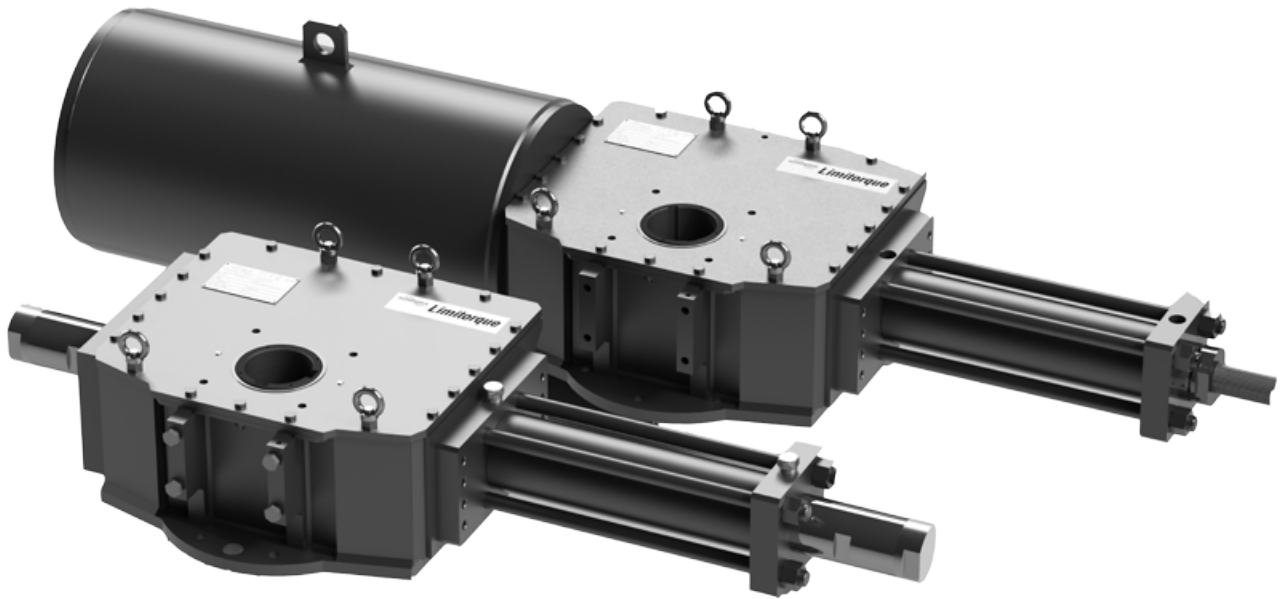


Limitorque™
LHS/LHH Hydraulic Heavy-Duty Actuator Series

FCD LFENTB0003-01-AQ - (5/16)



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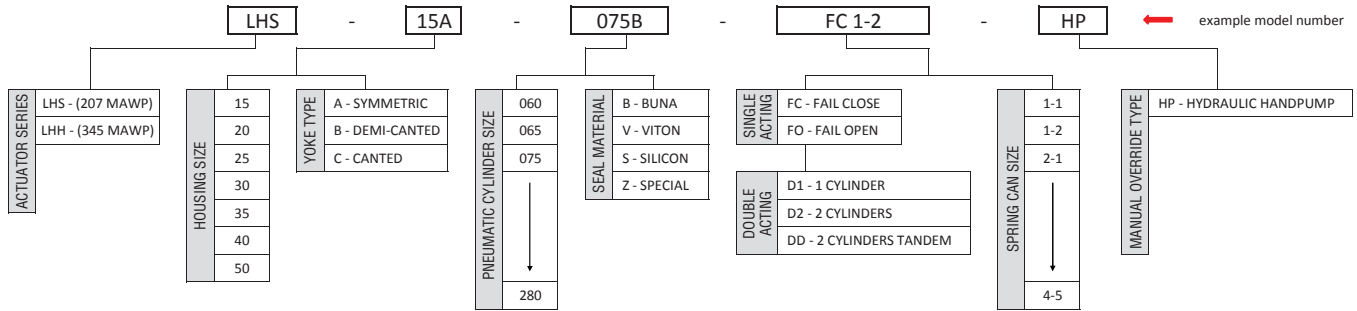
LHS/LHH Series Hydraulic Heavy-Duty Actuator Specifications

1. The LHS/LHH range of Limitorque Hydraulic Actuators is a robust, modular scotch yoke design, available in both spring return and double acting configurations. It is suitable for actuating ball, butterfly and plug valves or any other quarter-turn application.
2. LHS/LHH Hydraulic actuators deliver up to 300 kNm* (221 000 ft-lb) of precisely controlled torque. LHS/LHH Limitorque Hydraulic Actuator is part of Limitorque Fluid Power Systems family of heavy-duty scotch yoke actuators. The same design philosophy introduced on heavy-duty LPS actuators has been adopted for the LHS/LHH range, bringing enhanced performance and reliability.
3. LHS/LHH actuators are complemented by a comprehensive range of accessories, such as lockout modules, manual overrides and controls, like hydraulic power units, accumulator racks, self-contained units and other electro-hydraulic solutions. The Limitorque engineering team can also design custom solutions for the largest and most complex customer requirements.
4. Limitorque provides engineering design services for mounting hardware, ensuring that your actuation solution is ready to handle the toughest challenges.
5. The LHS/LHH actuator is designed to provide a 25-year design life, depending on service conditions, proper installation, operation and maintenance. In order to achieve this industry-leading design life, in-field maintenance is prescribed to be performed every 6 years of operation. For high-cycle applications, such as control valve operation, more frequent maintenance of replaceable wear surfaces, as outlined in EN 15714, may be required.
6. Suitable for use in on/off, modulating and control valve application in general service, protective service and safety applications such as ESD or HIPPS.
7. Available valve interface in compliance with **ISO 5211** or **MSS SP-101**, upon request as an option.
8. Manufactured and tested in compliance with **EN 15714-4** and **ISO 12490**.
9. Spring components are designed in compliance with **EN 13906-1**.
10. Surface coating and corrosion protection in compliance with **ISO 12944-2** up to and including **C5-M** if requested.
11. Environmental resistance has been certified to meet or exceed the requirements of **IEC 60529** up to and including **1P66/66M and IP67/67M**.
12. The LHS/LHH actuator is suitable for use in Safety Integrated Systems in accordance with **IEC 61508** up to and including **SIL Level 3**.
13. The actuators in the LHS/LHH series meet the requirements of **ISO 5599-2**.
14. LHS/LHH actuators are available in accordance with **ATEX 94/9/EC Ex II 2GD c IIC T6**, as it relates to mechanical actuators.
15. Actuators are available in compliance with **NACE** specification **MR0175** for sour gas applications
16. Shaft-driven accessories/devices are directly mounted to **VDE VDI 3845 NAMUR** compliant mounting locations.
17. The actuator is manufactured and tested in compliance with an **ISO 9001** Quality Assurance Program.
18. Integral travel stops provide **90°±5°** of stroke adjustment and are designed for the MAWP of the actuator, up to 207 barg (3000 psig) LHS series and 345 barg (5000 psig) LHH series. 410 barg (6000 psig) version available upon request.
19. The materials of construction and seals of the LHS/LHH family of actuators are available for a wide range of service temperatures, including **Tropical, Arid, Temperate, Cold and Polar** regions in accordance with **IEC 60721**.
20. The hydraulic cylinder design features proven and reliable external tie rods suitable for continuous duty service at the maximum rated pressure. Wear and corrosion protection of all components is ensured with suitable treatments and coatings. **ENP** (electro less nickel plating) is the standard for the internal surface of the hydraulic cylinder to ensure complete sealing and superior corrosion resistance. Other coatings for the internal surface of the cylinder are available upon request.
21. Pressure modules are available in compliance with:
 - a. **Pressure Equipment Directive 97/23/EC**
 - b. **ASME BPVC Sec. VIII, Div. 1**
 - c. **EN 13445-3, Part 3 for Unfired Pressure Vessels**
22. All actuators and modules meet acceptance criteria defined by Flowserve test specifications. Hydraulic cylinders can be tested as stand-alone modules prior to assembly or in case of stocking or retrofitting.

* Contact factory for larger sizes and higher output torques.

23. The actuator is provided with two full-length key slots in the yoke suitable for mounting in alternate orientations (horizontally or vertically – parallel or perpendicular to the piping system).
24. The LHS/LHH is available with either a symmetric or canted scotch yoke. Scotch yoke cants are available from 1° to 15° upon request, pending on application.
25. All modules align and mate with close-tolerance machined flanges with no exposed threaded connections.
26. The high-strength, heat-treated alloy steel guide bar is hard chrome plated for wear and corrosion protection.
27. Piston rods are designed to handle lateral loads to effectively minimize deflection. The piston rod is detachable from the torque module without special tools and does not require module disassembly.
28. Pressure seals utilize O-rings, quad-rings or V-rings as appropriate to eliminate environmental ingress. No gaskets are used in pressurized regions of the actuator.
29. The push-to-compress springs are safely enclosed and welded and are positively retained on the torque module under all load conditions. No external tie rods/braces are required to contain the springs. Springs are designed in accordance with **EN 13906-1** and combined and positioned to eliminate potential contact with the container or each other in the case of multiple springs. Springs are shot peened for maximum life and are painted and permanently lubricated coated prior to assembly to eliminate corrosion.
30. The spring and spring guide are self-centered and bearing guided within the spring module. The spring rod is guided in a self-lubricating bearing and connected to the torque module through a large pinned connection designed for safe operation at all load conditions. Installation and removal of the spring module does not require special tools.
31. Maintenance-free, self-lubricating bearings are used to minimize friction of the yoke, yoke-pins and slider blocks in the yoke slots for low friction and to minimize contact stresses in order to provide the longest possible service life.
32. Retention of the yoke pin is by a single plate to permit easy removal of the yoke pin and slider blocks while the actuator is mounted in the valve. No specialized tools are required.

Actuator Selection Table



Seals Material

Code	Material	Temperature Range	Climate Classification according to IEC60721
B	Buna	Std Temp: -29°C to +100°C (-20°F to 212°F)	Tropical & Arid
V	Viton®	Hi Temp: up to +160°C (320°F)	
S	Silicon	Low Temp: down to -40°C (-40°F)	Temperate
Z	Other	Special Applications: Consult Factory	Cold & Polar

Actuator Selection Guidance

1. Scope

This section provides guidance for the selection of the proper LHS/LHH actuator to suit specific operational requirements. A basic understanding of scotch yoke actuators and the typical applications in which they are used is provided in order to assist in selection of the most suitable actuator. While the selection procedures and product data contained herein cover many applications, due to the

wide range of applications in which the LHS/LHH actuators can be used, this information will not cover every set of operational requirements. The Limitorque applications team is always available to assess specific applications and help with selection of the appropriate LHS/LHH actuators. Please contact your local office for assistance.

2. General Definitions/Terms Used

Quarter-turn	A device that rotates by a nominal 90°. LHS/LHH series actuators rotate ± 5° more than the nominal 90°.
Position	The degree of rotation describing an actuator's current location, the zero being referred from complete counter-clockwise position of the yoke. The mid-position of the actuator is at 45° and 90° being the end of clockwise stroke.
CW	Clockwise rotation.
CCW	Counter-clockwise rotation.
Stroke	A continuous, 90° rotation of a quarter-turn actuator.
Cycle	Two strokes, one clockwise (CW) rotation and other counter-clockwise (CCW) rotation, constitute one cycle of operation of the actuator.

*Viton is a registered trademark of E. I. du Pont de Nemours.

Safety Factor	A factor multiplied by the valve's basic required torque value to increase the amount of torque required to meet safety requirements in a given application. When the valve's torque requirements are not known with certainty, or due to other application demands, use of a safety factor is required in the selection process in order to meet the worst-case torque requirements.
Hydraulic Break Torque	Output torque when the actuator is in the position to start the pressure stroke. [The torque required to initiate the pressure stroke.]
Hydraulic End Torque	Output torque at the end limit of the pressure stroke. [The torque required to seat the valve at the end of the pressure stroke.]
Run Torque	The output torque recorded while the actuator is in the mid-position of the pressure stroke (45°). For symmetrical yoke double-acting actuators, this is the minimum torque output obtained during the complete stroke.
Spring Break Torque	The output torque when the actuator is in the position to start the spring stroke. [The torque required to initiate the spring stroke.] The spring is fully compressed at this position and generates the maximum spring force.
Spring End Torque	The output torque when the actuator has reached the end limit of spring stroke. [The torque required to seat the valve at the end of the spring stroke.] The spring is fully extended at this position and generates the minimum spring force.
Minimum Torque	The output torque at an intermediate position of the spring stroke, where the output torque of the actuator is at its lowest value.
MOP	Maximum operating pressure of an actuator

3. Inputs for Sizing Hydraulic Scotch Yoke Actuators

Due to the scotch yoke mechanism, LHS/LHH actuators have a particular U-shaped output torque curve whether powered by a fixed supply pressure or the spring.

