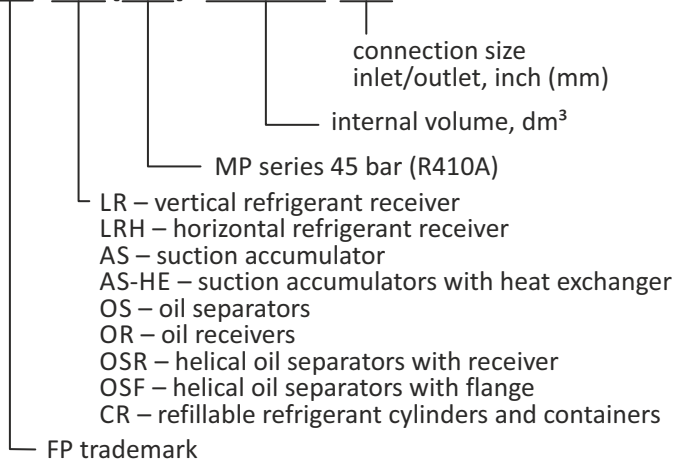
- Electronic oil level regulator FeedWay®;
- Refrigerant receivers, Suction accumulators;
- Oil separators, Oil receivers, Oil filters;
- Helical oil separators with receiver;
- Safety valves;
- Differential check valve;
- Rotalock and diverter valves;
- Ball valves
- Collapsible filters-driers;
- Electronic expansion valves Evajet®;
- Refrigeration cycle controllers
- Electronic oil/freon level sensors
- Pressure Sensors
- Welded vibration dampers;
- Special vessels;
- Reusable cylinders;
- Fan speed controller Digifan™;
- Condensation pressure regulator in air conditioning systems.

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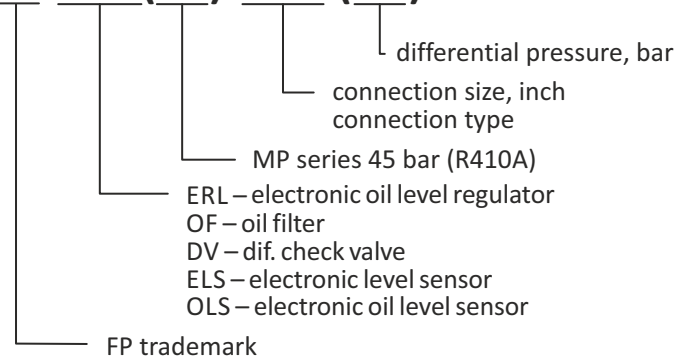
PRESSURE VESSELS

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



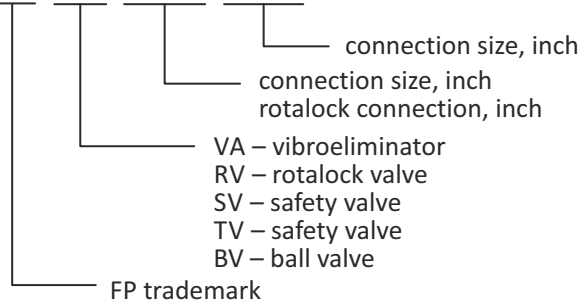
COMPONENTS OF THE OIL RETURN LINE

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

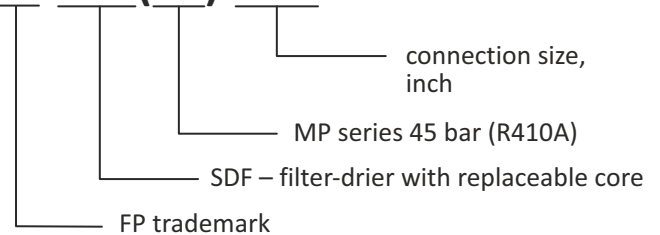


LINEAR COMPONENTS

FP-XX-XXX-XXX

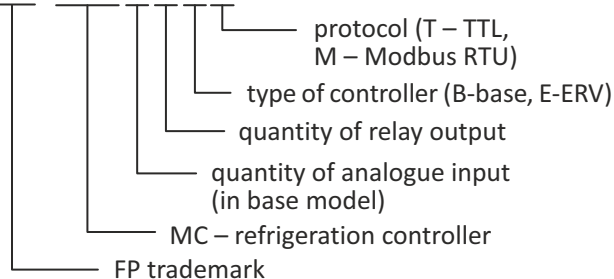


FP-SDF(XX)-XXX

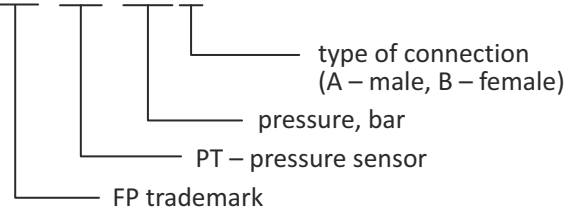


EVAPORATOR MANAGEMENT SYSTEM AND FAN SPEED CONTROLLERS

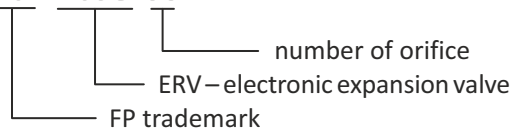
FP-MCXXXX



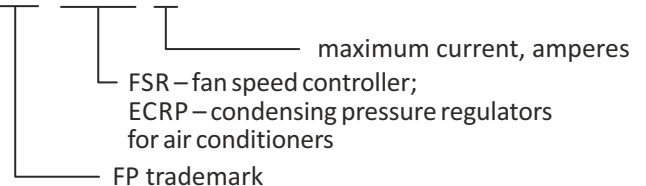
FP-PT-XXX



FP-ERV-X



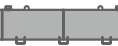
FP-XXX-X



REFRIGERANT RECEIVERS

The receiver is a container for storing liquid refrigerant. The receivers are designed to collect the liquid after the condenser, create a refrigerant reserve in the system and evenly supply the refrigerant to the evaporators. The design and technical characteristics of the FP receivers allow them to be used for operation with any refrigerants, according to the permissible operating pressures, except for NH₃. The refrigerant receivers are supplied with sight glasses and a nut for the safety valve port (without plug).

Vertical refrigerant receivers										
Type	Model	Ø D, mm	H, mm	A, mm	In/Out	SG ^[1] , M24 pcs	SVP ^[2] , 1¼" "	Volume, dm ³	Notes	
 28 bar 45 bar	FP-LR(MP)-1,0	102	121	27	3/8" ODS (Cu)	—	—	1,0	Draw. 1 Table 1	
	FP-LR(MP)-1,6	133	139	37	3/8" ODS (Cu)	—	—	1,6		
 28 bar 45 bar	FP-LR(MP)-2,5	159	170	—	1/2" ODS (Cu) / 1" – 14 UNS	—	—	2,5	Draw. 2 Table 1	
	FP-LR(MP)-4,0	159	245	—	1/2" ODS (Cu) / 1" – 14 UNS	—	—	4,0		
	FP-LR(MP)-6,3	159	370	—	1/2" ODS (Cu) / 1" – 14 UNS	—	—	6,3		
	FP-LR(MP)-8,0	159	470	—	1/2" ODS (Cu) / 1" – 14 UNS	—	+	8,0		
 28 bar 45 bar	FP-LR(MP)-10,0	190	410	130	1" – 14 UNS	—	+	10,0	Draw. 3	
	FP-LR(MP)-12,5	190	515	130	1" – 14 UNS	—	+	12,5		
	FP-LR(MP)-16,0	190	620	130	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		
	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	Draw. 5, 6	
	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	450	1140	220	2 1/4" – 12 UN	3	+	160,0		
	FP-LR(MP)-200,0	450	1430	220	2 1/4" – 12 UN	3	+	200,0		
	FP-LR-250,0	450	1590	220	2 1/4" – 12 UN	3	+	250,0		
	FP-LR-300,0 ST	450	2056	250	81 mm ODS (St)	4	+	300,0		
	FP-LR-350,0 ST	450	2356	250	81 mm ODS (St)	4	+	350,0		

Horizontal refrigerant receivers												
Тип	Model	Ø D, mm	L, mm	L1, mm	A, mm	A1, mm	H, mm	In/Out	SG ^[1] , 1¼ pcs	SVP ^[2] , 1¼"	Volume, dm³	Notes
 28 bar 45 bar SERIES SERIES	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" – 12UNF	1	+	25,0	
	FP-LRH(MP)-40,0	240	976	850	365	305	296	1 1/4" – 12UNF	1	+	40,0	
	FP-LRH(MP)-70,0	325	1011	850	365	305	385	1 3/4" – 12UN	1	+	70,0	
 28 bar 45 bar SERIES SERIES	FP-LRH(MP)-100,0	325	1310	750	500	420	375	1 3/4" – 12UN	2	+	100,0	Draw. 8
	FP-LRH(MP)-120,0	325	1560	1000	500	420	375	1 3/4" – 12UN	2	+	120,0	
	FP-LRH(MP)-160,0	450	1165	510	600	520	520	2 1/4" – 12UN	2	+	160,0	
	FP-LRH(MP)-200,0	450	1455	800	600	520	520	2 1/4" – 12UN	2	+	200,0	
	FP-LRH-250,0	450	1615	960	600	520	520	2 1/4" – 12UN	2	+	250,0	
	FP-LRH-300,0 ST	450	2025	1060	600	520	578	81 mm ODS(St)	3	+	300,0	Draw. 9
	FP-LRH-350,0 ST	450	2325	1400	600	520	578	81 mm ODS(St)	3	+	350,0	

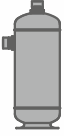
ПРИМЕЧАНИЯ: SG^[1], M24 – Sight glass, M24×1;
SVP^[2], 1¼" – Safety valve port, 1¼";

Cu – Copper connections;
St – Steel connections;

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

SUCTION ACCUMULATORS

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

Suction accumulators									
Тип	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" ODS(Cu)	2,0	Draw. 10 Table 1 Table 2 Table 3		
	FP-AS(MP)-2,0-058	102	319	55	5/8" ODS(Cu)	2,0			
	FP-AS(MP)-3,5-078	102	520	55	7/8" ODS(Cu)	3,5			
	FP-AS(MP)-3,5-118	102	520	55	1 1/8" ODS(Cu)	3,5			
	FP-AS(MP)-5,0-118	133	436	70	1 1/8" ODS(Cu)	5,0			
	FP-AS(MP)-5,0-138	133	442	70	1 3/8" ODS(Cu)	5,0			
	FP-AS(MP)-7,0-138	159	441	90	1 3/8" ODS(Cu)	7,0			
	FP-AS(MP)-7,0-158	159	443	90	1 5/8" ODS(Cu)	7,0			
	FP-AS(MP)-9,0-158	159	563	90	1 5/8" ODS(Cu)	9,0			
 Cu-St WELD 28bar SERIES 45bar SERIES	FP-AS(MP)-12,0-218	190	546	320	2 1/8" ODS(Cu)	12,0	Draw. 11		
	FP-AS(MP)-12,0-258	190	546	320	2 5/8" ODS(Cu)	12,0			
	FP-AS(MP)-25,0-218	240	680	455	2 1/8" ODS(Cu)	25,0	Draw. 12, 6 Table 1 Table 2 Table 3		
	FP-AS(MP)-25,0-258	240	680	455	2 5/8" ODS(Cu)	25,0			
	FP-AS(MP)-45,0-258	325	655	411	2 5/8" ODS(Cu)	45,0			
	FP-AS(MP)-45,0-318	325	655	411	3 1/8" ODS(Cu)	45,0			
	FP-AS(MP)-60,0-114ST	325	900	610	108 mm (St)	60,0			

Suction accumulators with heat exchanger									
Тип	Model	Ø D, mm	H, mm	A, mm	B, mm	In/Out LP ^[1]	In/Out HP ^[2]	Volume, dm ³	Notes
 Cu-St WELD 28bar SERIES 45bar SERIES	FP-AS(MP)-HE-12,0-218	190	563	338	132	2 1/8" ODS(Cu)	5/8" ODS(Cu)	12,0	Draw. 13
	FP-AS(MP)-HE-12,0-258	190	567	338	132	2 1/8" ODS(Cu)	5/8" ODS(Cu)	12,0	
 Cu-St WELD 28bar SERIES 45bar SERIES	FP-AS(MP)-HE-25,0-218	240	677	455	144	2 1/8" ODS(Cu)	3/4" ODS(Cu)	25,0	Draw. 14
	FP-AS(MP)-HE-25,0-258	240	677	455	144	2 5/8" ODS(Cu)	3/4" ODS(Cu)	25,0	
	FP-AS(MP)-HE-45,0-258	325	658	414	200	2 5/8" ODS(Cu)	7/8" ODS(Cu)	45,0	
	FP-AS(MP)-HE-45,0-318	325	658	414	200	3 1/8" ODS(Cu)	7/8" ODS(Cu)	45,0	

ПРИМЕЧАНИЯ: LP^[1] – Low pressure;
HP^[2] – High pressure;

Cu – Copper connections;
St – Steel connections.

OIL SEPARATORS

Oil separators are designed to separate the oil dissolved in the refrigerant in order to return it to the compressor crankcase. The efficiency of FP oil separators is over 90%, which improves system performance by preventing excess oil circulation.

