

Mechatronic department

**file:
SMART PU – ForkLift
machine management**

ForkLift

SMART PU FI, MACHINE MANAGEMENT



An ForkLift can be a complex automation system and have operator on board

It is composed of an hydraulic and electrical system that can include:

- Frame
- Battery
- Lifting cylinder
- Valves
- AC or DC Hydraulic power pack
- One or more electronic controllers
- A communication system (radio, wired)
- HMI (such as operator panel)
- Sensors
- Cable Harness
- Wi-Fi

Using our patented SMART POWER UNIT technology Hydronit offers a “one-stop-shop” solution for Electric Pallet Lift.

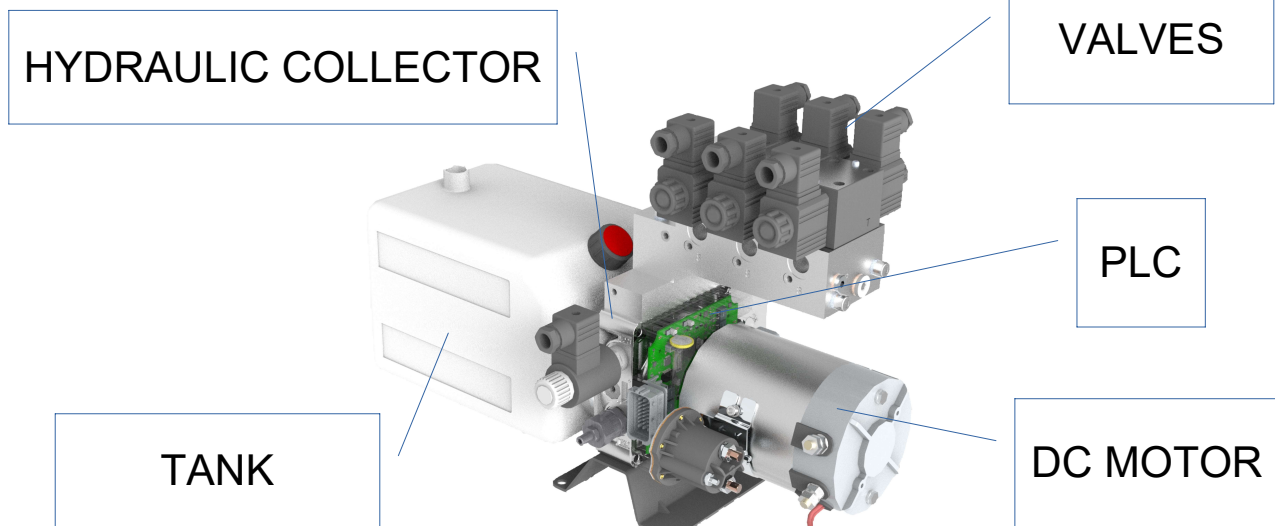
The Offer is including:

- SMART POWER UNIT
 - Hydraulic power pack
 - Embedded SIL 2 programmable PLC
 - Embedded Sensors (see data sheet)
 - WiFi – CAN – Ethernet
- A touchscreen display – Ethernet
- IDE (development and maintenance environment)



One SMART POWER UNIT is able to fully manage one lift from both hydraulic and electric point of view. It allows a consistent reduction of the TCO of the machine reducing assembly time since several sensors are embedded. It Integrates a wide number of I/O which can direct-drive valves both on-off or proportional.

The Smart Power Unit is programmable by CoDeSys



SMART PU FL MACHINE MANAGEMENT



A Smart Power Unit is equipped with all the hydraulic, electric and electronic features required to fully manage a complete complex machine (see full data sheet). The electronic and mechanic architecture is developed in order to meet SIL 2 (safety integrity level) as per EN61508 for or PLC as per EN13849

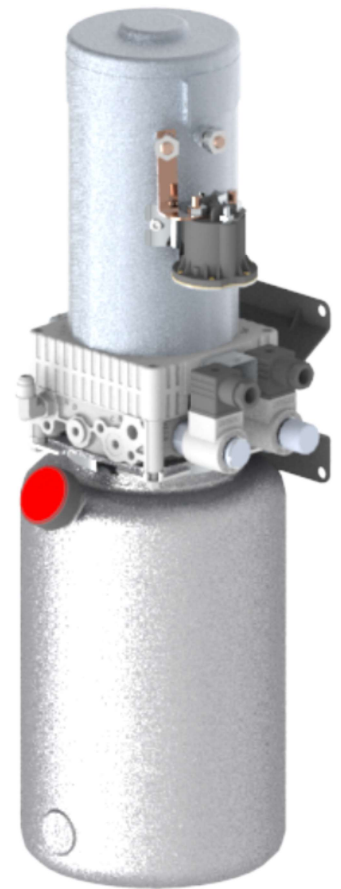
The smart Power Unit is ready to operate 48VDC, with the related cable harness downsizing (and cost saving)

