

Hydraulic Service Manifolds



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Features

- Modular layout
- Independent output modules/channels
- Accumulators in P-T and PIL lines
- Piloting module
- Return back-pressure module



Ordering code

01		02	03	04		05	06	07	08		09		10		11		12		13
HSM	-				-				/		/		-		/		-		

01	HSM Manifold	HSM
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Size

02	Size 100 l/min	A
	Size 200 l/min	B
	Size 400 l/min	C
	Size 800 l/min	D
	Size 1000 l/min	E

Adjustment type of pressure ramp

03	double on/off electro-valve with manual adjusting knob	MA
	On/off electro-valve + Electro-proportional valve	EP

Proportional valve amplifier for channel/station module (available only with option EP)

04	Setpoint command 0-10 V	V
	Setpoint command 4-20 mA	A

No. of independent channels/stations

05	No.1 module	1
	No.2 modules	2 (*)
	No.3 modules	3 (*)
	No.4 modules	4 (*)

Piloting module

06	Without piloting module	No code
	Piloting module normally open, manually adjustable pressure setting	PMA
	Piloting module normally closed, electro-proportional pressure setting	PEP

Proportional valve amplifier for piloting module (available only with option PEP)

07	Setpoint command 0-10 V	V
	Setpoint command 4-20 mA	A

Accumulators size on Main supply (P line)

08	Without accumulator	No code
	Volume 5 l	5
	Volume 10 l	10
	Volume 20 l	20 (**)

Accumulators size on Return (T line)

09	Without accumulator	No code
	Volume 5 l	5
	Volume 10 l	10
	Volume 20 l	20 (**)



01		02	03	04		05	06	07	08		09		10		11		12		13
DA	-				-					/		/		-		/		-	

Accumulators size on Piloting (PIL line)

10	Volume 0,7 l	07 (***)
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Filtration rate on Main supply (P line)

11	10 μm absolute	10
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Filtration rate on Piloting (PIL line)

12	3 μm absolute	3 (***)
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Return back-pressure module

13	Without back-pressure module	No code
	Back-pressure module, manually adjustable pressure setting	BKP

(*) not available for size D and E

(**) only for size D and E

(***) only for options PMA and PEP

Ordering examples

HSM-A EP V-1 PEP V 10-10/3

- Size: 100 l/min
- Adjustment of pressure ramp: electro-proportional
- Proportional valve amplifier for station module: 0-10 V setpoint command
- No. channels: 1
- Piloting module: electro-proportional
- Proportional valve amplifier for piloting module: 0-10 V setpoint command
- Accumulator Main supply (P line): 10l
- Filtration rate on Main supply: 10 μm
- Filtration rate on Piloting module: 3 μm

HSM-A MA-2 PEP V 10/10-10/3-BKP

- Size: 100 l/min
- Adjustment of pressure ramp: manual
- No. channels: 2
- Piloting module: electro-proportional
- Proportional valve amplifier for piloting module: 0-10 V setpoint command
- Accumulator Main supply (P line): 10l
- Accumulator Return (T line): 10l
- Filtration rate on Main supply: 10 μm
- Filtration rate on Piloting module: 3 μm
- Back-pressure module: included



Functionalities

Hydraulic Service Manifold (HSM) is a product conceived specifically for Testing application, connected to Hydraulic Power Units, HSM can provide servoactuators with oil flow in three pressure levels: OFF / LOW / HIGH:

- OFF: no flow – no pressure
- LOW: Max flow – low pressure
- HIGH: Max flow – High pressure

Pressure levels can be set by means of following optional devices:

- option **MA**:
 - double on/off electro-valve, ramp time is manually adjusted.
 - LOW pressure can be manually adjusted up to 50 bar.
 - HIGH pressure is equal to HPU maximum pressure.
- option **EP**:
 - no.1 on/off electro-valve + no.1 proportional electro-valve, ramp time can be set by remote analogue setpoint command (0-10V / 4-20mA), provided by an external electronic controller, not included in scope of supply.
 - LOW level can be manually adjusted up to 50 bar.

- HIGH level can be set between LOW level and HPU maximum pressure.