Oil separators										
Type	Model	Ø D, mm	H, mm	A, mm	B, mm	In/Out	ORP ^[1] , inch	Volume, dm ³	OSP ^[2] , л	Notes
 Cu-St WELD 28bar SERIES 45bar SERIES	FP-OS(MP)-2,0-012	102	319	55	—	1/2" ODS(Cu)	3/8 SAE	2,0	0,5	Draw. 15 Table 1 Table 2 Chart 1
	FP-OS(MP)-2,0-058	102	319	55	—	5/8" ODS(Cu)	3/8 SAE	2,0	0,5	
	FP-OS(MP)-3,5-078	102	520	55	—	7/8" ODS(Cu)	3/8 SAE	3,5	0,5	
	FP-OS(MP)-3,5-118	102	520	55	—	1 1/8" ODS(Cu)	3/8 SAE	3,5	0,5	
	FP-OS(MP)-5,0-118	133	436	70	—	1 1/8" ODS(Cu)	3/8 SAE	5,0	1,0	
	FP-OS(MP)-5,0-138	133	442	70	—	1 3/8" ODS(Cu)	3/8 SAE	5,0	1,0	
	FP-OS(MP)-7,0-138	159	441	90	—	1 3/8" ODS(Cu)	3/8 SAE	7,0	1,5	
	FP-OS(MP)-7,0-158	159	443	90	—	1 5/8" ODS(Cu)	3/8 SAE	7,0	1,5	
 Cu-St WELD 28bar SERIES 45bar SERIES	FP-OS(MP)-12-218	190	546	145	320	2 1/8" ODS(Cu)	3/8 SAE	12,0	1,75	Draw. 16
	FP-OS(MP)-25-218	240	680	166	455	2 1/8" ODS(Cu)	3/8 SAE	25,0	2,5	Draw. 17, 6 Table 1 Chart 1
	FP-OS(MP)-25-258	240	680	166	455	2 5/8" ODS(Cu)	3/8 SAE	25,0	2,5	
	FP-OS(MP)-45-258	325	655	166	411	2 5/8" ODS(Cu)	3/8 SAE	45,0	2,5	
Helical oil separators with flange										
Type	Model	Ø D, mm	H, mm	A, mm		In/Out, inch	ORP ^[1] , inch	Volume, dm ³	OSP ^[2] , л	Notes
 Cu-St WELD 28bar SERIES 45bar SERIES	FP-OSF(MP)-12,0-158	190	543	353		1 5/8" ODS(Cu)	3/8" SAE	12,0	2,0	Draw. 18 Table 1
	FP-OSF(MP)-12,0-218	190	520	353		2 1/8" ODS(Cu)	3/8" SAE	12,0	2,0	
	FP-OSF(MP)-25,0-258	240	735	496		2 5/8" ODS(Cu)	3/8" SAE	25,0	3,0	Draw. 19 Table 1
	FP-OSF(MP)-25,0-318	240	735	493		3 1/8" ODS(Cu)	3/8" SAE	25,0	3,0	

OIL RECEIVERS

Oil receivers are designed for temporary storage of oil not in demand at the moment by the refrigeration system. Two sight glass ports and an SAE port for connecting a differential check valve are provided for oil level control.

Oil receivers									
Type	Model	Ø D, mm	H, mm	A, mm	In/Out	SG ^[3] , M24, pcs	DVP ^[4] , 3/8", SAE	Volume, dm ³	Notes
 28bar SERIES 45bar SERIES	FP-OR(MP)-5,0	102	634	504	1" – 14 UNS	2	+	5,0	Draw. 20 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. 21 Chart 2
	FP-OR(MP)-25,0	240	670	—	1" – 14 UNS	2	+	25,0	

OIL FILTERS

Oil filters are designed to protect the elements of the oil circuit from the ingress of foreign particles.

Oil filters							
Type	Model	Connection A, inch	L, mm	L ₁ , mm	D, mm		Notes
 45bar SERIES Cu-St WELD	FP-OF-038	5/8"-18 UNF (3/8 SAE)	102	46	75		Draw. 22
	FP-OF-038S	3/8" ODS(Cu)	104	46	75		Table 1

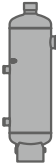
ПРИМЕЧАНИЯ: ORP^[1] – Oil return port
OSP^[2] – Oil separator pre-charge;

SG^[3], M24 – Sight glass, M24×1;
DVP^[4], 3/8" – Diff. valve port, 3/8" SAE.

Cu – Copper connections;
St – Steel connections.

HELICAL OIL SEPARATORS WITH RECEIVER

The main purpose of cyclone oil separators with a built-in oil receiver is the effective separation of oil from the refrigerant, its storage and return to the compressor. These oil separators are designed for high pressure oil return systems of multi-compressor refrigeration units.

Helical oil separators with receiver										
Type	Model	Ø D, mm	H, mm	h1, mm	In/Out ODS	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"	60	100	6,0	4,0	Draw. 23 Table 1 Table 4
	FP-OSR(MP)-6-078	133	608	495	7/8"	60	100	6,0	4,0	
	FP-OSR(MP)-8-078	159	615	481	7/8"	60	100	8,0	5,5	
	FP-OSR(MP)-8-118	159	620	481	1 1/8"	60	100	8,0	5,5	
	FP-OSR(MP)-12-138	159	767	621	1 3/8"	60	100	12,0	9,0	
	FP-OSR(MP)-12-158	159	768	616	1 5/8"	60	100	12,0	9,0	
	FP-OSR(MP)-16-218	190	726	546	2 1/8"	90	100	16,0	12,0	Draw. 25 Table 4
	FP-OSR(MP)-40-258	240	1140	910	2 5/8"	160	160	40,0	25,0	

OIL SEPARATORS FOR SCREW COMPRESSORS

Cyclonic oil separators are designed to separate oil from pressurized refrigerant vapor and return it to the compressor crankcase in systems with oil-flooded screw compressors.

Oil separators for screw compressors											
Type	Model	Ø D, mm	H, mm	A, mm	B, mm	ØD2 outer In/Out ODS	ORP ^[1]	SVP ^[2] , 1½"UN	Volume, dm³	Oil receiver volume, dm³	Notes
 28bar SERIES	FP-OS-40-57ST	325	445	178	700	57	1 1/4" UN	+	40,0	14	Draw. 24 Table 5 Chart 1
	FP-OS-80-76ST	325	1150	178	855	76	1 3/4" UN	+	80,0	35	
	FP-OS-200-114ST	460	1500	266	1126	114	2 1/4" UN	+	200,0	80	
	FP-OS-400-114ST	612	1630	295	1260	114	2 1/4" UN	+	400,0	178	
	FP-OS-600-140ST	716	1790	360	1330	140	67mmODS(St)	+	600,0	278	

REFILLABLE REFRIGERANT CYLINDERS

Designed for storage and transportation of CFCs, HCFCs and HFCs. Cylinders are completed with a valve with a safety device and a passport, they comply with all norms of TR TS032/2013.

Refillable refrigerant cylinders									
Type	Model	Ø D, mm	H, mm	Ø d, mm	Out, inch	Weight of refrigerant R22, kg	Volume, dm ³	Working press, MPa	Notes
	FP-CR-15	240	475	220	1x7/16"-20 UNF (1/4 SAE)	12,4	12,5	3,5	Draw. 26 Table 6
	FP-CR-15Y	240	475	220	2x7/16"-20 UNF (1/4 SAE)	12,4	12,5	3,5	
	FP-CR-30Y	240	825	220	2x7/16"-20 UNF (1/4 SAE)	29,8	30,0	3,5	
	FP-CR-60Y	325	1005	260	2x7/16"-20 UNF (1/4 SAE)	59,5	60,0	3,5	

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

SPECIAL PURPOSE VESSELS

Designed for storage and transportation of CFCs, HCFCs and HFCs. Cylinders are completed with a valve with a safety device and a passport, they comply with all norms of TR TS032/2013.

Special purpose vessels					
Type	Maximum technological possibilities				Notes
	ØD, mm	L, mm	Volume, dm³	Operating pressure, MPa	
	1020	2500	1900	4,5	Products made to order.

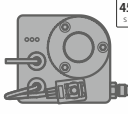
ПРИМЕЧАНИЯ: ORP^[1] – Oil return port; SVP^[2], 1 1/4" – Safety valve port, 1 1/4"

FEEDWAY. ELECTRONIC OIL LEVEL REGULATORS

The Feedway electronic oil level regulator is designed for installation in the oil circuit of compressor stations in order to control, maintain the oil level in the compressor crankcase, alarm and shutdown the compressor in case of low oil level in the crankcase.

The design of the electronic regulator is based on the electronic-mechanical principle of operation, using a "Hall sensor" as a sensitive element, which makes it possible to avoid false alarms and effectively control the oil level in the compressor.

FeedWay. Electronic oil level regulators

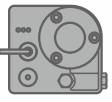
Type	Model	Parameter	Value	Notes
 FEEDWAY OIL LEVEL CONTROL	FP-ERL4	Max. operating pressure	4,5 MPa	Draw. 27, 29
		Test pressure	5,0 MPa	
		Power supply	230 V; 50/60 Hz; 0,04 A	
		Range of filling	40%...60% from sight glass height	
		Protection class	IP67	
		Time fill delay	10 sec	
		Alarm relay delay	120 sec	
		Alarm relay	max 3 A; 230 V; 50/60 Hx	
		Length of cables of power supply / alarm relay	3 m. 1 integrated cable	
		Oil connection	Thread 7/16"-20UNF external (1/4"SAE)	

FeedWay. 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, 4VS-15K...4NSL-30K, 4VES-8F Dorin: all K, KP (except below) SCC 500B, 750B, 1500B, 1900B, 2000B, 2500B, H41, H5, H6, H7, SCC_1, SCC_32, SCC_4, CDSW_35, CDS_41 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) Carrier: 06E Arctic Circle: G2, G4, G6	Draw. 31
	FP-ERL4 + BBL Screw adapter 1 1/8"- 18UNEF, flange and 2 O-rings included	Bitzer: entire series 2...C; 4FC, 4EC, 4DC, 4CC2KHC, 4FHC, 4EHC, 4DHC, 4CHC, 2MSL-07K...4CSL-12K, 2KES – 4BES 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: 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) 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 RefComp: SP2L, SP2H	Draw. 32
	FP-ERL4+BBL+MLZ	Danfoss: LLZ; MLZ	
	FP-ERL4+AA Screw adapter 3/4"- 14NPTF, flange and 1 O-ring included	Copeland: ZF06 – ZF18, ZS21-45, ZB 21-45 production before 06.2014 Bitzer: ZL, ZM Bristol: H29, H2, H7, H79 InvoTech: YSM, YSH	Draw. 33
	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. 34
	FP-ERL4 + CE Rotalock adapter 1-1/4"- 12UNF (free flange)	Copeland: Summit: ZR 94-ZR190 ZB 50, ZB 58-ZB 114, ZF-25 - ZF49, ZB 15-45, ZF06 - ZF18 production from 06.2014, ZBD, ZFD. FP: FP-SH, FP-SL, FP-SM InvoTech: YM, YF, YH230-355	Draw. 35

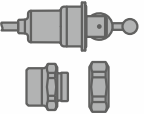
ELECTRONIC REFRIGERANT SENSOR/OIL LEVEL SENSOR

Electronic level transmitters FP-ELS2/OLS2 are intended for use as an electronic measuring instrument for limit values of levels (interfaces) of working media in capacitive equipment - vessels, compressors, flooded evaporators, circulation receivers and devices operating under pressure. To be installed on the connecting ports of devices for visual control of the level (interfaces).

Electronic refrigerant sensor/oil level sensor					
Type	Model	Parameter	ELS2	OLS2	Notes
	45bar FP-ELS2 FP-OLS2	Max. operating pressure	4,5 MPa	4,5 MPa	Draw. 28, 30
		Test pressure	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	
		Alarm relay delay	20 sec	120 sec	
		Alarm relay	max. 3 A; 230 V; 50/60 Hz	max. 3 A; 230 V; 50/60 Hz	
		Length of cables of power supply	3 m. 1 integrated cable	2 m. 1 integrated cable	
		Emergency level	40 %	25 %	
		Recommended control environment	refrigerants	oil	

Electronic refrigerant sensor/oil level sensor. Adapters			
Type	Model	Manufacturer – Type of compressor	Notes
	FP-ELS2/OLS2 + FA Screw adapter M24, flange and 2 O-rings included	Refrigerant receivers series FP-LR, FP-LRH, FP-OR and FP-OS after 01.2019. The list of adapters for mounting FP-OLS2 on compressor, see page 8.	Draw. 36
	FP-ELS2/OLS2 + CE Rotalock adapter 1-1/4"-12UNF (loose flange)	Refrigerant receivers series FP-LR, FP-LRH, FP-OR and FP-OS before 01.2019. The list of adapters for mounting FP-OLS2 on compressor, see page 8.	Draw. 35

Electronic refrigerant sensor/oil level sensor				
Type	Model	Parameter	Value	Notes
	45bar FP-ELS-L	Max. operating pressure PS, MPa	4,5	Draw. 37
		Test pressure PT, MPa	5,0	
		Burst pressure, MPa	20,0	
		Power supply, V DC	15...30	
		Energy consumption, VA	1 BA	
		Ambient / storage temperature, °C	-40...+50	
		Working environment temperature, °C	-40...+80	
		Protection class	IP65	
		Alarm relay contacts	max 1 A 30 V DC (30 W); 0.25 A 250 V AC	
		Electrical connection	Cable PVC 5×0,25 (AWG23)	
		Power cable length, m	2	

Electronic refrigerant sensor/oil level sensor. Adapters			
Type	Model	Manufacturer – Type of compressor	Notes
	FP-ELS-L + M24-114 (L) Screw adapter M24- 1 1/4", gasket and nut included	Refrigerant receivers series FP-LR, FP-LRH, FP-OR after 01.2019. Oil separators FP-OS before 01.2023	Draw. 38

SAFETY VALVES

Safety valve should be installed on all vessels that have a safety valve port. It is designed to protect the vessels working under pressure against excessive pressure by dumping excess fluid.

Safety valves							
Type	Model	Connection		Nominal pressure, MPa	Set point pressure, MPa	Max. volume of vessel, dm ³	Notes
		Ø d, NPT, inch	Ø D, SAE, inch				
	FP-SV-038	3/8	5/8"-18UNF (3/8 SAE)	2,8	3,0	250	Draw. 39
	FP-SV(MP)-038	3/8	5/8"-18UNF (3/8 SAE)	4,5	4,8	110	

ADAPTERS FOR SAFETY VALVES AND LEVEL SENSORS

The adapter is used to connect a 1 1/4" threaded relief valve port to a 1/2" or 3/8" taper female relief valve.

Adapters for safety valves and level sensors			
Type	Model	Connection, inch	Notes
	Adapter FP-A-012 (1/2")	1/2" NPT	Draw. 40
	Adapter FP-A-038 (3/8")	3/8" NPT	
	Adapter FP-A-012/038	1/2" – 3/8" NPT	Draw. 41
	Adapter FP-A-M24-012L	M24×1 – 1/2" NPT	Draw. 42

DIFFERENTIAL CHECK VALVE

The differential check valve FP-DV is designed to maintain a differential pressure in the oil circuit in 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, inch	Pressure difference, bar	Notes
	FP-DV-038-35	5/8"-18UNF (3/8 SAE)	3,5	Draw. 43

HEATING KIT FOR CYCLONE OIL SEPARATOR

The devices are designed for heating oil in cyclone oil separators. Supplied as a ready-made heating kit for OS-40, OS-80, OS-200. Not supplied with sleeves. Sleeves are installed in cyclone oil separators.

