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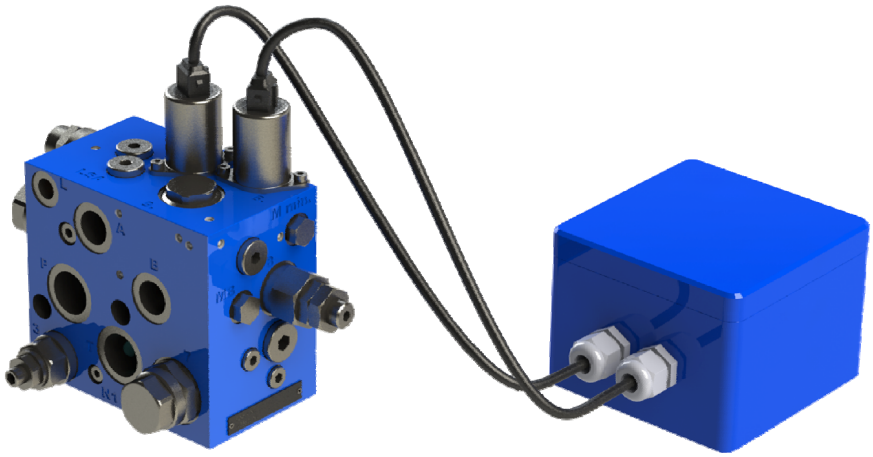
Electro-Hydraulic Drive Control

FC1-G3



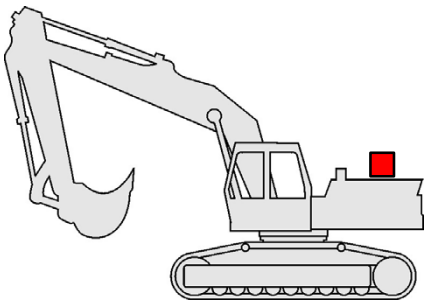
1 Product Description

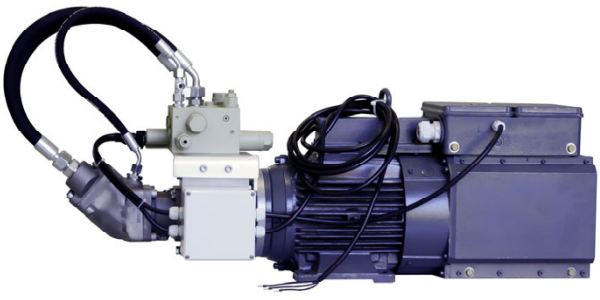
The electro-hydraulic drive control has initially been designed for the operation of electrical generators, but can also be used for other applications, where it matters to have a precise speed control. Systems for performance classes of 13kW, 20kW and 30kW are usual.
The speed of the consumer is regulated by means of a speed signal produced by the consumer and processed in the control unit. Load changes which might cause unwanted reactions (e.g. oscillations) are regulated with a dynamic dampening of the return volume flow. It will be optimized for energy savings over conventional systems.

1.1 Applications

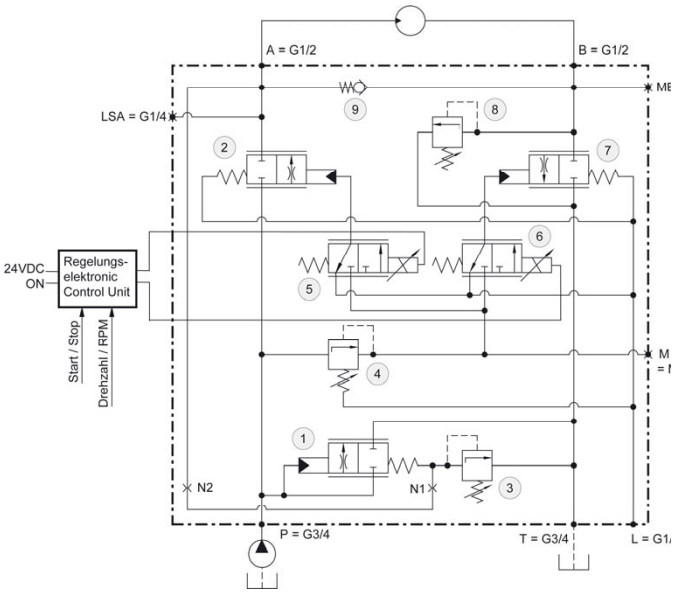
Used for single acting rotary actuators which must be operated with a precise controlled speed and reactions of load changes have to be dampened dynamically.