Manifold layout is modular and can be configured with different functional items, optionally selected:

- **output channels/stations**: up to 4 independent channels,
- **piloting module**, to feed servoactuators hydrostatic pockets and servovalve external pilot line,
- **return line back-pressure module**, typical used in aerospace testing.

Additional further options can be chosen among following:

- **accumulator size** for lines P-T-PIL,
- **filtration rate**,
- **piloting module pressure ramp device**: manual mode (option **PMA**) or remote analogue setpoint command, 0-10V / 4-20mA (option **PEP**).

NOTE

With reference to options **EP** and **PEP**, care should be taken to characteristic curve (pressure vs. flow) of proportional electro-valve, which is quadratic (2nd order); it is recommended to use a pressure transmitter on Main supply line (option **EP**) and on piloting line (option **PEP**) as feedback sensor for the external electronic controller.

Both pressure transmitter and external electronic controller are not included in the scope of supply.



Technical data

SPECIFICATION					
Size	100	200	400	800	1000
Operating pressure	280 bar				
Nominal flow	100 l/min	200 l/min	400 l/min	800 l/min	1000 l/min
Variable low pressure	0...50 bar				
Variable pilot pressure	0...280 bar				
Working fluid	HLP ISO VG 32 / 46 other fluids on request: MIL-PRF-5606 / -83282 / -87257				
Oil cleanliness level	20/18/15 ISO 4406 (c) or better				
Viscosity range	15...380 mm²/s				
Slow on/off pressure ramp	manually adjustable (OPTIONAL: electro-proportional valve, setpoint 0-10V / 4-20 mA)				
Maximum current to solenoid on/off valves	1,5 A – 24Vdc				
Maximum current to proportional valves	1,2 A – 24Vdc (recommended dither frequency, PWM: 300 Hz)				
Maximum no. of stations/channels	1...4			1	
Hydraulic port connections to HPU	P1: Main pressure line - T1: Return line to tank DR1: Drain line to tank				
Hydraulic port connections to servoactuator	P3: Main supply line - T3: Return line to tank DR3: Drain line to tank PIL3: Servovalve pilot line - ID: Hydrostatic pockets				

OPTIONS - ACCUMULATORS					
Size	100	200	400	800	1000
Pressure	Minimum 5 l Maximum 10 l			Minimum 10 l Maximum 20 l	
	included PED safety relief valve				
Return	Minimum 5 l Maximum 10 l			Minimum 10 l Maximum 20 l	
Pilot pressure	0.7 l				

OPTIONS – PILOTING MODULE					
Size	100	200	400	800	1000
Maximum current to solenoid on/off valves	1,5 A – 24Vdc (pressure set valve, option PMA) 1,5 A – 24Vdc (shut-off valve, option PEP)				
Maximum current to proportional valves	1,2 A – 24Vdc (pressure set valve, option PEP) (recommended dither frequency, PWM: 300 Hz)				



OPTIONS – FLUID FILTRATION					
Size	100	200	400	800	1000
Main supply	10 μ m Absolute				
Pilot pressure supply	3 μ m Absolute				

OPTIONS – RETURN BACK-PRESSURE MODULE					
Size	100	200	400	800	1000
Return back-pressure	manually adjustable 5...25 bar, with possibility to manual by-pass (different setting available on request)	available on request			
Maximum current to solenoid valves	1,5 A – 24Vdc	available on request			

Related items

At purpose to feed servoactuator with proper oil flow, it is recommended to use an Hydraulic Power Unit (HPU), which can supply conditioned and clean fluid, and an Hydraulic Service Manifold (HSM), which can distribute and control smooth and bump-less Off/Low/High pressure stages to servoactuator, connecting lines P-T-PIL-DR; for further details please make reference to following data sheets:

- IS-EN00326_Silence and Modular Hydraulic Power Unit, closed layout
- IS-EN00426_Modular Hydraulic Power Unit, open layout
- IS-EN00224_Servoactuators for Testing applications



