



Hydraulic & Electro Hydraulic Actuator

Data Sheet



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Overview:

- **Incentive for KTC System Technik:** Passion for engineering and developing solutions in industrial automation.
- **Experience:** More than two decades in the automation industry.
- **Technical Team Expertise:** Electrical engineering, hydraulics, mechanical engineering, and control engineering (PLC).
- **Project Experience:** Completion of numerous interesting and large projects since globally in last two decades.
- **Customer Base:** Valve manufacturers, engineering and end users in power stations, oil & gas, pipelines, and chemical industries.
- **Company Objectives:** Customer, employee, and business partner satisfaction.
- **Continuous Improvement:** Ongoing development of product services and regular professional education.



Rotary Scotch Yoke Actuator

(Double Acting & Single Acting)

Introduction:

- KTC actuator engineered for enduring performance with **negligible** maintenance.
- Crafted with advanced engineering and high-quality materials to deliver optimal performance in demanding environments.
- Designed to **reduce** maintenance requirements while ensuring sustained effectiveness.

Operating Pressure:

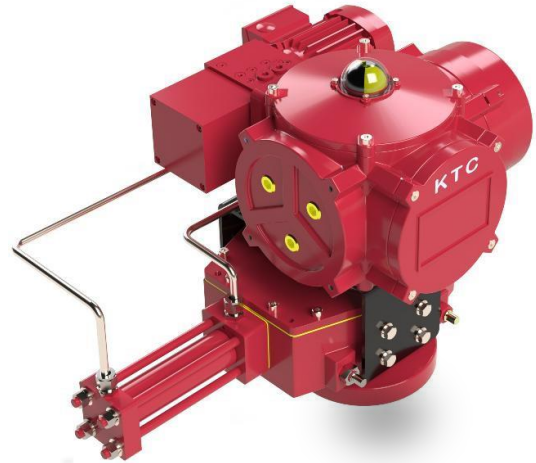
Hydraulic up to 200 bar (2900 psi).

Environmental Protection:

O-ring sealing provides protection certified to IEC IP66M, IP67M.

Corrosion Resistance:

Extended service life provided by carbon steel, honed cylinders and chrome plated rods.



Specifications:

- **Strength-to-Weight Ratio:** An outstanding strength-to-weight ratio is achieved through a fully enclosed, weather-resistant centralised body constructed from either ductile iron or stainless steel, depending on the size.
- **Scotch Yoke Mechanism:** Available in symmetric and canted designs to meet application-specific valve torque demands with minimum weight and cost.
- **Bearings and Bushings:** Typically, high-grade bronze or ceramic bearings designed for high load and minimal maintenance.

Effectiveness and Durability:

- **Honed and Hot chrome plated Cylinders:** Minimize friction.
- **Bronze Sliding Blocks:** Used on the torque arm to reduce friction.
- **Dynamic Sailing Piston Seal:** Minimizes friction and prevents chattering behavior, even after extended periods of inactivity.



Double Acting Technical Details:

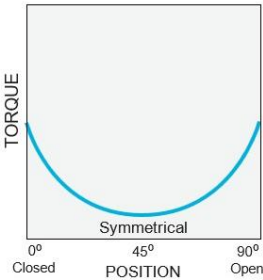
Model Number	100 Bar - 1450 Psi				130 Bar - 1886 Psi				160 Bar - 2320 Psi			
	Torque Output (Nm)		Torque Output (lb-in)		Torque Output (Nm)		Torque Output (lb-in)		Torque Output (Nm)		Torque Output (lb-in)	
	OPEN	CLOSE	OPEN	CLOSE	OPEN	CLOSE	OPEN	CLOSE	OPEN	CLOSE	OPEN	CLOSE
HRSDA-A1-032 / EHRSDA-A1-032	208	341	1841	3018	270	443	2390	3921	332	546	2938	4832
HRSDA-A1-040 / EHRSDA-A1-040	372	533	3292	4717	483	693	4275	6133	595	853	5266	7549
HRSDA-A1-050 / EHRSDA-A1-050	624	833	5522	7372	812	1082	7186	9576	999	1332	8841	11788
HRSDA-01-040 / EHRSDA-01-040	694	925	6142	8186	902	1202	7983	10638	1110	1480	9824	13098
HRSDA-01-050 / EHRSDA-01-050	1084	1445	9593	12788	1409	1879	12470	16629	1734	2312	15346	20461
HRSDA-02-050 / EHRSDA-02-050	1416	1888	12532	16709	1841	2455	16293	21727	2266	3021	20054	26736
HRSDA-02-060 / EHRSDA-02-060	2072	2998	18337	26532	2694	3897	23842	34488	3316	4796	29347	42445
HRSDA-02-080 / EHRSDA-02-080	3625	4834	32081	42781	4713	6824	41710	60392	5800	7734	51330	68446
HRSDA-02-100 / EHRSDA-02-100	5268	7552	46622	66835	6848	9818	60605	86889	8428	12084	74588	106943
HRSDA-03-060 / EHRSDA-03-060	2438	3526	21576	31205	3169	4584	28046	40568	3901	5642	34524	49932
HRSDA-03-080 / EHRSDA-03-080	4265	5686	37745	50321	5544	7392	49064	65419	6823	9098	60384	80517
HRSDA-03-100 / EHRSDA-03-100	6197	8884	54843	78623	8056	11550	71296	102218	9915	14215	87748	125803
HRSDA-04-100 / EHRSDA-04-100	8055	11548	71287	102200	10472	15013	92677	132865	12888	18478	114059	163530
HRSDA-04-125 / EHRSDA-04-125	13165	18045	116510	159698	18053	23458	159769	207603	22219	28871	196638	255508
HRSDA-04-140 / EHRSDA-04-140	16976	22635	150238	200320	22069	29426	195311	260420	27162	36216	240384	320512
HRSDA-05-140 / EHRSDA-05-140	20902	27869	184983	246641	27172	36230	240472	320636	33443	44590	295971	394622
HRSDA-05-160 / EHRSDA-05-160	27300	36400	241605	322140	35490	47320	314087	418782	43680	58240	386568	515424
HRSDA-05-180 / EHRSDA-05-180	34552	46069	305785	407711	44917	59890	397515	530027	55283	73711	489255	652342
HRSDA-06-180 / EHRSDA-06-180	42751	57001	378346	504459	55576	74101	491848	655794	68401	91202	605349	807138
HRSDA-06-200 / EHRSDA-06-200	52779	70372	467094	622792	68612	91483	607216	809625	84446	112595	747347	996466

** The specifications mentioned are subject to change without prior notice for the purpose of quality improvement.

Symmetric Yoke



Double Acting Actuator



Spring Return (Fail closed or Fail open):