Heaters					
Type	Model	Length, mm	Voltage, V	Power, W	Notes
	FP-TEH-120-150W	120	~230	150	Draw. 44 Table 5

Thermostats					
Type	Model	Temperature, °C	Voltage, V	Load, A	Notes
	FP-TS-90	6...90	~230	10 (2,5)	Draw. 45 Table 5

STANDS

Stands for the receiver are used for vessels with a diameter of 190 mm, if necessary, install on a support platform (shaped pipe) - vertical receivers FP-LR-10.0; 12.5; 16.0; liquid separators FP-AS-12 and oil separators FP-OS-12.

Stands for receiver						
Type	Model	Length, mm	Width, mm	Height, mm	Protrusion length, mm	Notes
	FP-DR	224	70	30	150	Draw. 46

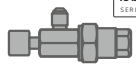
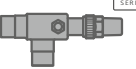
STANDS FOR HORIZONTAL RECEIVER

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 receiver									
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: 3(Y)...4CES-9(Y) Frascold: H11, H35 A, B, D	Draw. 47
	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 for locking and shutting off devices (compressors, receivers), which allows timely maintenance and facilitates the replacement of equipment. Two 1/4" SAE service ports are designed to connect instrumentation and automation.

Rotalock valves						
Type	Model	Connection		L, mm	□, mm	Notes
		Ø D, inch	Ø d, inch			
	FP-RV-014SAE	7/16" – 20UNF (1/4" SAE)	7/16" – 20UNF (1/4" SAE)	72	—	Draw. 48
	FP-RV-038SAE	5/8" – 18UNF (3/8 SAE)	5/8" – 18UNF (3/8 SAE)	72	—	
	FP-RV-034-012	3/4" UN	1/2" ODS	106	SW 20	Draw. 49
	FP-RV-1-012	1" – 14 UNS	1/2" ODS	106	SW 20	
	FP-RV-1-038	1" – 14 UNS	3/8" ODS	106	SW 20	
	FP-RV-1-058	1" – 14 UNS	5/8" ODS	106	SW 20	
	FP-RV-114-058	1 1/4" – 12 UNF	5/8" ODS	109	SW 22	
	FP-RV-114-034	1 1/4" – 12 UNF	3/4" ODS	142	SW 30	
	FP-RV-114-078	1 1/4" – 12 UNF	7/8" ODS	142	SW 30	
	FP-RV-114-118	1 1/4" – 12 UNF	1 1/8" ODS	145	SW 30	
	FP-RV-134-078	1 3/4" – 12 UN	7/8" ODS	142	SW 30	
	FP-RV-134-118	1 3/4" – 12 UN	1 1/8" ODS	185	SW 36	
	FP-RV-134-138	1 3/4" – 12 UN	1 3/8" ODS	187	SW 36	
	FP-RV-134-158	1 3/4" – 12 UN	1 5/8" ODS	191	SW 36	
	FP-RV-214-138	2 1/4" – 12 UN	1 3/8" ODS	201	SW 50	
	FP-RV-214-158	2 1/4" – 12 UN	1 5/8" ODS	203	SW 50	
	FP-RV-214-218	2 1/4" – 12 UN	2 1/8" ODS	205	SW 50	
	FP-RV-318-318	3 1/8" ODS	3 1/8" ODS	288	SW 100	Draw. 50

TEE VALVES

Diverter valves FP-TV are designed for installation on SVP pressure vessels. The diverter valve has two connection ports for connecting safety devices. The use of changeover valves allows one of the safety devices to be dismantled for verification and calibration (after operation) without shutting down the entire refrigeration system.

Tee valves						
Type	Model	Ø D UN, inch	Ø d NPT, inch	L, mm	□, mm	Notes
 45bar	FP-TV-114-038	1 1/4" – 12 UNF	3/8	147	SW22	Draw. 51

BALL VALVES

The ball valve FP-BV is designed for shutting off and isolating the devices of the refrigeration circuit, which allows for timely service and facilitates the replacement of equipment in the suction, discharge and liquid lines. Ball valves ensure tight closure. All valves are tested for strength and tightness.

Ball valves						
Type	Model	Ø D, mm	Ø d, inch	L, mm	H, mm	Notes
	FP-BV-014	30	1/4"	138	52	Draw. 52 Table 1
	FP-BV-038	30	3/8"	138	52	
	FP-BV-012	30	1/2"	138	52	
	FP-BV-058	30	5/8"	138	52	
	FP-BV-034	41	3/4"	156	68	
	FP-BV-078	41	7/8"	156	68	
	FP-BV-118	76	1 1/8"	225	109	
	FP-BV-138	76	1 3/8"	235	109	
	FP-BV-158	76	1 5/8"	235	109	
	FP-BV-218	96	2 1/8"	269	134	
	FP-BV-258	96	2 5/8"	299	134	
	FP-BV-318	116	3 1/8"	326	154	

WELDED VIBROELIMINATORS

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

Welded vibroeliminators							
Type	Model	Overall dimensions		Connection		Maximum working pressure, MPa	Notes
		L, mm	Ø D, mm	l, mm	Ød ODS, inch		
 Cu-St FP WELD 45bar	FP-VA-038	205	23,5	23	3/8"	4,5	Draw. 53 Table 1
	FP-VA-012	205	23,5	23	1/2"	4,5	
	FP-VA-058	218	29	17	5/8"	4,5	
	FP-VA-034	218	29	17	3/4"	4,5	
	FP-VA-078	242	34	20	7/8"	4,5	
	FP-VA-118	281	40	21	1 1/8"	4,5	
	FP-VA-138	316	48	25	1 3/8"	4,5	
	FP-VA-158	371	57	27	1 5/8"	4,5	
	FP-VA-218	456	67	33	2 1/8"	4,0	
	FP-VA-258	634	85	35	2 5/8"	3,5	
	FP-VA-318	690	105	35	3 1/8"	3,0	

FILTER-DRIERS WITH REPLACEABLE CORE

The FP-SDF filter-drier housing is designed for cartridge installation in order to protect refrigeration and air conditioning systems from solid particles, moisture and acid. The filter drier is usually installed in the liquid line before the expansion valve or in the suction line before the compressor. The filter-drier housing is completed with a cartridge holder and is not completed with a cartridge.

Filter-driers with replaceable core							
Type	Model	Connection Ød ODS, inch	Overall dimensions		Number of cores	H ₁ , mm	Notes
			L, mm	L ₁ , mm			
 Cu-St WELD 45bar SERIES 28bar SERIES	FP-SDF(MP)-058	5/8" ODS(Cu)	222	150	1	84	Draw. 54 Table 1
	FP-SDF(MP)-078	7/8" ODS(Cu)	230	160	1	84	
	FP-SDF(MP)-118	1 1/8" ODS(Cu)	232	160	1	93	
	FP-SDF(MP)-138	1 3/8" ODS(Cu)	238	167	1	96	
	FP-SDF(MP)-158	1 5/8" ODS(Cu)	240	168	1	96	
	FP-SDF(MP)-218	2 1/8" ODS(Cu)	250	163	1	103	
	FP-SDF(MP)-258	2 5/8" ODS(Cu)	260	173	1	110	
	FP-SDF(MP)-2-078	7/8" ODS(Cu)	383	303	2	90,5	
	FP-SDF(MP)-2-118	1 1/8" ODS(Cu)	386	306	2	92	
	FP-SDF(MP)-2-138	1 3/8" ODS(Cu)	392	312	2	96	
	FP-SDF(MP)-2-158	1 5/8" ODS(Cu)	393	313	2	96	
	FP-SDF(MP)-2-218	2 1/8" ODS(Cu)	403	303	2	103	
	FP-SDF(MP)-2-258	2 5/8" ODS(Cu)	413	313	2	109	
	FP-SDF(MP)-3-138	1 3/8" ODS(Cu)	537	457	3	96	
	FP-SDF(MP)-3-158	1 5/8" ODS(Cu)	538	458	3	96	
	FP-SDF(MP)-3-218	2 1/8" ODS(Cu)	548	448	3	103	
	FP-SDF(MP)-3-258	2 5/8" ODS(Cu)	558	458	3	109	

CARTRIDGES FOR FILTERS

Cartridges for filters are designed to protect the system from mechanical impurities (48F), moisture (48DM) and acid (48DC, 48DA). Depending on the purpose, the filters have a different ratio of the drying component (molecular sieve) and anti-acid (activated aluminum).

Cartridges for filters						
Type	Model	Material	Overall dimensions			Notes
			L, mm	D, mm	d, mm	
	FP-48DM (Moisture removal)	100% molecular sieve	138	95	44	Draw. 55
	FP-48DC (Moisture and acid remove)	80% molecular sieve 20% activated aluminum	138	95	44	
	FP-48DA (Acid remove)	30% molecular sieve 70% activated aluminum	138	95	44	
	FP-48F (Dirt protection)	—	138	95	64	Draw. 56

EVAJET. REFRIGERATION CYCLE CONTROLLER

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

Evajet. Refrigeration cycle controller				
Type	Model	Parameter	Value	Notes
 	FP-MC-R23EM	Power capacity	~230 V $\pm$ 10%; 50/60 Hz	Draw. 57
		Dimension	Overall dimension 77x35,5x79(65,5) mm Panel 77x35,5 mm	
		Interface	RS485 Modbus RTU	
		Environment	-5...+55 °C, relative humidity 10...90%	
		Ingress protection	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 C, F, D	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 mm ²	
		Set	Controller, mounts, temperature sensor — 3 pcs	

EVAJET. PRESSURE SENSORS

The FP-PT pressure sensors are designed to be installed on the pressure side and the suction side of a refrigerant circuit, in order to measure the overpressure. Pressure sensors are compatible with all types of refrigerants, have high vibration and shock resistance. The sensor body is made of brass and is not subject to corrosion.

Evajet. Pressure sensors						
Type	Model	Pressure range, bar	Connection	Output, mA	Voltage, VDC	Notes
	FP-PT-10A(W)	-0,5...10	7/16-20UNF (A) (1/4 SAE) M	4...20	8...25	Draw. 58
	FP-PT-35A(W)	0...35	2 m. 1 integrated cable	4...20	8...25	
	FP-PT-10B(W)	-0,5...10	7/16-20UNF (B) (1/4 SAE) F	4...20	8...25	Draw. 59
	FP-PT-35B(W)	0...35	2 m. 1 integrated cable	4...20	8...25	

EVAJET. ELECTRONIC EXPANSION VALVES

Electronic expansion valves FP-ERV are electronically controlled valves designed for use in refrigeration and air conditioning systems. The valve is controlled by the FP-MC-23EM refrigeration system controller. The valve performance is in the range from 0.36 to 16.3 kW (R404) and is changed by changing the nozzles (from FP-ERV-1 to FP-ERV-8).

Evajet. Electronic expansion valves				
Type	Model	Parameter	Value	Notes
 	FP-ERV	Voltage	220 V, $\pm$ 10%	Draw. 60
		Ingress protection rating	IP 67	
		Operating principle	PWM	
		Recommend period	6 sec	
		Capacity (R22)	0,36...16,3 kW	
		Capacity range	10...100 %	
		Working temperature	-50...+50 °C	
		Plunger sealing leakage	<0,02 % from kv-value	
		Maximum operating pressure	45 bar	

Rated capacity of electronic expansion valves FP-ERV

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

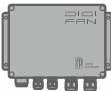
* Capacities are specified under the following conditions: condensing temperature $t_c=32\text{ }^{\circ}\text{C}$, liquid temperature before ERV $t_l=28\text{ }^{\circ}\text{C}$, evaporation temperature $t_e=5\text{ }^{\circ}\text{C}$. The selection of ERV for design conditions is recommended to be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

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

FAN SPEED CONTROLLERS

The fan speed controller FP-FSR-8 is designed to be installed on refrigeration units in order to maintain a given level of condensing pressure in the system by changing the speed of rotation of the condenser fans due to voltage regulation. The device is a slave and is controlled by the master. The device provides unified input signals 0...10 V and 4...20 mA, digital inputs for remote activation and alarms, as well as an alarm relay.

Fan speed controllers

Type	Model	Parameter	Value	Notes
 	FP-FSR-8	Voltage	~400 V $\pm 10\%$, 50/60 Hz with automatic synchronization	Draw. 61, 62
		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 VDC	
		Protection class	IP55	

* Ambient temperature — $\leq +50\text{ }^{\circ}\text{C}$,
maximum duration — ≤ 10 seconds every 5 minutes.

CONDENSING PRESSURE REGULATORS FOR AIR CONDITIONERS

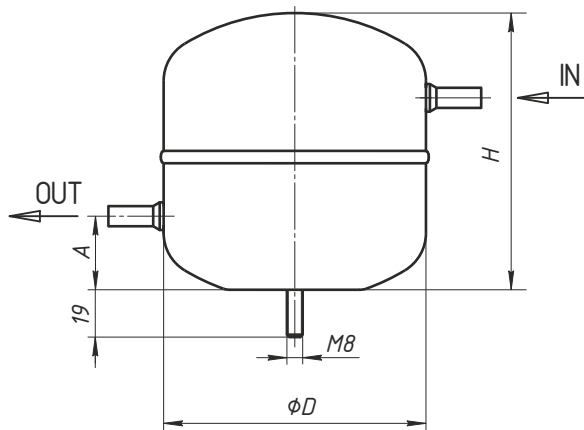
The condensing pressure regulator in air conditioning systems FP-ECPR-2 is included in the winter kit and is designed to maintain a certain level of condensing pressure in split air conditioning systems. It is mainly used in split systems that operate in a wide range of outdoor temperatures. FP-ECPR-2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

Condensing pressure regulators for air conditioners

Type	Model	Parameter	Values	Notes
 	FP-ECPR-2	Supply voltage	~230 V $\pm 10\%$, 50/60 Hz with automatic synchronization	Draw. 63
		Output voltage range	25...99 % from supply voltage	
		Maximum load current	2 A	
		Ambient operating temperature	-40...60 $^{\circ}\text{C}$	
		Protection class	IP55	

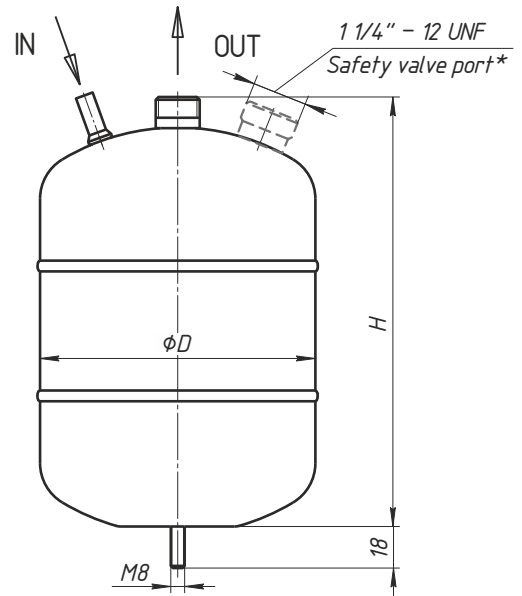
Drawing 1.