The smart power unit is programmable with



In a Forklift machine, one SMART PU can manage the complete machine , with the following features:

- drive the complete hydraulics thanks to electric motor, pump and embedded valves. The hydraulic scheme correspond with the strictly necessary circuit to lift and lower the vertical mast.
- The same electronic controller can manage proportional valves
- Detects load, thanks to embedded pressure sensor
- Detect actual temperature of the fluid (optional)
- Up to 12 embedded sensors/buttons for the machine operation, such as UP/DOWN and Emergency switches, end strokes proximity switches , machine ground pressure, wheel forks status, battery status and so on



The Embedded Electronic controller allow also the following features:

- preventive maintenance and data logging (for future rental options)
- connection with a smartphone (for example machine control through app)
- Transmission and steering control



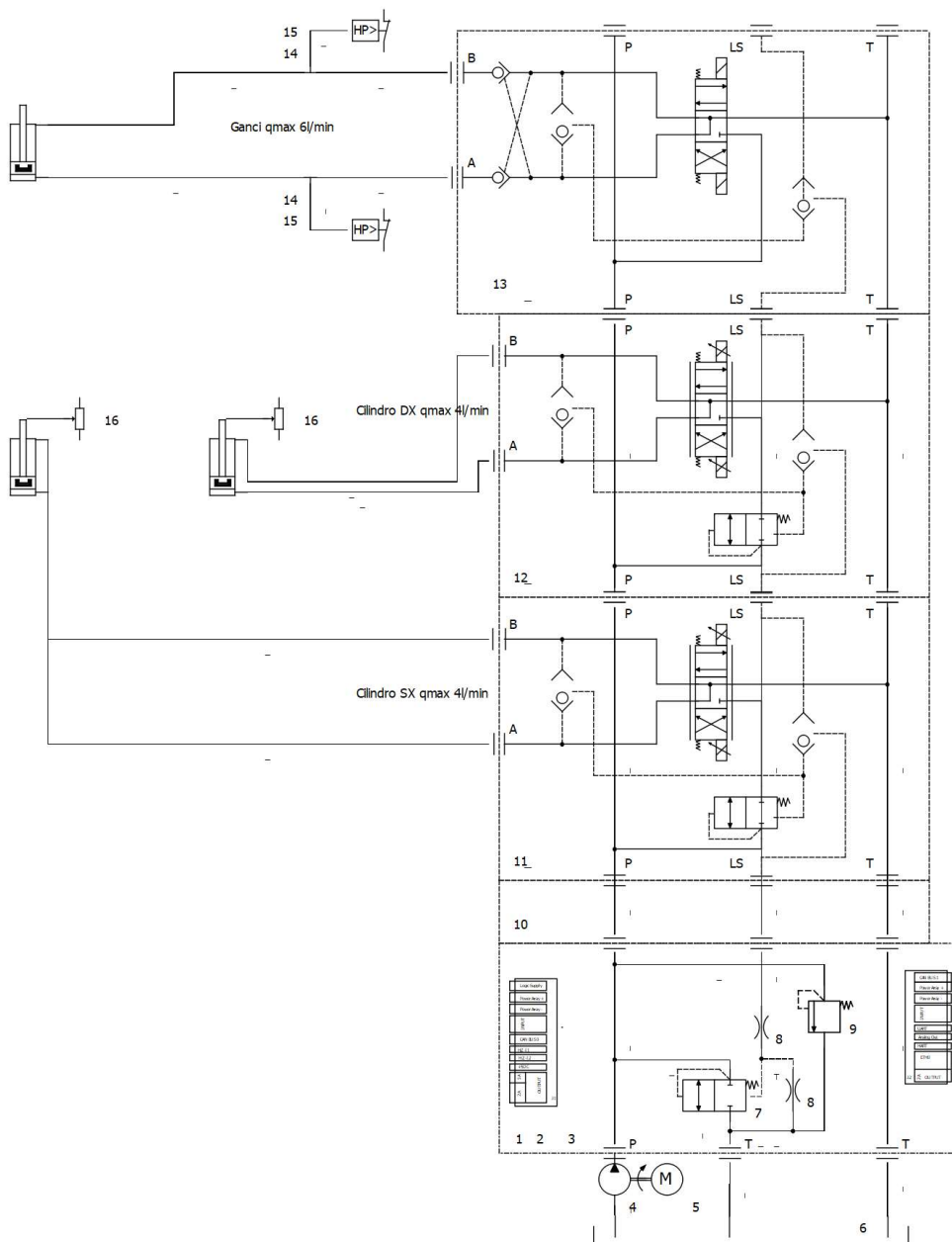
HMI (optional):

The Smart-Power-Unit range can be completed by a touchscreen display which is connected to the PLC through a CANOPEN network. Our Touchscreens are programmable through a proprietary IDE based on QT which is open-source.