For a proper actuator model selection, the safety factors between actuator output torque and valve torque requirement shall be calculated at least in six points along the valve stroke. In addition a final check is necessary to guarantee that actuator Maximum Output Torque does not exceed valve Maximum Allowable Stem Torque (MAST).

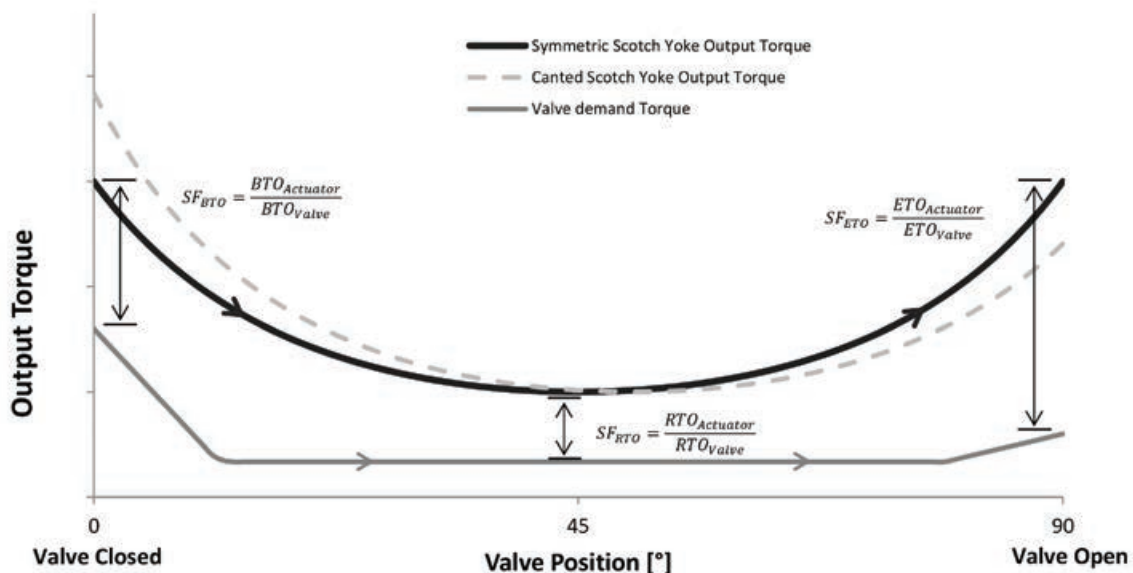


Figure 1: Actuator OPEN (by hydraulic) Torque Curve: Single Acting Spring Return – Fail Close (CW)

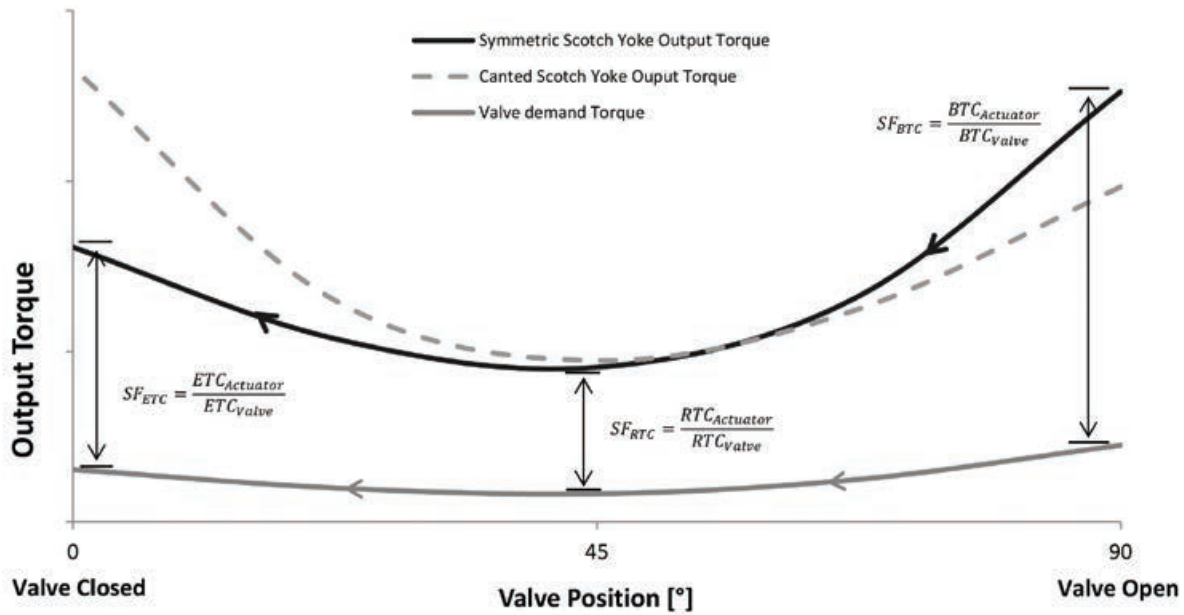


Figure 2: Actuator CLOSE (by spring) Torque Curve: Single Acting Spring Return – Fail Close (CW)

Note: Detailed Output Torque graphs covering the full valve stroke for both Single Acting Fail Open (CCW) and Double Acting actuators are available upon request.

The minimum set of parameters and features necessary for an optimized actuator selection:

- Valve torques, or at least the unseating torque (BTO), and valve MAST
- Type of actuator:
 - Single Acting/Spring Return: Fail Safe Close (CW) or Fail Safe Open (CCW)
 - Double Acting configuration for Fail Last or Fail As Is
- Minimum, Normal and Maximum Hydraulic Supply Pressure to the actuator
- Safety Factors requested by the project or by a specific application
- Working Temperature range
- Open/Close stroking times
- Additional options (manual override, control panel, limit switch box, positioner, ...)

Definitions:

- BTO = Break to Open torque
- BTC = Break to Close torque
- RTO = Running to Open torque
- RTC = Running to Close torque
- ETO = End to Open torque
- ETC = End to Close torque
- MAST = Maximum Allowable Stem Torque
- SF = Safety Factor

4. LHS/LHH Manual Overrides

Manual overrides are necessary to allow operation of the valve actuators whenever motive pressure and/or electrical power are not available. All LHS/LHH models can be fitted with an optional manual override system through a hydraulic handpump. Limitorque hydraulic manual overrides are designed in accordance with EN 12570 and are available for both single acting (spring-return) and double acting actuator versions.

5. Single Action and Double Action Configurations

The LHS/LHH actuator is designed for work in both single acting (fail open and fail close) and double acting configurations:

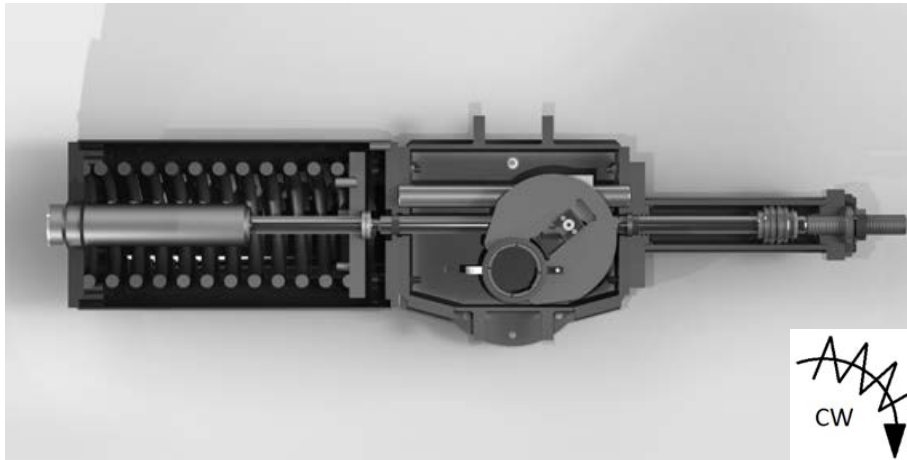


Figure 3: Single Acting Actuator Configuration: Fail Close – Fail Clockwise

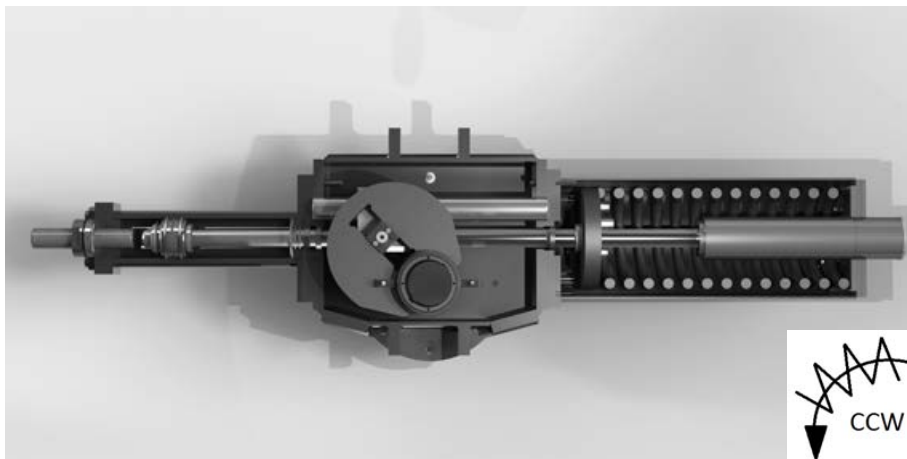


Figure 4: Single Acting Actuator Configuration: Fail Open – Fail Counterclockwise

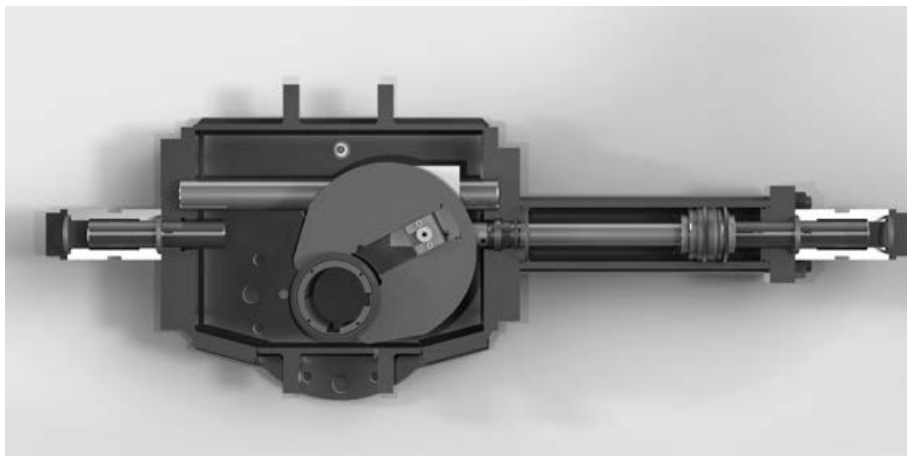


Figure 5: Double Acting Actuator Configuration – Close Position

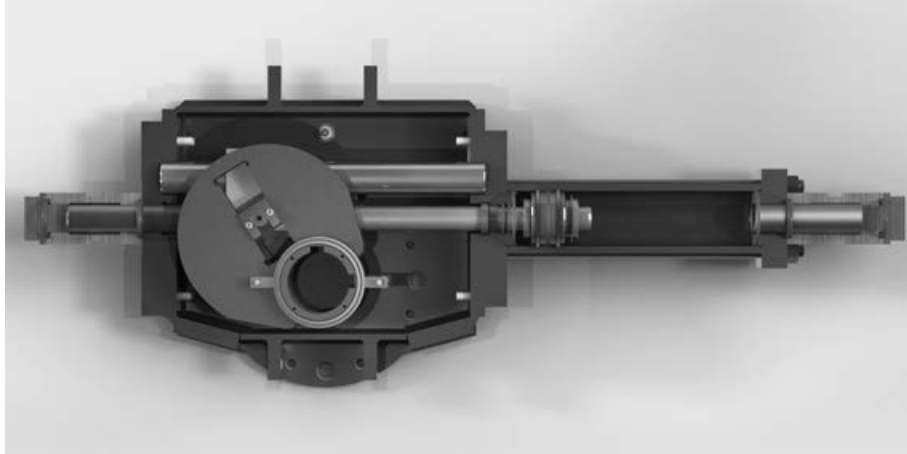


Figure 6: Double Acting Actuator Configuration – Open Position

6. Dimensions

The following Dimensions & Weight tables include main external dimensions referred to the relevant pictures included in each section. The overall lengths, the weights, the mounting dimension details, the interface dimensions and the tolerances are included as a guide for actuator selection.

The stated dimensions and weights include the actuators only, without any optional features, like the spool pieces, manual overrides, control panels, etc.

Note: Performance data for LPS actuators is available upon request. For correct selection of LPS actuators, consult Limitorque Flowserve Application Engineers or local Sales Support.

