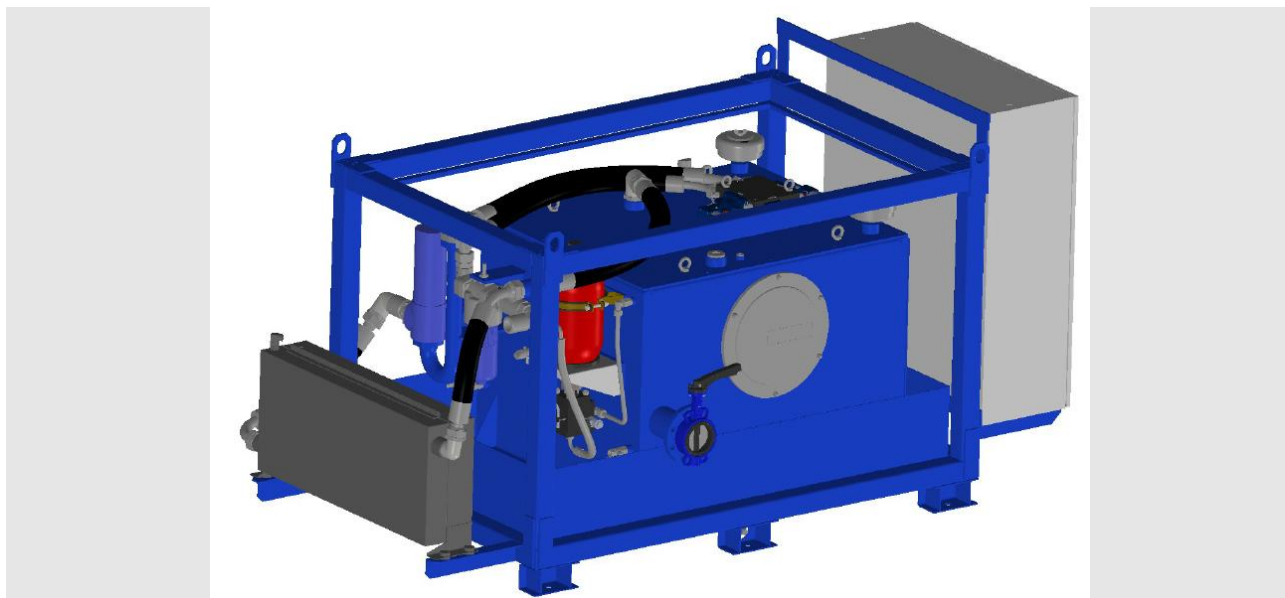


Silence and modular Hydraulic Power Units – Closed layout



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Features

- HPU, closed and silence layout
- Modular configuration and options
- Hydraulic components
- Electrical cabinet and operator panel
- Frequency converter for energy-saving functionality.



Ordering code

01		02		03	04	05	06	07		08		09
HPU-C	-		-						-		-	

01	Hydraulic Power Unit	HPU-C
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Silence panels

02	Without	No code
	Included, acoustic panels	S

Rated power (included off-line circuit), flow and pressure

03	1x 45 kW (1x 55 kW) – 100 l/min – 210 bar (280 bar) – Tank= 500 l	A (+)
	2x 45 kW (2x 55 kW) - 200 l/min – 210 bar (280 bar) – Tank= 1000 l	B (+)
	3x 45 kW (3x 55 kW) - 300 l/min – 210 bar (280 bar) – Tank= 1500 l	C (+)
	4x 45 kW (4x 55 kW) - 400 l/min – 210 bar (280 bar) – Tank= 2000 l	D (+)
	5x 45 kW (5x 55 kW) - 500 l/min – 210 bar (280 bar) – Tank= 2500 l	E (+)
	6x 45 kW (6x 55 kW) - 600 l/min – 210 bar (280 bar) – Tank= 3000 l	F (+)

Heat exchanger (connected into off-line circuit)

04	Without	No code
	Air/oil cooler (only available for options A and B)	A
	Water/oil cooler	W

Oil heater

05	Without	No code
	2x 2,45 kW, recommended for options A (+); B (+)	5
	2x 3,45 kW, recommended for options C (+); D (+)	7
	3x 3,45 kW, recommended for options E (+)	10
	4x 3,45 kW, recommended for options F (+)	14

Bladder accumulator in line P with PED safety block

06	Without	No code
	5 l with manual discharge valve	5M
	5 l with automatic discharge electro-valve (30W – 24Vdc)	5E
	10 l with manual discharge valve	10M
	10 l with automatic discharge electro-valve (30W – 24Vdc)	10E

