

Damcos Local Power Unit

General



The LPU - (Local Power Unit) comprehends an integrated electro-hydraulic system for remote control of valves and actuators and are especially developed to be bulkhead mounted or mounted directly on valve actuators, primarily onboard ships.

- Modular design in lightweight materials for safer and easier assembly and maintenance
- Automated functions for efficient start-up, handling and adjustment including self-learn, calibration, adjust and time-settings
- Local intelligence featuring functions such as self-protection, control, feedback, alarms and bluetooth
- Separate customer connection enabling cable mounting away from unit and easy plug in mounting
- Plug connection enabling safe work environment and ease of installation
- Automatic bleeder enabling free installation of the unit in all directions without the need for disabling unit
- Variable pump enabling easy speed adjustment for different actuator sizes (200 - 1500 ml/minutes)
- IP 68 when correctly installed
- Safe hand pump functionality for safe operation without risk of draining the unit of oil

Description

The LPU - (Local Power Unit) - is an integrated electro-hydraulic system for remote control of valves and actuators and are especially developed for bulkhead mounting or direct on valve actuators, primarily onboard ships. The LPU consists of a hydraulic pump which is driven by an asynchronous capacitor motor and several valve functions.

The LPU offers installation in both safe and hazardous area in two basic versions:

- LPU-S (fail safe) for single acting actuator
- LPU-D (fail set) for double acting actuator

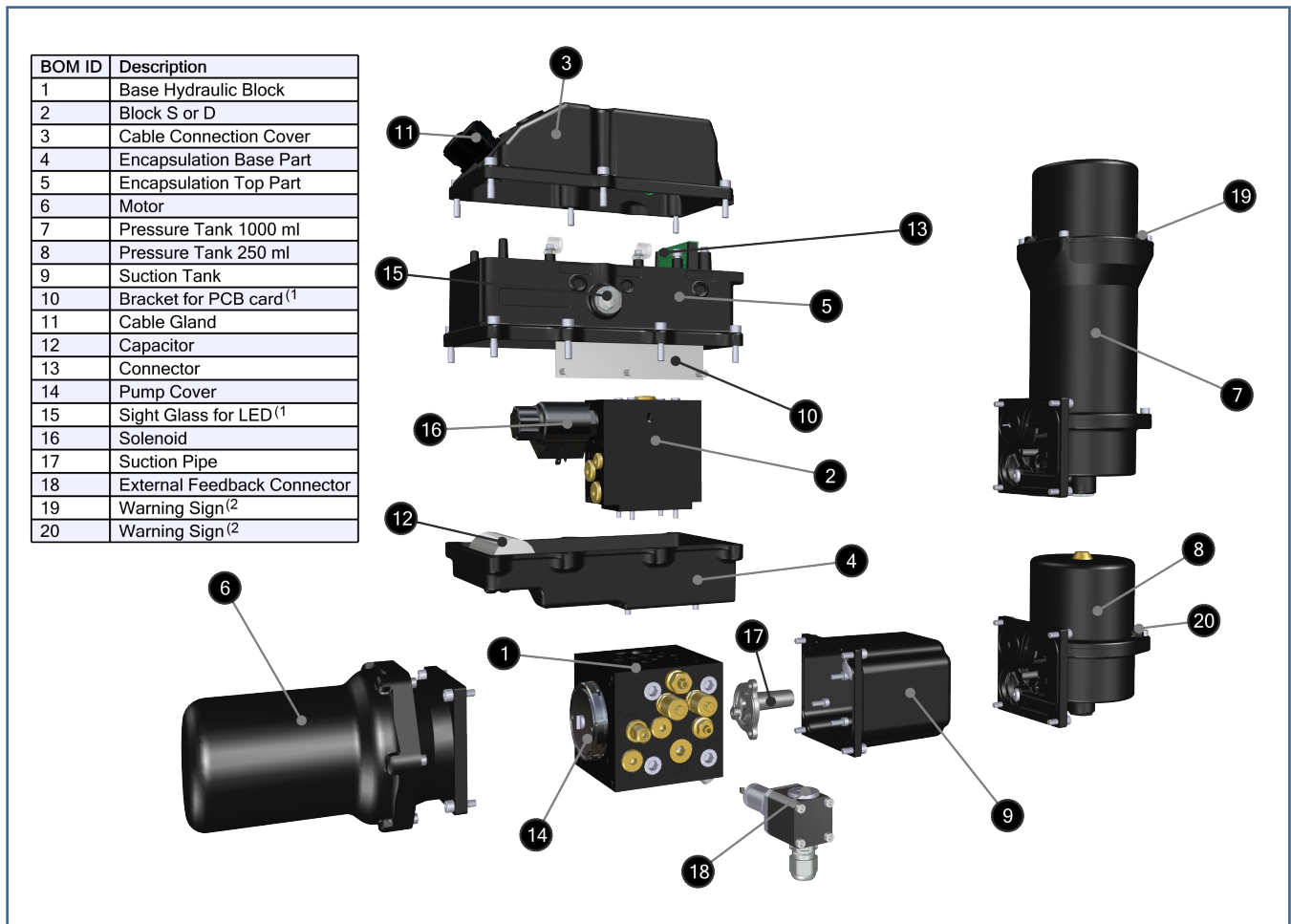
The LPU offer is further expanded with six different electrical standard versions all equipped with different levels of functions and possibilities:

- LPU Basic
- LPU Plus
- LPU Elite
- LPU P-NET
- LPU Power
- LPU Ex

The LPU program offers installation both on the actuator and for separate installation on the bulkhead in safe and hazardous area and can control both single and double acting actuators.

See separate data Sheets for more information.

LPU Parts Overview



- 1) LPU Plus and Elite
- 2) See warning notes in the Safety section of the Reference or User Manual

LPU Features and Options

Feature / Functionality	LPU Basic ¹⁾	LPU Plus	LPU Elite	LPU P-Net	LPU Ex ²⁾	LPU Power ³⁾
Product Usage						
Use on Double Acting Actuator	✓	✓	✓	✓	✓	✓
Use on Single Acting Actuator	✓	✓	✓	✓	✓	✓
Use on Bulkhead Mounted Option	✓	✓	✓	✓	✓	✓
Remote Usage						
Remote Control via Bus (RS485)	-	-	-	✓	✓	-
Remote Control (On/Off- I/O)	-	✓	✓	-	✓	-
Remote Control (Motor/SV - 230 V)	✓	-	-	-	-	✓
Remote Control (4 - 20 mA)	-	-	✓	-	-	-
Remote Control (AUX - Config)	-	-	✓	-	-	-
Remote Feedback via Bus (RS485)	-	-	-	✓	✓	-
Remote Feedback (On/Off- I/O)	✓	✓	✓	-	✓	✓
Remote Feedback (4 - 20 mA)	-	-	✓	-	✓	✓
Remote Feedback (Ohm)	✓	-	-	-	-	✓
Remote Feedback (AUX - Config)	-	-	✓	-	-	-
Local Usage						
Local Setup / Feedback Adjustment / Time config.	-	✓	✓	-	-	-
Local Magnet Control (open/close)	-	✓	✓	✓	-	-
Local LED Feedback (open/close)	(✓)	✓	✓	✓	-	-
Local / Remote (Control Switch-over)	-	-	✓	-	-	-
Local Safe Lock Function (Padlock Option)	-	✓	✓	-	-	-
Request Switch + Blue LED	(✓)	-	-	-	-	-
Request Switch + Blue LED w Padlock option	(✓)	-	-	-	-	-
Selective Options						
Large Pump (1.5 l/min)	✓	✓	✓	✓	-	✓
Oil Level Sensor (P2/P4) - local warning by LED	-	✓	✓	-	-	-
Reset Function (SS2, SS3)	-	-	✓	✓	-	✓
Positive Pressure Function (DD2, DD3)	-	-	✓	-	-	✓
Wireless Valve Data via Bluetooth - Product Tag, Position and Status - Product Live data, e.g. Temp, Humidity, etc. - Historical counts, e.g. Time in Operation etc.	-	-	✓	-	-	-
Configurable Functions	-	-	✓	✓	✓	-

