



Danfoss Marine Systems Hydraulic Valve Actuators



Danfoss Marine BRC

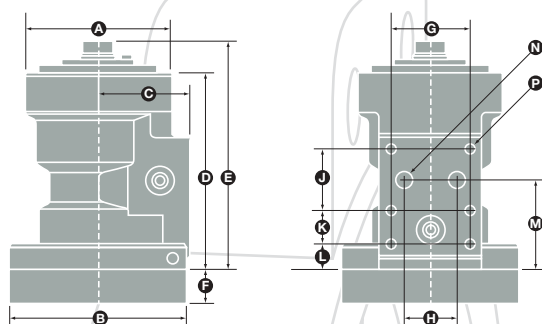
Hydraulic double-acting balanced rotary actuator 90° (quarter-turn).

The BRCs are designed with a built-in crossover valve. They convert hydraulic energy into rotation with torque proportional to the applied pressure. The high-torque output is constant throughout the 90 degrees, and a balanced rotary principle eliminates side forces and/or bending of valve spindle. The rotation is produced by a multiple-helical spline engaging with similar splines on the piston.

BRCs can be operated in any kind of environment. They are easily adapted to all well-known quarter-turn valves; the mounting positions are numerous, and all models are prepared for direct built-on modular control functions.

Technical data:

Working pressure:	135 bar
Burst test:	675 bar
Temperature range:	- 20°C to +80°C
Angle of rotation:	90° ± 1°
Torque range:	125 to 16000 Nm at 135 bar
Viscosity of hydraulic oil:	15 to 200 cSt

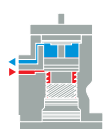


Type	Torque at 135 bar, * Nm	Total dry weight incl. mounting set, kg	Oil displacement at full stroke, litres	Dimensions side view, mm						Dimensions front view, mm						N		P	
				ØA	ØB	C	D	E	F	G	H	J	K	L	M	Thread	Depth mm	Thread	Depth mm
BRC 125	125	5.3	0.026	77	96	53	110	129	20.5	52	35	41	22	14.5	58	G ¹ / ₄	13	M8	12
BRC 250	250	8.3	0.050	95	118	60	130.5	151.5	23	52	35	41	22	16.5	59	G ¹ / ₄	13	M8	12
BRC 500	500	13.0	0.102	120	132	73	153	176	23	52	35	41	22	20	62.5	G ¹ / ₄	13	M8	12
BRC 1000	1000	19.9	0.209	135	160	85	157.5	201	28	52	35	41	22	23.5	66	G ¹ / ₄	13	M8	12
BRC 2000	2000	33.1	0.400	165	192	97	212	234	37	52	35	41	22	25.5	68	G ¹ / ₄	13	M8	12
BRC 4000	4000	68.9	0.800	215	300	125	255	279	40	52	35	41	22	31.5	74	G ¹ / ₄	13	M8	12
BRC 8000	8000	108.0	1.600	252	314	157	319	336	44	52	35	41	22	47.0	89.5	G ¹ / ₄	13	M8	12
BRC 16000	16000	176.0	3.100	300	350	180	390	410	60	52	35	41	22	61.5	104	G ¹ / ₄	13	M8	12

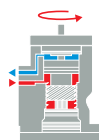
* Higher torques on request

Operating principle

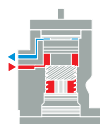
Opening sequence:



Hydraulic pressure forces the piston to move upwards

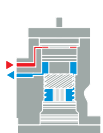


The vertical movement is transformed into rotation by the multi-helical spline

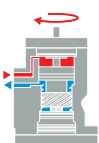


When the piston is in top position the valve is open

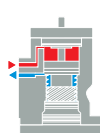
Closing sequence:



Hydraulic pressure forces the piston downwards



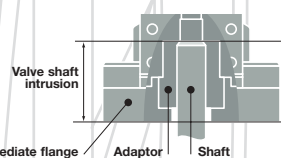
The vertical movement is transformed into rotation by the multi-helical spline





When the piston is in bottom position the valve is fully closed

Valve spindle options:

Limits for machining of the adaptor.
Other shapes and valve shaft intrusions on request, please contact Danfoss Marine Systems.