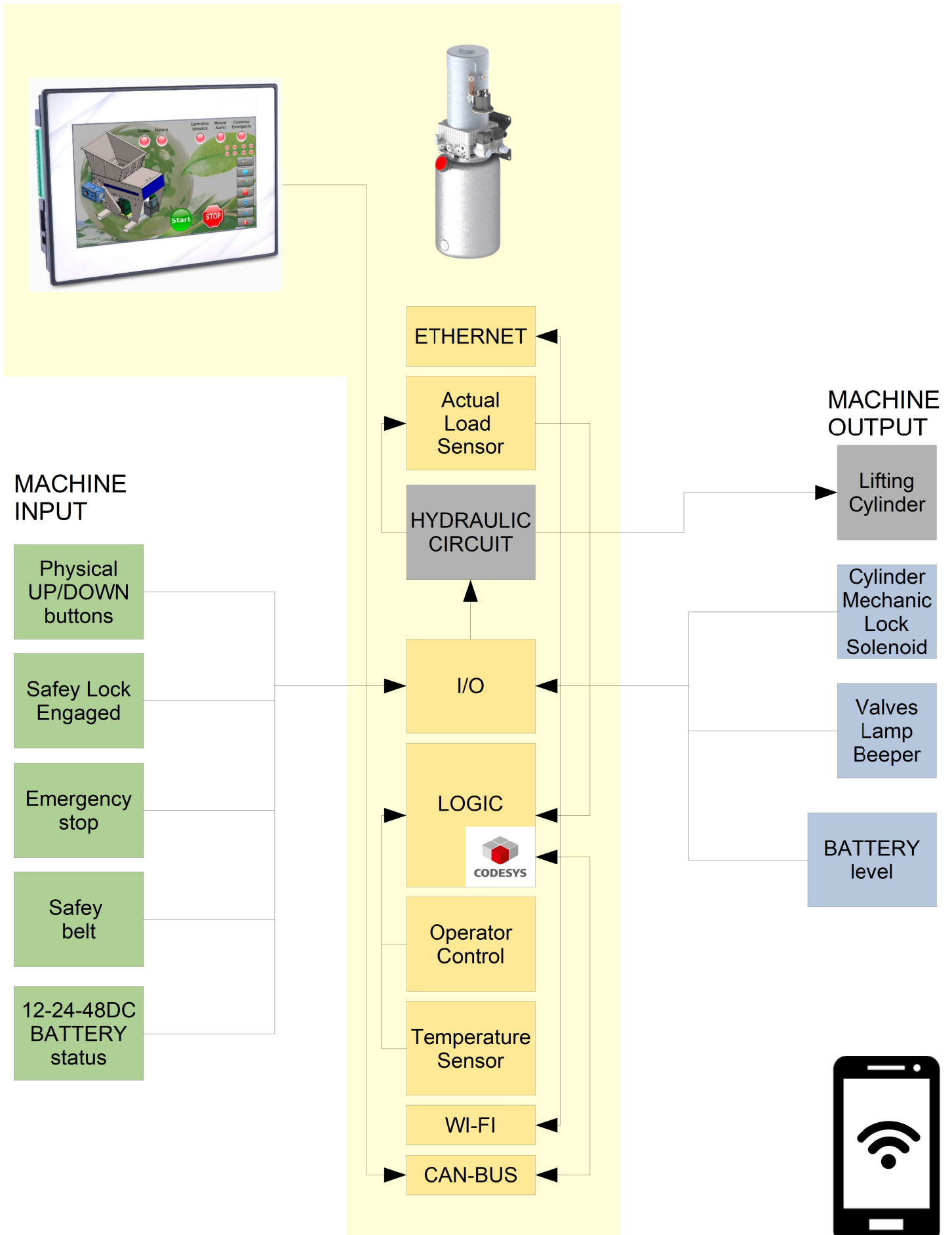
Typical HYDRAULIC SCHEME of the SPU ForkLift