1) Basic is only available for use with Damcos I/O system - or with approved 3rd party control system

2) Version 2 - See separate data sheet

3) Spare parts only

(✓) Option

Product Identification

LPU	XXXX	X	XX	-	X.X	X	XX	-	XX	-	XX	-	XX
Model Type	↑												
	Basic												
	Plus												
	Elite												
	Power												
	P-NET												
	Ex ⁽¹⁾												
Main Hydraulic Block	↑												
	Double acting (std application)	D											
	Single acting (std application)	S											
Valve Block	↑												
	Double acting	D1											
	Double acting with position pressure	D2											
	Single acting	S1											
	Single acting with reset switch	S2											
Pump	↑												
	0.7 l/min. incl. filter	0.7											
	1.5 l/min. incl. filter	1.5											
Motor	↑												
	Small motor	S											
	Large motor	L											
Tank	↑												
	Tank 250 ml	T2											
	Tank 250 ml incl. switch	P2											
	Tank 1000 ml incl. switch	P4											
Control	↑												
	Pulse control (Plus)	H2											
	Direction mode open (Plus)	H3											
	Configurable (Elite)	H4											
	Power Control v3 (Basic)	H5											
	Power Control v3 red/green (Basic)	H6											
	Pulse + Safe lock (Plus, Elite)	S1											
	Power Control v3 red/green + req. Switch + Blue LED (Basic)	S2											
	Power Control v3 red/green + req. Switch f. Padlock + Blue LED (Basic)	S3											
	P-NET control	B4											
	Power control (for v2 replacement)	H9											
Mounting Location	↑												
	Mounted directly on actuator	BA											
	Bulkhead mounted LPU with pipe to actuator ⁽²⁾	BB											
Feedback	↑												
	Feedback indication On/Off	On/Off											
	Feedback indication 4-20 mA	4-20 mA											
	Feedback indication Ohm 2K	Ohm											

Example :

LPU Plus DD1 - 0.7 S T2 - H2 - BA - On/Off

Where:

DD1 = Double acting

0.7 = Pump size

S = Motor type Small

T2 = 250 ml tank

H2 = Pulse control, Plus

BA = Mounting directly on actuator

On/Off = Feedback indication

Note!

The diagram shows the different identities per parts and not the combination possibilities.

Footnote

1) LPU-Ex - see separate datasheet (ver.2)

2) Bulkhead options (BB):
See "Mounting on Bulkhead" page 6

Mounting on Actuators

The LPU can be mounted on all Damcos actuators with a few considerations. The pump size should also be matched to speed requirement and actuator size.

