

KOSO **PARCOL**



**HYDRAULIC
CONTROL
SYSTEM
Intermediate**

HYDRAULIC POWER UNIT

The hydraulic power unit (**HPU**) is provided with a steel oil tank suitable for outdoor service able to collect the full volume of oil present in the circuit. The tank is equipped with inspection door, breather with filter, 2 level switches, 1 temperature switch, 1 visual level indicator.

Two main motor-pump groups **P1** and **P2**, each one fitted with an electric motor, are provided on the tank; the fixed displacement pump is able to deliver the required flow rate at a pressure of 200 bar.

A filtering/conditioning group composed by fixed displacement pump **P3**, filter with clogging detector (**DPS3**) and exchanger (**R**) with fan piloted by internal thermostat is provided on board.

Functions of the main pumps are :

- n° 1 active pump, to maintain all control valves in closed/open position or under continuous control.
- n° 1 stand-by pump to be activated on alarm signal from low pressure switch mounted on pump common delivery manifold

The pump flow rate is enough to ensure the maximum stroke time required in control mode for each valve without involving the accumulator intervention.

Four pressure switches are installed in the common delivery manifold of the motor-pump groups, as follows:

PS1 supplies the "low oil pressure signal"

PS2 supplies the "minimum oil pressure signal" (i.e. plant out of commission).

PS3 stops the active pump

PS4 starts the active pump

One accumulator **A1**, constantly inserted on the delivery manifold, is installed on the hydraulic power unit to grant trouble-free change-over from a motor/pump group to the other one.

The overflow valve **VS3** controls the oil pressure in the primary circuit.

Two sealed maximum pressure safety valves **VS1** and **VS2** are mounted on pump deliveries.

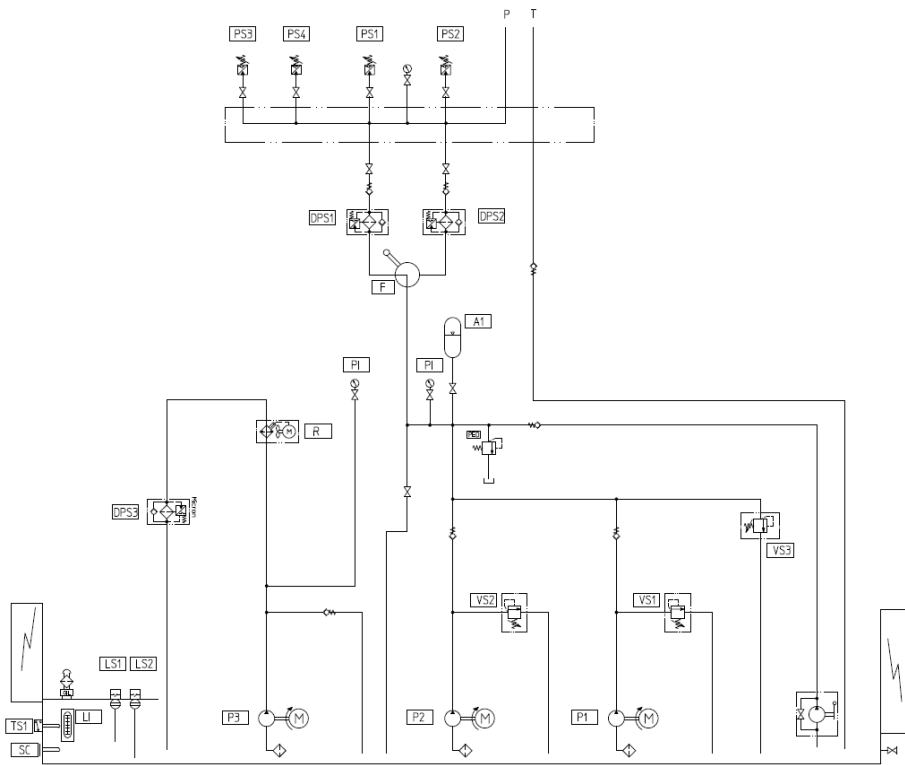
A double filter **F** provided with electric clogging detectors **DPS1-DPS2** is installed at power unit outlet.