7. Disclaimer

This publication is presented for information purposes only, with an effort to ensure the accuracy, the contents are not to be construed as warranties or guarantees, expressed or implied, regarding the products or services described herein or their use or applicability. The right to modify or improve the designs or specifications of our products at any time without notice is reserved.

Dimensional Data and Weights – Single Acting

Figure 7: Dimensional Data – Single Acting – Sym/Cant – Fail Close

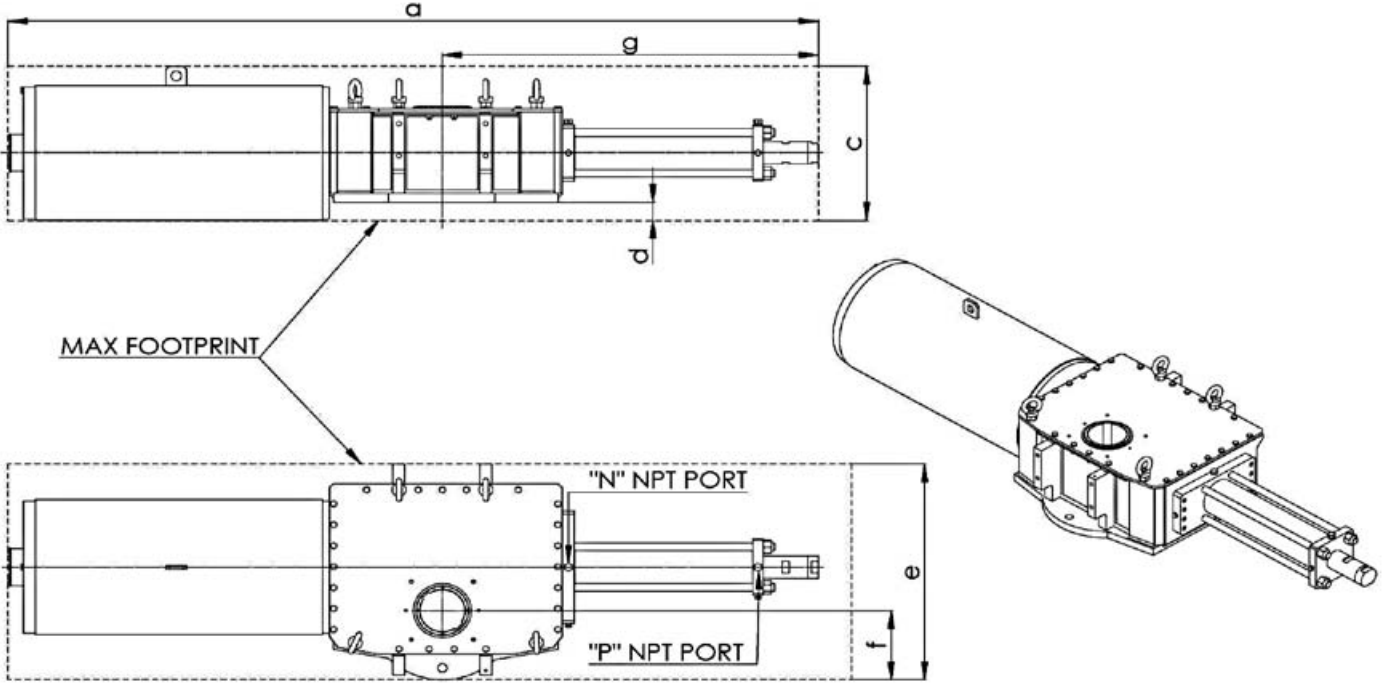
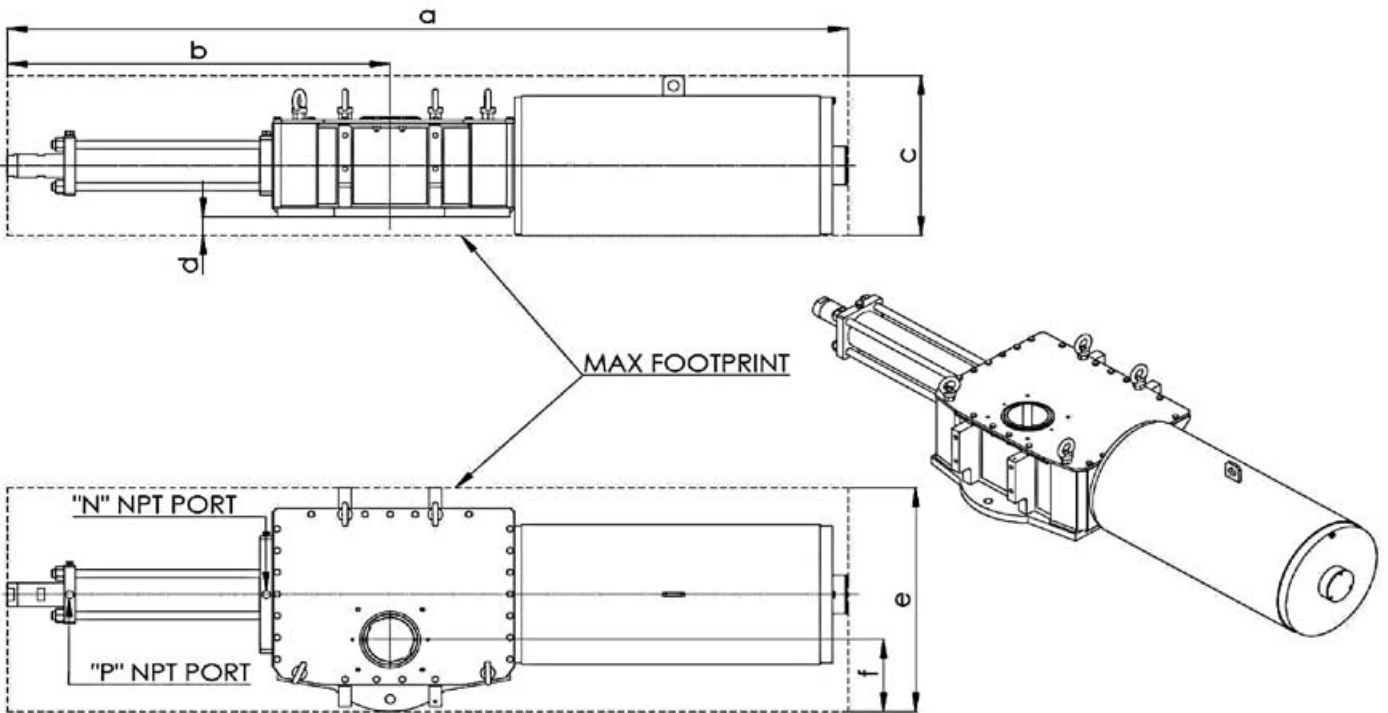


Figure 8: Dimensional Data – Single Acting – Sym/Cant – Fail Open





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Table with columns: Model, Dimensions (a, b, c, d, e, f, g), P NPT PORT, N NPT PORT, Weight, Swept Volume*, and MOT. It lists specifications for various actuator models from LHS-20X-100Y-FC3-3 to LHS-25X-130Y-FC2-1.

* Swept Volume data are referred to actuators with end stops adjusted for 90° of stroke.



Limitorque™ LHS/LHH Hydraulic Heavy-Duty Actuator Series FCD LFENTB0003-01-AQ - 5/16

Table with columns: Model, a, b, c, d, e, f, g, P NPT PORT, N NPT PORT, Weight, Swept Volume*, MOT. It lists various actuator models and their specifications.

* Swept Volume data are referred to actuators with end stops adjusted for 90° of stroke.



Limitorque™ LHS/LHH Hydraulic Heavy-Duty Actuator Series FCD LFENTB0003-01-AQ - 5/16

Table with columns: Model, a, b, c, d, e, f, g, P NPT PORT, N NPT PORT, Weight, Swept Volume*, MOT. Contains multiple rows of technical specifications for various actuator models.

* Swept Volume data are referred to actuators with end stops adjusted for 90° of stroke.



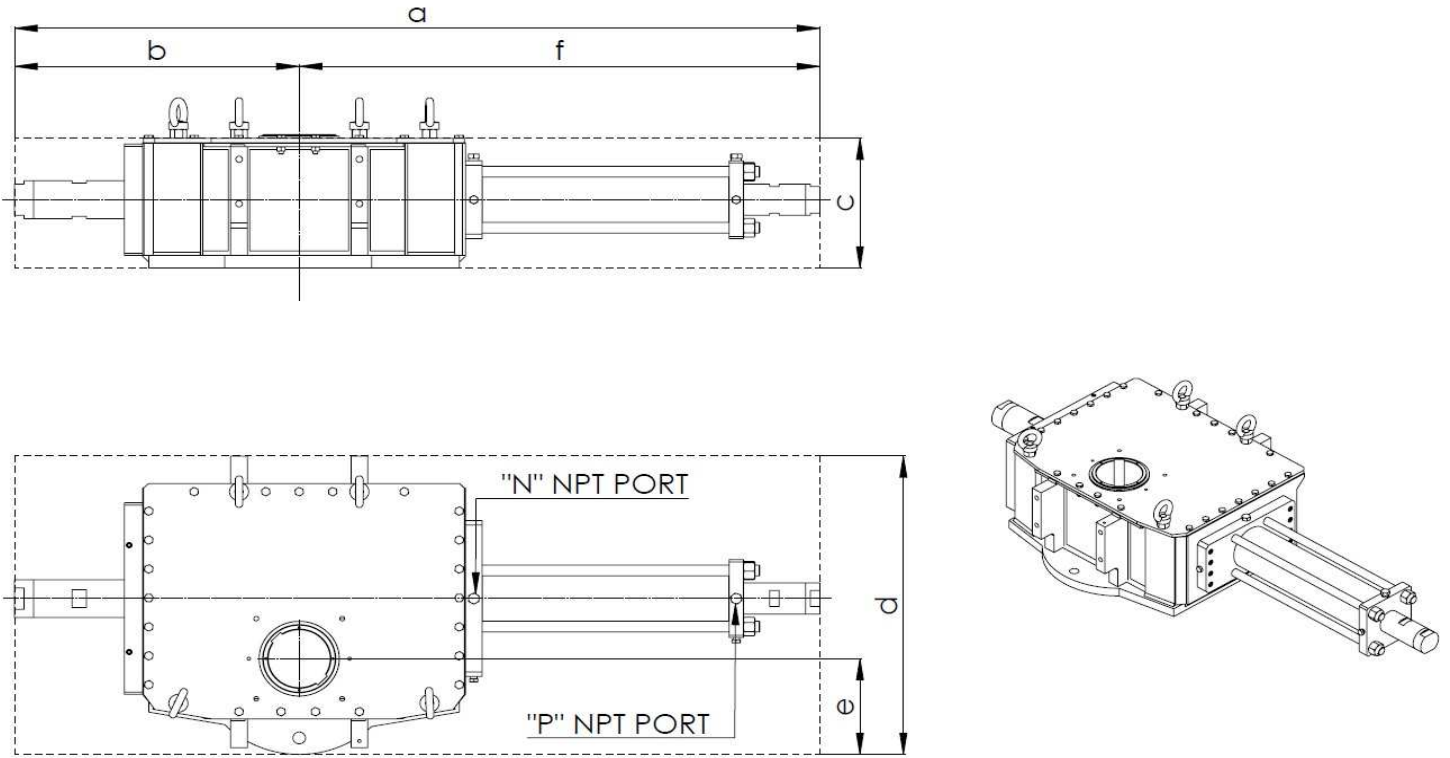
Limitorque™ LHS/LHH Hydraulic Heavy-Duty Actuator Series FCD LFENTB0003-01-AQ - 5/16

Table with columns: Model, a, b, c, d, e, f, g, P NPT PORT, N NPT PORT, Weight, Swept Volume*, MOT. Rows list various actuator models and their specifications.

* Swept Volume data are referred to actuators with end stops adjusted for 90° of stroke.