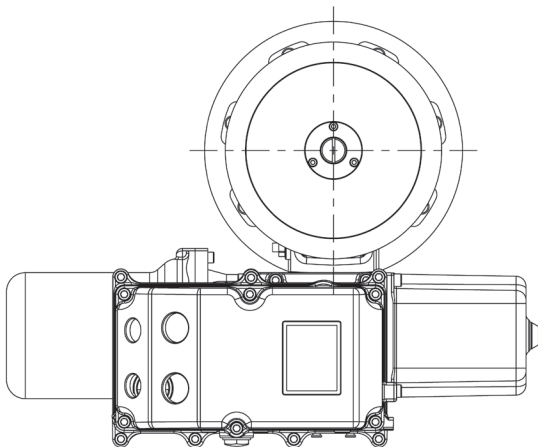
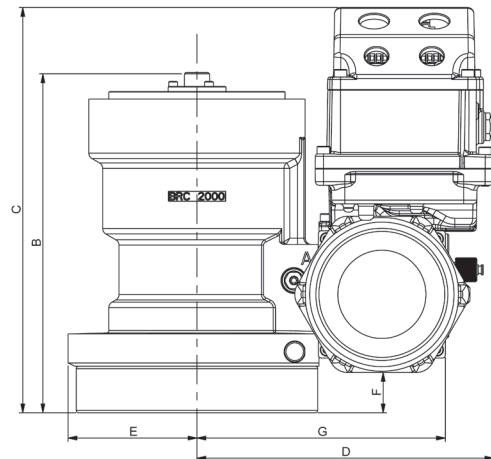
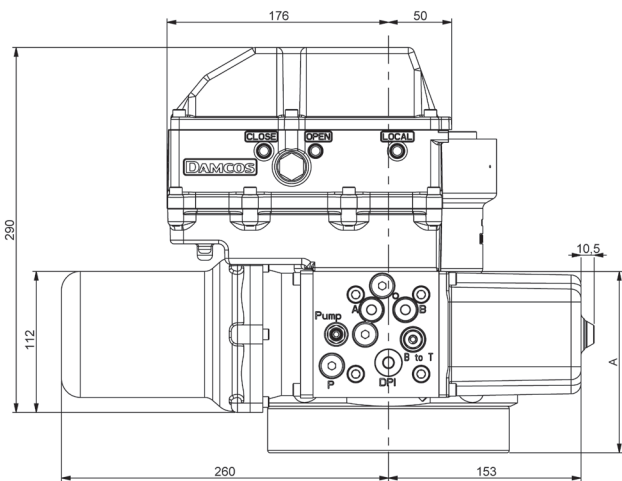
- Direct mounting on BRC 125 - 16000, BRCF 125 - 16000, BRCF HT 4000, KC 65 - 600, KF 65-250 and KFR 125 - 250.
- Mounting on BRCF Fail Open and KF Fail Open is via a special intermediate block.

Allow for working space around the LPU / Actuator. Recommended service space in front and top >200 mm.

Please contact Emerson for further information.



LPU mounted on BRC



BRC size	A	B	C	D	E	F	G
125	116,5	149,5	294,5	192	48	4,5	153,5
250	121	174,5	299	199	59	9	160,5
500	124,5	199	302,5	212	66	12,5	173,5
1000	133	229	311	224	80	21	185
2000	144	271	322	236	102,5	32	197,5
4000	153	319	331	264	150	41	225
8000	181,5	380	360	297	157	69,5	257,5
16000	203	470	381	320	178,5	91	280,5

All dimensions in mm

Mounting on Bulkhead

LPU may be bulkhead mounted via a standard B-block. It is possible to use a B-block with integrated VPI. No external indication cable is needed.

It can be necessary to use extension tanks, if pipe has to be used, because of bulkhead mounting. Also be aware of the pipe dimensions.

Available options for bulkhead mounting:

- LPU with VPI indicator (BB-VPI)
- LPU with VPI and handpump (BB-VPI-HP)
- LPU with external indicator Ext. DPI Namur (BB-Ext_Indicator)
- LPU with external indicator Ext. DPI Namur and handpump (BB-Ext_Indi-HP)

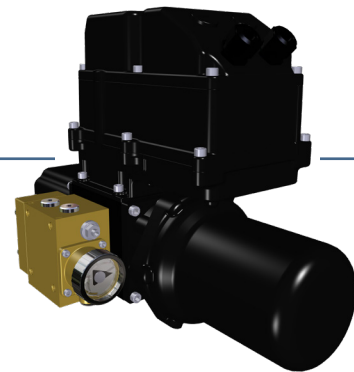
Note!