Figure 1: Silence HPU and HSM Manifold

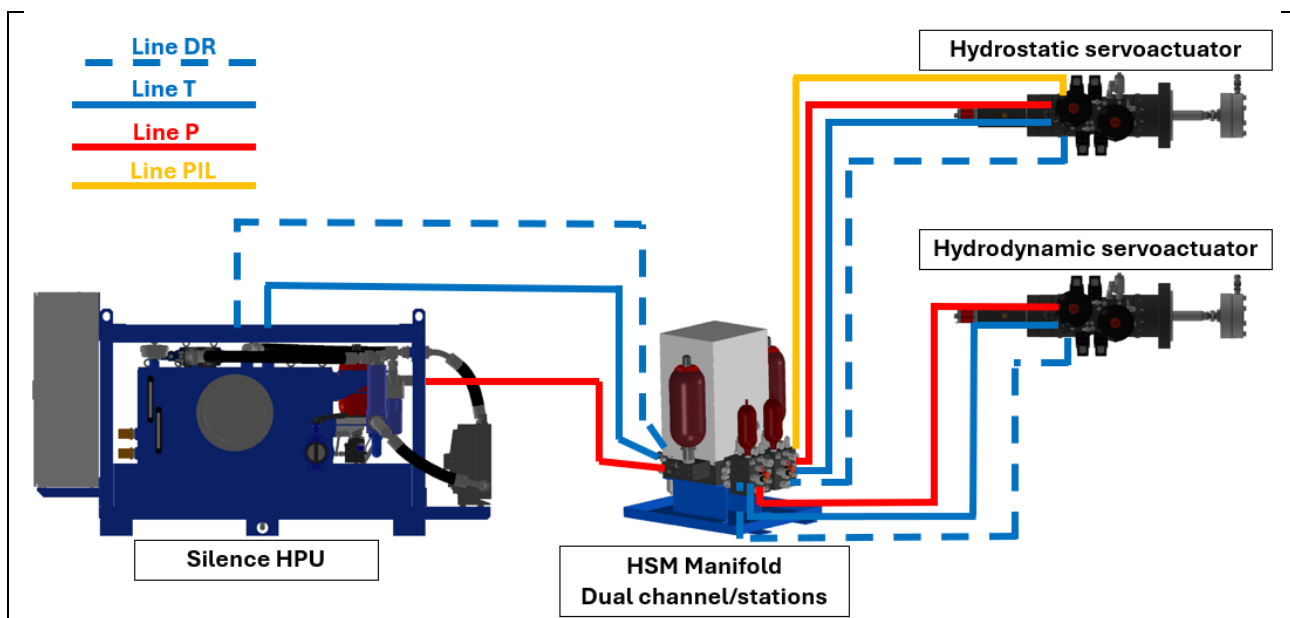
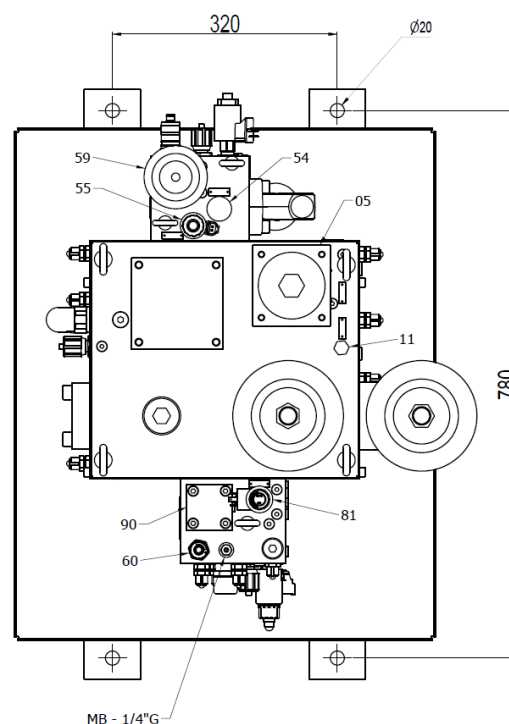