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



Drawing 2.

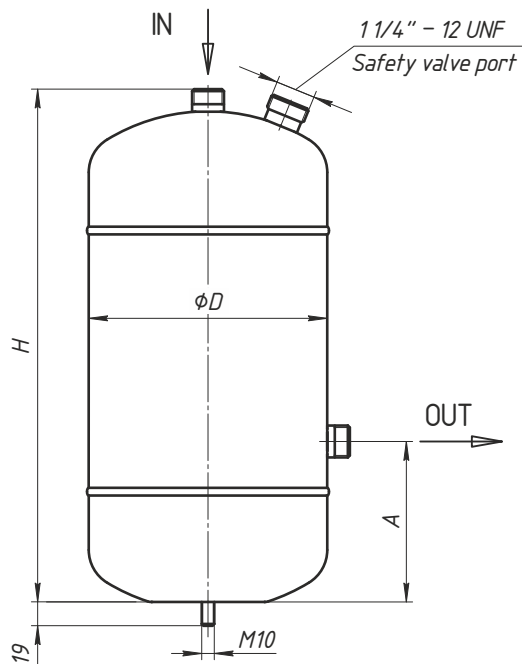
Vertical receivers FP-LR-2,5...8,0. Page 4



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

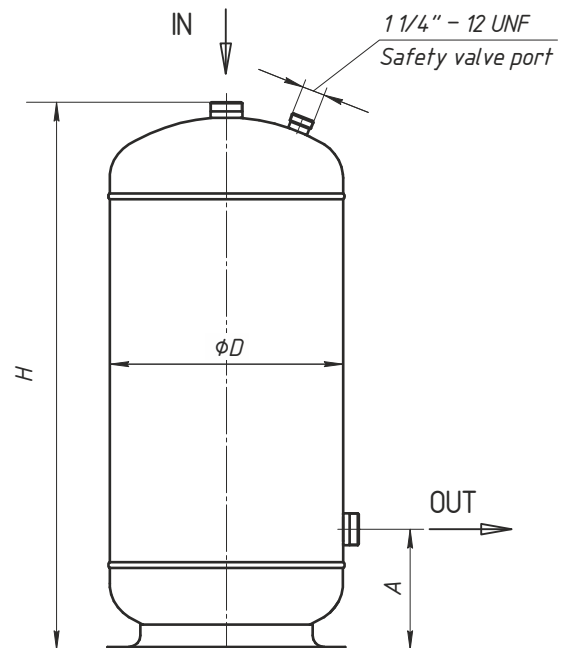
Drawing 3.

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



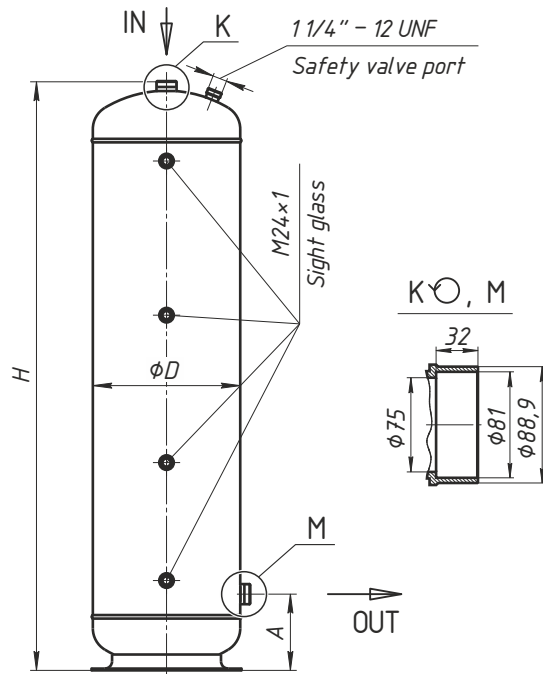
Drawing 4.

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



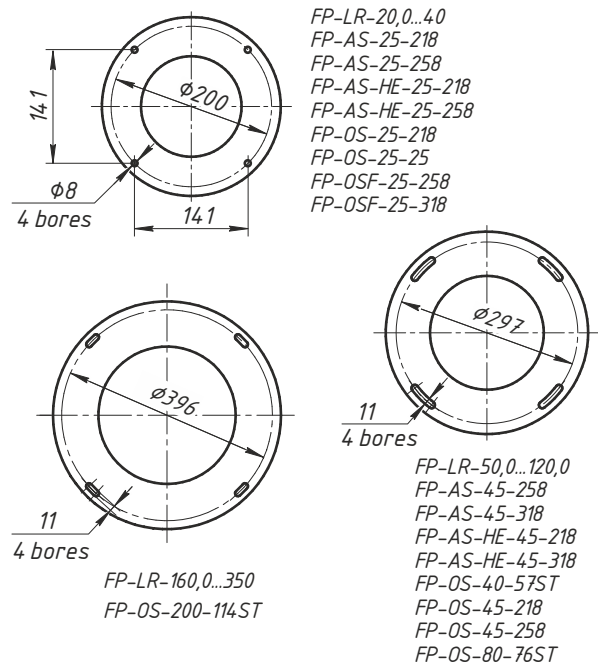
Drawing 5.

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



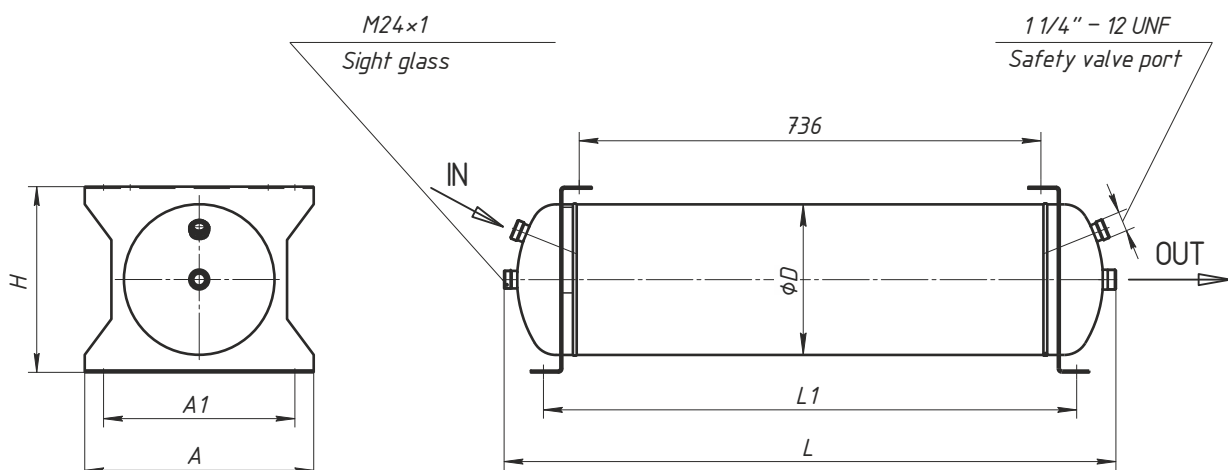
Drawing 6.

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



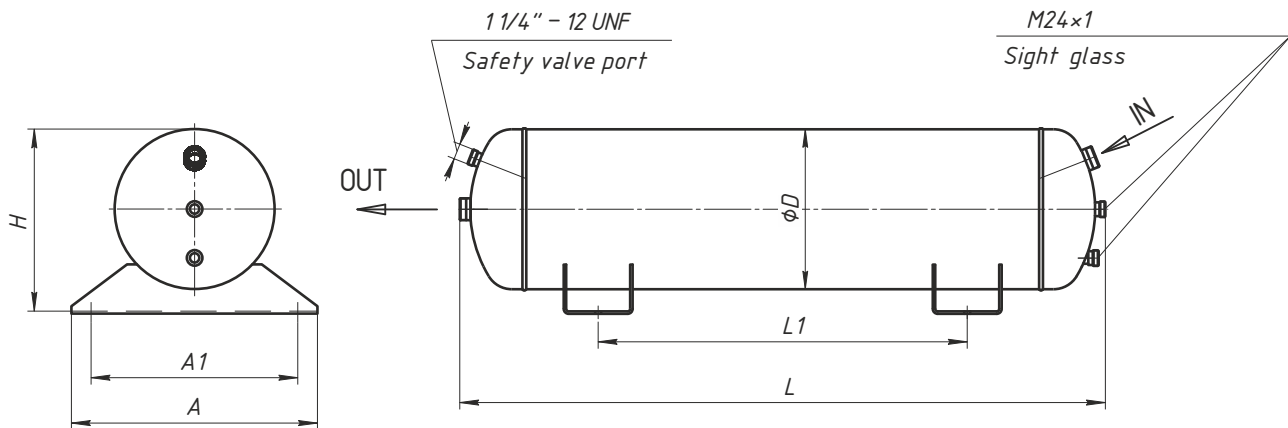
Drawing 7.

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



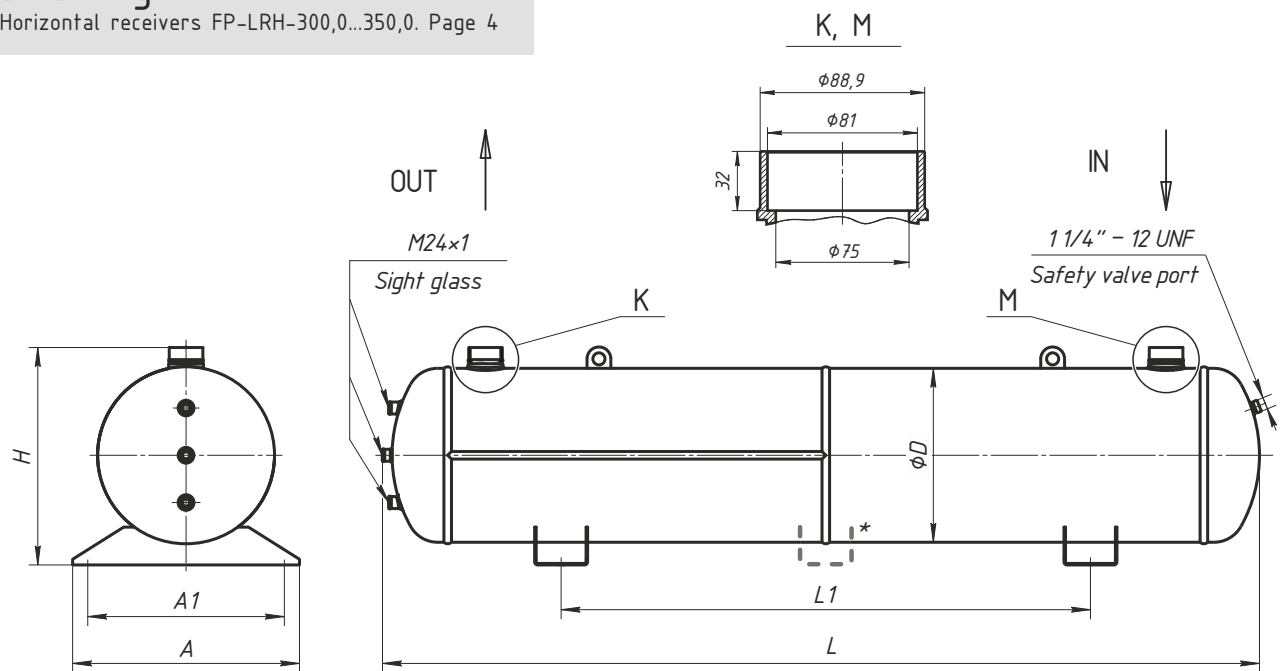
Drawing 8.

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



Drawing 9.

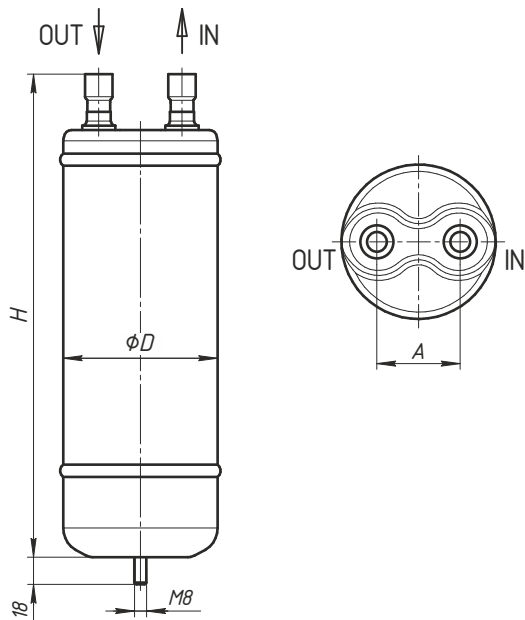
Horizontal receivers FP-LRH-300,0...350,0. Page 4



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

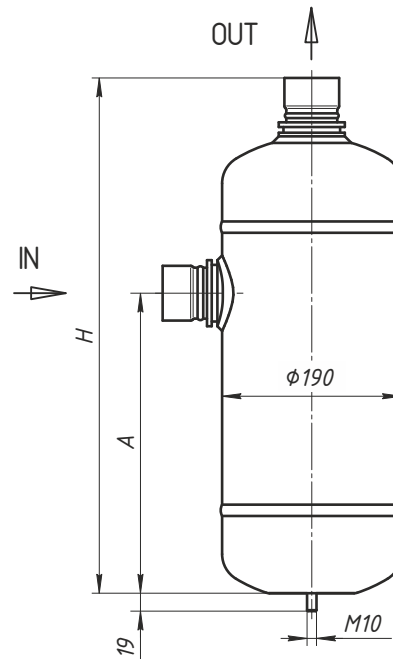
Drawing 10.

