



LPU-S
for single-acting
spring operated actuator

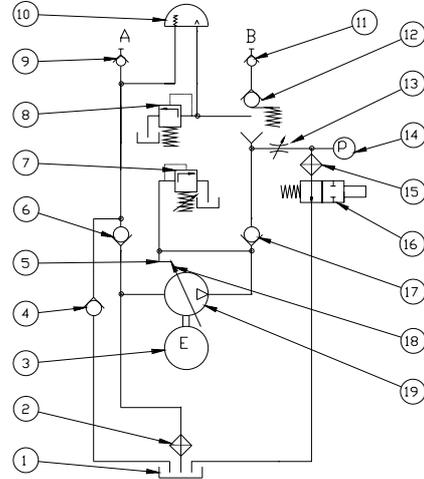
LPU-S:

LPU-S is designed for controlling spring closing actuators. Oil pressure is used for opening the actuator by pressing the springs

together. Closing actuator by means of mechanical springs.

Hydraulic diagram for LPU-S:

1. Tank for hydraulic oil
2. Suction filter
3. Electrical motor
4. Non-return valve
5. Pressure controlled flow adjustment
6. Non-return valve
7. Pump safety valve
8. Actuator relief valve
9. Quick connection for hand pump suction
10. Fail safe actuator, single-acting
11. Quick connection for hand pump opening
12. Shuttle valve for hand pump opening
13. Throttle for closing speed adjustment
14. Pressure switch
15. Pressure filter
16. Solenoid valve
17. Non-return valve
18. Opening speed adjustment
19. Variable displacement pump


Operation LPU-S:

To move the valve towards open, the motor (3) is activated. The oil is led from tank through the pump and through the non-return valve (17), directly to the actuator B port. To prevent the oil from flowing back to tank, the solenoid valve (16) must be energized. When the valve is fully open, the pressure rises to 150 bar which causes the pump safety valve (7) to open and the oil flows back to tank. The motor is de-energized. The actuator is now hydraulically locked in position by the solenoid valve. In case of a major increase of temperature, the pressure may rise. This will not cause any problems because of the safety valve (8) which will open at approximately 225 bar.

The valve can be stopped (and hydraulically locked) in any intermediate position simply by de-energizing the motor.

If the pressure drops while valve is fully open - due to a minor leakage in the solenoid valve or due to temperature variations -, the pressure switch (14) will detect this. The motor may then be activated for some seconds in order to keep up the pressure, and prevent the valve from leaving the open position. - This may take place automatically.

To move the valve towards closed, the solenoid valve is de-energized. The springs then move the actuator, pressing the oil back from the actuator B port, through the throttle valve (13) and the solenoid valve (16) to the LPU tank.

Emergency operation LPU-S:
... with portable hand pump (BRCF)

A portable hand pump is connected to the two quick connections (9) and (11). With suction to T and pressure to B which causes the shuttle valve (12) to change over and prevents the oil from flowing to tank. When reaching the required position, the hand pump can be disconnected. If the valve must be emergency operated towards closed, the cross-over valve on the actuator is open until the required position is reached. When the valve is fully closed, the shuttle valve will reset.

...with hand levers (KFR)

To open the valve, disengage the mechanical lock by hand, turn levers counter-clockwise. To close valve, turn levers clockwise until the