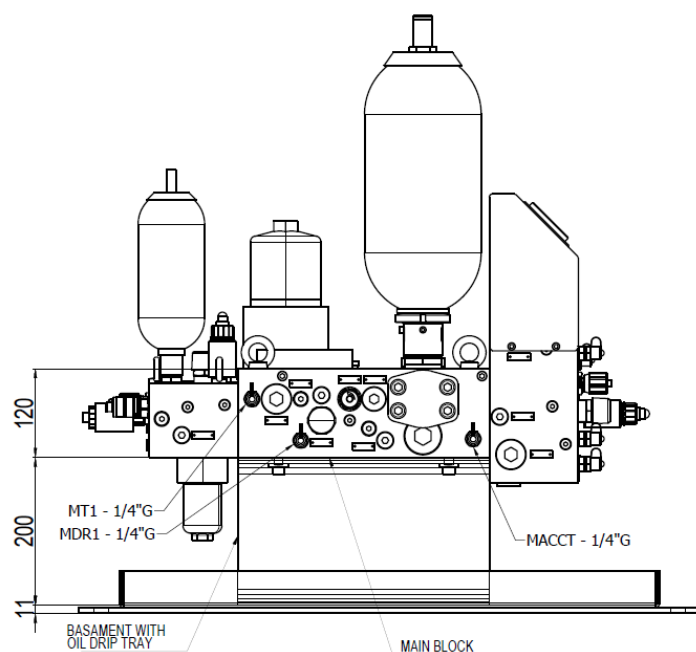
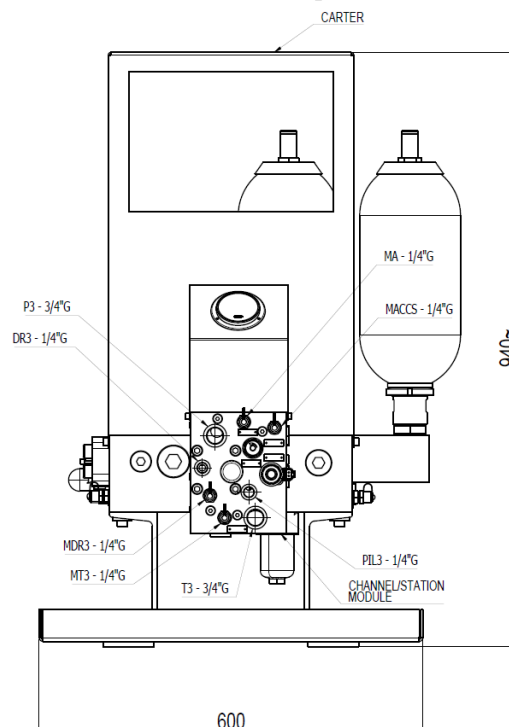
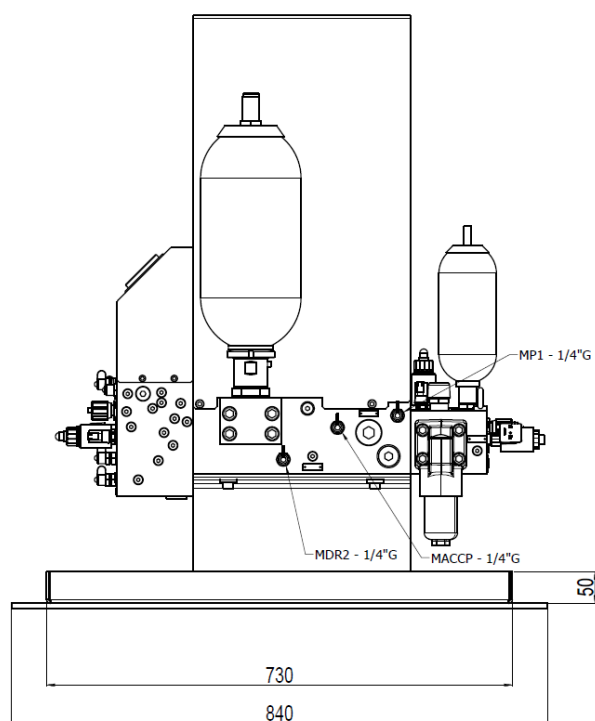