Model Number	Spring Torque (Nm)				Oil Torque (Nm)								
					100 Bar - 1450 Psi			130 Bar - 1886 Psi			160 Bar - 2320 Psi		
	Spring Code	Start	Run	End	Start	Run	End	Start	Run	End	Start	Run	End
HRSSA- A1-030 / EHRSSA- A1-030	S-A1	147	78	96	112	71	60	175	116	123	237	160	185
	S-A2	177	92	110	97	57	30	160	101	93	222	146	155
	S-A7	220	115	140	-	-	-	130	78	50	193	123	112
HRSSA-A1-040 / EHRSSA-A1-040	S-A7	256	139	177	217	150	157	337	236	277	457	322	397
	S-A4	337	182	229	171	105	62	291	191	182	411	277	302
	S-A5	401	214	266	-	-	-	253	158	118	373	244	238
HRSSA-A1-050 / EHRSSA-A1-050	S-1B	410	236	326	339	236	251	526	371	438	714	505	625
	S-1B	445	257	356	268	191	180	455	325	367	643	459	554
	S-1B	503	294	414	210	153	121	397	288	309	585	422	496
HRSSA-01-040 / EHRSSA-01-040	S-A7	495	256	317	377	234	199	585	381	407	793	528	615
	S-A7	583	310	398	296	180	111	504	327	319	712	474	527
	S-1B	726	376	267	-	-	-	635	261	176	843	409	384
HRSSA-01-050 / EHRSSA-01-050	S-1B	758	396	285	799	370	326	1124	599	651	1449	829	976
	S-1B	881	474	356	728	292	203	1053	522	528	1378	751	853
	S-1B	982	538	414	669	228	102	995	458	427	1320	687	752
HRSSA-02-050 / EHRSSA-02-050	S-1B	1096	551	647	769	450	32	1194	750	745	1619	1051	1170
	S-1B	1257	653	808	608	348	159	1033	649	584	1458	949	1009
	S-1A	1643	818	943	-	-	-	898	484	198	1323	784	623
HRSSA-02-060 / EHRSSA-02-060	S-1A	1622	805	922	1097	623	623	1702	1051	1002	2308	1479	1608
	S-1A	2154	1108	1349	866	477	166	1472	905	772	2077	1333	1377
	S-1	2149	1105	1344	-	-	-	1280	751	475	1886	1179	1081
HRSSA-02-080 / EHRSSA-02-080	S-1	2405	1267	1600	1901	1209	1097	2952	1952	2147	4002	2695	3197
	S-3	3058	1599	1995	1506	877	443	2557	1620	1493	3607	2363	2544
	S-4	3874	1965	2335	-	-	-	2216	1254	677	3267	1997	1728
HRSSA-02-100 / EHRSSA-02-100	S-4	3947	2010	2408	2860	1715	1321	4440	2832	2901	6021	3950	4482
	S-5	4604	2404	2997	2271	1321	664	3851	2438	2244	5432	3556	3825
	S-5	5105	2721	3498	1770	1004	163	3350	2121	1743	4931	3239	3324
HRSSA-03-060 / EHRSSA-03-060	S-1A	2054	993	1085	1290	687	321	2002	1190	1034	2715	1694	1764
	S-1	2467	1209	1353	-	-	-	1734	975	620	2447	1479	1333
	S-1	2695	1353	1581	-	-	-	1506	830	392	2218	1334	1105
HRSSA-03-080 / EHRSSA-03-080	S-1	2996	1543	1882	2237	1370	1123	3472	2243	2359	4708	3117	3594
	S-3	3818	1951	2347	1772	962	300	3008	1836	1536	4243	2710	2772
	S-4	4877	2412	2747	-	-	-	2607	1374	477	3843	2248	1713
HRSSA-03-100 / EHRSSA-03-100	S-4	4962	2466	2833	3364	1916	1235	5223	3231	3094	7082	4546	4953
	S-5	5749	2934	3525	2672	1448	448	4531	2763	2307	6390	4078	4166
	S-5	6339	3307	4115	-	-	-	3941	2390	1717	5800	3705	3576

Spring Return (Fail closed or Fail open):

Model Number	Spring Torque (Nm)				Oil Torque (Nm)								
					100 Bar - 1450 Psi			130 Bar - 1886 Psi			160 Bar - 2320 Psi		
	Spring Code	Start	Run	End	Start	Run	End	Start	Run	End	Start	Run	End
HRSSA-04-100 / EHRSSA-04-100	S-6	6135	3105	3677	4378	2593	1921	6795	4302	4337	9211	6011	6754
	S-5	8341	4089	4582	-	-	-	5889	3317	2131	8306	5027	4548
	S-8	10390	4983	5359	-	-	-	5112	2423	82	7529	4132	2498
HRSSA-04-125 / EHRSSA-04-125	S-8	11028	5387	5998	7167	3924	2137	11117	6718	6087	15067	9511	10036
	S-11	12084	6196	7497	5668	3116	1082	9618	5909	5031	13567	8703	8981
	S-11	13336	6988	8750	-	-	-	8365	5117	3779	12315	7910	7728
HRSSA-04-140 / EHRSSA-04-140	S-11	12331	6352	7744	9232	5655	4646	14325	9257	9738	19418	12859	14831
	S-12	15048	7827	9688	7288	4180	1929	12381	7782	7022	17474	11385	12115
	S-13	18157	9313	11275	-	-	-	10794	6296	3912	15887	9899	9005
HRSSA-05-140 / EHRSSA-05-140	S-11	16485	8230	9535	11367	6548	4417	17637	10981	10687	23908	15415	16958
	S-12	20050	10115	11928	8973	4663	852	15244	9097	7123	21514	13530	13393
	S-13	24311	12081	13882	-	-	-	13290	7131	2862	19560	11564	9132
HRSSA-05-160 / EHRSSA-05-160	S-15	20051	4585	12444	14857	14717	25249	23047	20508	33439	31237	26298	41629
	S-16	25856	13102	15565	11735	6200	1444	19925	11991	9634	28115	17781	17824
	S-17	30068	15245	18131	-	-	-	17360	9847	5422	25550	15638	13612
HRSSA-05-180 / EHRSSA-05-180	S-16	26050	13224	15758	18793	11205	8502	29159	18534	18868	39524	25863	29233

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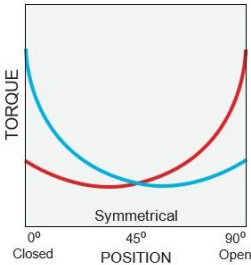
Important Note:

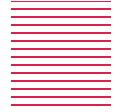
- Fail Close:** Consider the spring torque as the "Close" value for the actuator and the oil torque as the "Open" value for the actuator.
- Fail Open:** Consider the spring torque as the "Open" value for the actuator and the oil torque as the "Close" value for the actuator.

Symmetric Yoke



Spring Return Actuator





Travel Stop / Adjustment

Travel stop/adjustment can be set in the range of $-5^{\circ} \sim +95^{\circ}$ of stroke and the stoppers are designed in vertical touch in order to bear big shock.



Adaption

The valve shaft bore diameter is increased for direct mounting of the valve and actuator without a coupler or bracket, and the mounting flange follows ISO 5211.



Standard NAMUR Mounting Dimension & Indicator

For easy installation of accessories like limit switch box, positioners & etc. Indicator with pointer & angle meter for easy and convenient use



Yoke L-Plate

With the improved design only L Plate need to replace after wear.

Square type roller avoids single Edge contact and impression mark at yoke part during maximum load.