the scheme must be customised on the machine needs

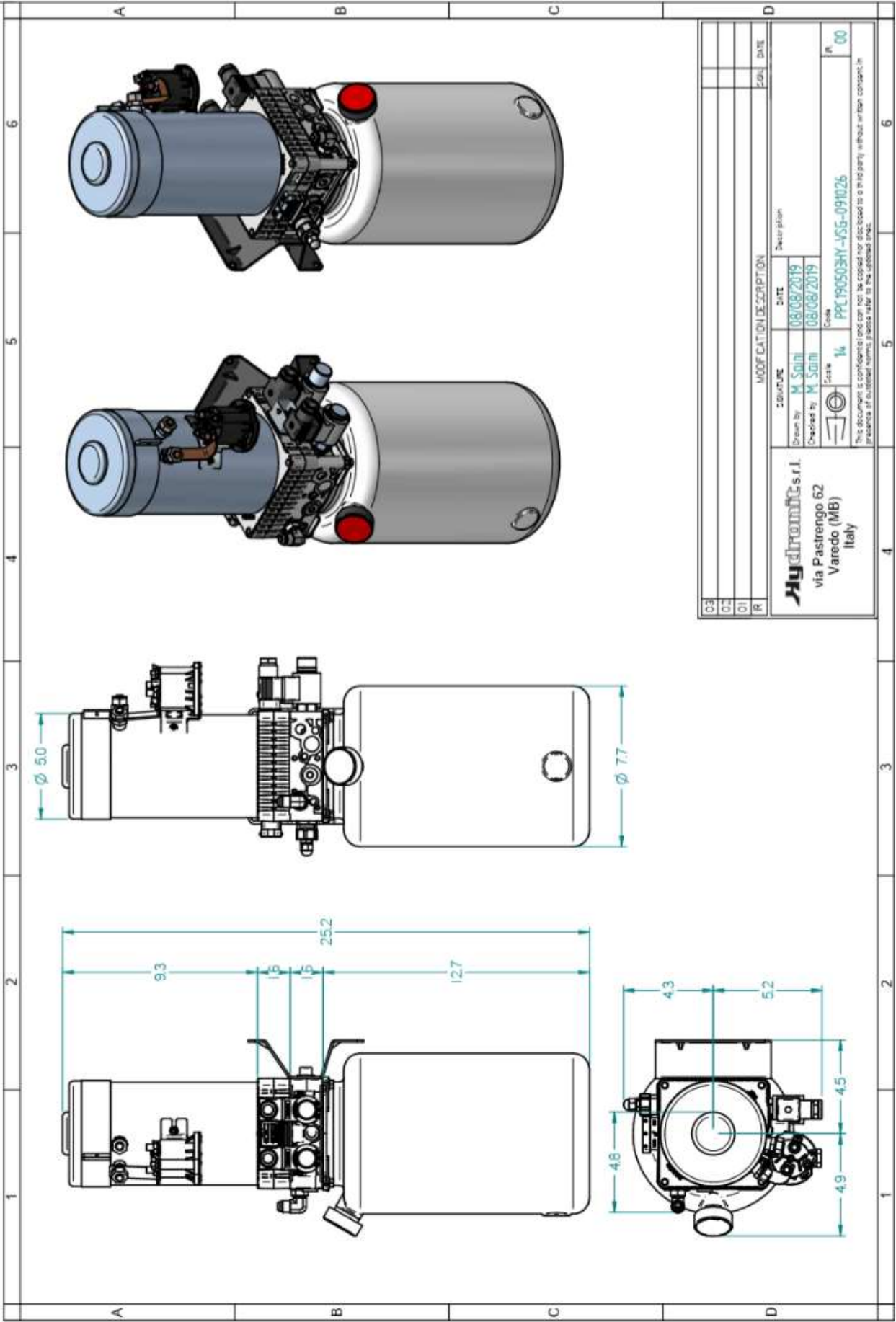


10	adapter plate	20	-
09	pressure relief valve	19	-
08	orifice	18	-
07	Main Pressure compensato	17	-
06	Tank	16	length sensors
05	Electric Motor	15	pressure switch
04	Pump	14	fittings
03	Enclosure for PLC	13	4/3 LS on-off
02	Hydronit PLC	12	4/3 pre-comp. LS prop
01	S type Manifold	11	4/3 pre-comp. LS prop

SMART PU FL BLOCK UNIT



SMART PU FL TYPICAL DIMENSIONS



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MCH 2019-00/EN