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



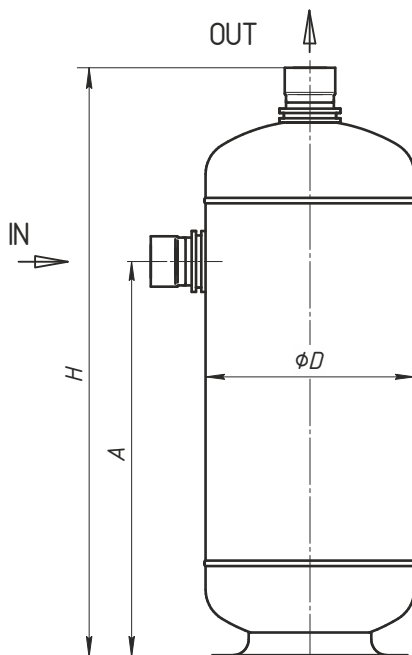
Drawing 11.

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



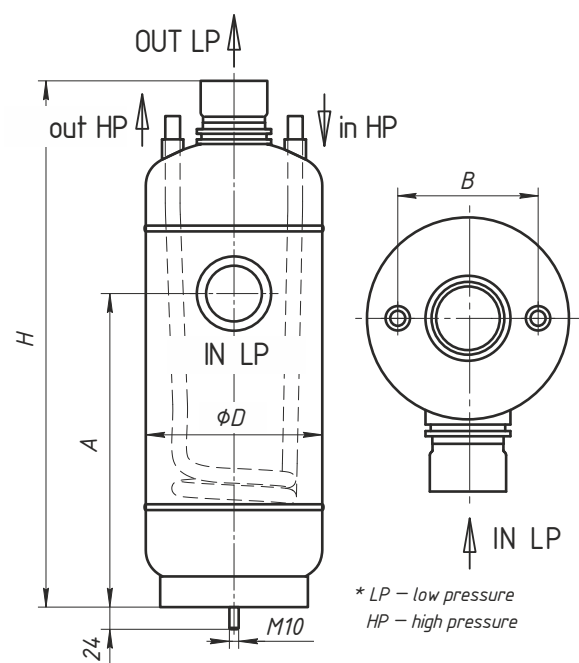
Drawing 12.

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



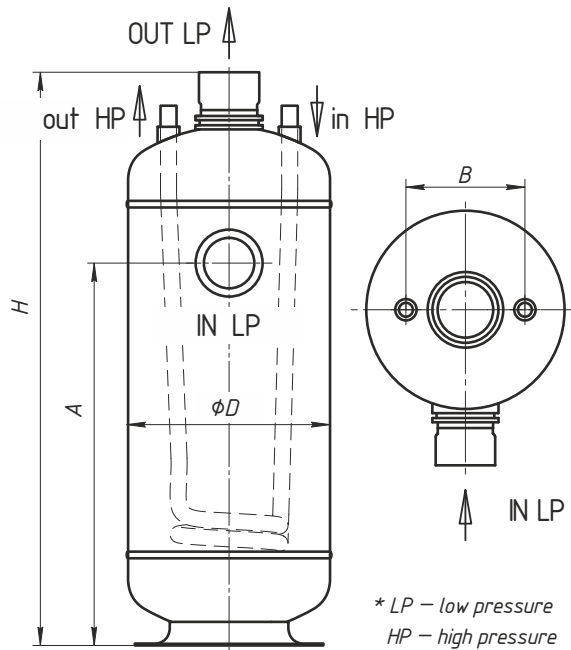
Drawing 13.

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



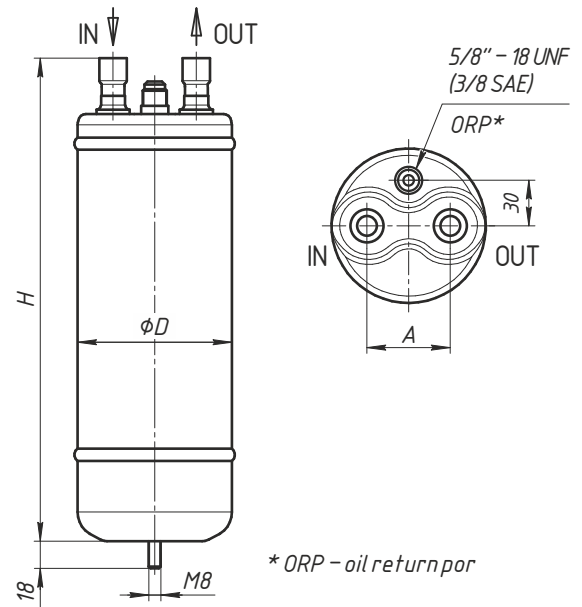
Drawing 14.

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



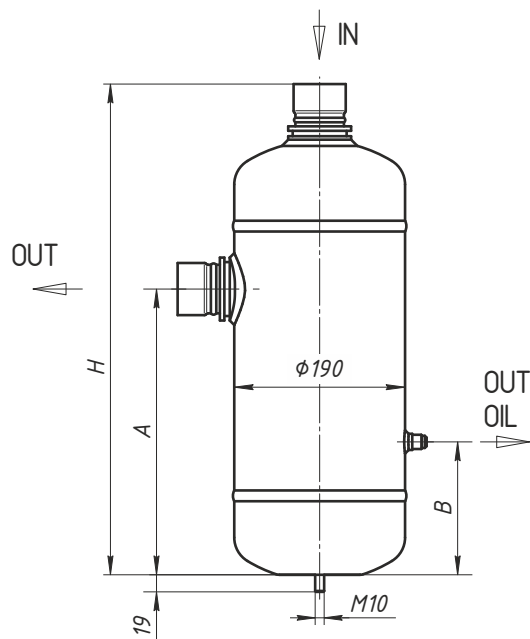
Drawing 15.

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



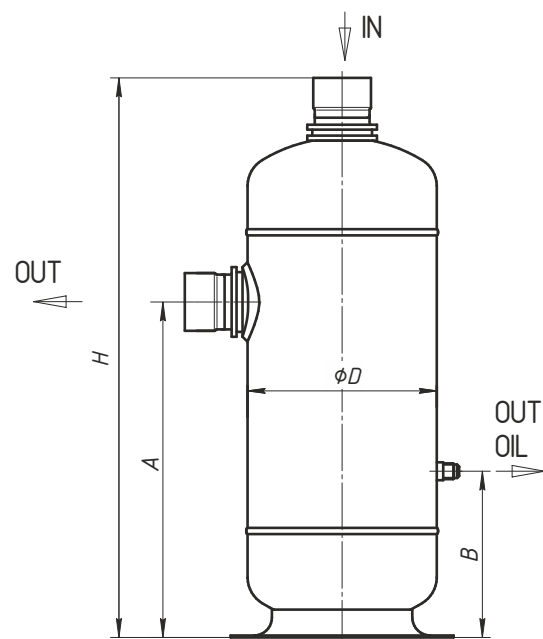
Drawing 16.

Oil separators FP-OS-12. Page 6



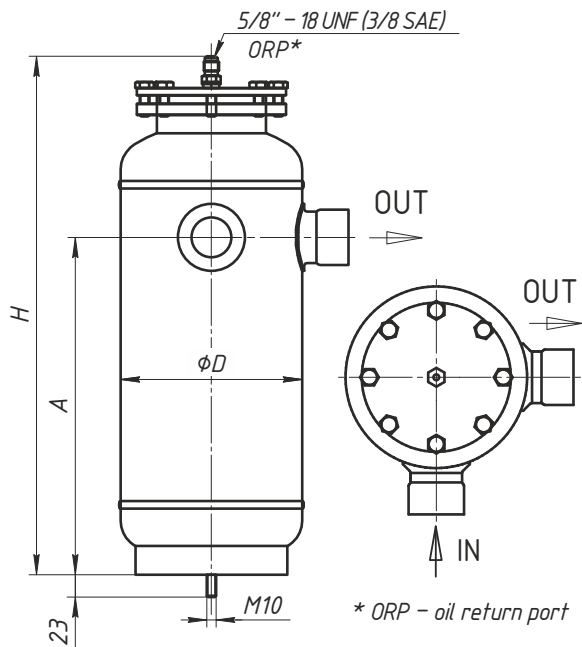
Drawing 17.

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



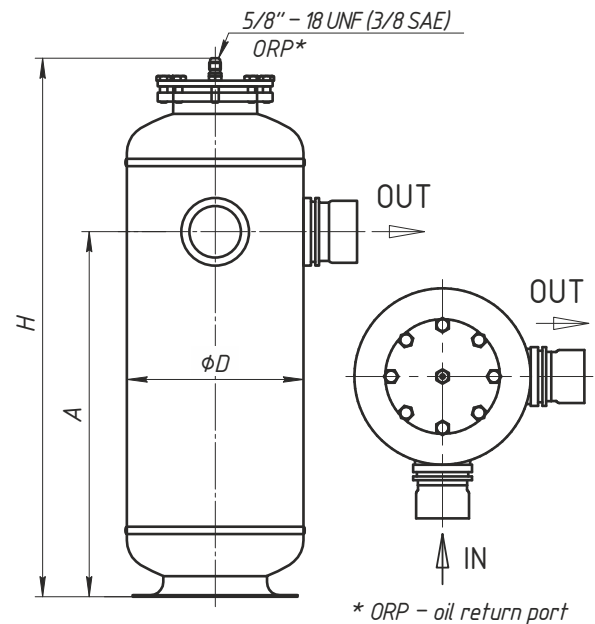
Drawing 18.

Oil separators FP-OSF-12. Page 6



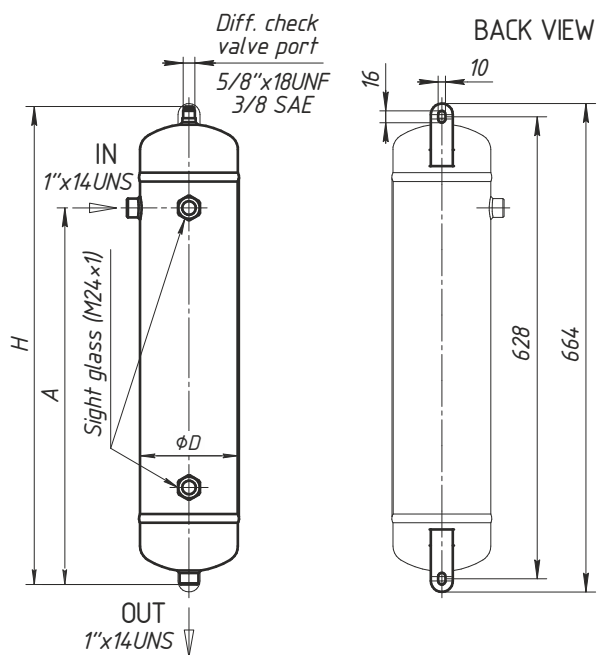
Drawing 19.

Oil separators FP-OSF-25. Page 6



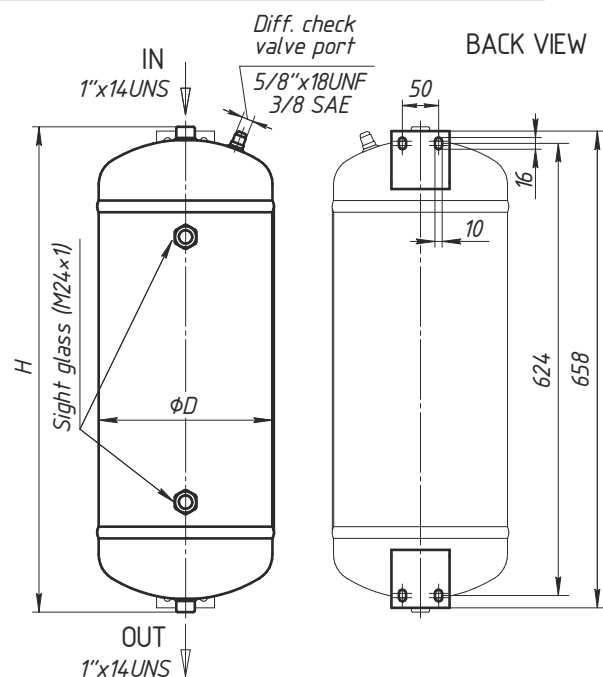
Drawing 20.

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



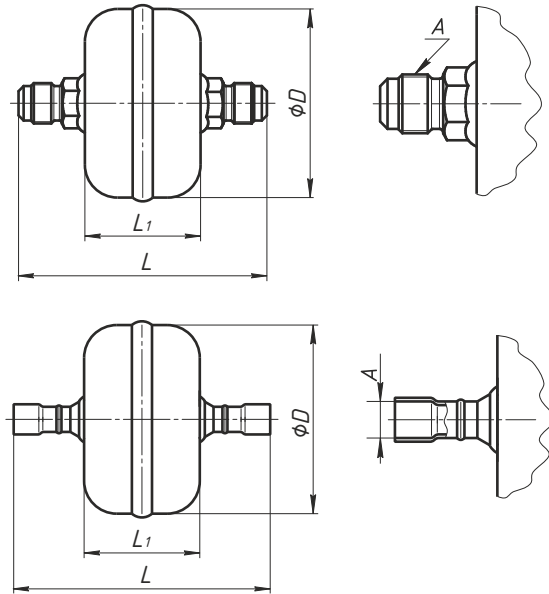
Drawing 21.