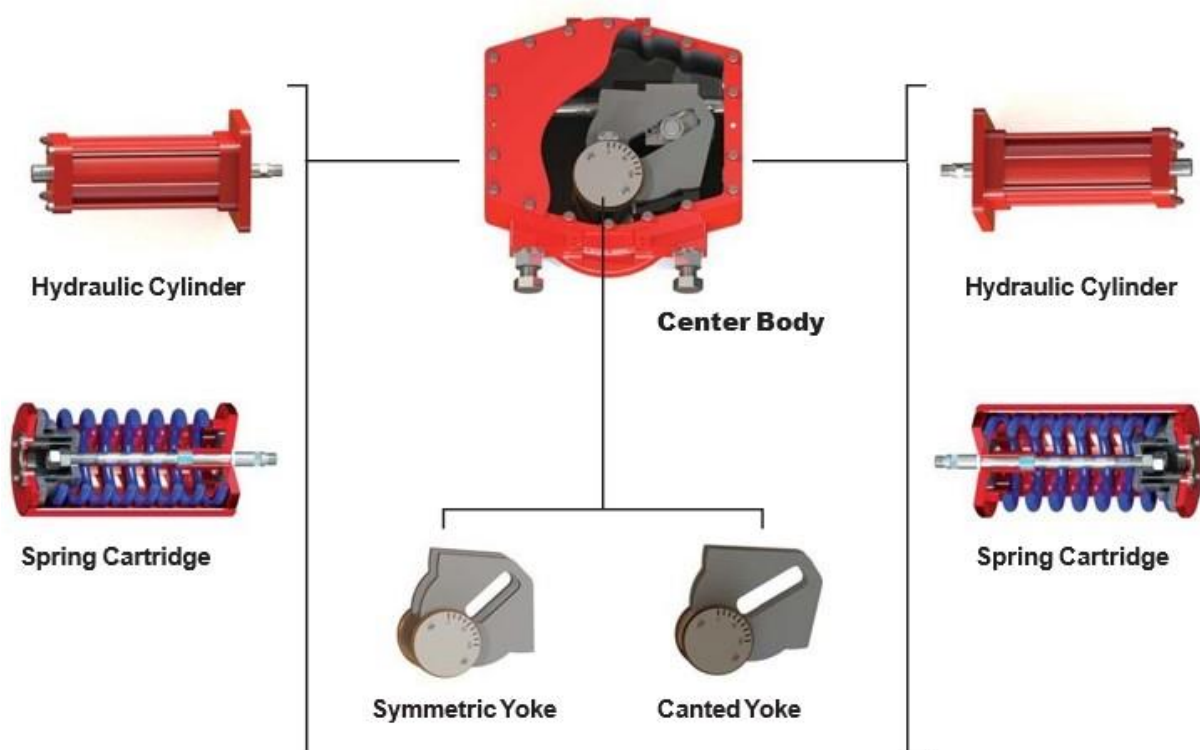
Replaceable Bearing

Surface heat-treated Slide Pin, Slide Bearing, and YokeSlide provides semi-permanent lifespan with strong durability of abrasion.



Spring Rod Guide

Hard anodized Aluminium casting and external epoxy powder coated against severe industrial environment.

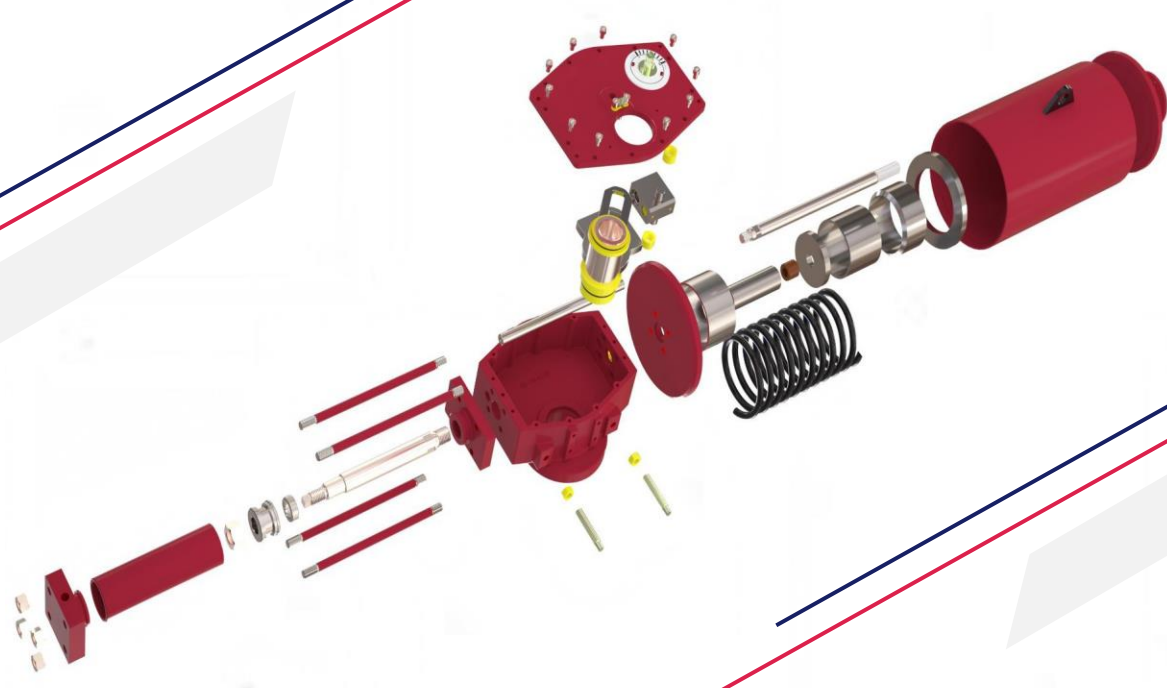


Standard Painting System: C4 (High - As per ISO 12944).

****Optional: C5-M (Very High - As per ISO 12944).**

Features:

- Capability for zero emissions.
- Double Acting, Tandem or Spring Return.
- Electric on/off failsafe. Continuous modulating duty.
- Various voltage and control signal options are available, including network standards.
- Can be powered by solar-charged power packs, making them perfect for remote locations.
- Rapid opening and closing speeds.
- High precision in repeatability and control.
- Stay put, fail last, fail open, or fail close using spring or stored accumulator energy.
- Diagnostic capabilities available both remotely and locally.
- Option to mount a remote hydraulic power pack is available.
- Controls available for both remote and local operation.



Description	Standard Material	Optional Material
Centre Body	Ductile Iron	Carbon Steel
Yoke	Ductile Iron	Carbon Steel
Sliding Ring	PTFE	Graphite
Seal	PTFE	NBR / Graphite
Roller Bush	Aluminum Bronze	Carbon Steel
Stopper Bolt	Alloy Steel	Carbon Steel
Slide Block	Carbon Steel	Alloy Steel
Tie Rod	Alloy Steel	Carbon Steel
Roller	Carbon Steel	Aluminum Bronze
Piston Rod	Carbon Steel (Chromium Plated)	Equivalent
Bush	Aluminum Bronze	Steel / PTFE

Description	Material
Piston	Carbon Steel
Pressure Relief Valve	Stainless Steel
O-ring	NBR
Guide Bar	Alloy Steel (Chromium-plated)
Yoke Bushing	Aluminum Bronze
Spring	Alloy Steel
Spring Cartridge	Carbon Steel
Spring Rod	Alloy Steel (Chromium plated)
Hydraulic Cylinder	Carbon Steel (Honed Tube)
Bottom Flange	Carbon Steel
Top Flange	Carbon Steel

Rotary Rack & Pinion Actuator

(Double Acting & Single Acting)

Introduction:

KTC Systemtechnik Actuator is a type of mechanical system used to convert hydraulic energy into rotary motion. It combines the principles of a rack and pinion mechanism with electro-hydraulic actuation, offering precise control and high torque output for various applications.

Product Design:

In-house Design, Development, and Construction: All processes are managed internally at KTC Systemtechnik.

Collaboration with Trusted Partners: We work exclusively with reliable partners in valve technology, storage technology, and CNC manufacturing.



Specification:

Power Supply:	400V50Hz 3Phs; 230V50Hz 1Phs
Power consumption:	180W, 250W, 750W
Solenoid Valve:	24VDC/230VDC 21W
Ambient Temp.:	-10°C to 60°C
**Optional:	-40°C to 80°C
Medium:	Hydraulic oil HLP, filtered min. 10µm, viscosity 10 to 46.
Hazardous Areas:	II 2G c k IIC T4 ATEX Zone 1
Mounting:	ISO5211, DIN3337, NAMUR, VDI/ VDE3 845.

Specifications:

- **Precision Control:** Offers accurate and smooth control of rotary motion, essential for applications requiring fine adjustments.
- **Modulating Control:** Allows for precise control of the valve position in applications requiring variable flow or pressure. This feature ensures that the actuator can adjust the position continuously (not just fully open/closed).
- **Electro-Hydraulic Integration:** Combines electrical control with hydraulic power, providing efficient and powerful actuation.
- **Speed Control:** Provides the ability to regulate the speed of movement, enhancing performance and precision.
- **Manual Override:** Manual override to operate at the time of power failure.
- **Load Capacity:** Designed to handle a wide range of load capacities, making them versatile for various applications.
- **Energy Efficiency:** Engineered to optimize energy use, often incorporating features to minimize power consumption.
- **Self-calibration:** Some actuators feature self-calibration capabilities, where the actuator automatically adjusts to the required settings without needing manual input, improving operational efficiency and reducing setup time.