If bulkhead mounted:

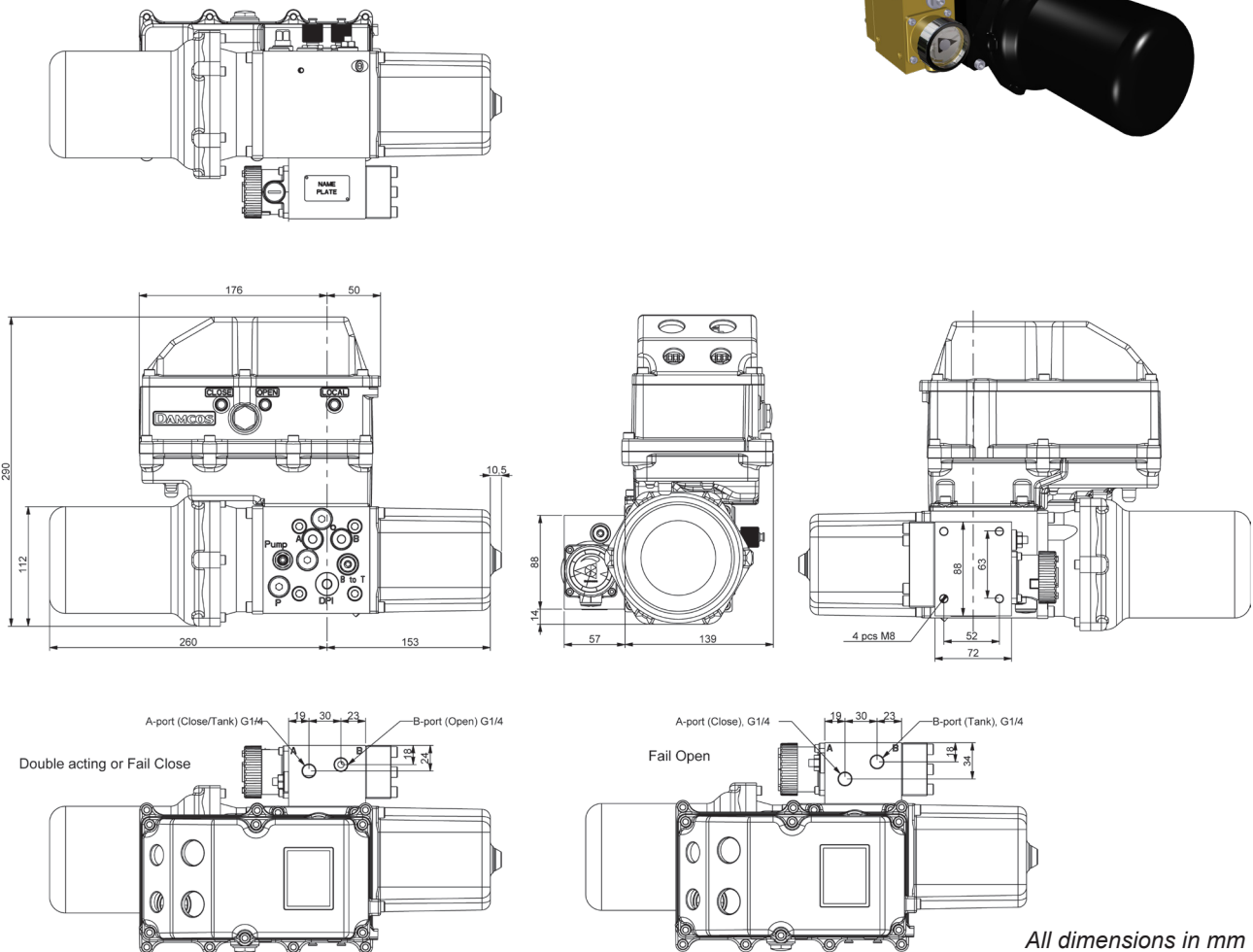
Oil level must be checked before starting up the LPU. The LPU may be emergency operated as if mounted directly on actuator.

Properly de-airing via quick connections on the LPU is required.

Allow for working space around the LPU / Actuator. Recommended service space in front and top >200 mm.