Type	DIN 6885	DIN 79	Valve shaft intrusion
	 mm (max.)	 mm (max.)	mm
BRC 125	Ø17	16	45
BRC 250	Ø25	24	50
BRC 500	Ø35	30	55
BRC 1000	Ø42	36	63
BRC 2000	Ø58	50	75
BRC 4000	Ø74	63	85
BRC 8000	Ø95	80	105
BRC 16000	Ø95	90	132

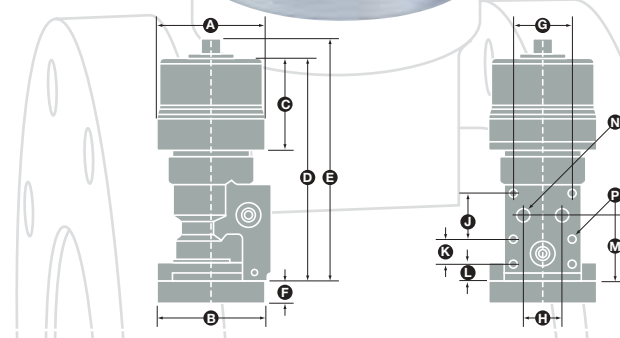
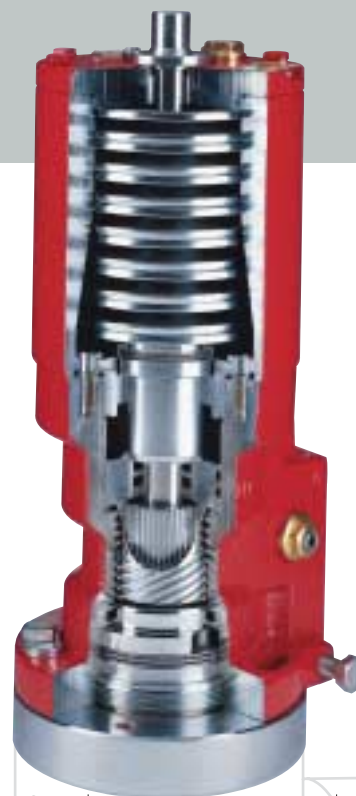
Danfoss Marine BRCF

Hydraulic single-acting balanced rotary spring-closing actuator 90° (quarter-turn, fail-safe).

The design and function of the BRCFs are quite similar to those of the BRCs – with crossover valve, high-torque output and a balanced rotary working principle. However, the BRCFs are single-acting, which means that the oil is led to only one side of the piston whereas the other part – i.e. the upper part of the actuator – contains a package of disc springs. These springs provide the fail-safety; if a malfunction occurs and the hydraulic pressure is cut off, they simply close the valve.

Technical data:

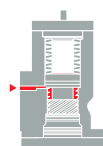
Working pressure:	135 bar
Burst test:	675 bar
Temperature range:	- 20°C to +80°C
Angle of rotation:	90° ± 1°
End closing torque:	30 to 4800 Nm
Viscosity of hydraulic oil:	15 to 200 cSt



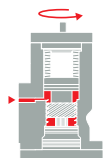
Type	Break-away opening torque at 135 bar, Nm	End closing torque, Nm	Total dry weight incl. mounting set, kg	Oil displacement at full stroke, litres	Dimensions side view, mm						Dimensions front view, mm						N		P	
					ØA	ØB	C	D	E	F	G	H	J	K	L	M	Thread	Depth mm	Thread	Depth mm
BRCF 125	88	30	8.6	0.026	96	96	82.5	198	215	20.5	52	35	41	22	14.5	58	G ¹ / ₄	13	M8	12
BRCF 250	150	65	13.6	0.050	107.5	118	106	243	256	23	52	35	41	22	16.5	59	G ¹ / ₄	13	M8	12
BRCF 500	301	140	22.5	0.102	134.5	132	131	291	306	23	52	35	41	22	20.0	62.5	G ¹ / ₄	13	M8	12
BRCF 1000	648	320	39.1	0.209	160	160	158	345	360	28	52	35	41	22	23.5	66	G ¹ / ₄	13	M8	12
BRCF 2000	1207	605	66.7	0.400	195	192	192	413	426	37	52	35	41	22	25.5	68	G ¹ / ₄	13	M8	12
BRCF 4000	2700	1350	151.8	0.800	253	300	269.5	534	550	40	52	35	41	22	31.5	74	G ¹ / ₄	13	M8	12
BRCF 8000	4800	2400	290.0	1.600	310	314	400	696	716	44	52	35	41	22	47.0	88.5	G ¹ / ₄	13	M8	12
BRCF 16000	9600	4800	467.0	3.100	370	350	572	926	947	60	52	35	41	22	61.5	104.0	G ¹ / ₄	13	M8	12