Frequency converter for speed control – energy-save option

07	Without	No code
	Included	FC

Digital panel operator

08	Without, start/stop push-buttons available	No code
	Local panel in front of electrical cabinet, commands and diagnostics	LP
	Remote panel, commands and diagnostics	RP

Painting

09	RAL 5010, semi-gloss - standard	5010
	Specify RAL code, semigloss	...



Ordering examples

HPU-A+ A 5 5E FC-5010

HPU	Hydraulic Power unit	Hydrodynamic, servo quality, external drain
A+	Rated power, flow and pressure	1x 55 kW – 100 l/min – 280 bar – Tank= 500 l
A	Heat exchanger	Air/oil cooler
5	Oil heater	2x 2,45 kW
5E	Bladder accumulator in line P with PED safety block	5 l with automatic discharge electro-valve (30W – 24Vdc)
FC	Frequency converter for speed control – energy-save option	Included, Bosch Rexroth frequency converter
5010	Painting	RAL 5010, semi-gloss (standard)

Customer specific configurations are available on request, please get in contact with us.



Main features

Modular HPUs, closed layout, are conceived to provide the possibility to connect side-by-side multiple HPUs, so to create a unique bigger reservoir with twins components, the same control logic in a compact and silenced layout.

Modularity concept offers the possibility to laboratory and workshop managers to benefit of a flexible and scalable tool, useful to optimize performance and time goals, and to keep under control both costs of new investments and of ownership.

Pumps and electric motors

Both pumps and electric motors are mounted inside tank and submerged in oil.

Each motor-pump group is equipped with:

- tandem of Bosch Rexroth pumps,
- one asynchronous, 4 poles, electric motor

Main pump is an axial piston variable displacement pump with electro-proportional valve, useful to progressively increase/decrease pressure and avoid any hydraulic hammer.

Connected to main pump through-drive, a fixed displacement Bosch Rexroth pump is used to supply off-line recirculation circuit, connected to filter and to heat exchanger.

Both pumps are designed for operation with HLP mineral oil according to DIN 51524-2, in particular, care must be taken to comply with following hydraulic data:

Hydraulic data	
Working fluid	HLP ISO VG 32 / 46, other fluids on request: MIL-PRF-5606 / -83282 / -87257, Skydrol
Max working pressure	210 bar / 280 bar (higher pressure on request)
Temperature range	+10°C...+ 65 °C
Oil contamination rate	19/17/14 ISO 4406 © (8 NAS 1638) or better When connected to servoactuators, it is recommended: 15/13/10 ISO 4406 © (4 NAS 1638) or better

Table 1: Hydraulic data



On-board sensors and valves

Each HPU is equipped with following sensors and valves:

- air filter, depending on tank size.
- oil filters, one into recirculation off-line circuit and one into main supply line,
- analogue oil level,
- PT1000 probe with analogue conditioned signal,
- pressure transducer into recirculation off-line circuit and into main supply line,
- on-off electro-valve for fully discharge both off-line circuit and main supply line,
- electro-proportional valve into main supply line.

Electro-proportional and on/off electro-valves are Bosch Rexroth models.

Pressure, temperature and level sensors are IFM models.

Filters are Hengst or Hydac models.

Filtration

Absolute filtration is provided both in off-line recirculation circuit and in main supply line, in particular with following filtration rate:

- off-line recirculation circuit: $3\ \mu\text{m}$
- main supply line: $10\ \mu\text{m}$

Each filter is equipped with an electro-optical clogging indicator.

Heat exchanger

Heat exchanger can be optionally selected by the User, each configuration provides a cooling power approximately equal to 80% of electric motors nominal power.

Optional choices include:

- air/oil heat exchanger, only available for HPU size A and B,
- water/oil heat exchanger.

It is also possible to choose HPU without heat exchanger, in any case off-line recirculation circuit is always equipped with pumps and filter, the User can autonomously size heat exchanger, according to its own machine working cycle.

Oil heaters

HPU shall operate with recommended fluid, described in previous *table 1*, and electric motors shall not be started when oil temperature is less than 10°C , so to avoid cavitation effects caused by high fluid viscosity; PLC inside electrical cabinet is programmed to automatically monitor such conditions and to switch-on oil heaters, so to reach minimum starting oil temperature.

According to laboratory/workshop environmental conditions, it is possible to choose oil heaters power, which minimize heating time and better comply with User operative requirements.