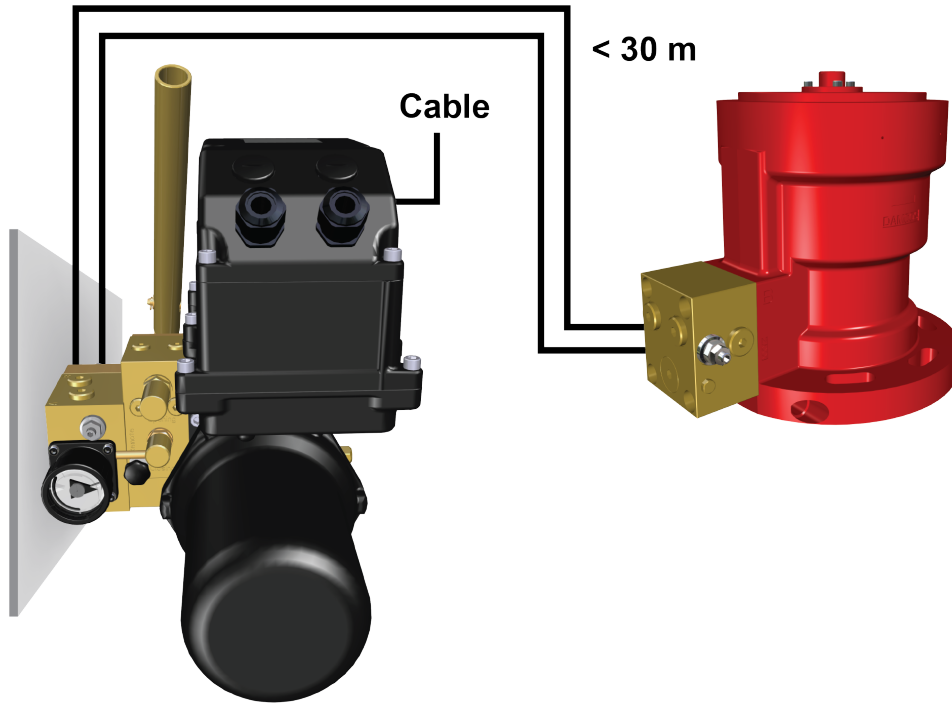


LPU with BB-VPI for Mounting on Bulkhead (example)

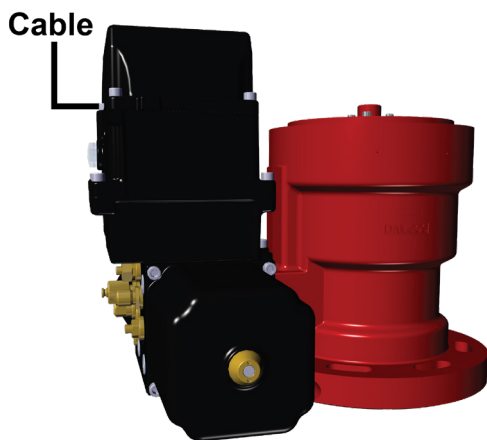


Installation Examples

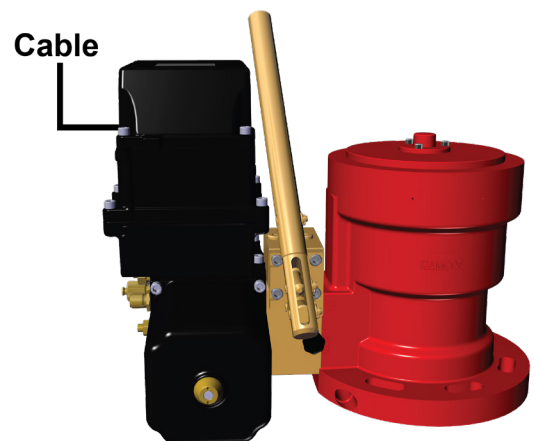
LPU with BB-VPI and Handpump mounted on Bulkhead