The hydraulic power unit is provided with two terminal boxes: the first one is intended for instrument cables, the second one for the electric motor control cabinet (M.C.C.).

Options:

- Inox oil tank
- Heating system
- Hand pump
- Fire resistance oil version
- First filling oil
- Charging and testing unit for accumulators

HYDRAULIC CONTROL SYSTEM INTERMEDIATE



HYDRAULIC DIAGRAM



HYDRAULIC POWER UNIT

HYDRAULIC CONTROL PANEL (HCP)

The control panel for control valves consists of:

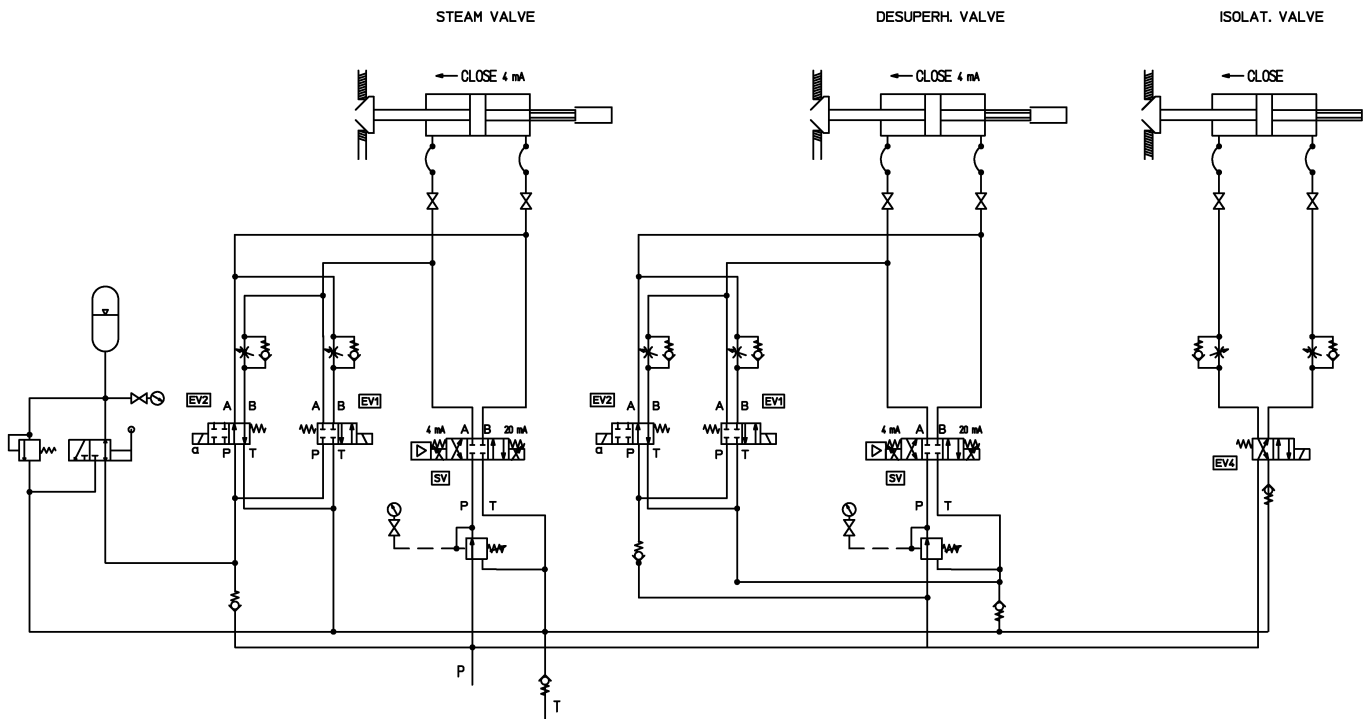
N° 2 SV proportional valves (steam and desuper. control valves), supplied with built-in electronic circuits ON-OFF, two-position solenoid valves (EV), to perform emergency actions (fast opening < 1 sec) accumulator

The HCP houses also analogue positioning cards (steam valves and desuperheating valves) for stroke control in closed loop system.