1.2 Mounting Location (Recommendation)





1.3 Function



1 +3	3-way Flow Control Valve with pressure cut off (Pressure Compensator)
2	controlled mainvalve fort he supply of the hydromotor
4	Pressure reducing valve. Generates piloting pressure (30 bar) for the supply of the proportional valves 5 and 6
5	Electrical-proportional piloting valve for the return spool (7)
6	Electrical-proportional piloting valve for the inlet spool (2)
	The valves 5 and 6 are operated by the electronic control inside a regulating circuit
7	controlled mainvalve for the throtteling of the hydromotor´s return line
8	safety pressure valve fort he hydromotor
9	anti-cavitation valve fort he hydromotor

The drive control system contains of a 3-direction flow valve with pressure cut-off, which is piloted by the electronic control device. The hydraulic valve regulates the inlet flow and the return flow of the consumer by means of two proportional hydraulic spools, piloted independently.

The inlet spool regulates the volume flow to the consumer to a constant value. An electrical speed signal is produced by the consumer and regulates the inlet spool.

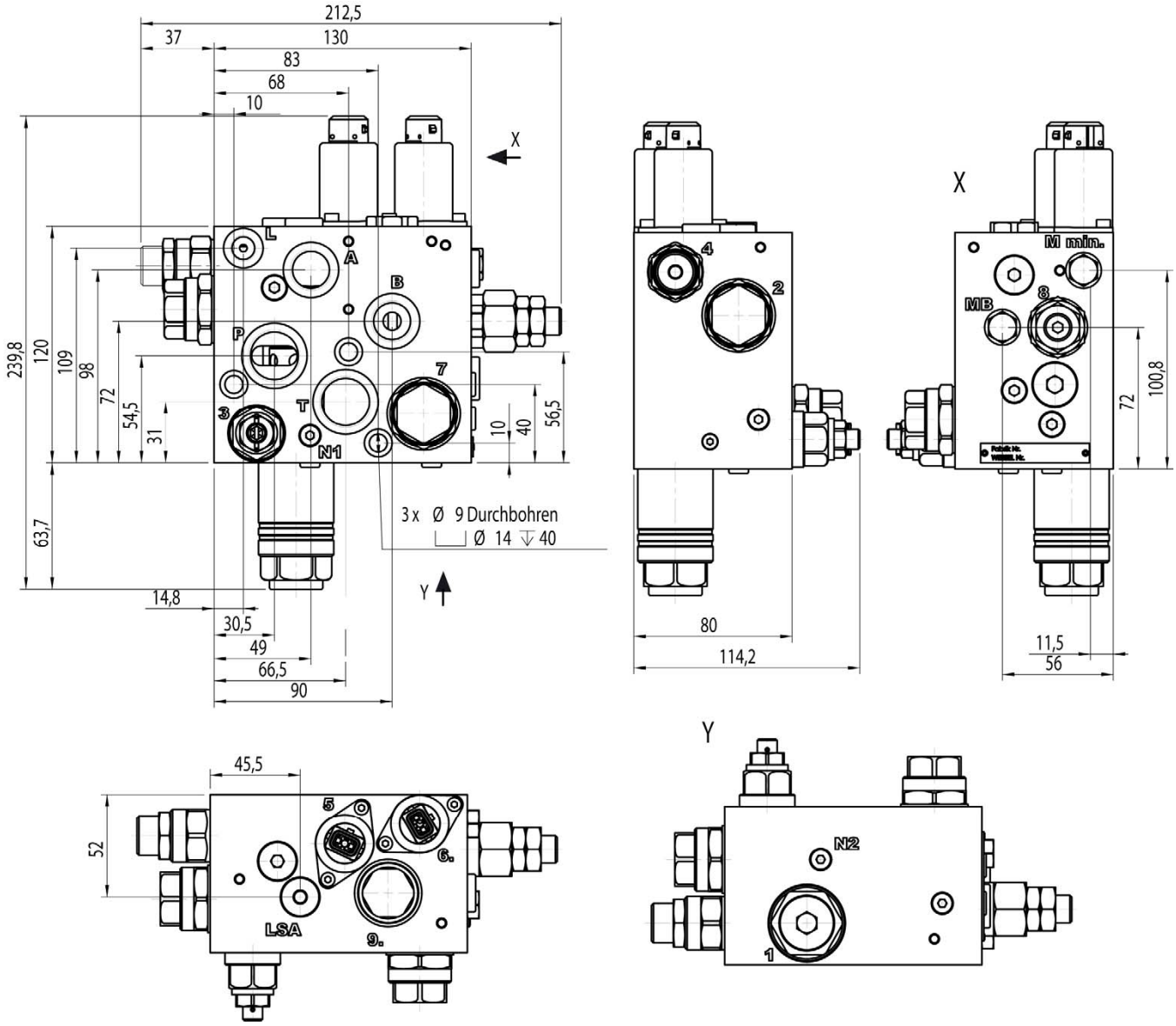
The return spool is dampening the hydraulics in order not to allow oscillation to influence the system. Especially when load changes (e.g. switching ON or OFF of an electrical load in a generator application) occure this dampening is controlled dynamically. Therefore the consumer has to submit a START/STOP signal to the control device.