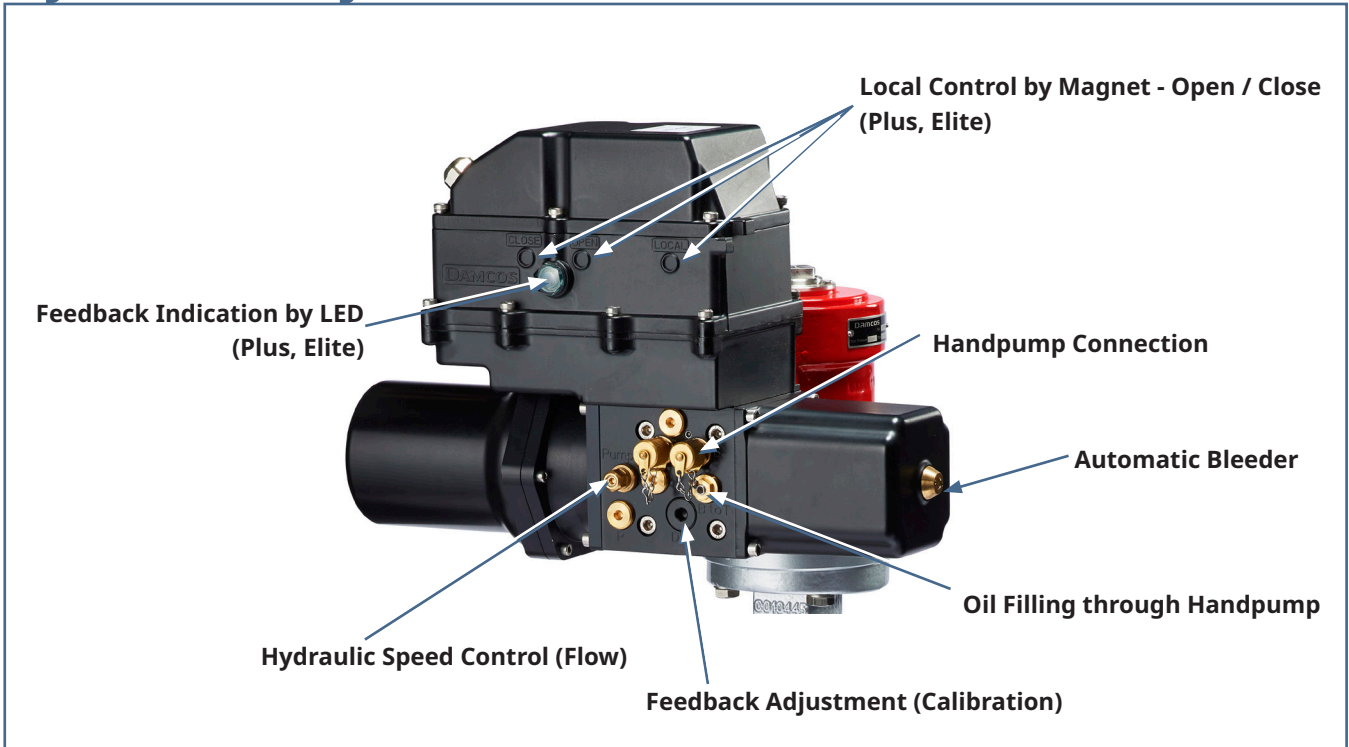
LPU with DPI mounted directly on BRC



LPU with DPI and Handpump mounted directly on BRC



Hydraulic Adjustment



Local Control with Magnets (Plus, Elite)

The LPU can locally be controlled by help of magnets. This will enable the operator to open and close the actuator directly on the LPU. Furthermore functions such as mode settings and to start auto functions are also possible to control locally with magnets.