The response time of ON-OFF valves may be separately adjusted by suitable throttling devices. The hydraulic circuit should be provided with gate valves to allow maintenance actions. Complete cycles are allowed, when pumps are still, within 15 minutes from pump stop, because of leakages.

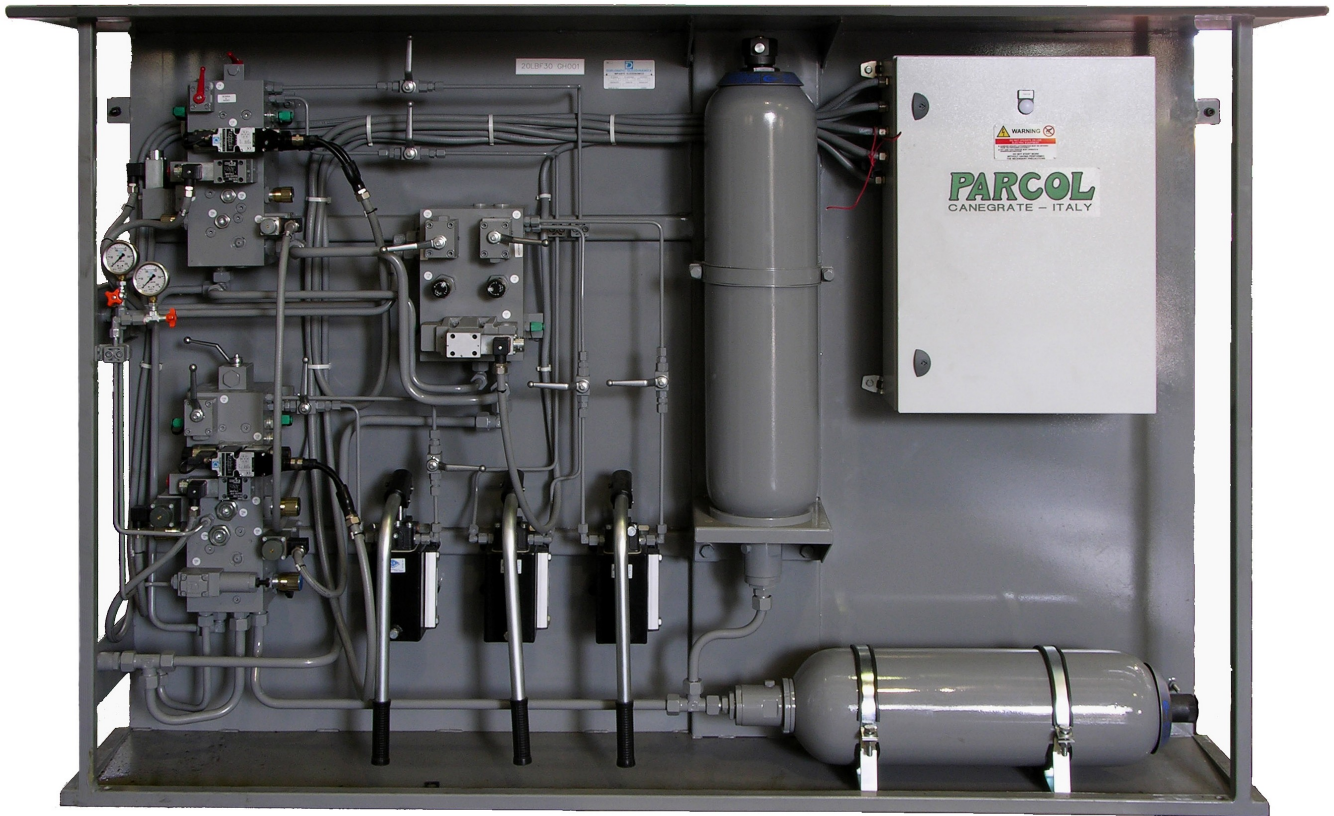
Options:

- Hand pump
- ON-OFF valves for fast closing < 3 sec



HYDRAULIC DIAGRAM

HYDRAULIC CONTROL SYSTEM INTERMEDIATE



HYDRAULIC CONTROL PANEL

ELECTRIC CONTROL CABINET

The electric control cabinet is supplied with a redundant feeder/transformer for auxiliary circuits (240 Vac ⇒ 24 Vdc), warning lights, lamps, contactors and any other necessary component to grant the efficiency of the whole hydraulic equipment.