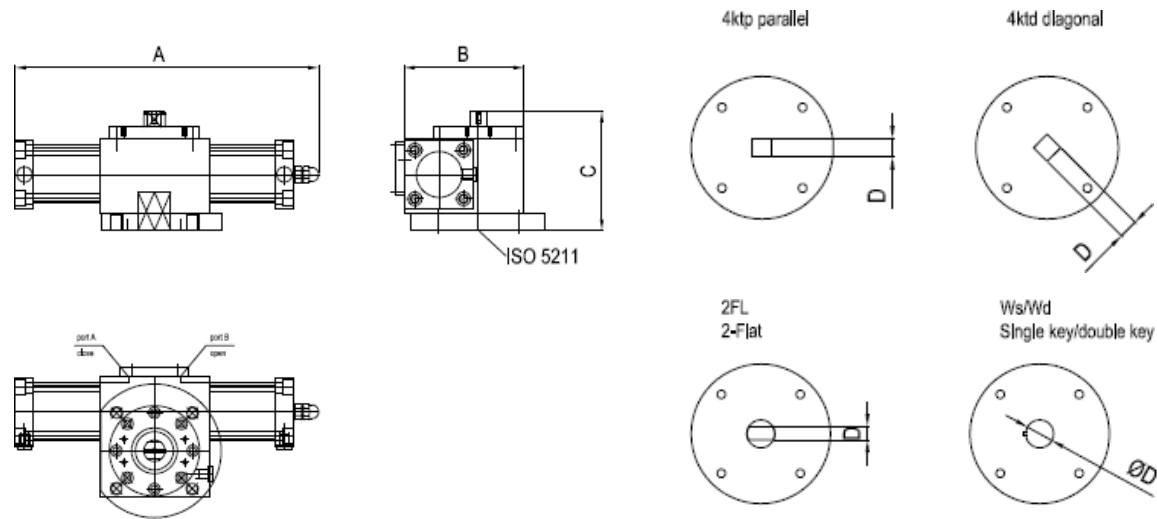
Dimensional and Technical Details:

Double Acting:

Main Data Sheet

Hydraulic Actuator PA-HX-O-Dxx

Part turn actuator 90°, double acting



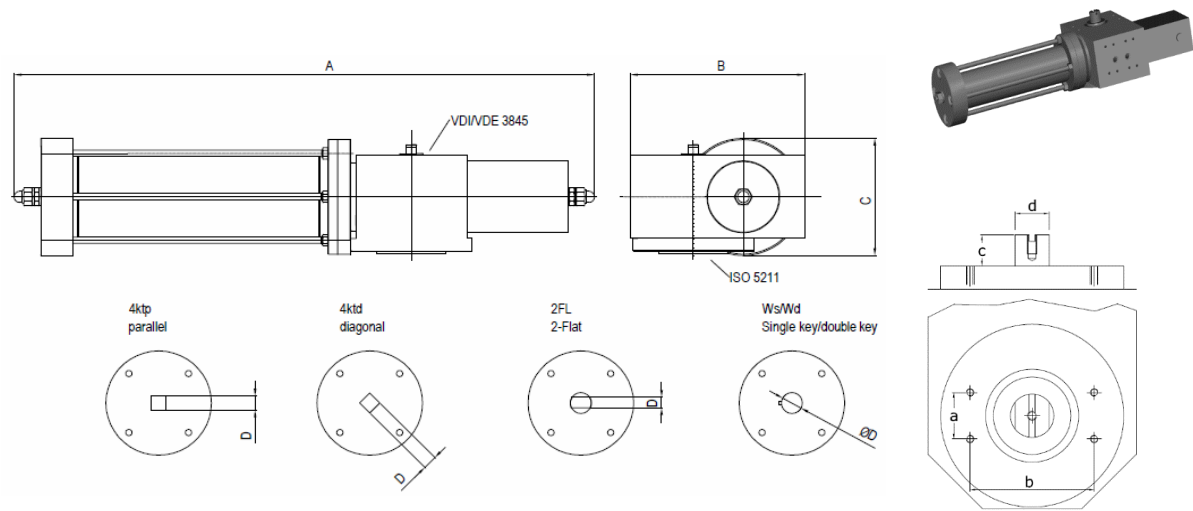
Standard Range

Type PA-HX- O-	Torque Nm (100bar)	A mm	B mm	C mm	max. D				F DIN EN 5211	Weight kg	Oil Volume L
					4KtP	4KtD	2FL	Ws/Wd			
D005	90	200	110	96	14	14	14	16	F05-F07	9	0,016
D010	220	270	120	115	17	17	17	20	F05-F07	15	0,04
D020	400	290	150	155	24	24	22	30	F07-F10	18	0,07
D040	600	300	160	155	30	30	27	40	F10-F14	25	0,08
D041	1200	500	205	185	40	40	40	55	F14-F16	43	0,36
D042	900	400	160	155	30	30	27	40	F12-F14	25	0,16
D043	2150	500	205	185	40	40	40	55	F14-F16	45	0,40
D045	4500	630	265	230	55	55	50	65	F16-F25	97	0,90
D110	10000	835	365	285	75	75	75	90	F16-F30	248	1,90

Hydraulic fluid:	HLP DIN51524-2 / ISO 6743-4
Working pressure:	80bar...160bar
Ambient temperature range:	-10°C to 60°C optional -40°C to 80°C
Degree of protection:	Sub merge on request
Hydraulic connection:	Female thread 1/4", 3/8", 1/2"
Block connection:	Customized valve block available (Solenoid valves, pressure reducing valves etc.)
Hand pump:	Available
Hazardous areas:	ATEX conformity
Limit Switches:	Wide range available

Spring Return - Fail closed:

Hydraulic Actuator PA-HX-O-Exx-90-SC
Part Turn Actuator 90°, single acting, spring to close