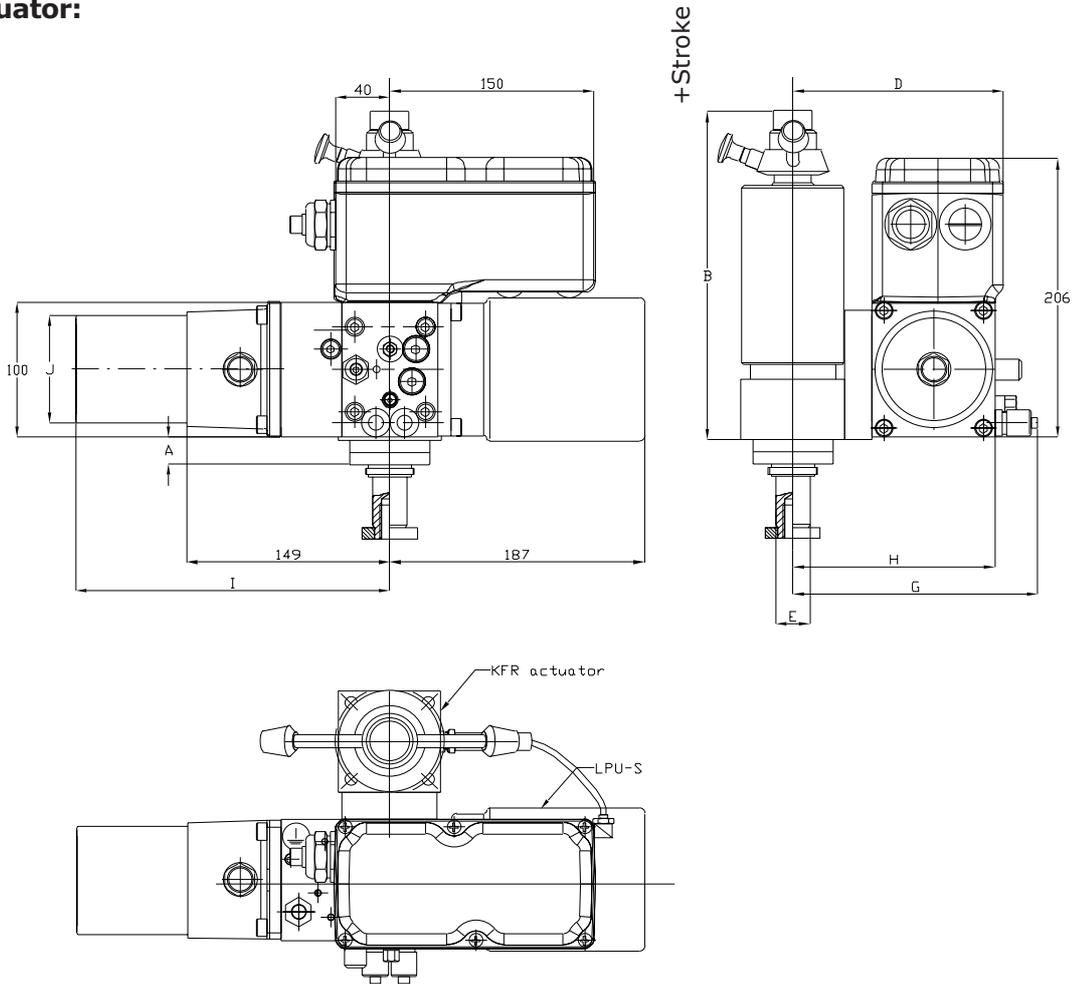
mechanical lock re-engages. When the remote control takes over, the valve can be closed by opening the KFR completely, which will re-engage the mechanical lock.

...with permanently connected (bulk-head-mounted) hand pump

Opening: Hand pump is activated until the required valve position is reached.