LHS Double Acting: Dimensional, Weight and Volume Tables

Figure 7:





Limitorque™ LHS/LHH Hydraulic Heavy-Duty Actuator Series FCD LFENTB0003-01-AQ - 5/16

LHS Double Acting - Dimensions: mm (in) - Weights: Kg (lbs) - Swept Volumes: l (cu in) - MOT: Nm (ft-lb)												
Model	a	b	c	d	e	f	P NPT PORT	N NPT PORT	Weight	Swept Volume*		MOT
										"P" PORT	"N" PORT	
LHS-40X-140Y-D1	2371	708	399	953	290	1663	2 x 1/2"	2 x 1/2"	1092	6,5	4,2	150000
	93,3	27,9	15,7	37,5	11,4	65,5			2407	397	256	103321
LHS-40X-150Y-D1	2371	708	399	953	290	1663	2 x 1/2"	2 x 1/2"	1137	7,4	5,1	150000
	93,3	27,9	15,7	37,5	11,4	65,5			2507	452	311	103321
LHS-40X-160Y-D1	2376	708	399	953	290	1668	2 x 3/4"	2 x 3/4"	1160	8,4	6,0	150000
	93,5	27,9	15,7	37,5	11,4	65,7			2558	513	366	103321
LHS-40X-180Y-D1	2393	708	399	953	290	1685	2 x 3/4"	2 x 3/4"	1220	10,7	8,2	150000
	94,2	27,9	15,7	37,5	11,4	66,3			2690	653	500	103321
LHS-40X-200Y-D1	2382	708	399	953	290	1674	2 x 3/4"	2 x 3/4"	1241	13,2	10,6	150000
	93,8	27,9	15,7	37,5	11,4	65,9			2736	806	647	103321
LHS-40X-220Y-D1	2486	708	399	953	290	1778	2 x 3/4"	2 x 3/4"	1303	16,0	13,2	150000
	97,9	27,9	15,7	37,5	11,4	70,0			2873	976	806	103321
LHS-40X-240Y-D1	2492	708	405	953	290	1784	2 x 3/4"	2 x 3/4"	1399	19,0	16,1	150000
	98,1	27,9	15,9	37,5	11,4	70,2			3083	1159	982	103321
LHS-40X-250Y-D1	2496	708	418	953	290	1788	2 x 1"	2 x 1"	1433	20,6	17,6	150000
	98,2	27,9	16,4	37,5	11,4	70,4			3160	1257	1074	103321
LHS-40X-260Y-D1	2501	708	418	953	290	1793	2 x 1"	2 x 1"	1486	22,3	19,2	150000
	98,4	27,9	16,4	37,5	11,4	70,6			3276	1361	1172	103321
LHS-40X-280Y-D1	2516	708	445	953	290	1808	2 x 1"	2 x 1"	1521	25,8	22,6	150000
	99,0	27,9	17,5	37,5	11,4	71,2			3354	1574	1379	103321
LHS-50X-180Y-D1	2817	883	582	1150	343	1935	2 x 3/4"	2 x 3/4"	2413	13,1	10,0	300000
	110,9	34,7	22,9	45,3	13,5	76,2			5321	799	613	221269
LHS-50X-200Y-D1	2871	883	582	1150	343	1989	2 x 3/4"	2 x 3/4"	2449	16,2	13,0	300000
	113,0	34,7	22,9	45,3	13,5	78,3			5399	989	794	221269
LHS-50X-220Y-D1	2877	883	582	1150	343	1995	2 x 3/4"	2 x 3/4"	2490	19,5	16,1	300000
	113,3	34,7	22,9	45,3	13,5	78,5			5490	1190	982	221269
LHS-50X-240Y-D1	2881	883	582	1150	343	1999	2 x 3/4"	2 x 3/4"	2586	23,3	19,7	300000
	113,4	34,7	22,9	45,3	13,5	78,7			5700	1422	1205	221269
LHS-50X-250Y-D1	2886	883	582	1150	343	2004	2 x 1"	2 x 1"	2620	25,2	21,5	300000
	113,6	34,7	22,9	45,3	13,5	78,9			5777	1538	1314	221269
LHS-50X-260Y-D1	2901	883	582	1150	343	2019	2 x 1"	2 x 1"	2673	27,3	23,5	300000
	114,2	34,7	22,9	45,3	13,5	79,5			5893	1666	1434	221269
LHS-50X-280Y-D1	2966	883	582	1150	343	2084	2 x 1"	2 x 1"	2709	31,7	27,8	300000
	116,8	34,7	22,9	45,3	13,5	82,0			5971	1934	1695	221269
LHS-50X-290Y-D1	2981	883	582	1150	343	2099	2 x 1"	2 x 1"	2749	34,0	29,8	300000
	117,4	34,7	22,9	45,3	13,5	82,6			6062	2075	1817	221269
LHS-50X-300Y-D1	2996	883	555	1150	343	2114	2 x 1"	2 x 1"	2786	36,3	31,8	300000
	118,0	34,7	21,8	45,3	13,5	83,2			6143	2215	1940	221269
LHS-50X-320Y-D1	3011	883	570	1150	343	2129	2 x 1"	2 x 1"	2823	41,4	36,3	300000
	118,5	34,7	22,4	45,3	13,5	83,8			6224	2526	2213	221269
LHS-50X-340Y-D1	3026	883	585	1150	343	2144	2 x 1"	2 x 1"	2860	46,7	40,9	300000
	119,1	34,7	23,0	45,3	13,5	84,4			6305	2850	2496	221269
LHS-50X-350Y-D1	3041	883	600	1150	343	2159	2 x 1"	2 x 1"	2896	49,5	43,4	300000
	119,7	34,7	23,6	45,3	13,5	85,0			6386	3021	2646	221269

* Swept Volume data are referred to actuators with end stops adjusted for 90° of stroke.

LHH Single Acting: Dimensional, Weight and Volume Tables

Figure 8: Dimensional Data – Single Acting – Sym/Cant – Fail Close

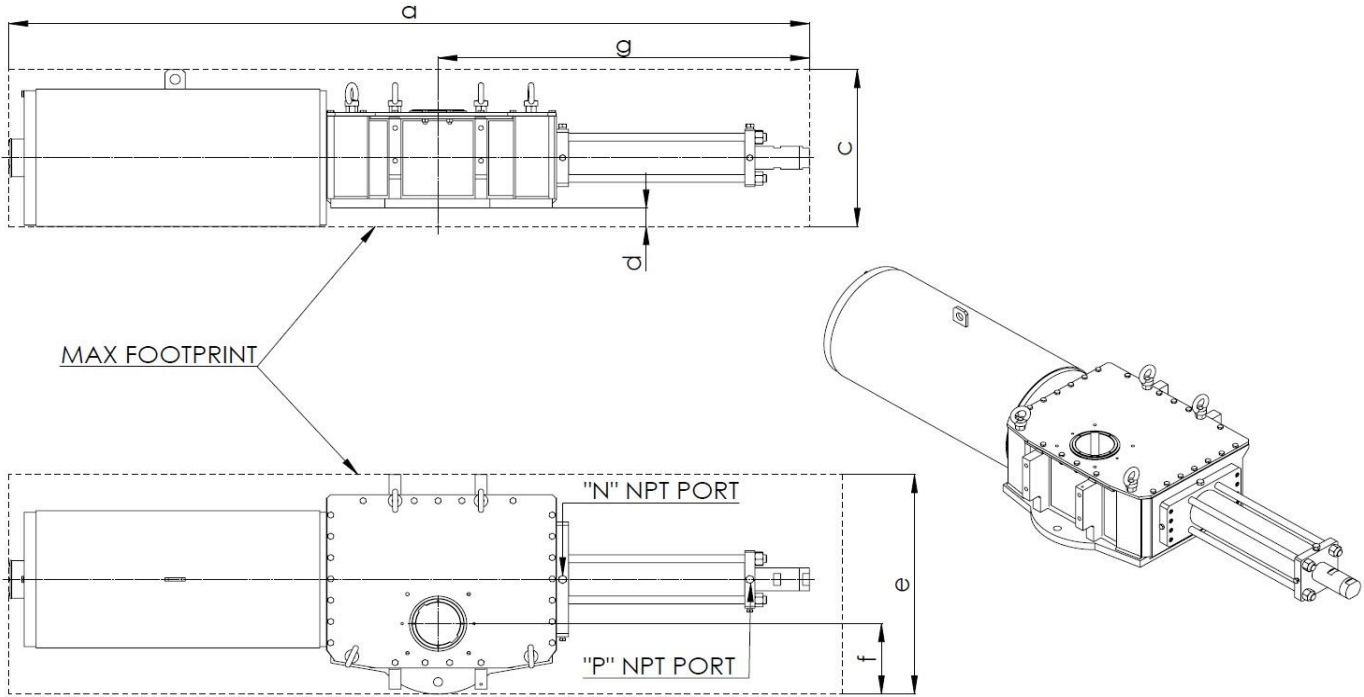
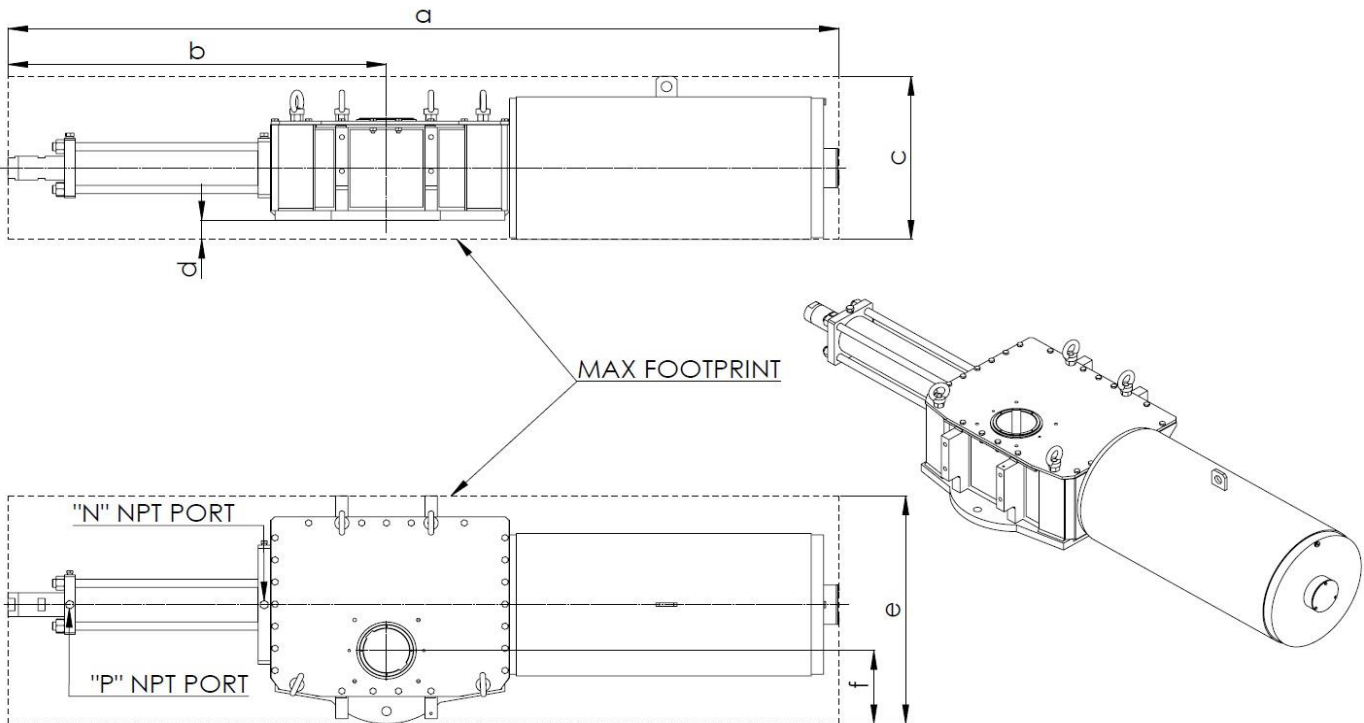


Figure 8: Dimensional Data – Single Acting – Sym/Cant – Fail Open





Limitorque™ LHS/LHH Hydraulic Heavy-Duty Actuator Series FCD LFENTB0003-01-AQ - 5/16

Table with columns: Model, a, b, c, d, e, f, g, P NPT PORT, N NPT PORT, Weight, Swept Volume*, and MOT. It lists various actuator models and their specifications.

* Swept Volume data are referred to actuators with end stops adjusted for 90° of stroke.



Limitorque™ LHS/LHH Hydraulic Heavy-Duty Actuator Series FCD LFENTB0003-01-AQ - 5/16

Table with columns: Model, a, b, c, d, e, f, g, P NPT PORT, N NPT PORT, Weight, Swept Volume*, MOT. Rows list various actuator models and their specifications.

* Swept Volume data are referred to actuators with end stops adjusted for 90° of stroke.



Limitorque™ LHS/LHH Hydraulic Heavy-Duty Actuator Series FCD LFENTB0003-01-AQ - 5/16

Table with columns: Model, a, b, c, d, e, f, g, P NPT PORT, N NPT PORT, Weight, Swept Volume*, MOT. Contains detailed specifications for various actuator models.

* Swept Volume data are referred to actuators with end stops adjusted for 90° of stroke.



Limitorque™ LHS/LHH Hydraulic Heavy-Duty Actuator Series FCD LFENTB0003-01-AQ - 5/16

Table with columns: Model, a, b, c, d, e, f, g, P NPT PORT, N NPT PORT, Weight, Swept Volume*, MOT. Rows list various actuator models and their specifications.

* Swept Volume data are referred to actuators with end stops adjusted for 90° of stroke.