Operating principle

Opening sequence:



Hydraulic pressure forces the piston to move upwards



The vertical movement is transformed into rotation by the multi-helical spline

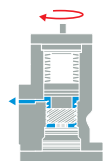


When the piston is in top position the valve is open

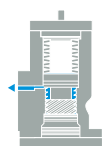
Closing sequence:



Disc spring package forces the piston downwards



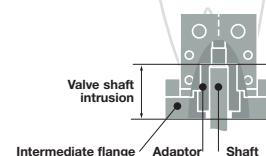
The vertical movement is transformed into rotation by the multi-helical spline





When the piston is in bottom position the valve is fully closed

Valve spindle options:

Limits for machining of the adaptor.
Other shapes and valve shaft intrusions on request, please contact Danfoss Marine Systems.



Type	DIN 6885	DIN 79	Valve shaft intrusion
	 mm (max.)	 mm (max.)	mm
BRCF 125	Ø17	16	45
BRCF 250	Ø25	24	50
BRCF 500	Ø35	30	55
BRCF 1000	Ø42	36	63
BRCF 2000	Ø58	50	75
BRCF 4000	Ø74	63	85
BRCF 8000	Ø95	80	105
BRCF 16000	Ø95	90	132

Danfoss Marine KC

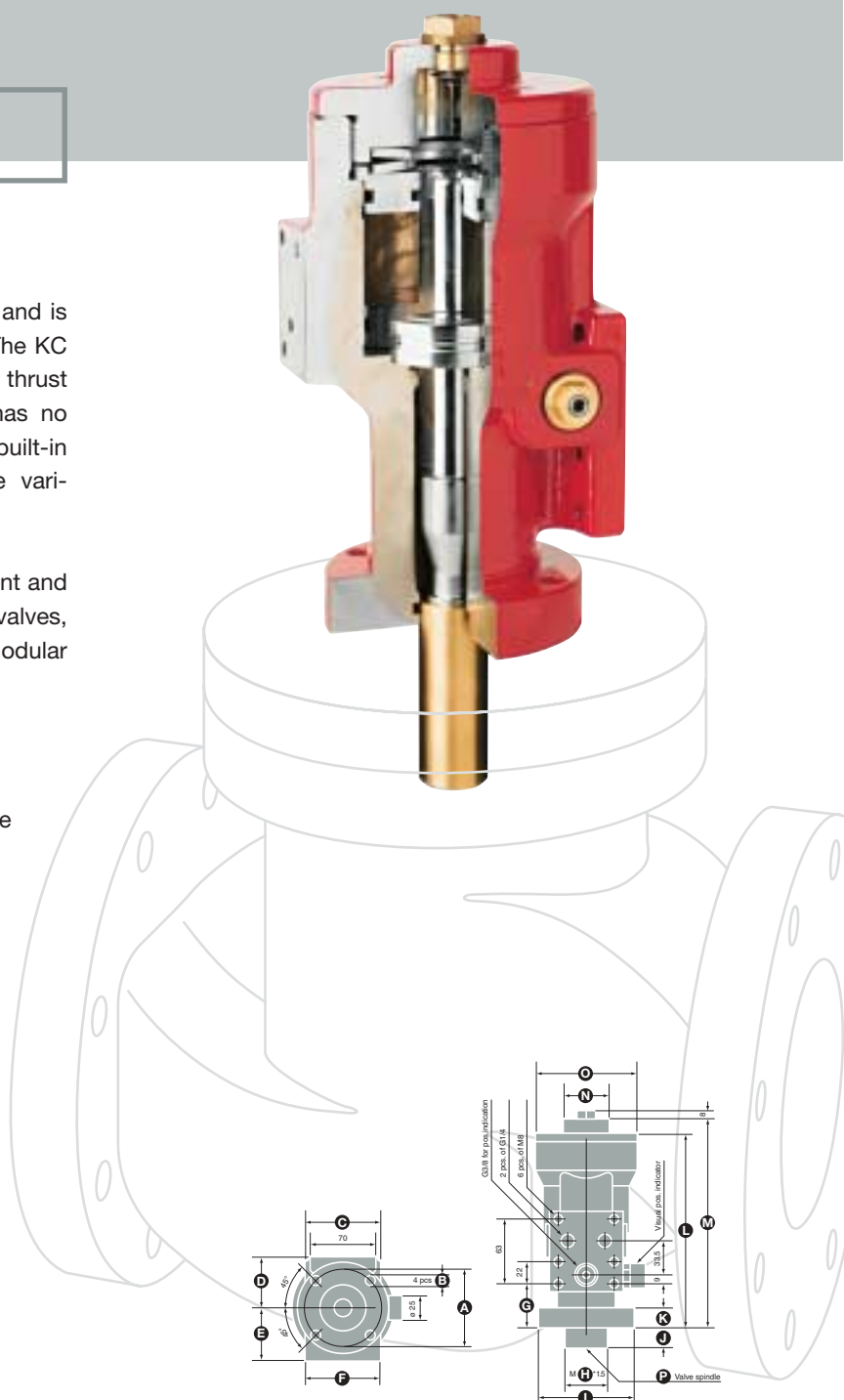
Hydraulic linear double-acting actuator

The KC is designed with built-in crossover valve and is equipped with a direct visual position indicator. The KC converts hydraulic energy into linear motion with thrust proportional to the applied pressure. The KC has no external moving parts during operation and has a built-in device for maintaining pressure at temperature variations.