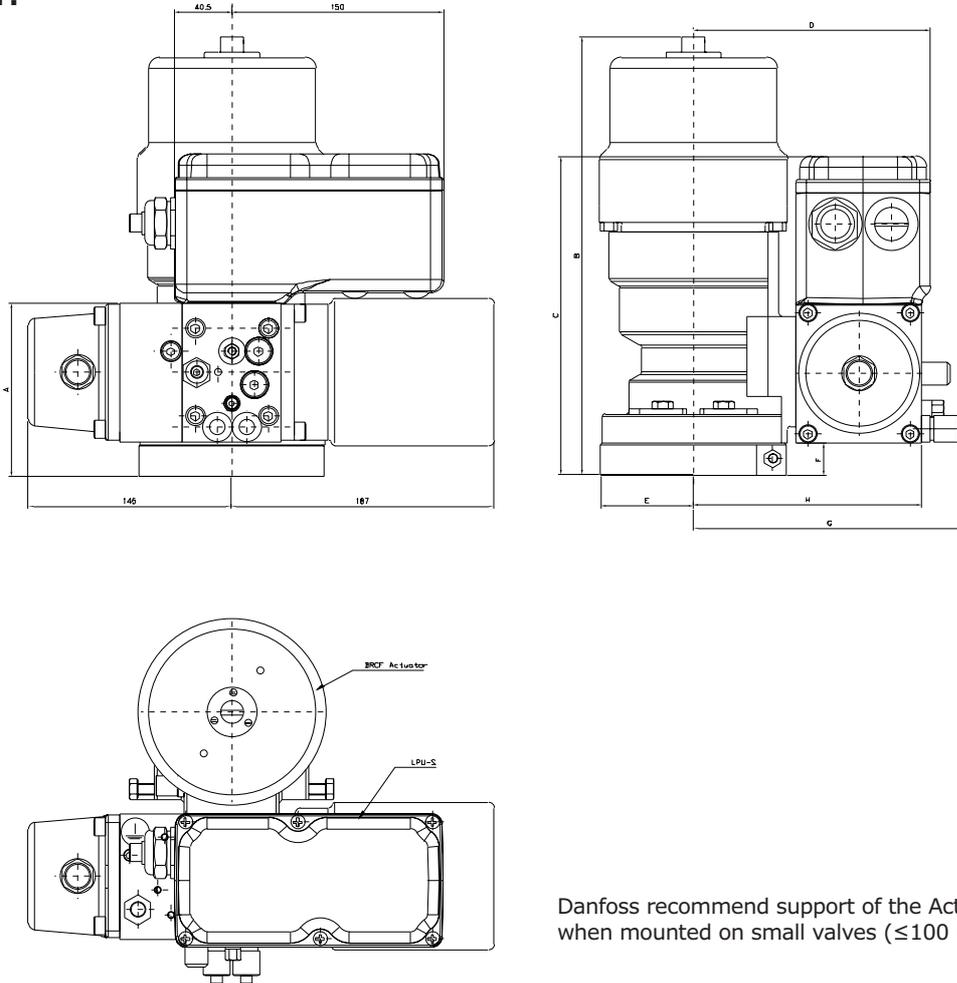
Closing: The valve moves towards closed by opening the bypass valve in the hand pump block. When the remote control has to take over, the valve can be closed by energizing the solenoid valve and the motor for a few seconds. This will reset the shuttle valve.

After emergency operation, remote control is automatically in charge.

**Dimensions LPU-S on
KFR actuator:**


	A	B	D	E	G	H	I	J	Stroke
KFR 1.0	20.5	219	156.5	Ø25	176	150.5	231	80	16.25
KFR 1.1	20.5	244	156.5	Ø25	176	150.5	231	80	25
KFR 1.1.0/1.0.P	20.5	244	156.5	Ø25	176	150.5	231	80	16.25
KFR 1.2	20.5	295	156.5	Ø25	176	150.5	231	80	37.5
KFR 1.2.1	20.5	295	156.5	Ø25	176	150.5	231	80	25
KFR 2.2	20.5	299.5	166.5	Ø25	186	160.5	231	80	37.5
KFR 3.3	26.5	339.5	174	Ø35	193.5	168	327.5	105	50
KFR 3.3.1	26.5	339.5	174	Ø35	193.5	168	231	80	25
KFR 3.3.2	26.5	339.5	174	Ø35	193.5	168	327.5	105	37.5
KFR 4.4	26.5	420	194	Ø35	213.5	188	450	105	62.5

All dimensions in mm.

**Dimensions LPU-S
on BRCF actuator:**


Danfoss recommend support of the Actuator/LPU when mounted on small valves (≤ 100 mm).

	A	B	C	D	E	F	G	H
BRCF 125*	116.5	235.5	226.5	149	48	16.5	174.5	143
BRCF 250	121	279	231	156	59	21	181.5	150
BRCF 500	124.5	329	234.5	169	66	24.5	194.5	163
BRCF 1000	133	388	243	181	80	33	206.5	175
BRCF 2000	144	463	254	193	96	44	218.5	187
BRCF 4000	153	590	263	221	150	53	246.5	215

*BRCF 125/LPU has to be bulkhead mounted.

All dimensions in mm.

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