Oil receivers FP-OR-16/25. Page 6



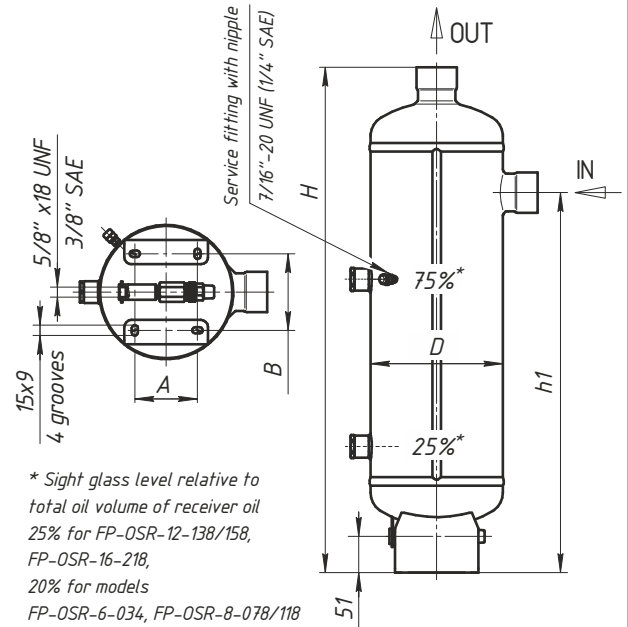
Drawing 22.

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



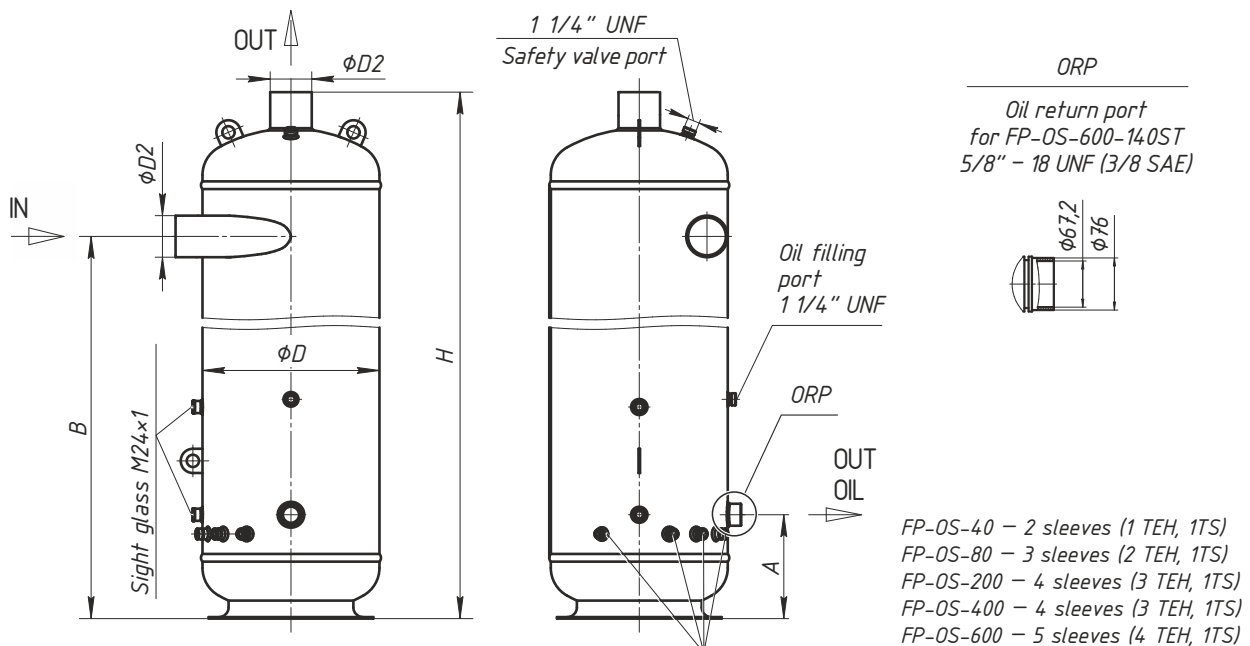
Drawing 23.

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



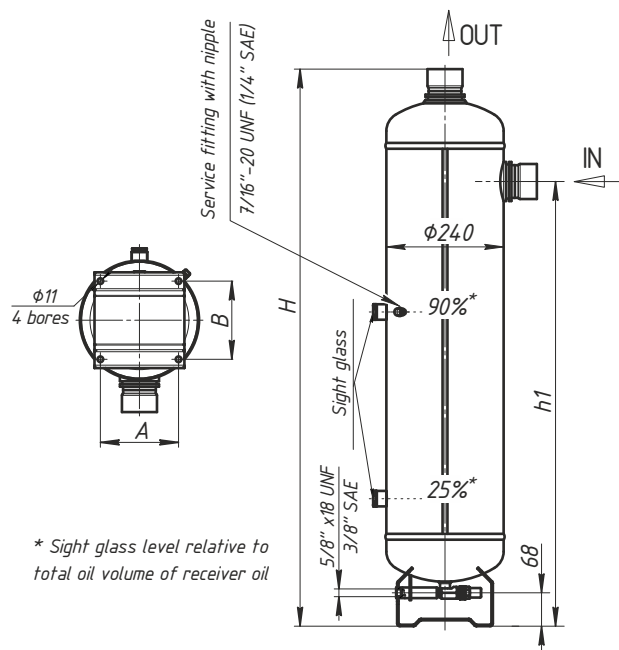
Drawing 24.

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



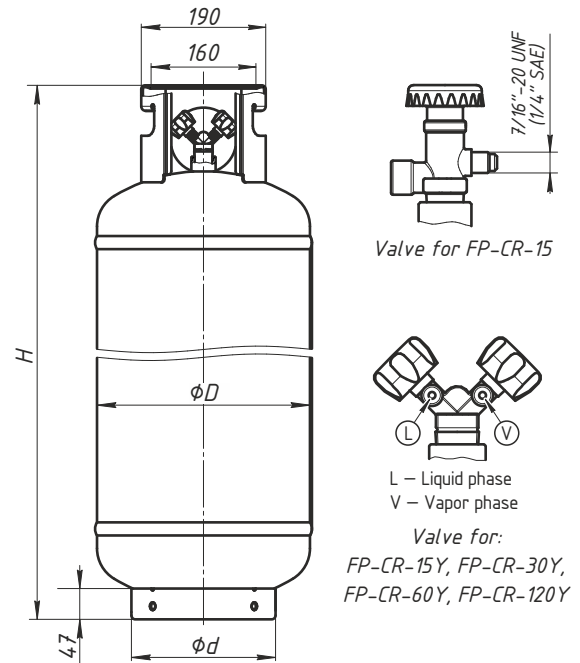
Drawing 25.

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



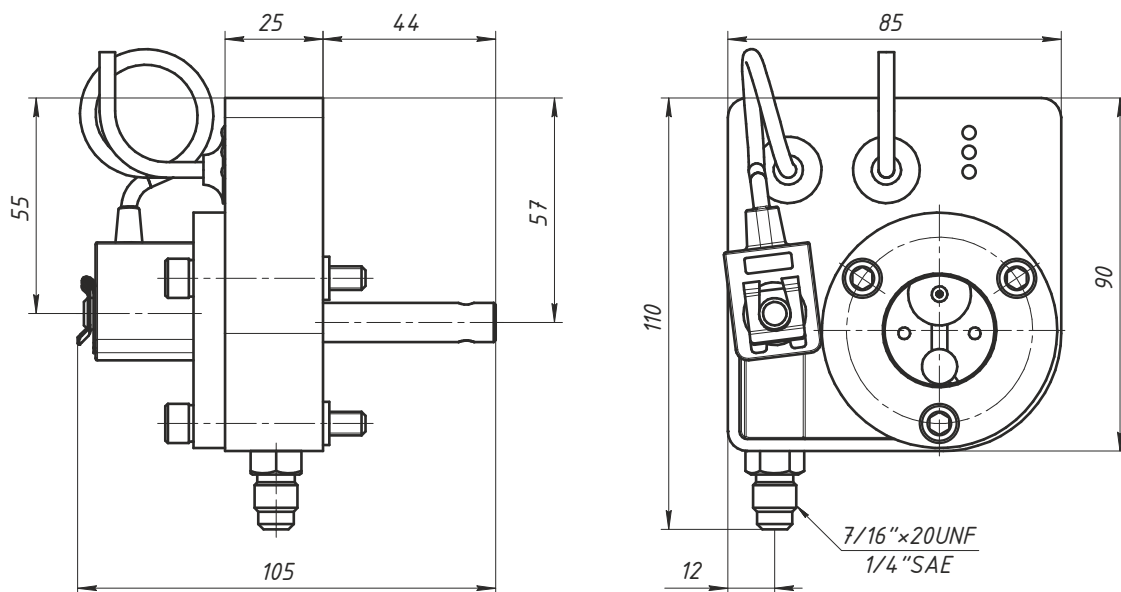
Drawing 26.

Refillable refrigerant cylinders. Page 7



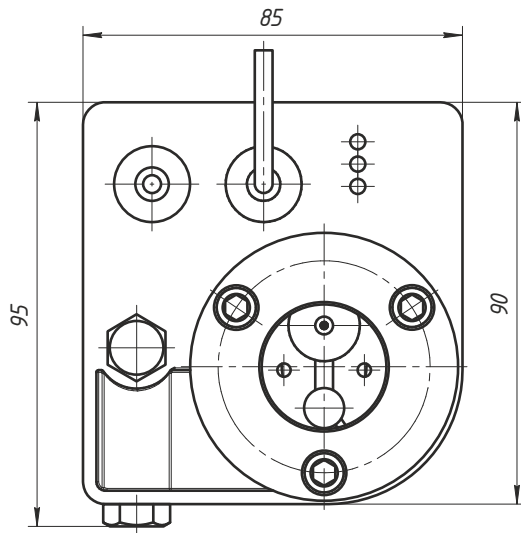
Drawing 27.

Electronic oil level regulators FP-ERL4. Page 8



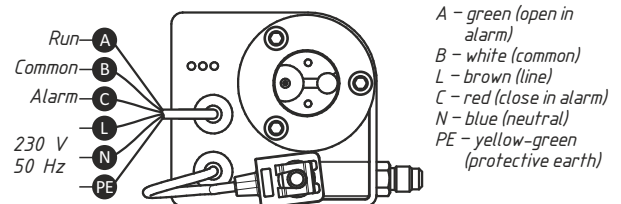
Drawing 28.

Electronic level sensors FP-OLS2/ELS2. Page 9



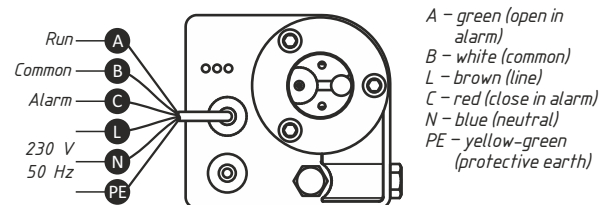
Drawing 29.

Electrical connections FP-ERL4. Page 8



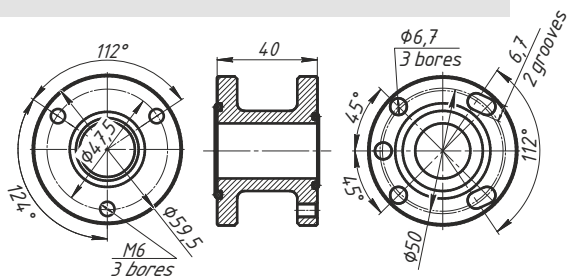
Drawing 30.

Sensors OLS2/ELS2. Electrical connections. Page 11



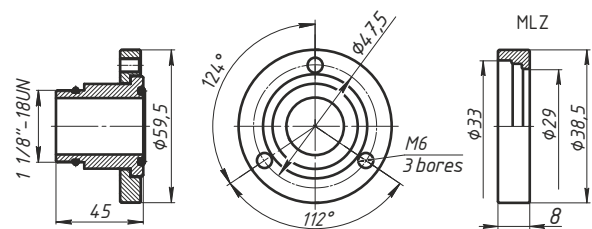
Drawing 31.

AdapterFP-ERL-UA. Page 8



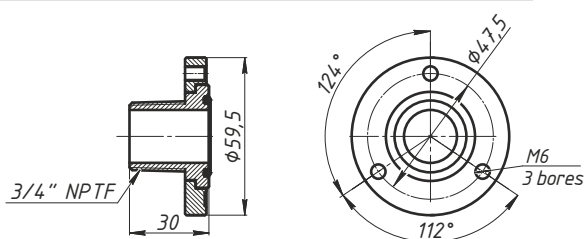
Drawing 32.

Adapter FP-BBL(+MLZ). Page 8



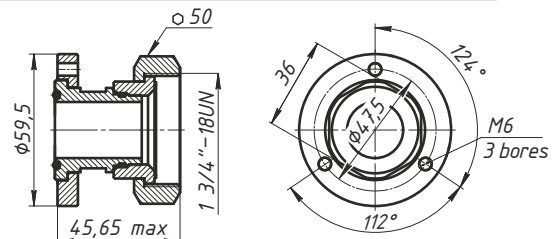
Drawing 33.

AdapterFP-AA. Page 8



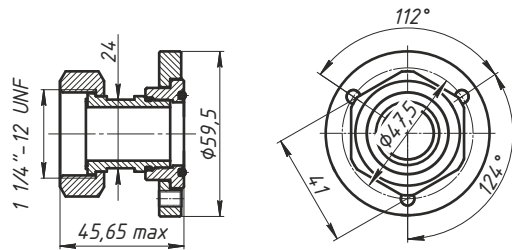
Drawing 34.

AdapterFP-CD. Page 8



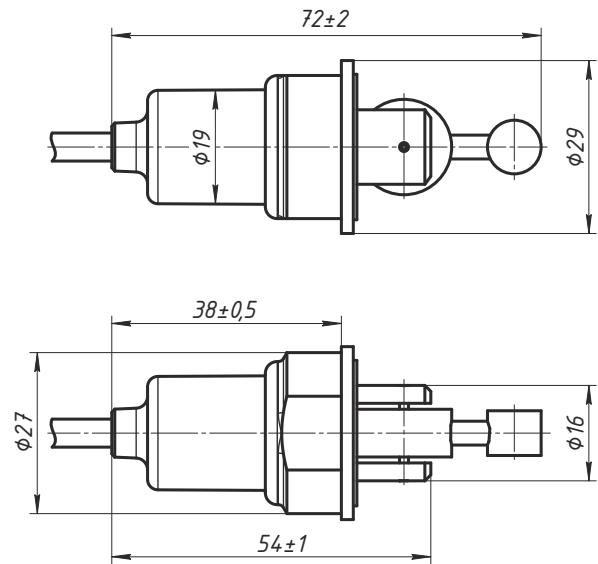
Drawing 35.