LHH Single Acting - Dimensions: mm (in) - Weights: Kg (lbs) - Swept Volumes: l (cu in) - MOT: Nm (ft-lb)													
Model		a	b	c	d	e	f	g	P NPT PORT	N NPT PORT	Weight	Swept Volume*	MOT
LHH-40X-110Y-FC3-3	LHH-40X-110Y-FO3-3	3805	1450	688	105	953	290	1474	2 x 1/2"	2 x 1/2"	2675	3,8	150000
		149,8	57,1	27,1	4,1	37,5	11,4	58,0			5896	232	103321
LHH-40X-120Y-FC3-3	LHH-40X-120Y-FO3-3	3805	1450	688	105	953	290	1474	2 x 1/2"	2 x 1/2"	2694	4,5	150000
		149,8	57,1	27,1	4,1	37,5	11,4	58,0			5939	275	103321
LHH-40X-130Y-FC3-3	LHH-40X-130Y-FO3-3	3810	1455	688	105	953	290	1479	2 x 1/2"	2 x 1/2"	2713	5,3	150000
		150,0	57,3	27,1	4,1	37,5	11,4	58,2			5981	323	103321
LHH-40X-140Y-FC3-3	LHH-40X-140Y-FO3-3	3814	1459	688	105	953	290	1483	2 x 1/2"	2 x 1/2"	2732	6,2	150000
		150,2	57,4	27,1	4,1	37,5	11,4	58,4			6023	378	103321
LHH-40X-150Y-FC3-3	LHH-40X-150Y-FO3-3	4024	1669	688	105	953	290	1693	2 x 1/2"	2 x 1/2"	2824	7,1	150000
		158,4	65,7	27,1	4,1	37,5	11,4	66,7			6227	433	103321
LHH-40X-160Y-FC3-3	LHH-40X-160Y-FO3-3	4029	1674	688	105	953	290	1698	2 x 3/4"	2 x 3/4"	2853	8,0	150000
		158,6	65,9	27,1	4,1	37,5	11,4	66,9			6290	488	103321
LHH-40X-170Y-FC3-3	LHH-40X-170Y-FO3-3	4029	1674	688	105	953	290	1698	2 x 3/4"	2 x 3/4"	2882	9,1	150000
		158,6	65,9	27,1	4,1	37,5	11,4	66,9			6354	555	103321
LHH-40X-180Y-FC3-3	LHH-40X-180Y-FO3-3	4034	1679	688	105	953	290	1703	2 x 3/4"	2 x 3/4"	2911	10,2	150000
		158,8	66,1	27,1	4,1	37,5	11,4	67,0			6418	622	103321
LHH-40X-190Y-FC3-3	LHH-40X-190Y-FO3-3	4034	1679	688	105	953	290	1703	2 x 3/4"	2 x 3/4"	2940	11,3	150000
		158,8	66,1	27,1	4,1	37,5	11,4	67,0			6482	690	103321
LHH-40X-200Y-FC3-3	LHH-40X-200Y-FO3-3	4039	1684	688	105	953	290	1708	2 x 3/4"	2 x 3/4"	2969	12,6	150000
		159,0	66,3	27,1	4,1	37,5	11,4	67,2			6545	769	103321
LHH-40X-210Y-FC3-3	LHH-40X-210Y-FO3-3	4044	1689	688	105	953	290	1713	2 x 3/4"	2 x 3/4"	2998	13,8	150000
		159,2	66,5	27,1	4,1	37,5	11,4	67,4			6609	842	103321
LHH-40X-220Y-FC3-3	LHH-40X-220Y-FO3-3	4044	1689	688	105	953	290	1713	2 x 3/4"	2 x 3/4"	3027	15,2	150000
		159,2	66,5	27,1	4,1	37,5	11,4	67,4			6673	928	103321
LHH-40X-110Y-FC3-4	LHH-40X-110Y-FO3-4	3805	1450	688	105	953	290	1474	2 x 1/2"	2 x 1/2"	2675	3,8	150000
		149,8	57,1	27,1	4,1	37,5	11,4	58,0			5896	232	103321
LHH-40X-120Y-FC3-4	LHH-40X-120Y-FO3-4	3805	1450	688	105	953	290	1474	2 x 1/2"	2 x 1/2"	2694	4,5	150000
		149,8	57,1	27,1	4,1	37,5	11,4	58,0			5939	275	103321
LHH-40X-130Y-FC3-4	LHH-40X-130Y-FO3-4	3810	1455	688	105	953	290	1479	2 x 1/2"	2 x 1/2"	2713	5,3	150000
		150,0	57,3	27,1	4,1	37,5	11,4	58,2			5981	323	103321
LHH-40X-140Y-FC3-4	LHH-40X-140Y-FO3-4	3814	1459	688	105	953	290	1483	2 x 1/2"	2 x 1/2"	2732	6,2	150000
		150,2	57,4	27,1	4,1	37,5	11,4	58,4			6023	378	103321
LHH-40X-150Y-FC3-4	LHH-40X-150Y-FO3-4	4024	1669	688	105	953	290	1693	2 x 1/2"	2 x 1/2"	2824	7,1	150000
		158,4	65,7	27,1	4,1	37,5	11,4	66,7			6227	433	103321
LHH-40X-160Y-FC3-4	LHH-40X-160Y-FO3-4	4029	1674	688	105	953	290	1698	2 x 3/4"	2 x 3/4"	2853	8,0	150000
		158,6	65,9	27,1	4,1	37,5	11,4	66,9			6290	488	103321
LHH-40X-170Y-FC3-4	LHH-40X-170Y-FO3-4	4029	1674	688	105	953	290	1698	2 x 3/4"	2 x 3/4"	2882	9,1	150000
		158,6	65,9	27,1	4,1	37,5	11,4	66,9			6354	555	103321
LHH-40X-180Y-FC3-4	LHH-40X-180Y-FO3-4	4034	1679	688	105	953	290	1703	2 x 3/4"	2 x 3/4"	2911	10,2	150000
		158,8	66,1	27,1	4,1	37,5	11,4	67,0			6418	622	103321
LHH-40X-190Y-FC3-4	LHH-40X-190Y-FO3-4	4034	1679	688	105	953	290	1703	2 x 3/4"	2 x 3/4"	2940	11,3	150000
		158,8	66,1	27,1	4,1	37,5	11,4	67,0			6482	690	103321
LHH-40X-200Y-FC3-4	LHH-40X-200Y-FO3-4	4039	1684	688	105	953	290	1708	2 x 3/4"	2 x 3/4"	2969	12,6	150000
		159,0	66,3	27,1	4,1	37,5	11,4	67,2			6545	769	103321
LHH-40X-210Y-FC3-4	LHH-40X-210Y-FO3-4	4044	1689	688	105	953	290	1713	2 x 3/4"	2 x 3/4"	2998	13,8	150000
		159,2	66,5	27,1	4,1	37,5	11,4	67,4			6609	842	103321
LHH-40X-220Y-FC3-4	LHH-40X-220Y-FO3-4	4044	1689	688	105	953	290	1713	2 x 3/4"	2 x 3/4"	3027	15,2	150000
		159,2	66,5	27,1	4,1	37,5	11,4	67,4			6673	928	103321
LHH-40X-110Y-FC4-1	LHH-40X-110Y-FO4-1	4036	1450	700	110	953	290	1474	2 x 1/2"	2 x 1/2"	2065	3,8	150000
		158,9	57,1	27,5	4,3	37,5	11,4	58,0			4551	232	103321
LHH-40X-120Y-FC4-1	LHH-40X-120Y-FO4-1	4036	1450	700	110	953	290	1474	2 x 1/2"	2 x 1/2"	2084	4,5	150000
		158,9	57,1	27,5	4,3	37,5	11,4	58,0			4594	275	103321
LHH-40X-130Y-FC4-1	LHH-40X-130Y-FO4-1	4041	1455	700	110	953	290	1479	2 x 1/2"	2 x 1/2"	2103	5,3	150000
		159,1	57,3	27,5	4,3	37,5	11,4	58,2			4636	323	103321
LHH-40X-140Y-FC4-1	LHH-40X-140Y-FO4-1	4045	1459	700	110	953	290	1483	2 x 1/2"	2 x 1/2"	2122	6,2	150000
		159,3	57,4	27,5	4,3	37,5	11,4	58,4			4678	378	103321
LHH-40X-150Y-FC4-1	LHH-40X-150Y-FO4-1	4255	1669	700	110	953	290	1693	2 x 1/2"	2 x 1/2"	2214	7,1	150000
		167,5	65,7	27,5	4,3	37,5	11,4	66,7			4882	433	103321
LHH-40X-160Y-FC4-1	LHH-40X-160Y-FO4-1	4260	1674	700	110	953	290	1698	2 x 3/4"	2 x 3/4"	2243	8,0	150000
		167,7	65,9	27,5	4,3	37,5	11,4	66,9			4945	488	103321
LHH-40X-170Y-FC4-1	LHH-40X-170Y-FO4-1	4260	1674	700	110	953	290	1698	2 x 3/4"	2 x 3/4"	2272	9,1	150000
		167,7	65,9	27,5	4,3	37,5	11,4	66,9			5009	555	103321
LHH-40X-180Y-FC4-1	LHH-40X-180Y-FO4-1	4265	1679	700	110	953	290	1703	2 x 3/4"	2 x 3/4"	2301	10,2	150000
		167,9	66,1	27,5	4,3	37,5	11,4	67,0			5073	622	103321
LHH-40X-190Y-FC4-1	LHH-40X-190Y-FO4-1	4265	1679	700	110	953	290	1703	2 x 3/4"	2 x 3/4"	2330	11,3	150000
		167,9	66,1	27,5	4,3	37,5	11,4	67,0			5137	690	103321
LHH-40X-200Y-FC4-1	LHH-40X-200Y-FO4-1	4270	1684	700	110	953	290	1708	2 x 3/4"	2 x 3/4"	2359	12,6	150000
		168,1	66,3	27,5	4,3	37,5	11,4	67,2			5200	769	103321
LHH-40X-210Y-FC4-1	LHH-40X-210Y-FO4-1	4275	1689	700	110	953	290	1713	2 x 3/4"	2 x 3/4"	2388	13,8	150000
		168,3	66,5	27,5	4,3	37,5	11,4	67,4			5264	842	103321
LHH-40X-220Y-FC4-1	LHH-40X-220Y-FO4-1	4275	1689	700	110	953	290	1713	2 x 3/4"	2 x 3/4"	2417	15,2	150000
		168,3	66,5	27,5	4,3	37,5	11,4	67,4			5328	928	103321
LHH-40X-120Y-FC4-2	LHH-40X-120Y-FO4-2	4036	1450	700	110	953	290	1474	2 x 1/2"	2 x 1/2"	2175	4,5	150000
		158,9	57,1	27,5	4,3	37,5	11,4	58,0			4795	275	103321
LHH-40X-130Y-FC4-2	LHH-40X-130Y-FO4-2	4041	1455	700	110	953	290	1479	2 x 1/2"	2 x 1/2"	2194	5,3	150000
		159,1	57,3	27,5	4,3	37,5	11,4	58,2			4837	323	103321
LHH-40X-140Y-FC4-2	LHH-40X-140Y-FO4-2	4045	1459	700	110	953	290	1483	2 x 1/2"	2 x 1/2"	2213	6,2	150000
		159,3	57,4	27,5	4,3	37,5	11,4	58,4			4880	378	103321
LHH-40X-150Y-FC4-2	LHH-40X-150Y-FO4-2	4255	1669	700	110	953	290	1693	2 x 1/2"	2 x 1/2"	2306	7,1	150000
		167,5	65,7	27,5	4,3	37,5	11,4	66,7			5083	433	103321
LHH-40X-160Y-FC4-2	LHH-40X-160Y-FO4-2	4260	1674	700	110	953	290	1698	2 x 3/4"	2 x 3/4"			