The cabinet, fitted with a fan (extractor) complete with replaceable cartridge, includes an auxiliary electrical socket .

Manufactured according to the industrial standards, with minimum protection degree IP42, houses the control system for emergency solenoid valves and 1 PLC to manage the Hydraulic Power Unit, the Control Panel and the interchange signals with control room.

The cabinet houses also analogue positioning cards (steam valves and desuperheating valves) for stroke control in closed loop system.

Auxiliary circuits are separately protected, even when redundant (pumps control, PLC power supply and proportional valves).

Cable entry	from bottom.
Max cable run from cabinet to control panel	approx. 200 m.
Max resistance of proportional valves supply cable	2 W.
Approximate sizes	1200 x 2000 (+ 100) x 600 mm.

PLC CONTROL FUNCTIONS

The HPU is managed by one PLC, located inside the electric cabinet. The PLC manages failure and emergency signals as well as pump change-over.

The PLC is provided with display and keyboard allowing to check programmed parameters on site, and to modify them if required.

The access to parameter modification is protected by password.

Functions performed by PLC are listed here below:

FUNCTION	DESCRIPTION
1 - Operating mode selection	- manual mode - automatic mode
2 - Pump change over start/stop	- temporary - failure - external commutation
3 - Main alarm control (shutdown)	- oil pressure too low - minimum oil level - emergency shut-down
4 - Secondary alarm control (monitored)	- clogged filter (3) - low oil level - low oil pressure - high oil temperature - aut/man selector

1 OPERATING MODE SELECTION

The operating mode may be selected by a suitable selector located on control cabinet front.

Manual Mode

Necessary in order to allow the plant start-up. The PLC does not affect the pump selection, but allows to select the pump to be started (by using the pump change-over push-buttons).

By this mode all monitoring functions towards warning lights and Control Room are implemented.

2 PUMPS CONTROL

Start-Stop

Timed change-over

Change-over due to failure

External commutation

3 MAIN ALARM CONTROL

Minimum oil level

On minimum oil level signal, the pumps are stopped.

Minimum oil pressure

Pumps are not stopped on minimum oil pressure.

Control cabinet emergency shut-down

4 SECONDARY ALARM CONTROL

Clogged oil filter

Low oil level

Low oil pressure

High oil temperature

AUT/MAN selector on MAN position

Options:

- Control axis digital cards expansion
- Cabinet conditioning equipment for indoor installation

CONTROL HYDRAULIC ACTUATORS

Double acting cylinders built in compliance with ISO 6020-2 and DIN 24554.

On board are installed the inductive limit switches (n° 1 open posit. + n° 1 close posit. – SPDT contacts) and position transducer (4 ÷ 20 mA)

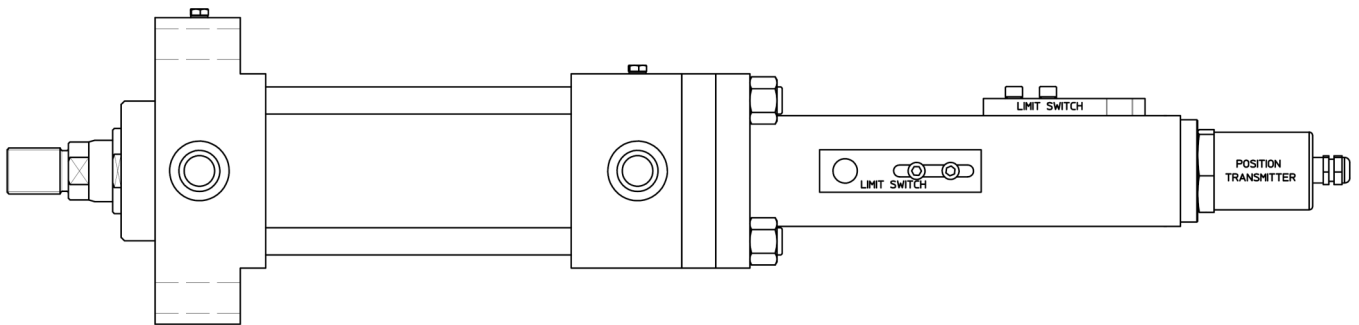
ON-OFF HYDRAULIC ACTUATORS

Double acting cylinders built in compliance with ISO 6020-2 and DIN 24554.