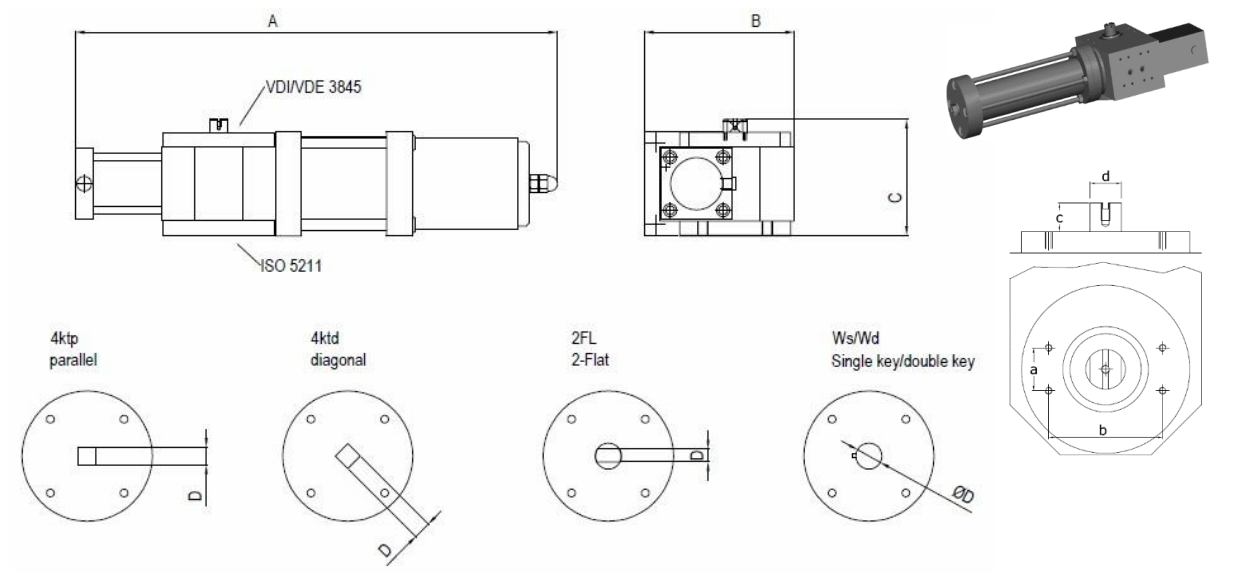
Standard Range

Type PA HX- O-	ETC End torque spring Nm	A mm	B mm	C mm	max D				F DIN 5211	Switch Box interface a/b/c/d	Weight Kg	Oil Volume L
					4KtP	4KtD	2FI	Ws/Wd				
E10-SC	35	275	110	100	14	14	14	16	F05-F07	30/80/20/18	10	0,02
E20-SC	90	380	130	115	17	17	17	20	F05-F07	30/80/20/22	20	0,04
E30-SC	160	530	160	155	24	24	22	30	F07-F10	30/80/20/28	25	0,075
E40-SC	400	660	170	155	30	30	27	40	F10-F14	30/80/20/28	55	0,16
E50-SC	860	805	230	180	40	40	40	55	F10-F16	30/130/20/36	85	0,4
E70-SC	1900	1100	300	230	55	55	55	65	F14-F25	30/155/30/48	155	0,9
E75-SC	2400	1100	300	230	55	55	55	65	F14-F25	30/155/30/48	160	1,1
E90-SC	4000	1300	405	285	75	75	75	90	F16-F30	40/210/60/30	320	1,9
E110-SC	8000	1680	510	285	75	75	75	90	F16-F30	10/210/30/30	640	3,7

Hydraulic fluid:	HLP 15...46 DIN51524-2 / ISO 6743-4
Working pressure:	80bar...160bar
Ambient temperature range:	-10°C to 60°C optional -40°C to 80°C (to be confirmed in case of order)
Degree of protection:	Sub merge on request
Hydraulic connection:	Female thread 1/4", 3/8", 1/2"
Block connection:	Customized valve block available (Solenoid valves, pressure reducing valves etc.)
Hand pump:	Available
Hazardous areas:	ATEX conformity
Limit Switches:	Wide range available (Mechanical, proximity switches)

Hydraulic Actuator PA-HX-O-Exx-SO

Part turn actuator 90°, single acting, spring to open



Standard Range

Type PA HX- O-	BTO Start Torque Spring Nm	A mm	B mm	C mm	max D				F DIN 5211	Switch Box interface a/b/c/d	Weight Kg	Oil Volume L
					4KtP	4KtD	2FI	Ws/Wd				
E05-SO	45	210	110	100	14	14	14	16	F05-F07	30/80/20/18	10	0,016
E20-SO	100	355	130	115	17	17	17	20	F05-F07	30/80/20/22	20	0,040
E25-SO	180	485	160	155	24	24	22	30	F07-F10	30/80/20/28	25	0,075
E40-SO	455	635	170	155	30	30	27	40	F10-F14	30/80/20/28	45	0,16
E50-SO	940	750	230	180	40	40	40	55	F10-F16	30/130/20/36	80	0,40
E72-SO	2225	1050	300	230	55	55	55	65	F14-F25	30/155/30/48	150	0,90
E78-SO	4160	1265	405	285	75	75	75	90	F16-F30		360	1,90
E110-SO	8320	1765	510	285	75	75	75	90	F16-F30		620	3,70

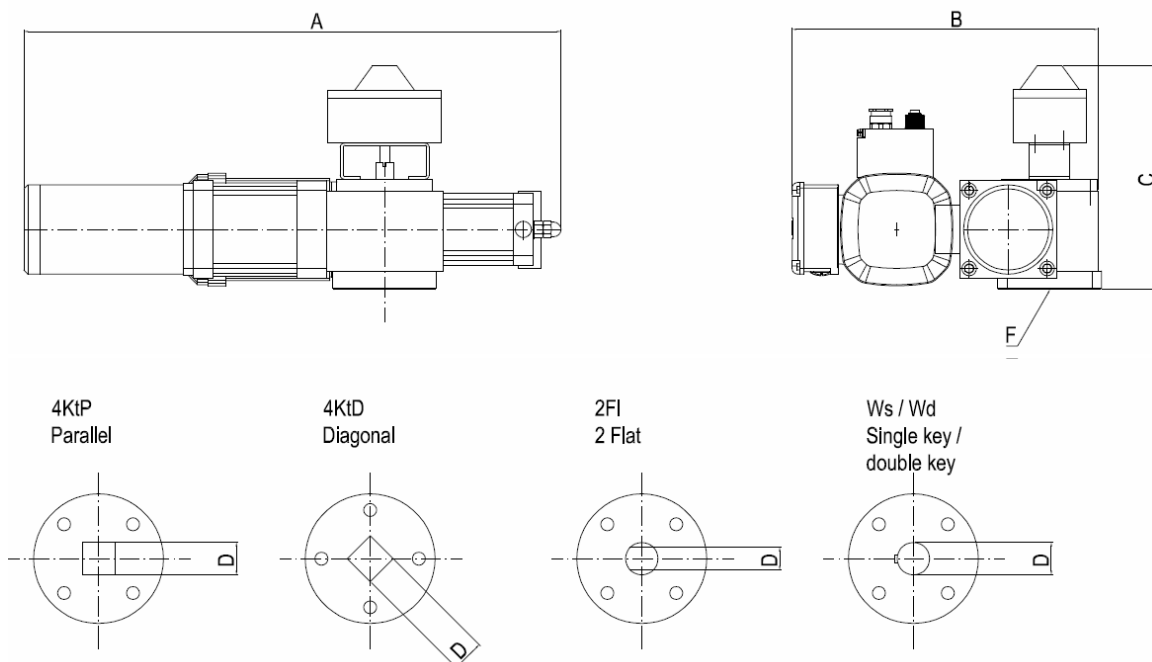
Hydraulic fluid:	HLP 15...46 DIN51524-2 / ISO 6743-4
Working pressure:	80bar...160bar
Ambient temperature range:	-10°C to 60°C optional -40°C to 80°C (to be confirmed in case of order)
Degree of protection:	Sub merge on request
Hydraulic connection:	Female thread 1/4", 3/8", 1/2"
Block connection:	Customized valve block available (Solenoid valves, pressure reducing valves etc.)
Hand pump:	Available
Hazardous areas:	ATEX conformity
Limit Switches:	Wide range available (Mechanical, proximity switches)

Dimensional and Technical Details:

Double Acting:

Electro Hydraulic Actuator PA-O-Exx-90-EB-SC-(X)

Part turns actuator 90°, limit switch box, single acting, spring to close, X=Explosion proof



Standard Range

Type	ETC End torque spring Nm	A mm	B mm	C* mm	max D				F DIN 5211	Weight Kg
					4KtP	4KtD	2FI	Ws/Wd		
E20	35	445	305	225	14	14	14	16	F05-F07	25
E30	90	445	325	235	17	17	17	20	F05-F07	35
E35	165	515	360	276	24	24	22	30	F07-F10	40
E40	410	665	380	276	30	30	27	40	F10-F14	70
E55	870	805	440	300	40	40	40	55	F10-F16	105
E60	1200	815	440	300	40	40	40	55	F10-F16	110
E65	1950	1100	550	350	55	55	55	65	F14-F25	170
E70	2400	1125	550	350	55	55	55	65	F14-F25	175
E85	4000	1290	655	405	75	75	75	90	F16-F30	225