LHH Single Acting - Dimensions: mm (in) - Weights: Kg (lbs) - Swept Volumes: l (cu in) - MOT: Nm (ft-lb)													
Model		a	b	c	d	e	f	g	P NPT PORT	N NPT PORT	Weight	Swept Volume*	MOT
LHH-40X-170Y-FC4-3	LHH-40X-170Y-F04-3	4260 167,7	1674 65,9	700 27,5	110 4,3	953 37,5	290 11,4	1698 66,9	2 x 3/4"	2 x 3/4"	2725 6007	9,1 555	150000 103321
LHH-40X-180Y-FC4-3	LHH-40X-180Y-F04-3	4265 167,9	1679 66,1	700 27,5	110 4,3	953 37,5	290 11,4	1703 67,0	2 x 3/4"	2 x 3/4"	2754 6070	10,2 622	150000 103321
LHH-40X-190Y-FC4-3	LHH-40X-190Y-F04-3	4265 167,9	1679 66,1	700 27,5	110 4,3	953 37,5	290 11,4	1703 67,0	2 x 3/4"	2 x 3/4"	2783 6134	11,3 690	150000 103321
LHH-40X-200Y-FC4-3	LHH-40X-200Y-F04-3	4270 168,1	1684 66,3	700 27,5	110 4,3	953 37,5	290 11,4	1708 67,2	2 x 3/4"	2 x 3/4"	2811 6198	12,6 769	150000 103321
LHH-40X-210Y-FC4-3	LHH-40X-210Y-F04-3	4275 168,3	1689 66,5	700 27,5	110 4,3	953 37,5	290 11,4	1713 67,4	2 x 3/4"	2 x 3/4"	2840 6262	13,8 842	150000 103321
LHH-40X-220Y-FC4-3	LHH-40X-220Y-F04-3	4275 168,3	1689 66,5	700 27,5	110 4,3	953 37,5	290 11,4	1713 67,4	2 x 3/4"	2 x 3/4"	2869 6325	15,2 928	150000 103321
LHH-40X-130Y-FC4-4	LHH-40X-130Y-F04-4	4041 159,1	1455 57,3	700 27,5	110 4,3	953 37,5	290 11,4	1479 58,2	2 x 1/2"	2 x 1/2"	2708 5969	5,3 323	150000 103321
LHH-40X-140Y-FC4-4	LHH-40X-140Y-F04-4	4045 159,3	1459 57,4	700 27,5	110 4,3	953 37,5	290 11,4	1483 58,4	2 x 1/2"	2 x 1/2"	2727 6012	6,2 378	150000 103321
LHH-40X-150Y-FC4-4	LHH-40X-150Y-F04-4	4255 167,5	1669 65,7	700 27,5	110 4,3	953 37,5	290 11,4	1693 66,7	2 x 1/2"	2 x 1/2"	2819 6215	7,1 433	150000 103321
LHH-40X-160Y-FC4-4	LHH-40X-160Y-F04-4	4260 167,7	1674 65,9	700 27,5	110 4,3	953 37,5	290 11,4	1698 66,9	2 x 3/4"	2 x 3/4"	2848 6279	8,0 488	150000 103321
LHH-40X-170Y-FC4-4	LHH-40X-170Y-F04-4	4260 167,7	1674 65,9	700 27,5	110 4,3	953 37,5	290 11,4	1698 66,9	2 x 3/4"	2 x 3/4"	2877 6342	9,1 555	150000 103321
LHH-40X-180Y-FC4-4	LHH-40X-180Y-F04-4	4265 167,9	1679 66,1	700 27,5	110 4,3	953 37,5	290 11,4	1703 67,0	2 x 3/4"	2 x 3/4"	2906 6406	10,2 622	150000 103321
LHH-40X-190Y-FC4-4	LHH-40X-190Y-F04-4	4265 167,9	1679 66,1	700 27,5	110 4,3	953 37,5	290 11,4	1703 67,0	2 x 3/4"	2 x 3/4"	2935 6470	11,3 690	150000 103321
LHH-40X-200Y-FC4-4	LHH-40X-200Y-F04-4	4270 168,1	1684 66,3	700 27,5	110 4,3	953 37,5	290 11,4	1708 67,2	2 x 3/4"	2 x 3/4"	2964 6534	12,6 769	150000 103321
LHH-40X-210Y-FC4-4	LHH-40X-210Y-F04-4	4275 168,3	1689 66,5	700 27,5	110 4,3	953 37,5	290 11,4	1713 67,4	2 x 3/4"	2 x 3/4"	2993 6597	13,8 842	150000 103321
LHH-40X-220Y-FC4-4	LHH-40X-220Y-F04-4	4275 168,3	1689 66,5	700 27,5	110 4,3	953 37,5	290 11,4	1713 67,4	2 x 3/4"	2 x 3/4"	3021 6661	15,2 928	150000 103321
LHH-40X-120Y-FC5-1	LHH-40X-120Y-F05-1	4723 185,9	1450 57,1	818 32,2	160 6,3	953 37,5	290 11,4	1474 58,0	2 x 1/2"	2 x 1/2"	3268 7205	4,5 275	150000 103321
LHH-40X-130Y-FC5-1	LHH-40X-130Y-F05-1	4728 186,1	1455 57,3	818 32,2	160 6,3	953 37,5	290 11,4	1479 58,2	2 x 1/2"	2 x 1/2"	3287 7247	5,3 323	150000 103321
LHH-40X-140Y-FC5-1	LHH-40X-140Y-F05-1	4732 186,3	1459 57,4	818 32,2	160 6,3	953 37,5	290 11,4	1483 58,4	2 x 1/2"	2 x 1/2"	3306 7289	6,2 378	150000 103321
LHH-40X-150Y-FC5-1	LHH-40X-150Y-F05-1	4942 194,6	1669 65,7	818 32,2	160 6,3	953 37,5	290 11,4	1693 66,7	2 x 1/2"	2 x 1/2"	3399 7493	7,1 433	150000 103321
LHH-40X-160Y-FC5-1	LHH-40X-160Y-F05-1	4947 194,8	1674 65,9	818 32,2	160 6,3	953 37,5	290 11,4	1698 66,9	2 x 3/4"	2 x 3/4"	3428 7557	8,0 488	150000 103321
LHH-40X-170Y-FC5-1	LHH-40X-170Y-F05-1	4947 194,8	1674 65,9	818 32,2	160 6,3	953 37,5	290 11,4	1698 66,9	2 x 3/4"	2 x 3/4"	3456 7620	9,1 555	150000 103321
LHH-40X-180Y-FC5-1	LHH-40X-180Y-F05-1	4952 195,0	1679 66,1	818 32,2	160 6,3	953 37,5	290 11,4	1703 67,0	2 x 3/4"	2 x 3/4"	3485 7684	10,2 622	150000 103321
LHH-40X-190Y-FC5-1	LHH-40X-190Y-F05-1	4952 195,0	1679 66,1	818 32,2	160 6,3	953 37,5	290 11,4	1703 67,0	2 x 3/4"	2 x 3/4"	3514 7748	11,3 690	150000 103321
LHH-40X-200Y-FC5-1	LHH-40X-200Y-F05-1	4957 195,2	1684 66,3	818 32,2	160 6,3	953 37,5	290 11,4	1708 67,2	2 x 3/4"	2 x 3/4"	3543 7811	12,6 769	150000 103321
LHH-40X-210Y-FC5-1	LHH-40X-210Y-F05-1	4962 195,4	1689 66,5	818 32,2	160 6,3	953 37,5	290 11,4	1713 67,4	2 x 3/4"	2 x 3/4"	3572 7875	13,8 842	150000 103321
LHH-40X-220Y-FC5-1	LHH-40X-220Y-F05-1	4962 195,4	1689 66,5	818 32,2	160 6,3	953 37,5	290 11,4	1713 67,4	2 x 3/4"	2 x 3/4"	3601 7939	15,2 928	150000 103321
LHH-40X-140Y-FC5-2	LHH-40X-140Y-F05-2	4732 186,3	1459 57,4	818 32,2	160 6,3	953 37,5	290 11,4	1483 58,4	2 x 1/2"	2 x 1/2"	3600 7938	6,2 378	150000 103321
LHH-40X-150Y-FC5-2	LHH-40X-150Y-F05-2	4942 194,6	1669 65,7	818 32,2	160 6,3	953 37,5	290 11,4	1693 66,7	2 x 1/2"	2 x 1/2"	3693 8141	7,1 433	150000 103321
LHH-40X-160Y-FC5-2	LHH-40X-160Y-F05-2	4947 194,8	1674 65,9	818 32,2	160 6,3	953 37,5	290 11,4	1698 66,9	2 x 3/4"	2 x 3/4"	3722 8205	8,0 488	150000 103321
LHH-40X-170Y-FC5-2	LHH-40X-170Y-F05-2	4947 194,8	1674 65,9	818 32,2	160 6,3	953 37,5	290 11,4	1698 66,9	2 x 3/4"	2 x 3/4"	3750 8268	9,1 555	150000 103321
LHH-40X-180Y-FC5-2	LHH-40X-180Y-F05-2	4952 195,0	1679 66,1	818 32,2	160 6,3	953 37,5	290 11,4	1703 67,0	2 x 3/4"	2 x 3/4"	3779 8332	10,2 622	150000 103321
LHH-40X-190Y-FC5-2	LHH-40X-190Y-F05-2	4952 195,0	1679 66,1	818 32,2	160 6,3	953 37,5	290 11,4	1703 67,0	2 x 3/4"	2 x 3/4"	3808 8396	11,3 690	150000 103321
LHH-40X-200Y-FC5-2	LHH-40X-200Y-F05-2	4957 195,2	1684 66,3	818 32,2	160 6,3	953 37,5	290 11,4	1708 67,2	2 x 3/4"	2 x 3/4"	3837 8460	12,6 769	150000 103321
LHH-40X-210Y-FC5-2	LHH-40X-210Y-F05-2	4962 195,4	1689 66,5	818 32,2	160 6,3	953 37,5	290 11,4	1713 67,4	2 x 3/4"	2 x 3/4"	3866 8523	13,8 842	150000 103321
LHH-40X-220Y-FC5-2	LHH-40X-220Y-F05-2	4962 195,4	1689 66,5	818 32,2	160 6,3	953 37,5	290 11,4	1713 67,4	2 x 3/4"	2 x 3/4"	3895 8587	15,2 928	150000 103321
LHH-40X-140Y-FC5-3	LHH-40X-140Y-F05-3	4732 186,3	1459 57,4	818 32,2	160 6,3	953 37,5	290 11,4	1483 58,4	2 x 1/2"	2 x 1/2"	3989 8794	6,2 378	150000 103321
LHH-40X-150Y-FC5-3	LHH-40X-150Y-F05-3	4942 194,6	1669 65,7	818 32,2	160 6,3	953 37,5	290 11,4	1693 66,7	2 x 1/2"	2 x 1/2"	4081 8998	7,1 433	150000 103321
LHH-40X-160Y-FC5-3	LHH-40X-160Y-F05-3	4947 194,8	1674 65,9	818 32,2	160 6,3	953 37,5	290 11,4	1698 66,9	2 x 3/4"	2 x 3/4"	4110 9061	8,0 488	150000 103321
LHH-40X-170Y-FC5-3	LHH-40X-170Y-F05-3	4947 194,8	1674 65,9	818 32,2	160 6,3	953 37,5	290 11,4	1698 66,9	2 x 3/4"	2 x 3/4"	4139 9125	9,1 555	150000 103321
LHH-40X-180Y-FC5-3	LHH-40X-180Y-F05-3	4952 195,0	1679 66,1	818 32,2	160 6,3	953 37,5	290 11,4	1703 67,0	2 x 3/4"	2 x 3/4"	4168 9189	10,2 622	150000 103321
LHH-40X-190Y-FC5-3	LHH-40X-190Y-F05-3	4952 195,0	1679 66,1	818 32,2	160 6,3	953 37,5	290 11,4	1703 67,0	2 x 3/4"	2 x 3/4"	4197 9252	11,3 690	150000 103321
LHH-40X-200Y-FC5-3	LHH-40X-200Y-F05-3	4957 195,2	1684 66,3	818 32,2	160 6,3	953 37,5	290 11,4	1708 67,2	2 x 3/4"	2 x 3/4"	4226 9316	12,6 769	150000 103321
LHH-40X-210Y-FC5-3	LHH-40X-210Y-F05-3	4962 195,4	1689 66,5	818 32,2	160 6,3	953 37,5	290 11,4	1713 67,4	2 x 3/4"	2 x 3/4"	4255 9380	13,8 842	150000 103321
LHH-40X-220Y-FC5-3	LHH-40X-220Y-F05-3	4962 195,4	1689 66,5	818 32,2	160 6,3	953 37,5	290 11,4	1713 67,4	2 x 3/4"	2 x 3/4"	4283 9443	15,2 928	150000 103321
LHH-50X-140Y-FC1-1	LHH-50X-140Y-F01-1	5218 205,4	1788 70,4	728 28,6	22 0,8	1150 45,3	343 13,5	1804 71,0	2 x 1/2"	2 x 1/2"	4582 10101	7,9 482	300000 221269
LHH-50X-150Y-FC1-1	LHH-50X-150Y-F01-1	5239 206,3	1809 71,2	728 28,6	22 0,8	1150 45,3	343 13,5	1825 71,9	2 x 1/2"	2 x 1/2"	4594 10129	9,1 555	300000 221269
LHH-50X-160Y-FC1-1	LHH-50X-160Y-F01-1	5243 206,4	1813 71,4	728 28,6	22 0,8	1150 45,3	343 13,5	1829 72,0	2 x 3/4"	2 x 3/4"	4643 10235	10,3 629	300000 221269
LHH-50X-170Y-FC1-1	LHH-50X-170Y-F01-1	5246 206,5	1816 71,5	728 28,6	22 0,8	1150 45,3	343 13,5	1832 72,1	2 x 3/4"	2 x 3/4"	4651 10254	11,7 714	300000 221269
LHH-50X-180Y-FC1-1	LHH-50X-180Y-F01-1	5255 206,9	1825 71,9	728 28,6	22 0,8	1150 45,3	343 13,5	1841 72,5	2 x 3/4"	2 x 3/4"	4697 10356	13,1 799	300000 221269
LHH-50X-190Y-FC1-1	LHH-50X-190Y-F01-1	5258 207,0	1828 72,0	728 28,6	22 0,8	1150 45,3	343 13,5	1844 72,6	2 x 3/4"	2 x 3/4"	4725 10416	14,6 891	300000 221269
LHH-50X-200Y-FC1-1	LHH-50X-200Y-F01-1	5496 216,4	2066 81,3	728 28,6	22 0,8	1150 45,3	343 13,5	2082 82,0	2 x 3/4"	2 x 3/4"	4893 10786	16,2 989	300000 221269



Limitorque™ LHS/LHH Hydraulic Heavy-Duty Actuator Series FCD LFENTB0003-01-AQ - 5/16

Table with columns: Model, a, b, c, d, e, f, g, P NPT PORT, N NPT PORT, Weight, Swept Volume*, MOT. It lists specifications for LHH Single Acting actuators in various sizes and configurations.