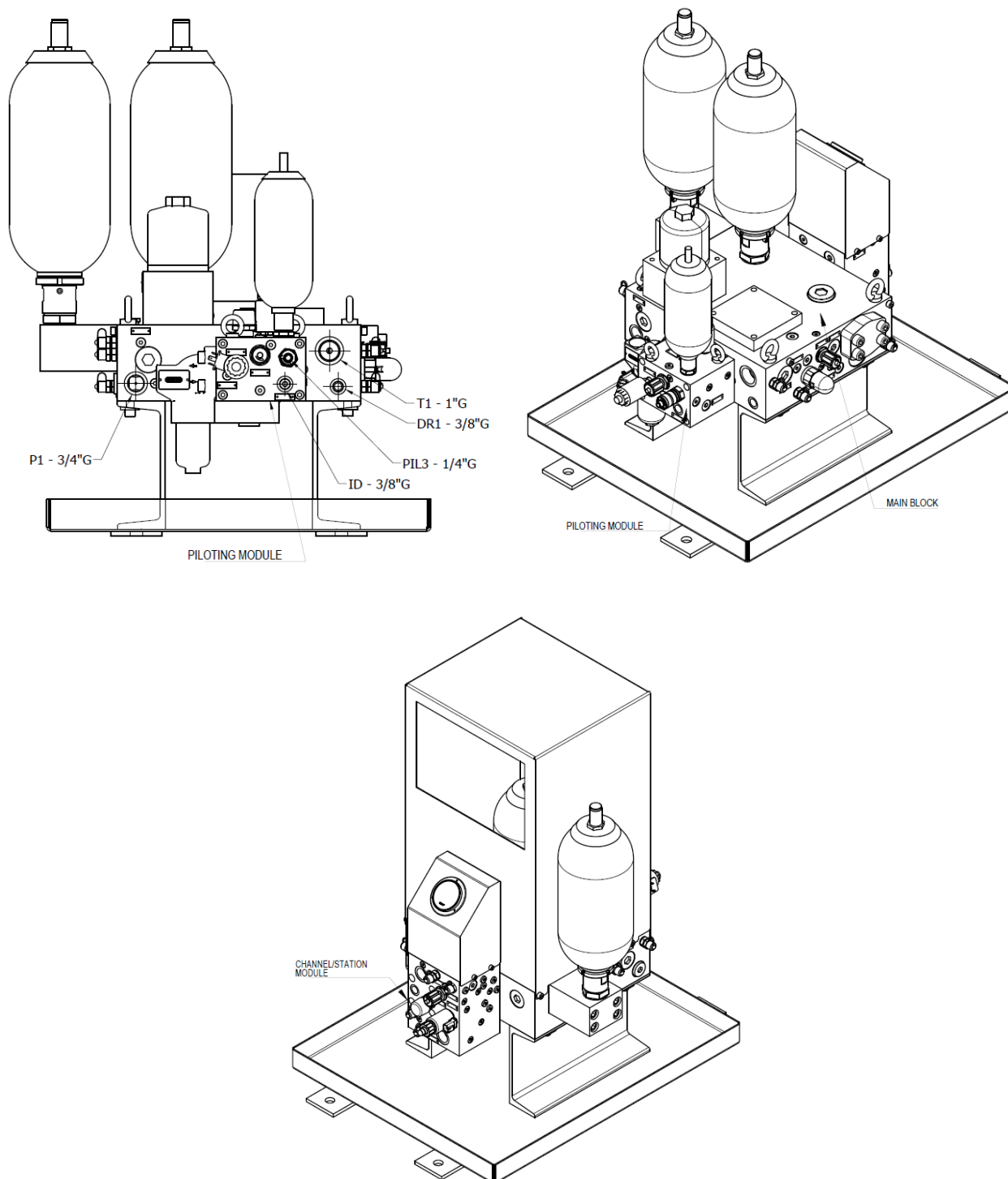
Figure 2: Logic diagram of hydraulic system