Adapter FP-CE. Page 8, 9



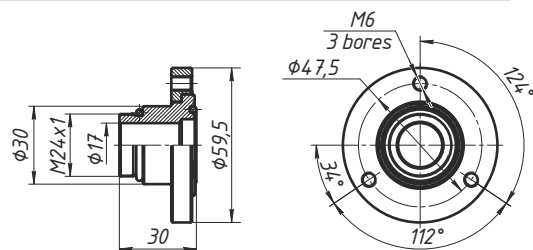
Drawing 37.

Electronic level sensor FP-ELS-L. Page 9



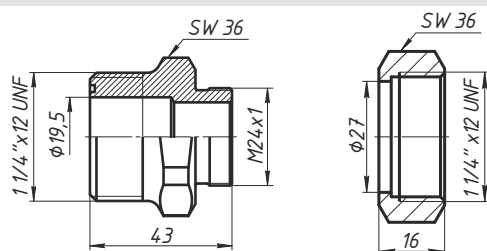
Drawing 36.

Adapter FP-FA. Page 9



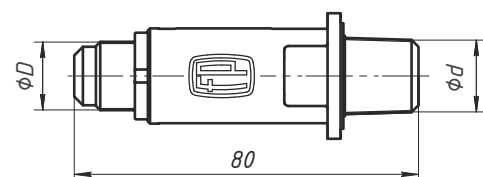
Drawing 38.

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



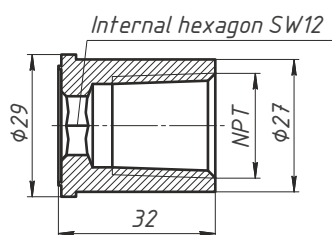
Drawing 39.

Safety valves FP-SV. Page 10



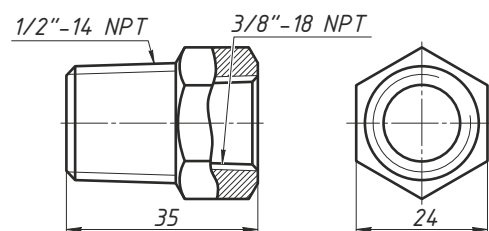
Drawing 40.

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



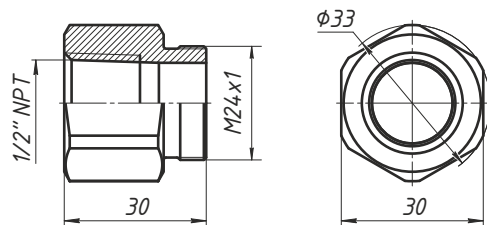
Drawing 41.

Adapter FP-A-012/038. Page 10



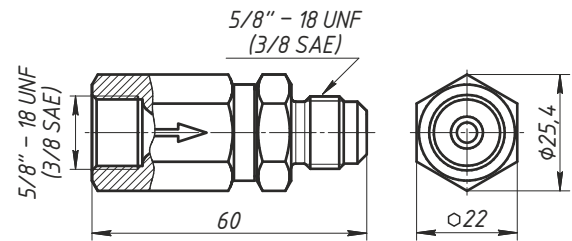
Drawing 42.

AdapterFP-A-M24-012. Page 10



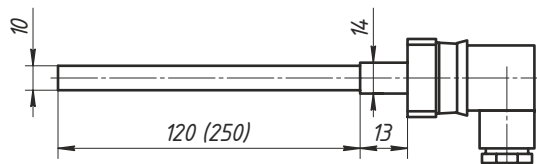
Drawing 43.

Differential check valve. Page 10



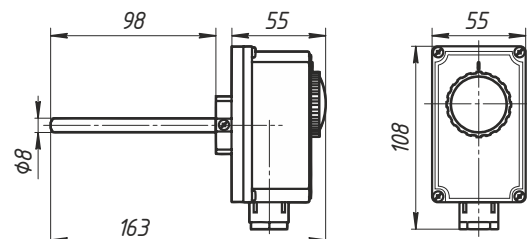
Drawing 44.

Heaters FP-TEH. Page 10



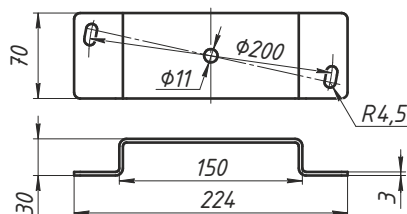
Drawing 45.

Thermostats FP-TS. Page 10



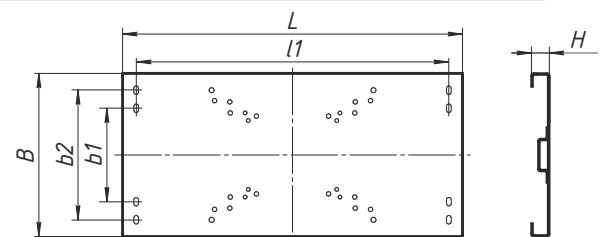
Drawing 46.

Pedestal for receiver. Page 10



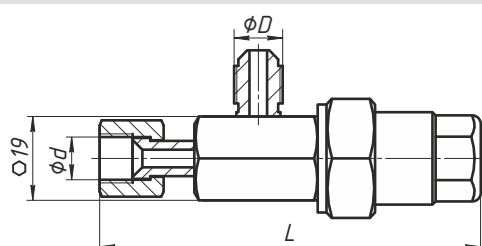
Drawing 47.

Piedestals for horizontal receiver FP-ST-LRH. Page 11



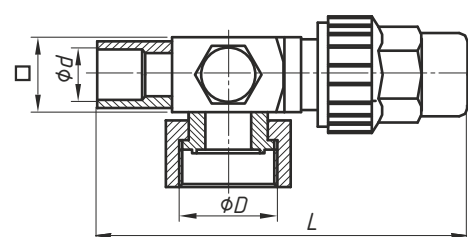
Drawing 48.

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



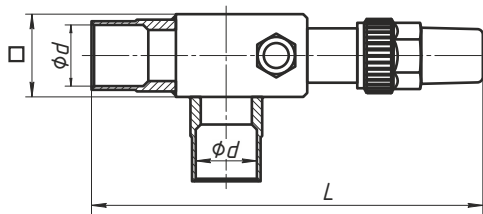
Drawing 49.

Rotalock valves FP-RV-034...218. Page 11



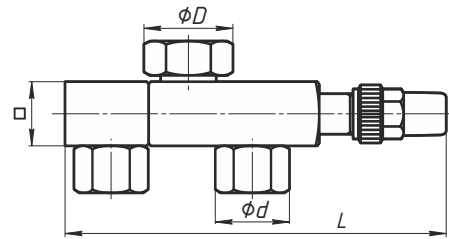
Drawing 50.

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



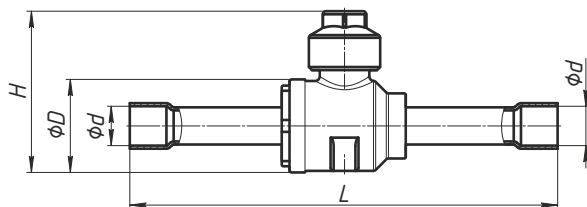
Drawing 51.

Tee valves FP-TV. Page 12



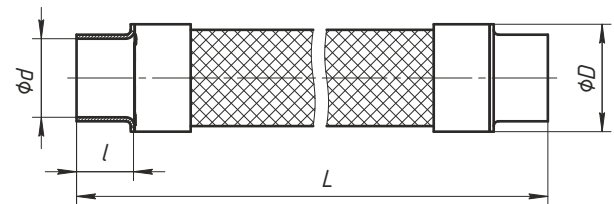
Drawing 52.

Tee valves FP-BV. Page 12



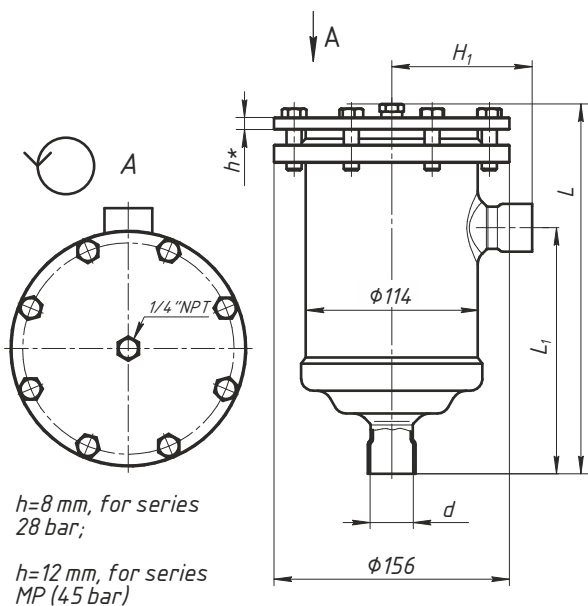
Drawing 53.

Welded vibroeliminators FP-VA. Page 12



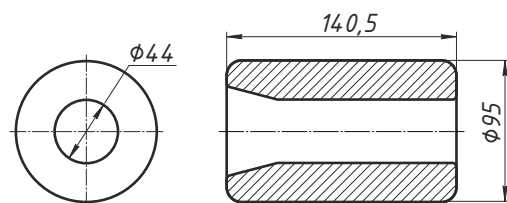
Drawing 54.

Filter-driers with replaceable core. Page 13



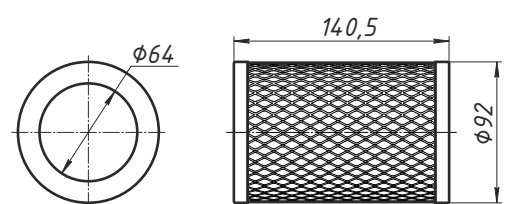
Drawing 55.

Cartridges FP-48DC, FP-48DA, FP-48DM. Page 13



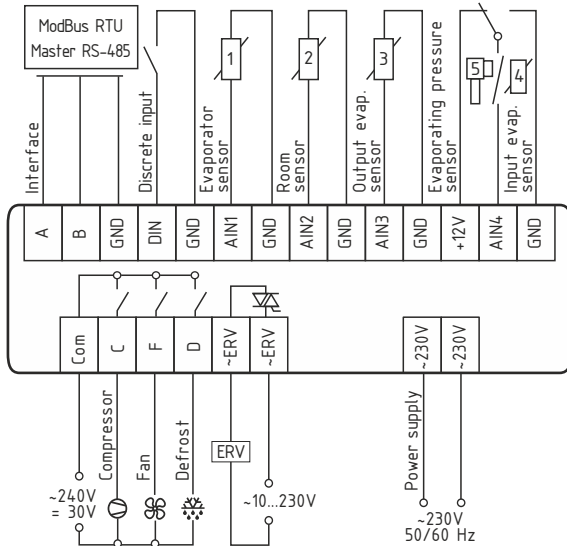
Drawing 56.

Cartridges for collapsible filters FP-48F. Page 13



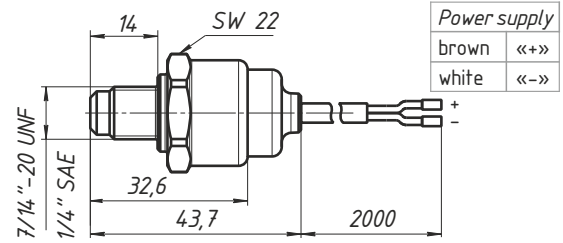
Drawing 57.

Refrigeration controller FP-MC electrical conn. Page 14



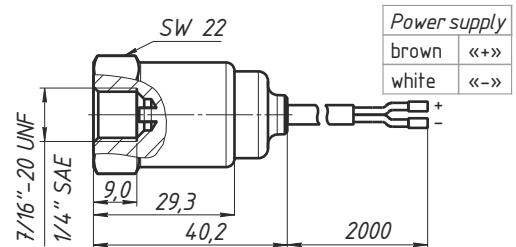
Drawing 58.

Pressure sensors FP-PT-10A(W); FP-PT-35A(W). Page 14



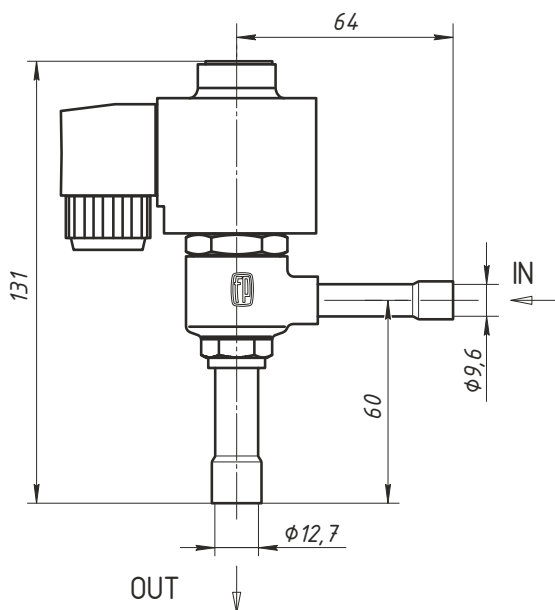
Drawing 59.

Pressure sensors FP-PT-10B(W); FP-PT-35B(W). Page 14



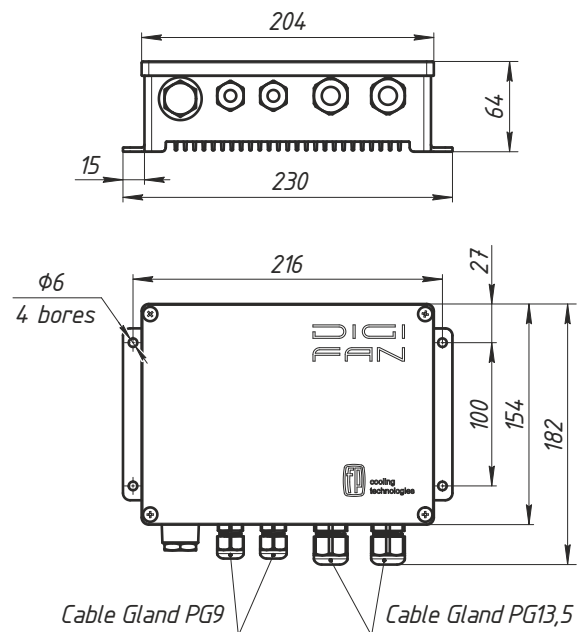
Drawing 60.