* Swept Volume data are referred to actuators with end stops adjusted for 90° of stroke.



Limitorque™ LHS/LHH Hydraulic Heavy-Duty Actuator Series FCD LFENTB0003-01-AQ - 5/16

Table with columns: Model, a, b, c, d, e, f, g, P NPT PORT, N NPT PORT, Weight, Swept Volume*, MOT. Rows list various actuator models and their specifications.

* Swept Volume data are referred to actuators with end stops adjusted for 90° of stroke.

LHH Double Acting: Dimensional, Weight and Volume Tables

Figure ?

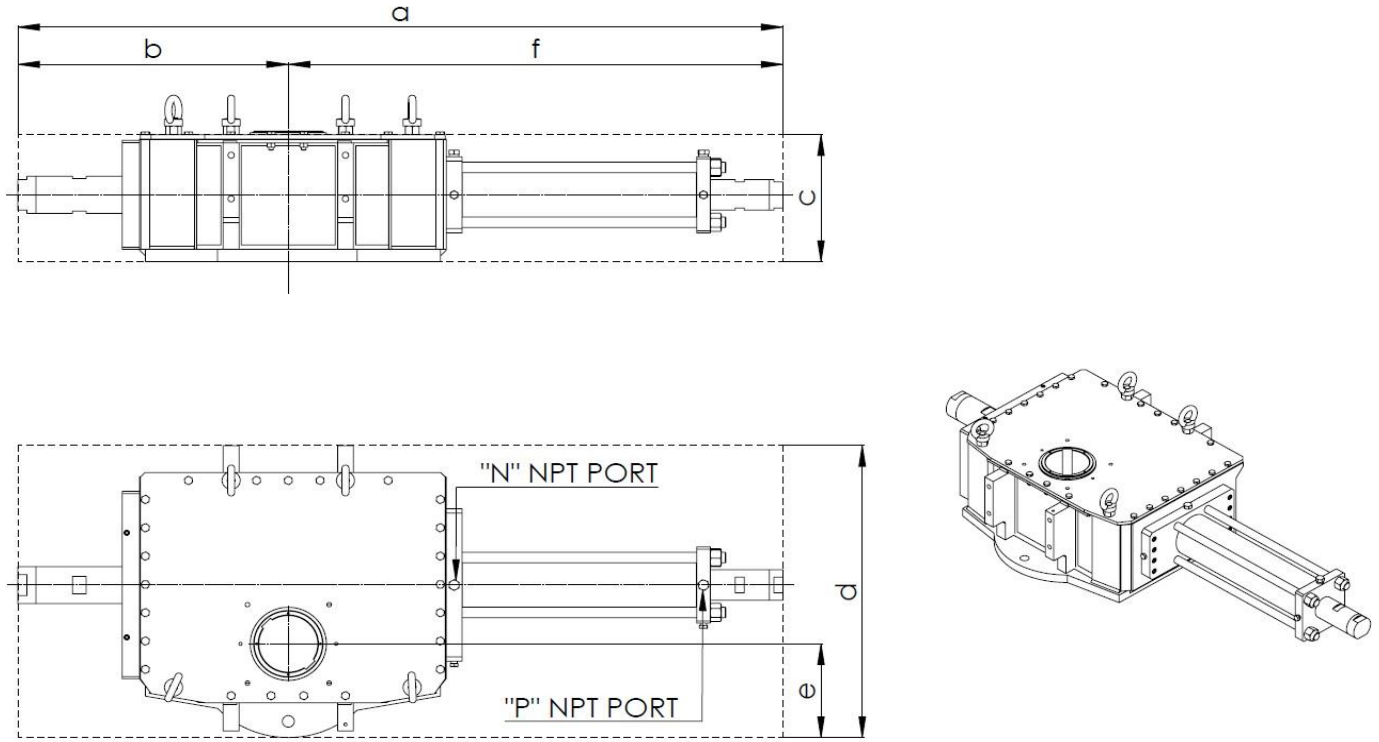




Table with columns: Model, a, b, c, d, e, f, P NPT PORT, N NPT PORT, Weight, Swept Volume* (P PORT, N PORT), MOT. Lists specifications for LHH Double Acting actuators across various models and ports.

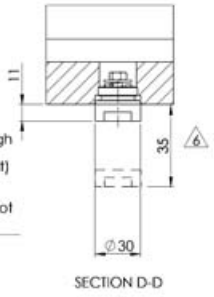
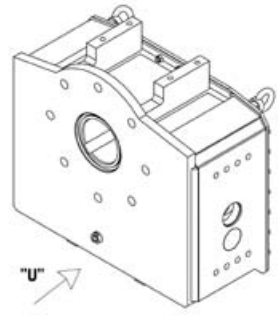
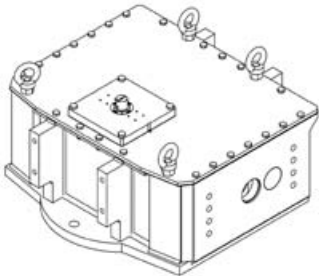
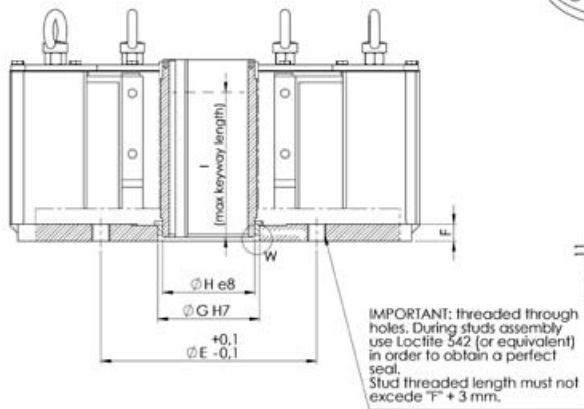
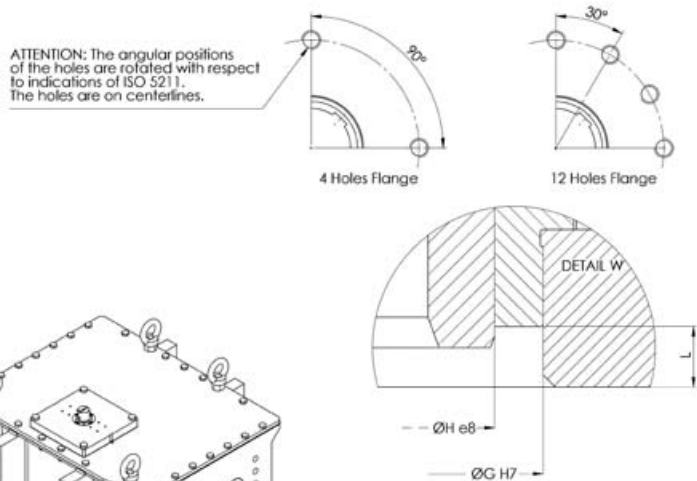
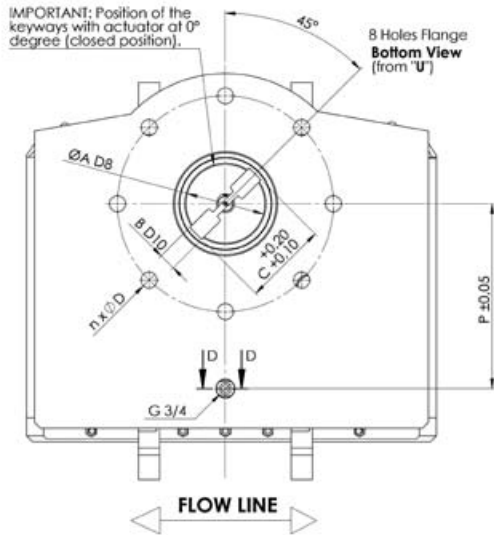
* Swept Volume data are referred to actuators with end stops adjusted for 90° of stroke.

LHH Double Acting - Dimensions: mm (in) - Weights: Kg (lbs) - Swept Volumes: l (cu in) - MOT: Nm (ft-lb)												
Model	a	b	c	d	e	f	P NPT PORT	N NPT PORT	Weight	Swept Volume*		MOT
										"P" PORT	"N" PORT	
LHH-40X-190Y-D1	2411	708	399	953	290	1703	2 x 3/4"	2 x 3/4"	1345	11,3	9,3	150000
	94,9	27,9	15,7	37,5	11,4	67,0			2965	690	568	103321
LHH-40X-200Y-D1	2416	708	399	953	290	1708	2 x 3/4"	2 x 3/4"	1374	12,6	10,6	150000
	95,1	27,9	15,7	37,5	11,4	67,2			3029	769	647	103321
LHH-50X-140Y-D1	2687	883	582	1150	343	1804	2 x 1/2"	2 x 1/2"	2348	7,9	5,3	300000
	105,8	34,7	22,9	45,3	13,5	71,0			5177	482	323	221269
LHH-50X-150Y-D1	2708	883	582	1150	343	1825	2 x 1/2"	2 x 1/2"	2367	9,1	6,5	300000
	106,6	34,7	22,9	45,3	13,5	71,9			5219	555	397	221269
LHH-50X-160Y-D1	2712	883	582	1150	343	1829	2 x 3/4"	2 x 3/4"	2416	10,3	7,6	300000
	106,8	34,7	22,9	45,3	13,5	72,0			5325	629	464	221269
LHH-50X-170Y-D1	2715	883	582	1150	343	1832	2 x 3/4"	2 x 3/4"	2424	11,7	8,9	300000
	106,9	34,7	22,9	45,3	13,5	72,1			5344	714	543	221269
LHH-50X-180Y-D1	2724	883	582	1150	343	1841	2 x 3/4"	2 x 3/4"	2470	13,1	10,3	300000
	107,2	34,7	22,9	45,3	13,5	72,5			5446	799	629	221269
LHH-50X-190Y-D1	2727	883	582	1150	343	1844	2 x 3/4"	2 x 3/4"	2497	14,6	11,6	300000
	107,3	34,7	22,9	45,3	13,5	72,6			5506	891	708	221269
LHH-50X-200Y-D1	2965	883	582	1150	343	2082	2 x 3/4"	2 x 3/4"	2665	16,2	17,7	300000
	116,7	34,7	22,9	45,3	13,5	82,0			5876	989	1080	221269
LHH-50X-210Y-D1	3002	883	582	1150	343	2119	2 x 3/4"	2 x 3/4"	2694	17,8	13,2	300000
	118,2	34,7	22,9	45,3	13,5	83,4			5939	1086	806	221269
LHH-50X-220Y-D1	3002	883	582	1150	343	2119	2 x 3/4"	2 x 3/4"	2753	19,5	14,8	300000
	118,2	34,7	22,9	45,3	13,5	83,4			6068	1190	903	221269
LHH-50X-240Y-D1	3017	883	582	1150	343	2134	2 x 1"	2 x 1"	2880	23,3	18,4	300000
	118,8	34,7	22,9	45,3	13,5	84,0			6349	1422	1123	221269
LHH-50X-250Y-D1	3027	883	582	1150	343	2144	2 x 1"	2 x 1"	2891	25,2	20,2	300000
	119,2	34,7	22,9	45,3	13,5	84,4			6374	1538	1233	221269
LHH-50X-260Y-D1	3027	883	582	1150	343	2144	2 x 1"	2 x 1"	2928	27,3	22,2	300000
	119,2	34,7	22,9	45,3	13,5	84,4			6455	1666	1355	221269

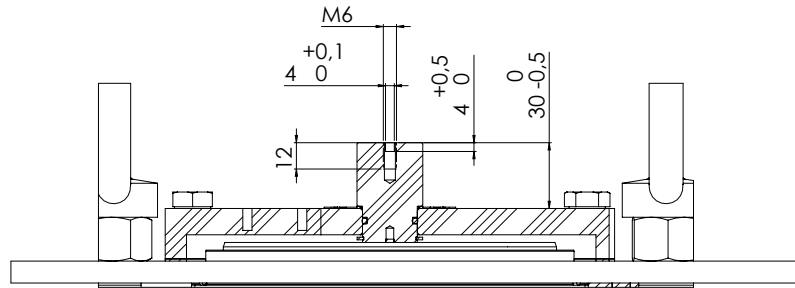
* Swept Volume data are referred to actuators with end stops adjusted for 90° of stroke.