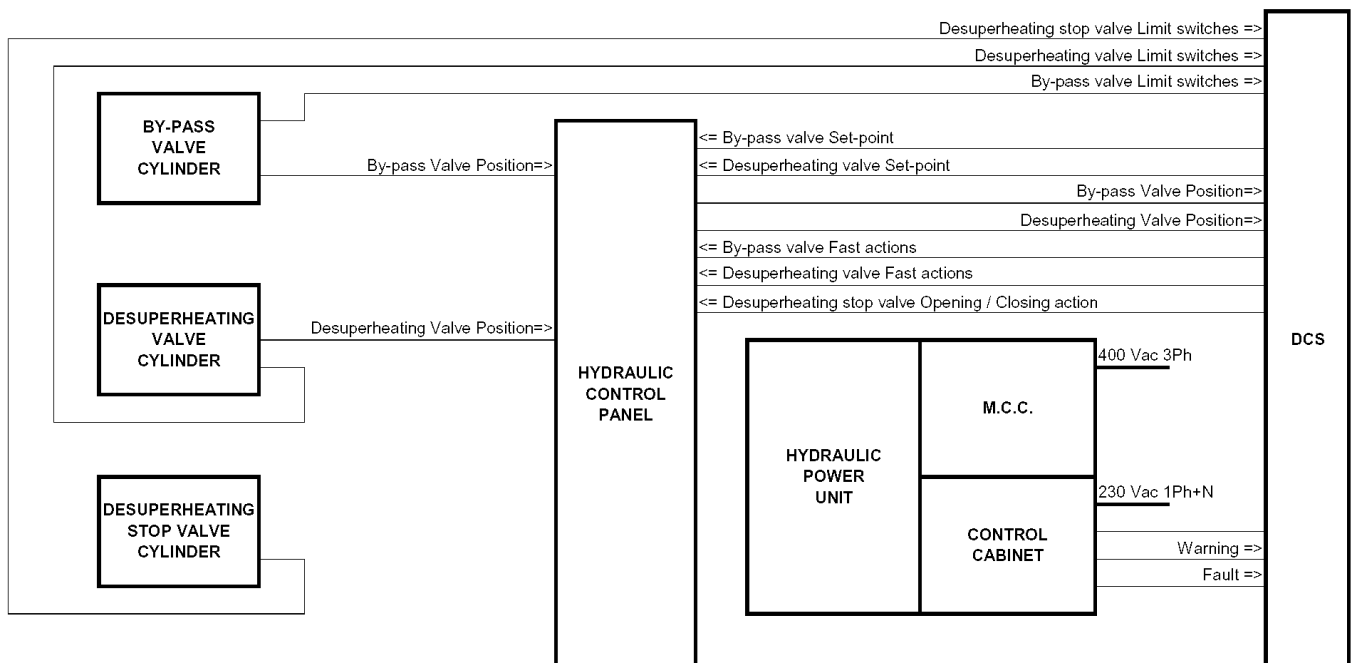
On board are installed the mechanical limit switches (n° 1 open posit. + n° 1 close posit. – SPDT contacts)

Options:

- DPDT contacts (limit switches)
- n° 4 limit switches (n°2 open posit. + n° 2 close posit.)



HYDRAULIC CYLINDER FOR CONTROL VALVES



HYDRAULIC CONTROL SYSTEM INTERCONNECTIONS DIAGRAM

KOSO PARCOL S.r.l. a socio unico

Sede legale: Via Isonzo, 2, 20010 Canegrate (Milano) ITALY

Partita IVA e Codice Fiscale 09684900963

Cap. Soc. €110.000,00 | R.E.A. MI – 2106767

Phone: +39 0331 413111 | Fax: +39 0331 404 215