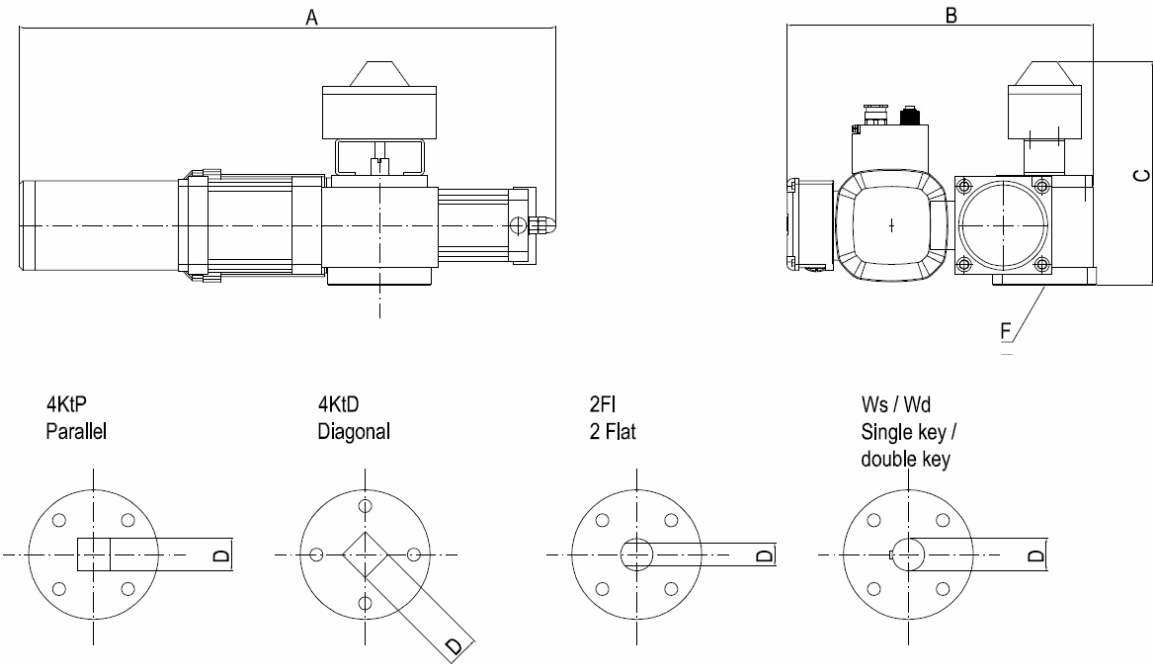
*with standard limit switch box

Ambient temperature range:	-10°C to 60°C optional -40°C to 80°C
Degree of protection:	IP65
Power supply:	400V50Hz 3Phs; 230V50Hz 1Phs
Solenoid valve, spring close:	24VDC / 230VDC (15W)
Closing speed:	<1sec. up to 60 sec. adjustable with throttle valve (on demand)
Hazardous area:	II 2G c k IIC T4 ATEX
SIL:	SIL2 (Architecture 1oo1) other logic on demand
Installation position:	preferred horizontal, others by prior agreement



Electro Hydraulic Actuator PA-O-Exx-90-EB-SC-(X)

Part turns actuator 90°, limit switch box, single acting, spring to close, X=Explosion proof



Standard Range

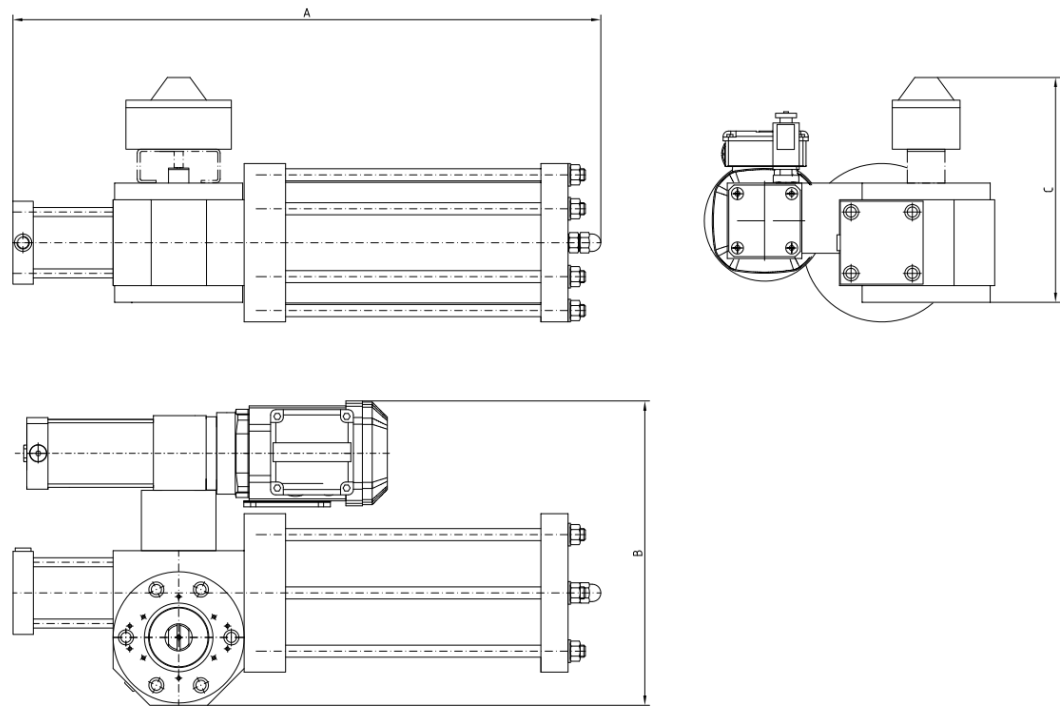
Type	ETC End torque spring Nm	A mm	B mm	C* mm	max D				F DIN 5211	Weight Kg
					4KtP	4KtD	2FI	Ws/Wd		
E20	35	445	305	225	14	14	14	16	F05-F07	25
E30	90	445	325	235	17	17	17	20	F05-F07	35
E35	165	515	360	276	24	24	22	30	F07-F10	40
E40	410	665	380	276	30	30	27	40	F10-F14	70
E55	870	805	440	300	40	40	40	55	F10-F16	105
E60	1200	815	440	300	40	40	40	55	F10-F16	110
E65	1950	1100	550	350	55	55	55	65	F14-F25	170
E70	2400	1125	550	350	55	55	55	65	F14-F25	175
E85	4000	1290	655	405	75	75	75	90	F16-F30	225

*with standard limit switch box

Ambient temperature range:	-10°C to 60°C optional -40°C to 80°C
Degree of protection:	IP65
Power supply:	400V50Hz 3Phs; 230V50Hz 1Phs
Solenoid valve, spring close:	24VDC / 230VDC (15W)
Closing speed:	<1sec. up to 60 sec. adjustable with throttle valve (on demand)
Hazardous area:	II 2G c k IIC T4 ATEX
SIL:	SIL2 (Architecture 1oo1) other logic on demand
Installation position:	preferred horizontal, others by prior agreement

Electro Hydraulic Actuator PA-O-Exx-90-EB-SO-(X)

Part turn actuator 90°, limit switch box, single acting, spring to open, X=Explosion proof