Electrical cabinet, PLC, operator panel and network

The electrical cabinet is designed and built to comply with following norms:

- EN 60204-1:2006-06 – Safety of machinery
- EN 61439-1:2010-01 – Low voltage switchgear and controlgear assemblies
- 2014/35/EU - Low voltage directive
- 2014/30/EU – EMC directive

Main supply line shall always include 400 Vac – 50 Hz / 3PH + N + Gr

A PLC inside cabinet is programmed to automatically control HPU, in particular:

- without operator panel: no parameter change is possible,
- with digital local / remote panel: some parameters, such as pressure

level and pressure ramp may be changed by operator.

PLC and local /remote operator panel are connected in EtherCAT network.

Local and remote operator panels are touchscreen models with command buttons and diagnostics information; local panel is mounted in front of electrical cabinet door, remote panel is mounted into an electrical box with an emergency red button and 10m EtherCAT cable, for different length, please specify at order.

Frequency converter

For option FC, a frequency converter is installed inside the electrical cabinet and programmed, for energy-saving purpose, to reduce electrical motor speed to minimum during stand-by.

Related items

For testing applications, which make use of servoactuators, it is recommended to use Hydraulic Power Unit (HPU) in connection with 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 as shown in figure 2 here below; for further details please make reference to following data sheets:

- IS-EN00124_Hydraulic Service Manifold
- IS-EN00224_Servoactuators for Testing applications