1.4 Technical data

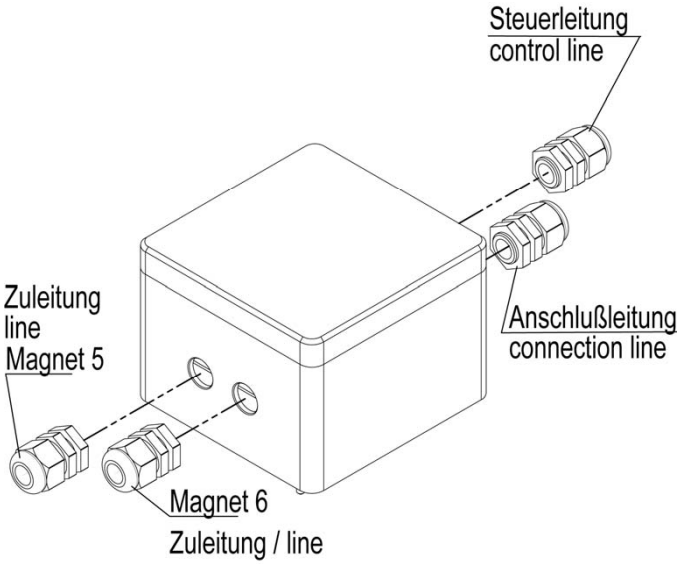
<u>General</u>	
Installation position:	any
Environmental temperature:	-20 to +50°C
Weight:	
Connections:	A ; B G1/2 ISO 1179-1 P ; T G3/4 ISO 1179-1 L ; LSA G1/4 ISO 1179-1 MB ; M min. M8x1
<u>Hydraulics</u>	
Maximum operating pressure:	420 bar (6000 psi) at port A , P , T 350 bar (5080) at port B port L unpressurized
Maximum allowable input volume flow :	250 l/min (66 gpm)
Minimum inlet volume flow:	Volume flow of the consumer +20%
Load volume flow:	0 – 100 l/min (…26 gpm), adjusted by software.
Hydraulic fluid:	Mineral Oil (HL, HLP) conforming DIN 51524, different fluids upon request
Hydraulic fluid temperature range:	-20 to +80°C
Viscosity range:	20 to 500mm²/s (preferably 30 to 46)
Contamination grade:	Filtering conforming with NAS 1638, class 8
<u>Electrics</u>	
Power supply voltage	24 VDC
Tolerance of voltage	12 – 30 VDC
Maximum current (controler and solenoids)	1600 mA (at 24 VDC)
Maximum solenoid current	2x 750 mA
Digitale Inlet ports	logic 0: < 2V logic 1: >10V

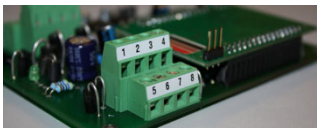
1.5 Type of design

Dimensions: Drive Control valve



1.6 Electronic Control Device





LED function:

GREEN OFF	No power supply or ENABLE not activated
GREEN ON	System is ready
YELLOW	without function