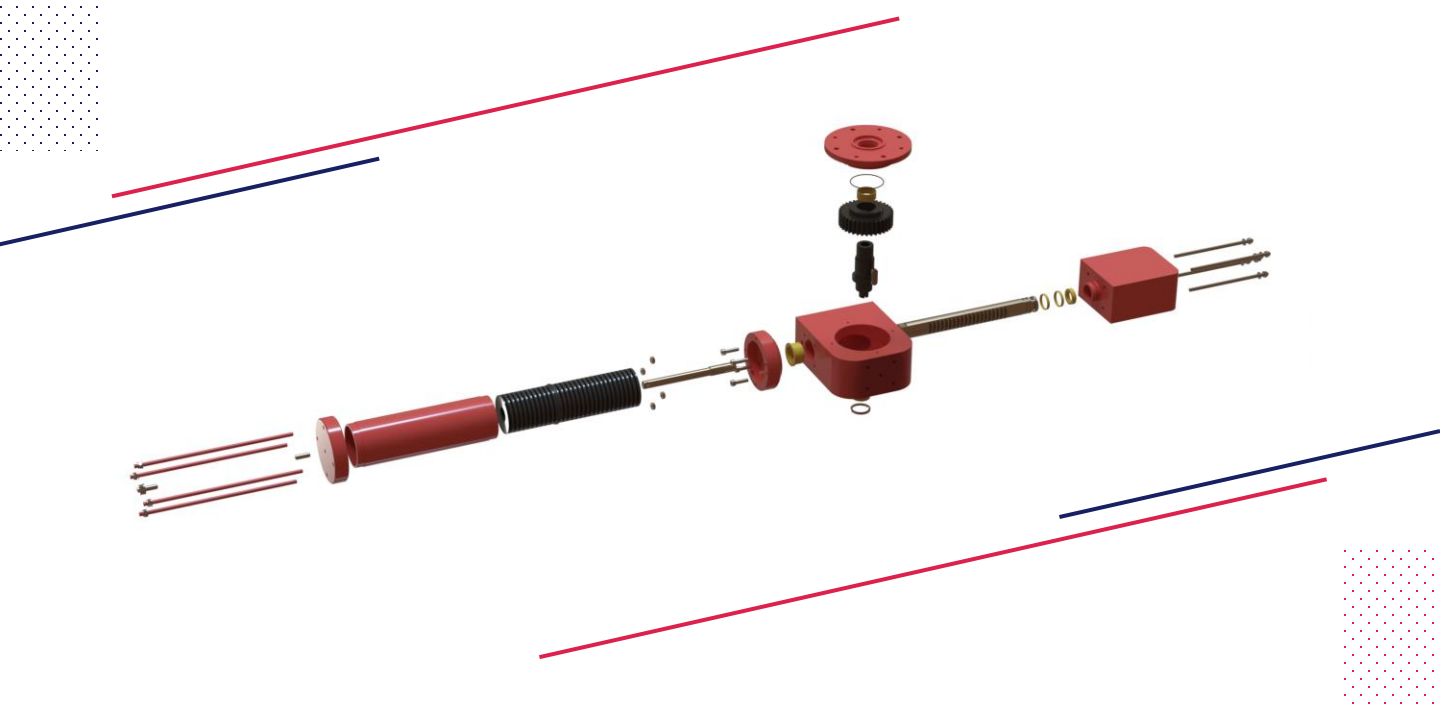


Standard Range

Type	STO Start torque spring Nm	A mm	B mm	C* mm	max D				F DIN 5211	Weight Kg
					4KtP	4KtD	2FI	Ws/Wd		
E40	455	632	430	275	30	30	27	40	F10-F14	55
E55	940	750	465	300	40	40	40	55	F10-F16	95
E60	1200	780	465	300	40	40	40	55	F10-F16	110
E65	2225	1030	425	340	55	55	55	65	F14-F25	180
E70	4160	1265	580	365	55	55	55	65	F16-F30	380
E85	8320	1760	690	410	75	75	75	90	F16-F30	640

*with standard limit switch box

Ambient temperature range:	-10°C to 60°C optional -40°C to 80°C
Degree of protection:	IP65
Power supply:	400V50Hz 3Phs; 230V50Hz 1Phs
Solenoid valve, spring close:	24VDC / 230VDC (ATEX 15W)
Spring opening speed:	<1sec. up to 60 sec. adjustable with throttle valve (on demand)
Hazardous area:	II 2G c k IIC T4 ATEX
SIL:	SIL2 (Architecture 1oo1) other logic on demand
Installation position:	preferred horizontal, others by prior agreement



Description	Standard Material
Housing	S235JR
Side Cover Right	S235JR
Side Cover Left	S235JR
Spring tube	E355
Piston	EN 8
Rack	V2A
Pinion	V2A
Tope cover	S235JR
Bushing	SM1004-2
Centring flange	S235JR

Description	Material
Screw Plug	Stzn, A4
Bearing	CuSn7Zn4Pb7-C
O-ring	NBR
Fasteners	A2, 8.8
Gasket	NBR
Flat Oring Spacer	NBR
Spring Cartridge	S235JR
Spring	50CrV4
Check Valve Body	EN 8
Bottom Flange	Carbon Steel
Top Flange	Carbon Steel



Linear Piston Actuator

(Double Acting)

Introduction:

- **Expertise:** Specialize in electro-hydraulic actuation and control systems.
- **Solutions Offered:** Provide comprehensive, custom-designed, engineered, and fabricated solutions.
- **Environments:** Suitable for both onshore and offshore installations.

Product Design:

- **Strength-to-Weight Ratio:** An outstanding strength-to-weight ratio is achieved.
- **High strength Stem:** A high yield strength material is used for the actuator stem to perform on large thrust areas

Effectiveness and Durability:

- **Honed and Hot chrome plated Cylinders:** Minimize friction.
- **Dynamic Sealing Piston Seal:** Minimizes friction and prevents chattering behaviour, even after extended periods of inactivity.



Specifications:

- **Precision Control:** Offers accurate and smooth control of linear motion, essential for applications requiring fine adjustments.
- **High Force Output:** Capable of generating significant force for lifting, pushing, or pulling loads.
- **Electro-Hydraulic Integration:** Combines electrical control with hydraulic power, providing efficient and powerful actuation.
- **Speed Control:** Provides the ability to regulate the speed of movement, enhancing performance and precision.
- **Manual Override:** Manual override to operate at the time of power failure.
- **Load Capacity:** Designed to handle a wide range of load capacities, making them versatile for various applications.
- **Energy Efficiency:** Engineered to optimize energy use, often incorporating features to minimize power consumption.



MODEL	CYLIN DER DIA (mm)	100 BAR - 1450 PSI				130 BAR - 1886 PSI				160 BAR - 2320 PSI			
		Close (KN)	Open (KN)	Close (lbf)	Open (lbf)	Close (KN)	Open (KN)	Close (lbf)	Open (lbf)	Close (KN)	Open (KN)	Close (lbf)	Open (lbf)
HLDA - 030 / EHLDA-030	32	6	4	1446	881	8	5	1880	1146	10	6	2314	1410
HLDA - 040 / EHLDA-040	40	10	7	2260	1576	13	9	2938	2049	16	11	3616	2522
HLDA - 050 / EHLDA-050	50	16	12	3531	2649	20	15	4591	3443	25	19	5650	4238
HLDA - 060 / EHLDA-060	63	25	19	5607	4335	32	25	7289	5636	40	31	8970	6936
HLDA - 080 / EHLDA-080	80	40	30	9041	6780	52	39	11753	8815	64	48	14465	10849
HLDA - 100 / EHLDA-100	100	63	47	14126	10594	82	61	18364	13773	101	75	22601	16951
HLDA - 125 / EHLDA-125	125	98	76	22072	16986	128	98	28693	22082	157	121	35315	27178
HLDA - 140 / EHLDA-140	140	123	92	27687	20765	160	120	35993	26995	197	148	44299	33224
HLDA - 160 / EHLDA-160	160	161	121	36162	27122	209	157	47011	35258	257	193	57860	43395
HLDA - 180/ EHLDA-180	180	204	153	45768	34326	265	198	59498	44624	326	244	73228	54921
HLDA - 200 / EHLDA-200	200	251	188	56503	42378	327	245	73455	55091	402	302	90406	67804

** The specifications mentioned are subject to change without prior notice for the purpose of quality improvement.

Operating Pressure: Hydraulic up to 200 bar (2900 psi).