Mounting Interface Dimensions

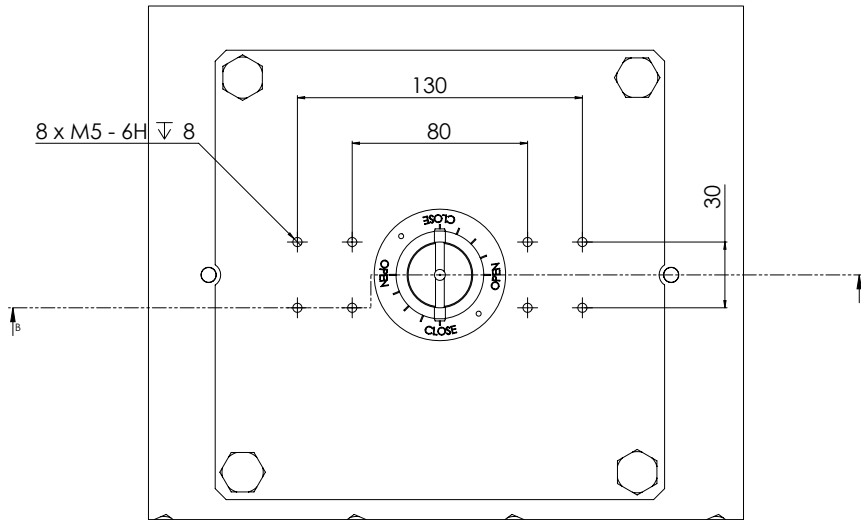
LPS/LDG/LGO/LHS/LHH Series Coupling Dimensions													
Model	ISO 5211 Flange Interface (reference)	ØA	B	C	No. of Holes	Hole Diameter	P.C.D. [mm (inch)]	F	ØG	ØH	I	L	P
LPS/LDG/LGO/LHS/LHH-15	F16	65	10	70.6	4	M20	165 (6,50)	18	86	78	161	8	155
LPS/LDG/LGO/LHS/LHH-20	F25	86	12	91.6	8	M16	254 (10)	16	130	112	178	4.5	205
LPS/LDG/LGO/LHS/LHH-25	F30	100	18	108.8	8	M20	298 (11,73)	18	150	133	201	6	230
LPS/LDG/LGO/LHS/LHH-30	F35	130	28	138.6	8	M30	356 (14,02)	28	168	152	261	10	305
LPS/LDG/LGO/LHS/LHH-35	F40	150	36	166.8	8	M36	406 (15,98)	33	199	185	323	9	405
LPS/LDG/LGO/LHS/LHH-40	F48	185	45	205.8	12	M36	483 (19,02)	38	244	230	338	10	450
LPS/LDG/LGO/LHS/LHH-50	F60	230	50	252.8	20	M36	603 (23,74)	48	292	275	500	18	550



LPS/LDG/LGO/LHS/LHH Series Coupling Dimensions
 THE DETAIL BELOW REFERS TO LPS/LDG/LGO/LHS/LHH Actuators Models
 15/20/25/30/35/40/50



SECTION B-B



REV		REV	BY	APP
1	20/04/2014	Dimensional	MWB	PLFR
2	19/12/2014	General Review - Changed Sheet Format - Updating Flange Interface and P dimension	PLFR	PLFR
3	20/08/2013	Updating Flange Interface	SCB	PLD
4	21/09/2013	Updating Nerve Interface	SCB	PLD
5	20/01/2014	LDG/LHH models Added	SCAR	PLD
6	21/03/2014	ADD VENT VALVE ISO model system	ANZO	PLD

MATERIAL/STANDARD	SURFACE ROUGHNESS IN Rm	DRAWN	GIM	24/02/2014		REV	6
---		CHECKED	CHB	24/02/2014		Flow Control Division	
		APPROVED	PLFR	24/02/2014			
HARDNESS IN HB	GENERAL TOLERANCES	WEIGHT	15%		DESCRIPTION	LPS/LDG/LGO/LHS/LHH COUPLING DIMENSIONS	
---	ISO 2768-mK	SIZE	A3		DRAWING NO.	DUT024	
TREATMENT/PAINING	FIRST ANGLE PROJECTION	SCALE	1:10		SHEET	2 OF 2	
- NONE -							

Service Kits

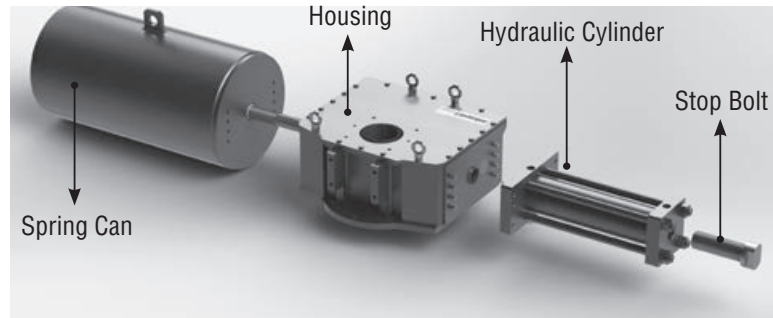


Figure 10: Single Acting Actuator

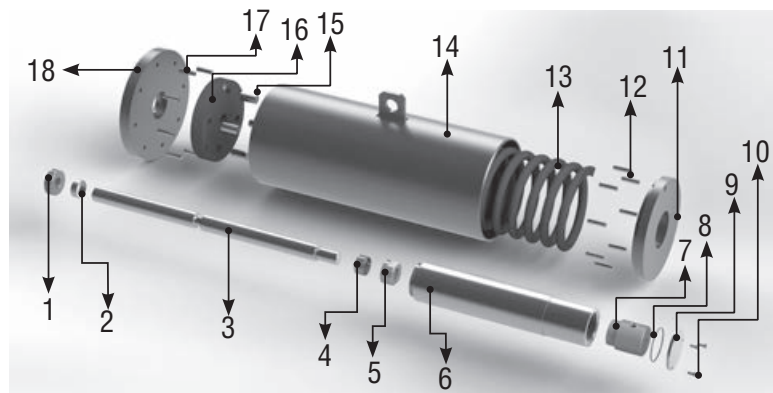


Figure 11: Spring Can Exploded View

Number	Description	Number	Description
1	Split Ring	10	Hex Screw
2	Bushing	11	Spring Can End Flange
3	Spring Rod	12	Bar Pin
4	Bushing	13	Spring
5	Spring Rod End Nut	14	Spring Can
6	Spring Guide	15	Bar Pin
7	Spring Stop Bolt	16	Spring Plate
8	O-Ring	17	Bar Pin
9	Stop Bolt Cap	18	Spring Can Head Flange

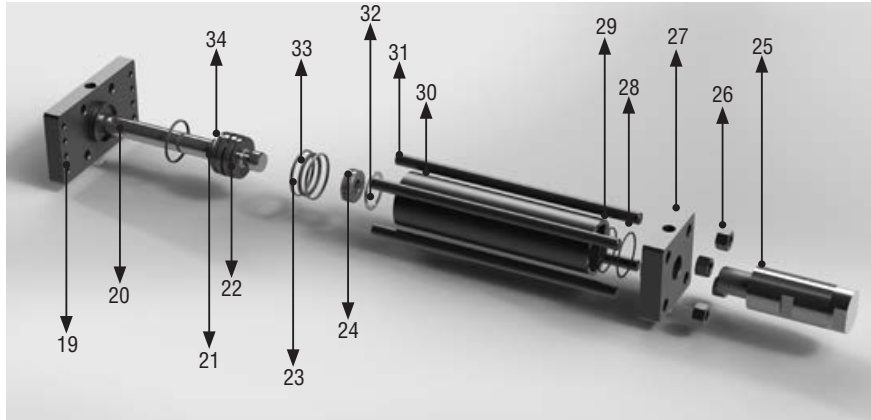


Figure 12: Exploded View of Hydraulic Cylinder

Number	Description	Spare Parts*	Number	Description	Spare Parts*
19	Cylinder Head Flange		27	Cylinder End Flange	
20	Piston Rod		28	O-Ring (x2)	X
21	O-Ring	X	29	Parback Ring (x2)	X
22	Piston		30	Tube	
23	Guide Ring	X	31	Tie Rod	
24	Split Ring		32	Spiral Retaining Shaft Ring	
25	Stop Bolt Assembly		33	O-Ring	X
26	Hex Nut (High)		34	Split Ring	

*Standard Maintenance Spare Parts for On/Off Application

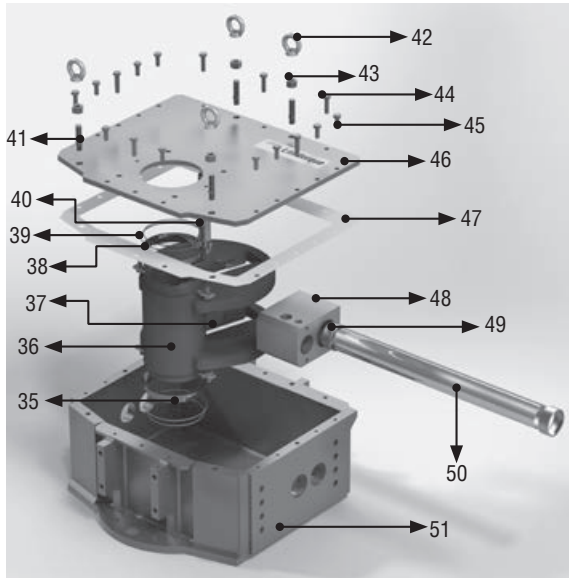


Figure 13: Exploded View of Housing

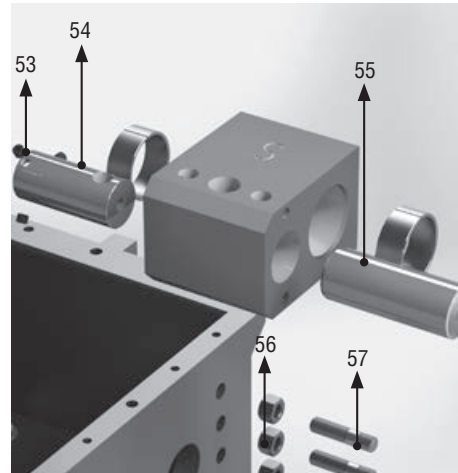


Figure 14: Exploded View of Adaptor Kit

Number	Description	Spare Parts*	Number	Description	Spare Parts*
35	Bushing		48	Guide Block	
36	Scotch Yoke		49	Bushing	
37	Slider Block (x2)		50	Guide Bar	
38	O-Ring	X	51	Housing	
39	O-Ring	X	52	Center Ring	
40	Guide Pin		53	Grub Screw	
41	Stud		54	Cylinder Adaptor	
42	Eyebolt		55	Spring Adaptor	
43	Hex nut (High)		56	Hex Nut (High)	
44	Hex Head Shoulder Bolt		57	Stud	
45	Hex Head Screw		58	Guide Adaptor Pin ¹	
46	Cover		59	Hex Head Screw ¹	
47	Cover Gasket	X			

*Standard Maintenance Spare Parts for On/Off Application

¹Only in the double acting actuators

CW/CCW Conversion Kit Sample

Number	Description
49	Bushing
54	Cylinder Adaptor
55	Spring Adaptor
56	Hex Nut (High)
57	Studs





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**Flowserve Limatorque
Fluid Power Systems
Product Sales**

Via Rio Vallone 17
20883 Mezzago (MB), Italy
Phone: +39 039 62060 1
Fax: +39 039 62060 213
Email: lfpsinfo@flowserve.com

**Flowserve Limatorque
Fluid Power Systems
Manufacturing and Operations**

Via Rio Vallone 17
20883 Mezzago (MB), Italy
Phone: +39 039 62060 1
Fax: +39 039 62060 213
Email: lfpsinfo@flowserve.com

**Flowserve Limatorque
Fluid Power Systems
Research and Development**

Viale dell'Artigianato 24
29122 Piacenza (PC), Italy
Email: lfpsinfo@flowserve.com