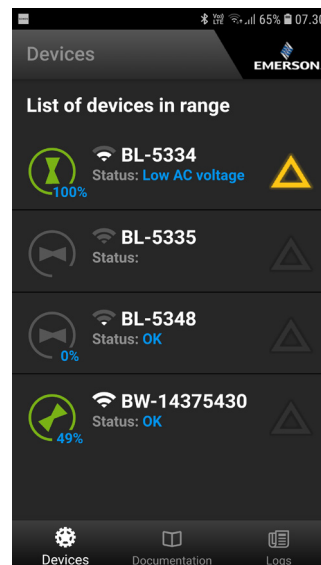


Magnets are placed on the circles for Close, Open or Local to control the LPU locally. Feedback is shown by LED lights through the Sight Glass.

Monitoring (Elite)

Monitoring is offered through a wireless bluetooth communication. Data and status of the LPU can easily be monitored with help from a Bluetooth App. When getting within Bluetooth reach, the LPU's will "pop up" in the App. The App will show the status of the LPU's and other data directly in the vicinity of the LPU's.

This option is only offered through the LPU Elite Version.



Technical Specifications (Basic, Plus and Elite)

For LPU-Ex see separate data sheet

Hydraulic Specification	
Main principles	S for Single Acting Actuators D for Double Acting Actuators
Local operation by	Portable Hand Pump or optionally by magnets
Flow - adjustable	0.2 to 0.7 l/min or 0.4 to 1.5 l/min
Working pressure	135 bar
Safety relief valve adjustment pressure	140 bar
Safety relief valve pressure	210 ± 40 bar
Max. running time Large /Small	Up to 8 minutes depending on ambient temp. (max. 25% duty cycle)
IP Class	IP 66, IP 68 (1.5 bar in 72 hours, 3 bar in 24 hours)
Test pressure	225 bar (250 bar)
Tank	250 ml effective volume
Tank with switch	250 / 1000 ml Level switch included
Suction filter	50 µ
Filter Quick connections	20 µ
NAS	NAS 9 filling via Quick connections
Dry running capability	Minimum one operation cycle Open / Close
Ambient temperature	-5°C to 70°C (Class) -25°C to 70°C (on request)
Weight	14 kg

Electrical Specification	
	230 V AC
Power supply	230 V AC 50 or 60 Hz +10% / -20%
Control	24 V DC – Plus or Elite (Blue-tooth), 230 VAC – Basic
LED (Plus and Elite)	Red (Close), Green (Open), Blue (Local operation and bluetooth), Steady Yellow (Middle position), Flashing Yellow (Alarm)
Starting current Large / Small	8.2 A / 5.8 A
Running current at 20°C (220 V 50 Hz) Large / Small	3.2 A / 2.4 A

Materials	
Electrical housing and tank	Black anodized aluminium
Motor encapsulation	Black anodized aluminium
Slides, etc.	Steel
Screws, sign plate, rivets and bracket	Stainless steel
Seals	NBR
Cable glands	Brass/nickel
Hydraulic blocks	Black anodized aluminium
Fittings	Brass

Motor is protected against overheating with internal bimetal switch.

Class approvals and Tests	
Vibration	5 - 25 Hz / ± 1.6 mm and 25 - 200 Hz ± 4.0 g in three directions (Class)
Shock	80 g for 6 msec in 6 directions
Noise level	50 - 70 dB (A)
EMC	According to IACS E10 (Class requirements)
Class	ABS, DNV-GL, KR, LRS, BV, CCS
Rotary Actuators	BRC / BRCF 125 - 16000
Linear actuators	KC65 - 400, KF 65, KF / KFR 125 - 250

About Emerson's Marine Solutions

Emerson is a world-leading provider of marine solutions with engineering excellence, decades of industry experience and global presence supporting any ship anywhere. All marine systems and solutions are designed especially for the harsh marine environments, engineered and manufactured in-house by our skilled teams of marine engineers. Emerson is well-known in the industry and has more than 50 years' experience with a large installed base and covers well-known marine brands such as Rosemount, Micro Motion and Damcos. Supporting marine customers from a global network of sales and service hubs along the maritime highway.

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To contact Emerson's marine experts, visit [Emerson.com/marinecontacts](https://www.emerson.com/marinecontacts)

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