The KC can be operated in any kind of environment and can easily be adapted to all well-known globe valves, and all models are prepared for direct built-on modular control functions.

Technical data:

Working pressure:	135 bar
Test pressure:	1.5 x working pressure
Temperature range:	- 20°C to +80°C
Closing thrust:	17000 - 92500 N
Viscosity of hydraulic oil:	15 to 200 cSt



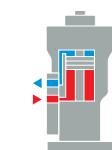
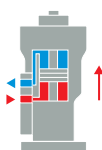
Type	Closing thrust at 135 bar, N	Stroke mm	Total dry weight, kg	Oil displacement at full stroke, litres	Dimensions bottom view, mm						Dimensions front view, mm									
					ØA	ØB	C	D	E	F	G	H	ØI	J	K	L	M	ØN	ØO	ØP
KC 65	17000	16.25	4.5	0.021	62	9	80	47.5	—	—	34.5	36	76	17	15	153	158	—	80	20
KC 125	35000	31.25	7.0	0.082	75	9	78	50	52	72	42.5	42	90	19	20	189	202	45	97.5	25
KC 250	92500	62.50	24.0	0.428	118	14	70	84	78	72	74	72	140	23	35	299	321	80	155	50

Operating principle

Opening sequence:



Hydraulic pressure forces the piston upwards



When the piston is in top position the valve is fully open

Closing sequence:



Hydraulic pressure forces the piston downwards



When the piston is in bottom position the valve is fully closed

Danfoss Marine KF/KFR

Hydraulic linear single-acting spring-closing actuator

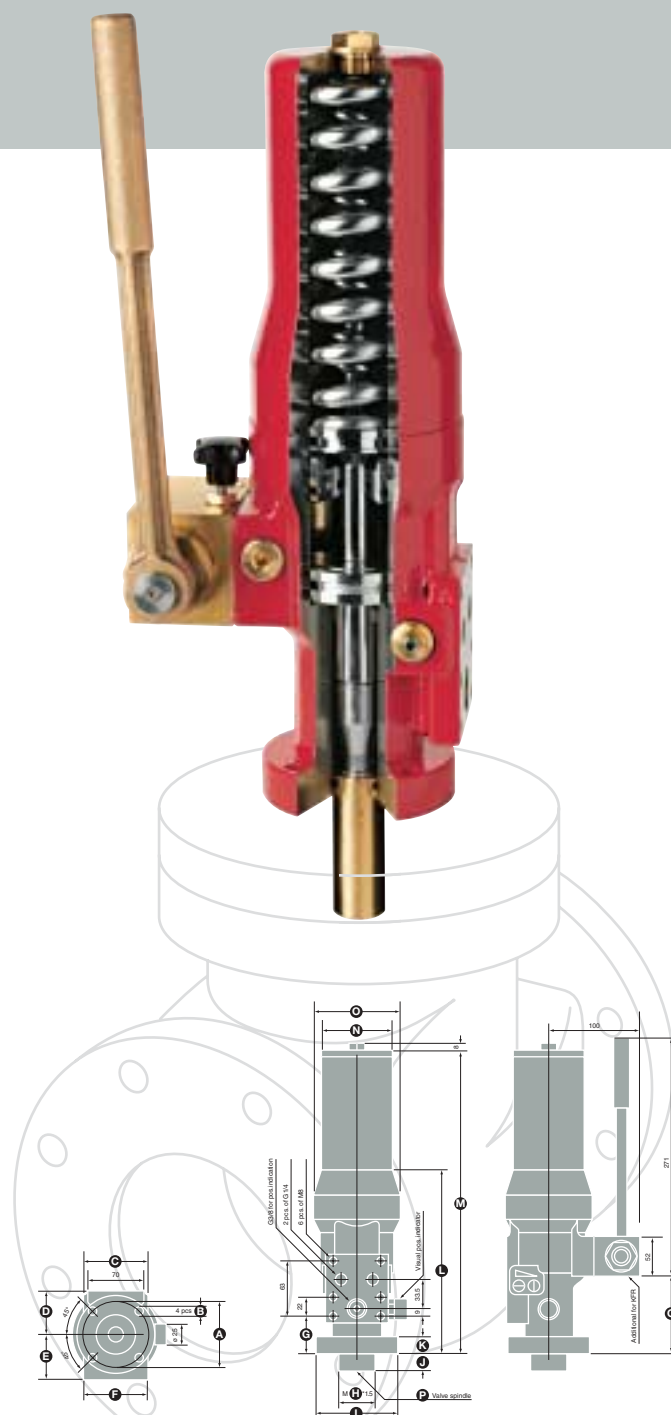
The KF/KFR is designed with built-in crossover valve and is equipped with a direct visual position indicator. When the actuator is operated by hydraulic pressure, the output spindle is lifted (and the valve is thus opened) and the spring package is compressed. When the pressure is released, the spring package will press down the spindle and close the valve. The KF/KFR has no external moving parts during operation.

The KF/KFR can be operated in any kind of environment and is easily adapted to all well-known globe valves, and all models are prepared for direct built-on modular control functions.

The KFR is also equipped with a unique emergency system; when the hydraulic pressure is not available, the valve can be opened and closed by means of a built-in manual hand pump. When the pressure is reestablished, the manual hand pump function is automatically disengaged at the first hydraulic opening of the actuator.

Technical data:

Working pressure:	135 bar
Test pressure:	1.5 x working pressure
Temperature range:	- 20°C to +80°C
End closing thrust (spring):	1500 - 16500 N
Viscosity of hydraulic oil:	15 to 200 cSt

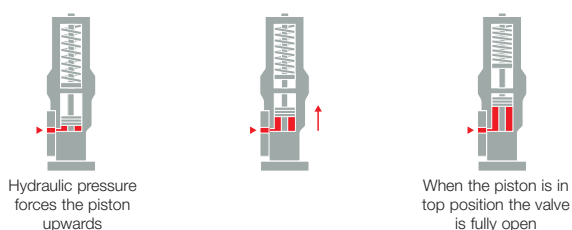


Type	End closing thrust,*	Stroke	Total dry weight,	Oil displacement at full stroke, litres	Dimensions bottom view, mm						Dimensions, mm										
					ØA	ØB	C	D	E	F	G	H	ØI	J	K	L	M	ØN	ØO	ØP	Q
KF 65	1500	16.25	6	0.021	62	9	80	47.5	–	–	34.5	36	76	17	15	160	226	64	80	20	–
KF/KFR 125	4800	31.25	11/12	0.082	75	9	78	50	52	72	42.5	42	90	19	20	209	345	80	97.5	25	89
KF/KFR 250	16500	62.50	51/52	0.428	118	14	70	84	78	72	74	72	140	23	35	329	602	150	155	50	155

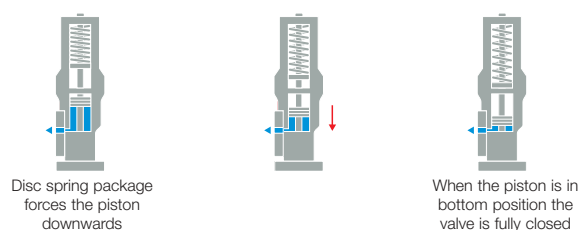
* Pre-stressed 3 mm.