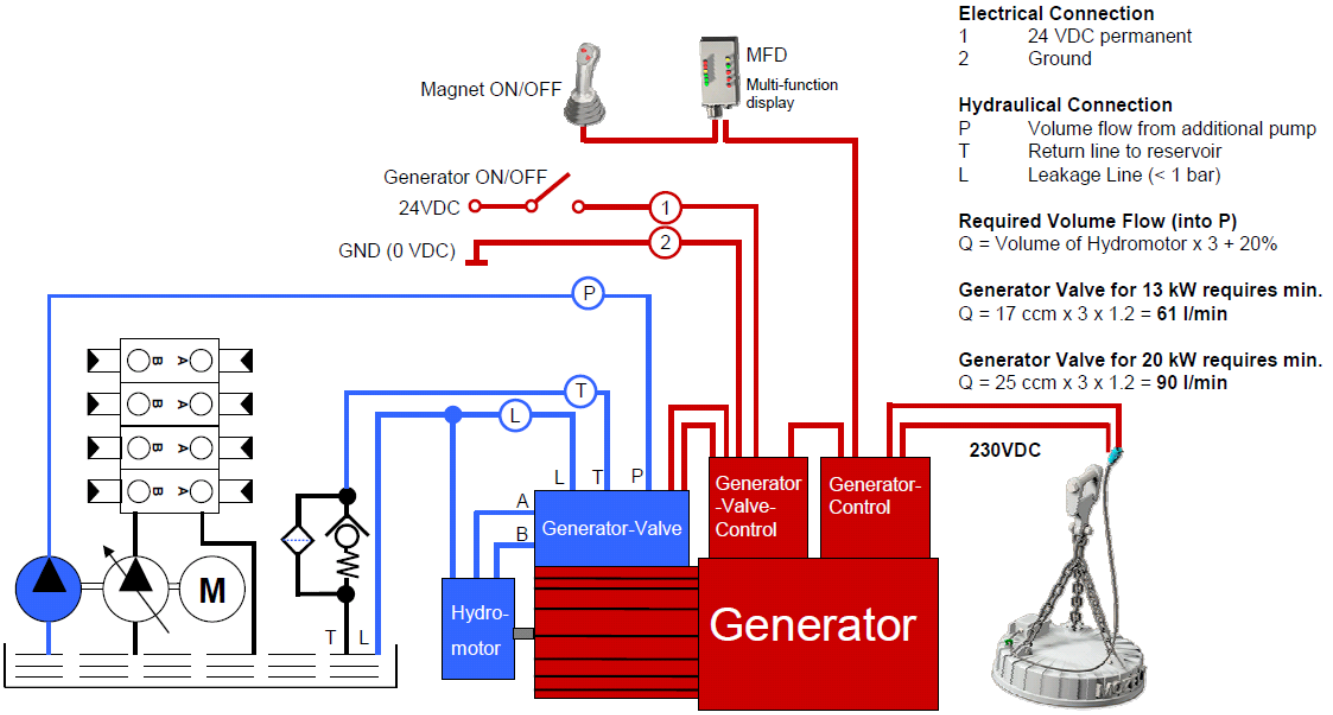
PIN designation

1	do not connect
2	do not connect
3	signal GND
4	RPM signal of consumer
5	signal GND
6	Enable input
7	Start-stop signal of consumer
8	signal GND
9	do not connect
10	Solenoid 5
11	Solenoid 6
12	GND Power Supply
13	do not connect
14	Solenoid 5
15	Solenoid 6
16	+24 VDC Power Supply

Installation Remarks

- Observe all installation and safety information of the construction machine manufacturer.
- Only technically permitted changes are to be made on the construction machine.
- The user has to ensure that the device is suitable for the respective application.
- Application exclusively for the range of application specified by the manufacturer.
- Before installation or de-installation, the hydraulic system is to be depressurized.
- Settings are to be made by qualified personnel only.
- Opening of the device is only to be performed with the approval of the manufacturer, otherwise the warranty is in validated.
- The included connection recommendations are not guaranteed. The functionality and the technical specifications of the construction machine must be checked.

1.7 Connection Recommendation



Part No.	Complete System	Type Code
235.091.002.9	Drive Control, complete system, output power 13kW, 51 l/min, 13.5 gpm	FC1-G3-13-051
235.091.001.9	Drive Control, complete system, output power 20kW, 75 l/min, 19.8 gpm	FC1-G3-20-075
< N.N. >	Drive Control, complete system, output power 30kW, ??? l/min	FC1-G3-30-???

Part No.	Separat Components of the System
235.331.102.9	Drive Control, valve, output power 13kW
235.331.101.9	Drive Control, valve, output power 20kW
< N.N. >	Drive Control, valve, output power 30kW
279.912.605.7	Drive Control, Seal kit
000.310.011.9	Drive Control, electronic control, preset for 13kW
000.310.010.9	Drive Control, electronic control, preset for 20kW
< N.N. >	Drive Control, electronic control, preset for 30kW
000.801.013.1	Drive Control, set of parameters optimized for 13kW
000.801.014.1	Drive Control, set of parameters optimized for 20kW
000.801.015.1	Drive Control, set of parameters optimized for 30kW
390.000.016.6	USB cable for data transfer of parameter set from PC into the electronic control
281.718.000.6	Pressure reducing valve, proportional 24 VDC, 25 bar, incl. Mesh filter

2 Standards and Safety Requirements

⚠ **CAREFUL**

Hydraulic hoses are not to come into contact with the load holding valve because otherwise they might be subject to thermal damaging. Ensure that standards EN 563 and EN 982 are observed.

The following standards are to be observed because of the surface temperatures on the load holding valve:

- EN 563: Temperatures on surfaces that can be touched.
- EN 982: Safety-technical requirements for fluid-technical systems and their components.