Electronic expansion valves Page 14



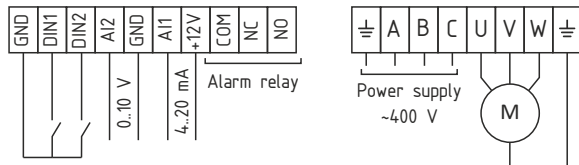
Drawing 61.

Fan speed controllers FP-FSR-8. Page 15



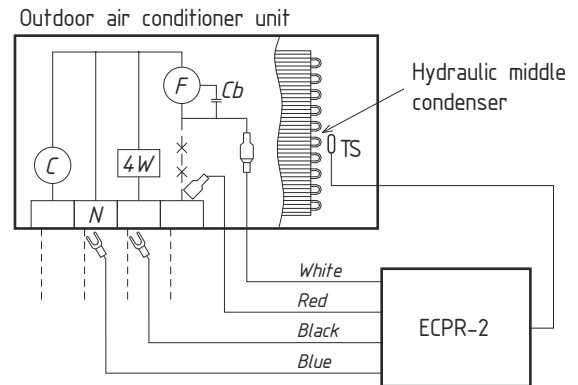
Drawing 62.

Fan speed controller FP-FSR-8 electrical conn. Page 17



Drawing 63.

Condensing pressure regulators FP-ECPR-2. Page 15



---- interconnections

TS – regulator temperature sensor,

F – condenser fan motor,

4W – 4 way valve,

C – compressor motor,

N – power supply neutral

The manufacturer reserves the right to make changes in the design of products that do not degrade functional characteristics, without prior agreement with customers.

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

inch	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	10,00	12,70	16,00	19,05	22,30	28,60	35,00	42,00	54,00	66,70	79,40

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

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

TABLE 3. Correction coefficients for another working conditions

to	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: $QK = Q_0 \cdot K$ (Q_0 – nominal capacity, K – correction factor, QK – 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_n (R22) = $25 \cdot 1,76 = 44$ kW → FPAS-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 por	Oil filling port	SVP
FP-OS-40-218 ST	1xFP-TEH-250-150W	FP-TS-90	FP-ELS2+FA или FP-ELS-L+M24-114	FP-RV-114	FP-RV-114-118	FP-SV-038 или
FP-OS-80-318 ST	2xFP-TEH-120-150W	FP-TS-90		FP-RV-134	FP-RV-114-118	FP-TV-114-038+2xFP-SV-038
FP-OS-200-418 ST	3xFP-TEH-120-150W	FP-TS-90		FP-RV-214	FP-RV-114-118	FP-TV-114-038+2xFP-SV-038
FP-OS-400-114ST	3xFP-TEH-120-150W	FP-TS-90	FP-ELS2+CE /FP-ELS-L	FP-RV-214	FP-RV-114-118	FP-TV-114-038+2xFP-SV-038
FP-OS-600-140ST	4xFP-TEH-250-150W	FP-TS-90	FP-ELS2+CE /FP-ELS-L	76 mm ODS(St)	FP-RV-114-118	FP-TV-114-038+2xFP-SV-038

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

Model	R22	R134A	R404A	R407C	R410A	R507A
FP-CR-15	12,1	12,3	10,1	11,4	10,2	10,1
FP-CR-15Y	12,1	12,3	10,1	11,4	10,2	10,1
FP-CR-30Y	26,0	26,4	21,6	24,4	21,8	21,5
FP-CR-60Y	52,0	52,9	43,2	48,8	43,6	43,1

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

ГРАФИК 1. Quick selection chart for oil separator

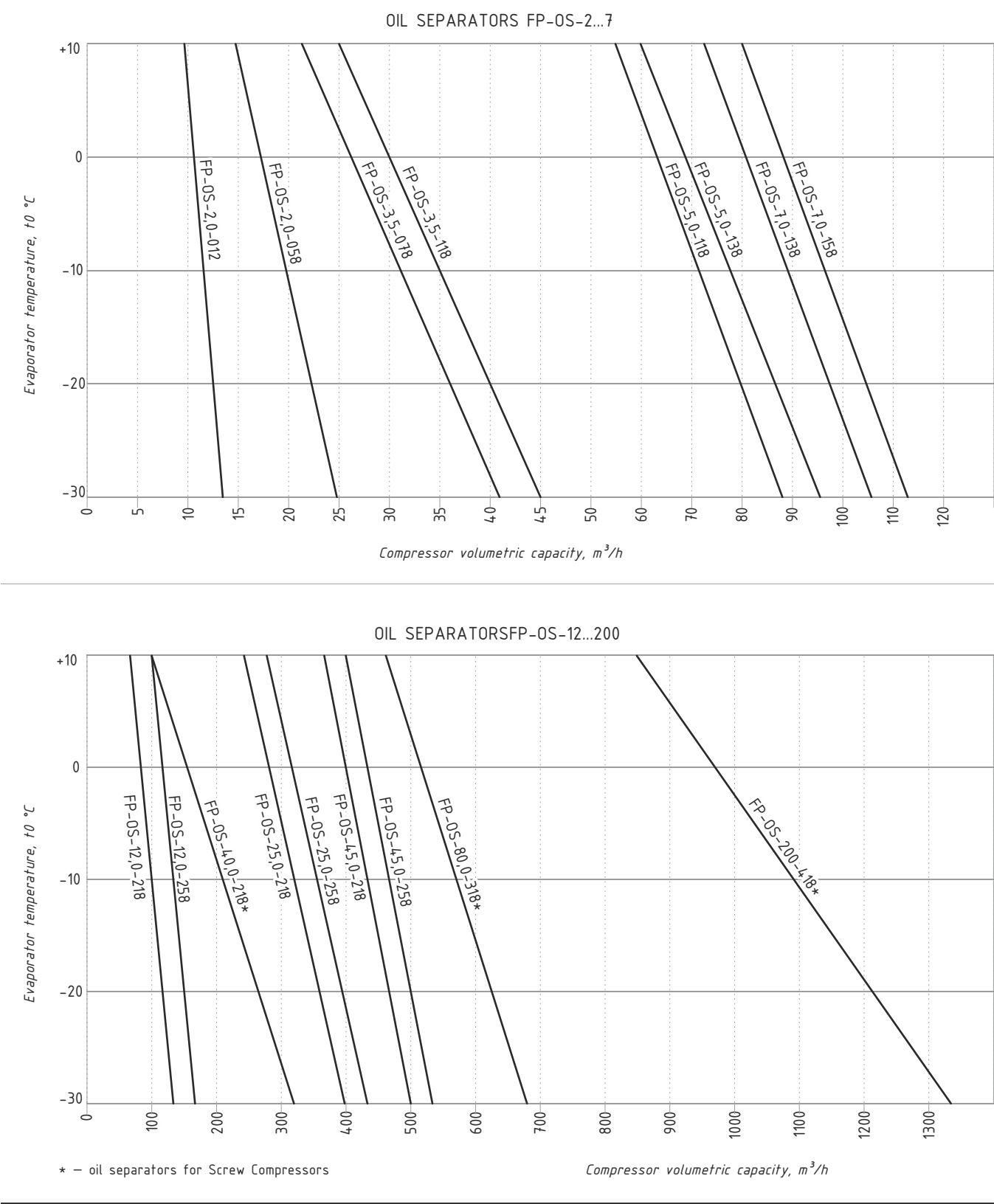
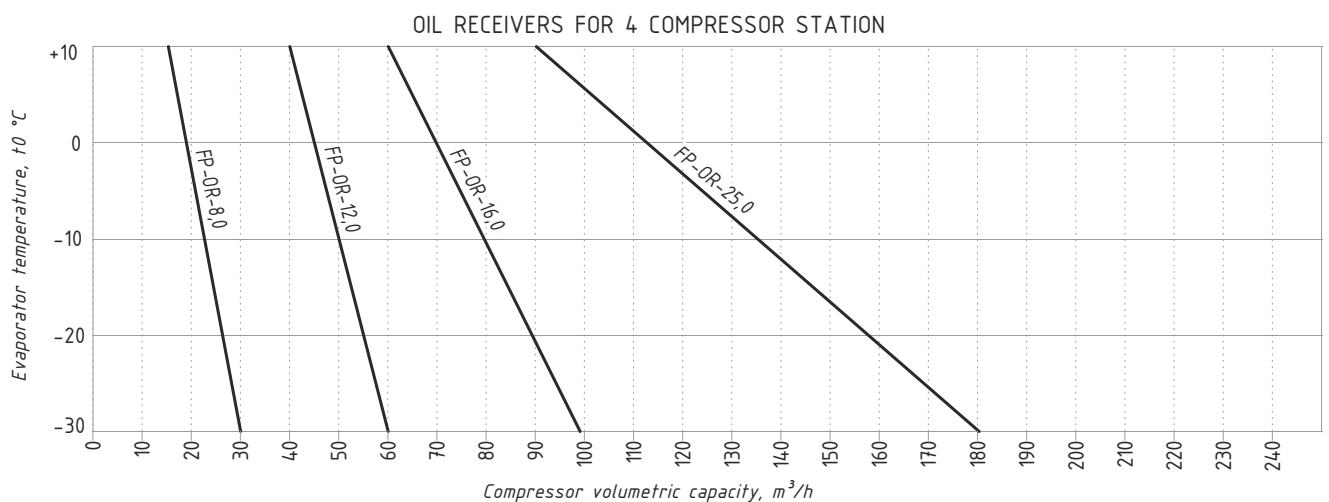
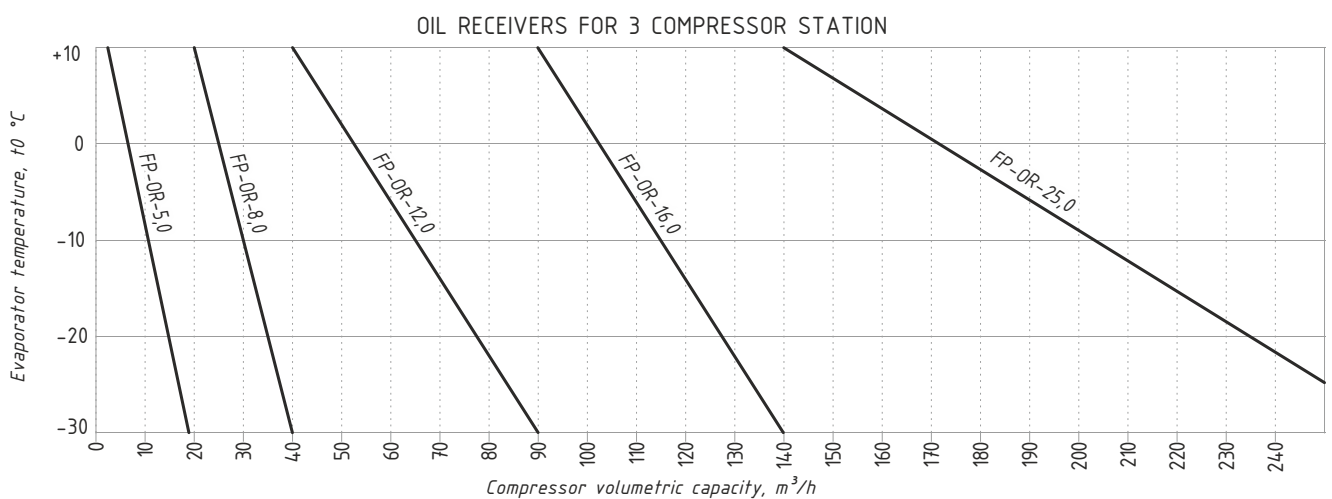
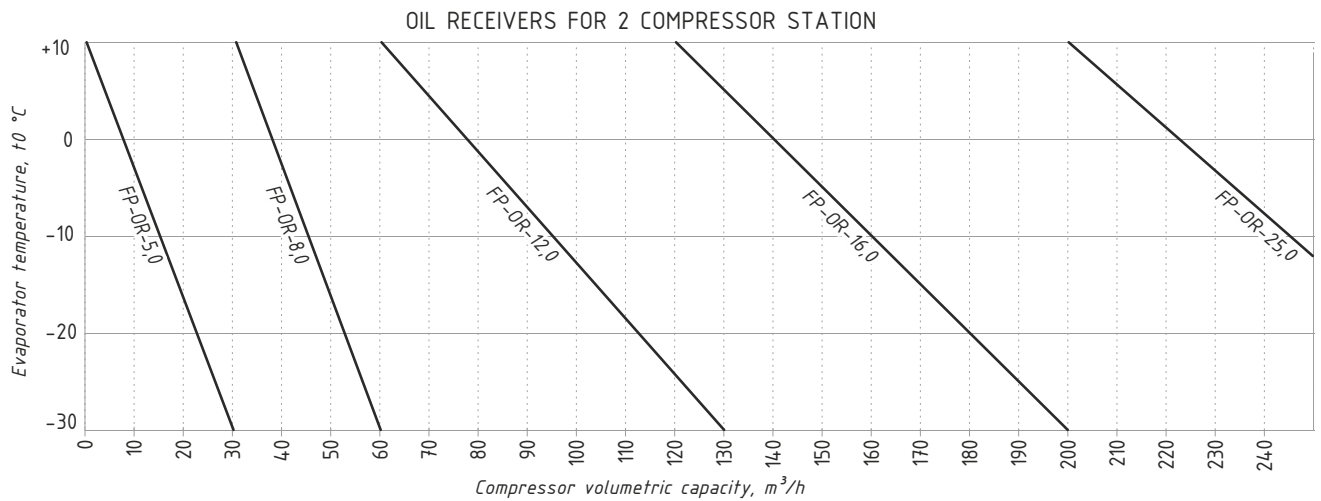


CHART 2. Quick selection chart for oil receivers



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