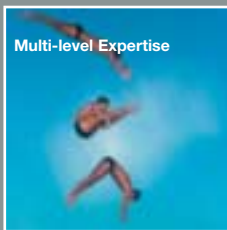
Operating principle

Opening sequence:

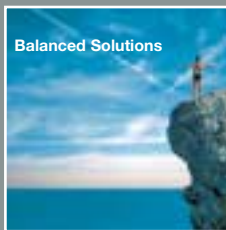


Closing sequence:

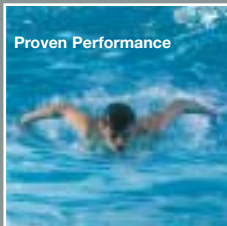




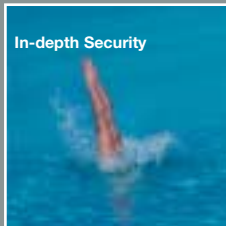
Multi-level Expertise



Balanced Solutions



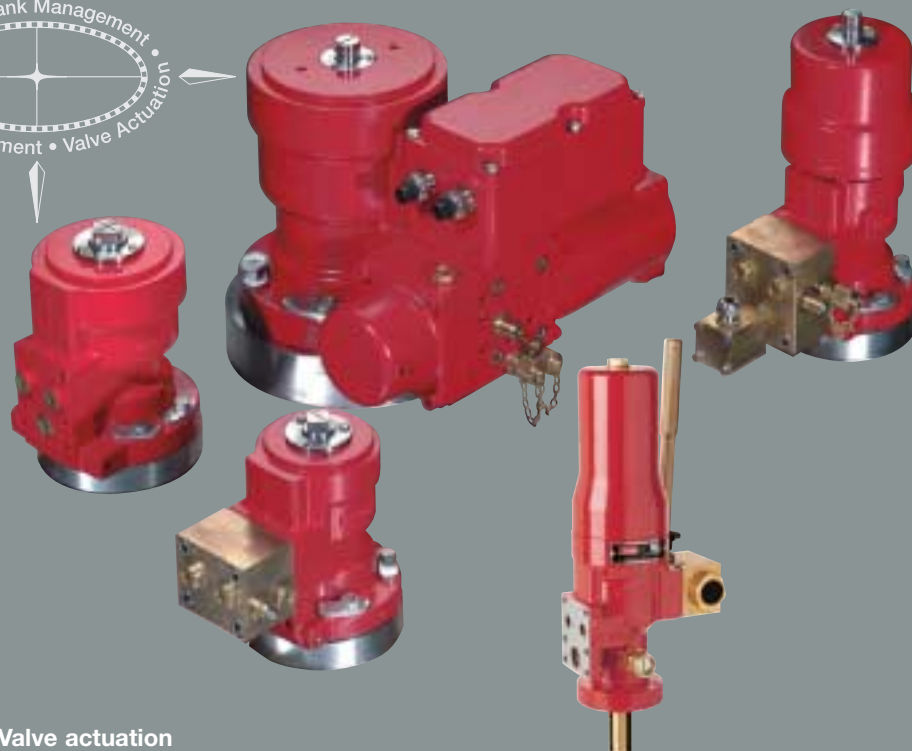
Proven Performance



In-depth Security



Danfoss Marine Systems is a comprehensive supplier of management and control solutions for marine applications. Our three focus areas – tank measurement equipment, valve actuation and Marine Tank Management (cf. our "compass of competencies") – are based on extensive experience and application know-how, enabling us to meet any marine assignment with a tailor-made solution. Whether worked up by single components or as total, all-inclusive systems, our solutions are always designed to perfectly balance the requirements of the job in question.



Features:

- Made of non-corrosive materials to withstand life at sea
- Capable of working above the ground, in the ground and submerged
- Mechanical indicators
- Multi-function blocks
- Built-on portable hand pumps for manual operation
- Hydraulic position indicators
- Electrical position indicators
 - open/closed
 - analogue
 - submersible
 - hazardous areas

Valve actuation

Danfoss Marine Systems' assortment of hydraulic actuators is designed to match the variety of the valve programme. Butterfly valves, ball valves, globe valves, gate valves, plug valves; whatever type of valve is needed for a job, there is a Danfoss Marine actuator to match the requirements – at various levels of automation. Thoroughly tested – even in emergency situations – they are designed to ensure faultless, reliable and perfect valve control on board any vessel or offshore unit. The various types of actuators are available in several models, ready to be fitted into all kinds of actuation systems – from the simple, manually controlled hydraulic system to the most advanced electro-hydraulic computerized system.

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