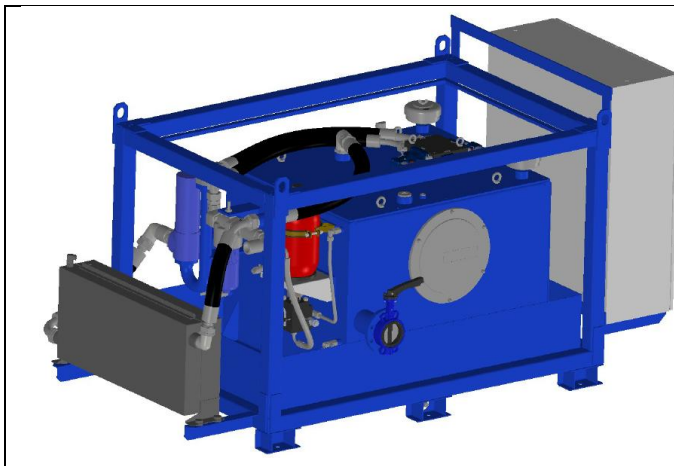


Figure 1: Silence HPU and HSM Manifold

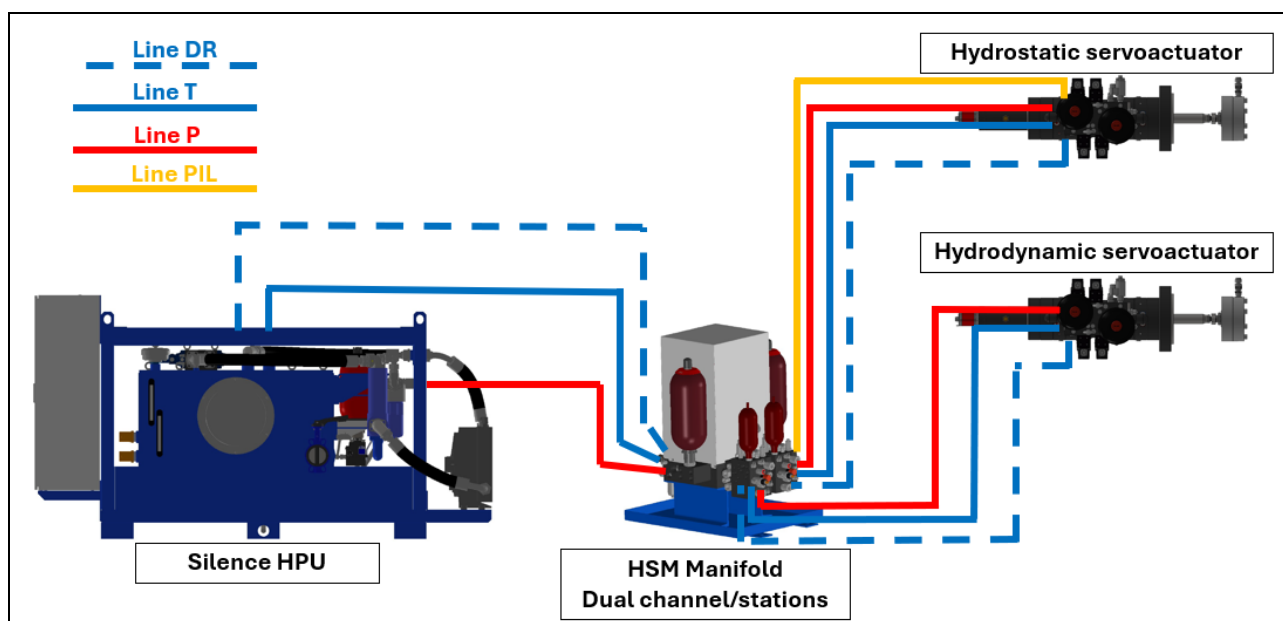
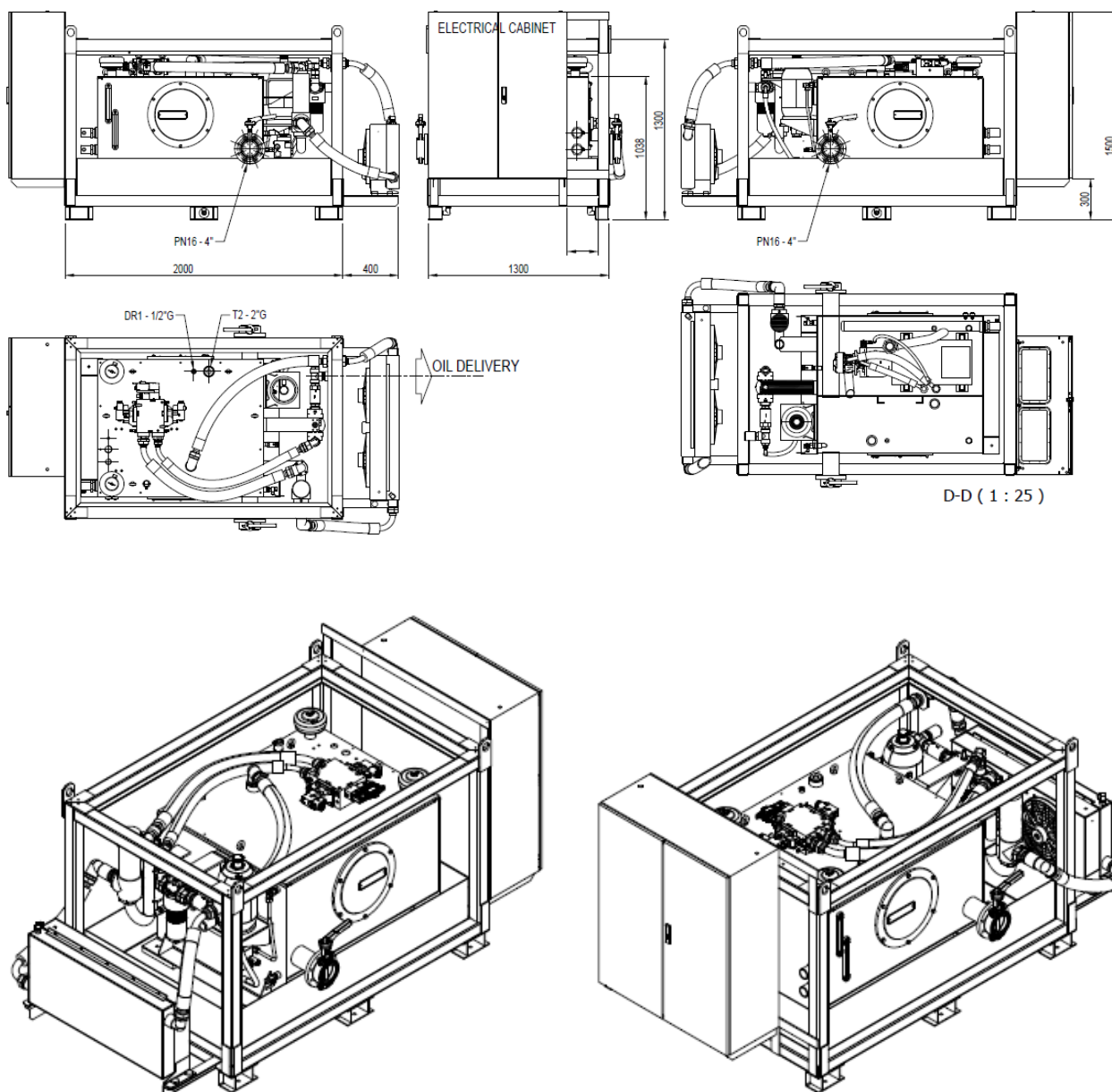


Figure 2: Logic diagram of hydraulic system

Drawings

(dimensions in mm)

HPU size A+ (example)





Contacts

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