Drawings - examples

(dimensions in mm)

HSM-A EP V-1 PEP V 10-10/3 (single channel manifold, size 100 l/min, example)



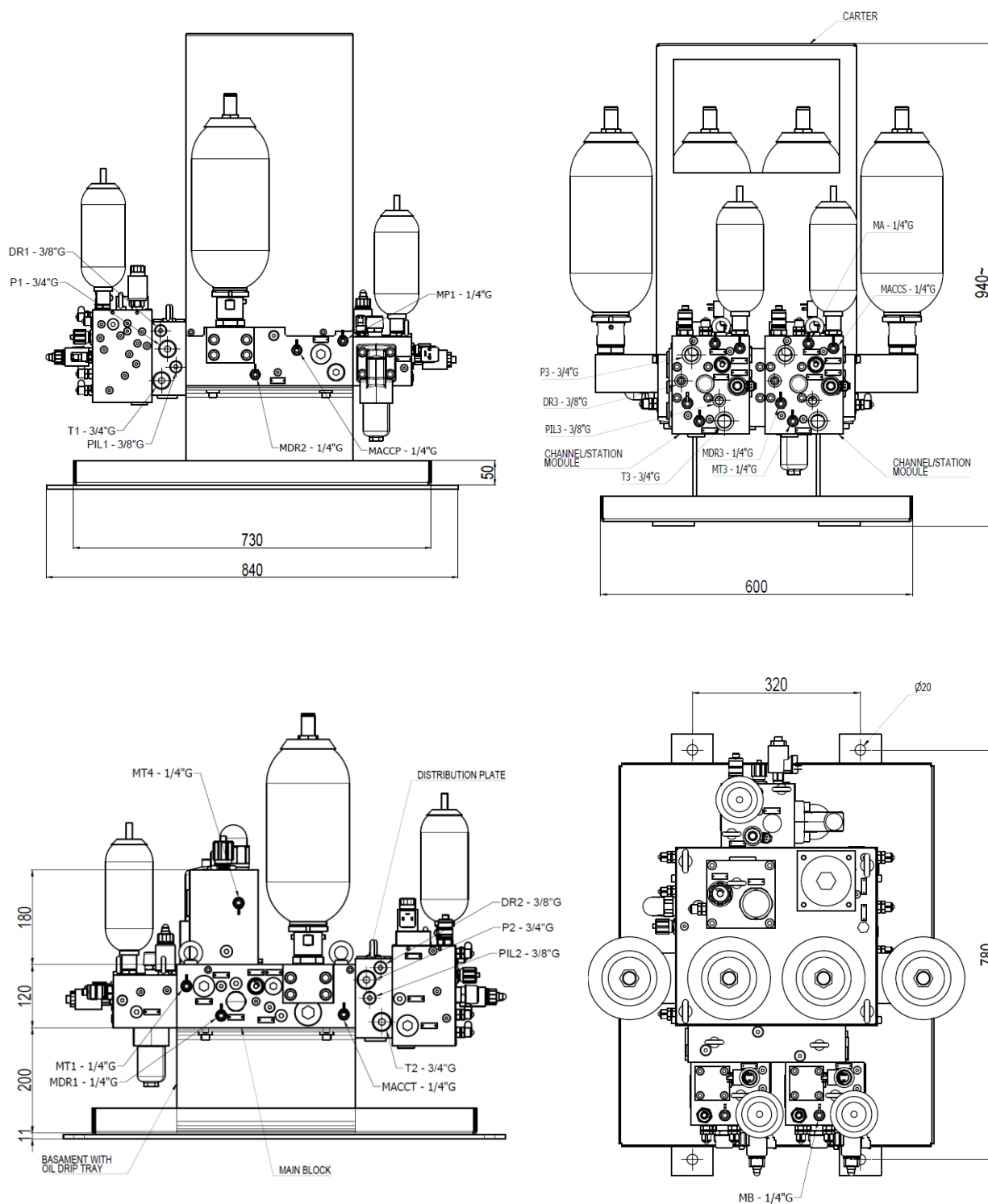


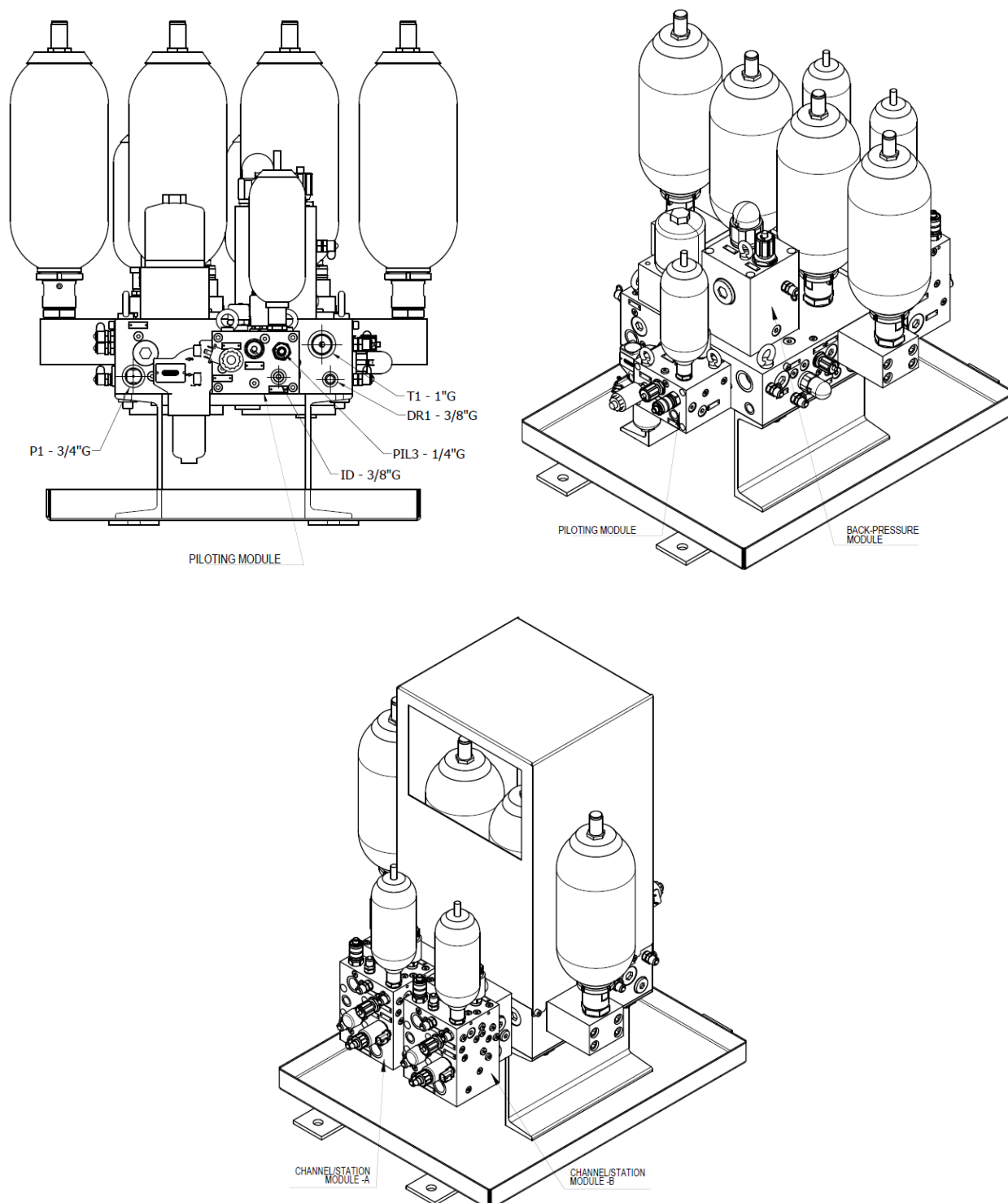
Weight: ca. 253 kg

NOTE:

dimensions and weight are reference values and may be subjected to small changes.

HSM-A MA-2 PEP V 10/10-10/3-BKP (double channel manifold, size 100 l/min, example)





Weight: ca. 346 kg

NOTE:

dimensions and weight are reference values and may be subjected to small changes.



Contacts

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