Environmental Protection: O-ring sealing provides protection certified to IEC IP66M, IP67M.

Corrosion Resistance: Extended service life provided by carbon steel, honed cylinders and chrome plated rods.



Description	Standard Material
Hydraulic Cylinder	Carbon Steel (Honed Tube)
Yoke	Carbon Steel
Piston	Carbon Steel
Seal	NBR/CFT
Yoke Bushing	Aluminum Bronze
O-ring	NBR/CFT
Top Flange	Carbon Steel
Tie Rod	Alloy Steel
Bottom Flange	Carbon Steel
Piston Rod	Carbon Steel (chromium plated)

Electronic Modulating with Analog and Digital Feedback

With Power Pack:

Power Pack:

- Power pack includes a hydraulic pump (usually electrically powered) that generates the necessary fluid pressure to move the actuator.
- In this setup, the system does not include a manual hand pump for emergency operation.

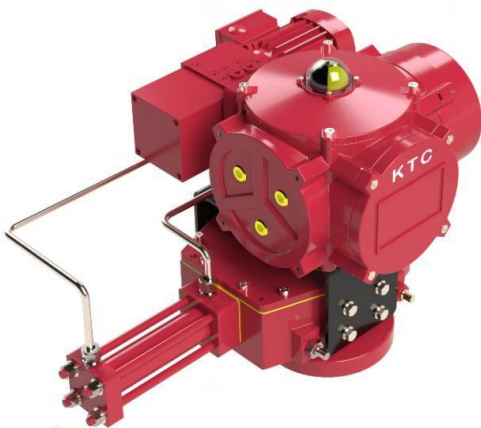
Potentiometer: Potentiometer kit (output signal: 0~1 Kohm), High resolution potentiometer and precisely machined gearing are directly engaged with drive shaft to feedback continuous position of valve.



CT: Current transmitter (output signal: 4-20mA) Zero / Span Adjustment.

RPC / Signal configuration:

- Input: 4-20mA, 0-10VDC, 2~10VDC, 1~5VDC, 0~5VDC
- Output: 4-20mA
- (Option: 0-10VDC, 2~10VDC, 1~5VDC, 0~5VDC)
- Auto-calibration
- Reverse operating direction
- Signal Fail Safe Position: Close / Open / Stop
- Motor Recess Time when Running Reverse Direction (Delay Time).



For Analog Output:

- Main Power: 3Ph / 220/380/440 VAC, 1Ph / 110/220 VAC
- Magnetic selector switches: Open/Close & Local/Stop/Remote
- Reversing electric contactors, Transformer, Phase Detector
- Auto-Phase Discriminator
- Local lamp indication
 - : Power - White(on), Remote: Blue(on),
 - : In case of Close Torque Switch Trip - Yellow(on) + Green(flickering)
 - : In case of Open Torque Switch Trip - Yellow(on) + Red(flickering)
 - : Full Close - Green(on), Closing - Green (flickering)
 - : Full Open - Red(on), Opening - Red (flickering)
- Single & Reverse Phasing: (Yellow + Green + Red) all flickering

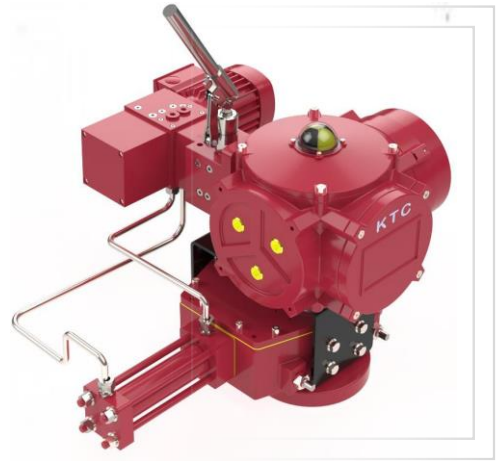
For Digital Output:

- Including the same functions as Analog
- Reversing electric contactors, Transformer, Auto-Phase Discriminator, LCD Display
- Options Available: CT, RPC(Modulating)

Power Pack with Hand Pump:

Power Pack:

- A hydraulic power pack with a hand pump is a compact, manually operated hydraulic
- system used to generate hydraulic pressure for operating various hydraulic tools and
- machinery.
- Hand pump typically includes a lever or piston mechanism that, when operated, forces hydraulic fluid (usually oil) into the hydraulic lines.



Potentiometer: Potentiometer kit (output signal: 0~1 Kohm), High resolution potentiometer and precisely machined gearing are directly engaged with drive shaft to feedback continuous position of valve.

CT: Current transmitter (output signal: 4-20mA) Zero / Span Adjustment.

RPC / Signal configuration:

- Input: 4-20mA, 0-10VDC, 2~10VDC, 1~5VDC, 0~5VDC
- Output: 4-20mA
- (Option: 0-10VDC, 2~10VDC, 1~5VDC, 0~5VDC)
- Auto-calibration
- Reverse operating direction
- Signal Fail Safe Position: Close / Open / Stop
- Motor Recess Time when Running Reverse Direction (Delay Time)



For Analog Output:

- Main Power: 3Ph / 220/380/440 VAC, 1Ph / 110/220 VAC
- Magnetic selector switches: Open/Close & Local/Stop/Remote
- Reversing electric contactors, Transformer, Phase Detector
- Auto-Phase Discriminator
- Local lamp indication
 - : Power - White(on), Remote: Blue(on),
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 - : In case of Open Torque Switch Trip - Yellow(on) + Red(flickering)
 - : Full Close - Green(on), Closing - Green (flickering)
 - : Full Open - Red(on), Opening - Red (flickering)
- Single & Reverse Phasing: (Yellow + Green + Red) all flickering

For Digital Output:

- Including the same functions as Analog
- Reversing electric contactors, Transformer, Auto-Phase Discriminator, LCD Display
- Options Available: CT, RPC(Modulating)

Hydraulic Control System with Accumulator

Introduction:

- Since more than 20 years, our team realized hydraulic control systems for applications with extreme high requirements on accuracy, control speed and safety.
- Samples are, Turbine by pass control and safety valves, steam conditioning control valves, de- superheater valves, pipeline control valves and many further applications.
- A hydraulic control system with proportional valves offers precise control of fluid flow and pressure in hydraulic systems. The key technical features are:

Proportional Control:

Proportional valves regulate the flow or pressure in a hydraulic system in relation to the input signal. This means the valve does not simply turn on or off (as with switching valves), but the valve opening continuously varies between minimum and maximum positions, depending on the control command.

Dynamic Control:

These valves enable real-time dynamic adjustment of flow or pressure. The change occurs proportionally to the control signal, allowing for very fine and stable regulation.

High Precision:

Proportional valves offer very precise regulation of flows or pressures, which is particularly necessary in applications where fine adjustments are required, such as in manufacturing technology or CNC machines.

Stepless Adjustment:

The ability to control the valve position stepless allows the system to be controlled very accurately and flexibly, without relying on predefined states.

Input Signal:

Proportional valves are typically controlled by an electrical signal (e.g., 4–20 mA or 0–10 V), which directly influences the position of the valve. Depending on the input signal, the valve opening changes, and thus the flow or pressure is adjusted.

Pressure and Flow Control:

Depending on the type of proportional valve (pressure-proportional valve, flow-proportional valve), the system can control either the pressure or the flow. In some systems, both parameters can be regulated simultaneously.

Low Hysteresis:

Modern proportional valves are characterized by low hysteresis, meaning they respond almost identically to the same input signal, leading to stable and repeatable regulation.

Fast Response Time:

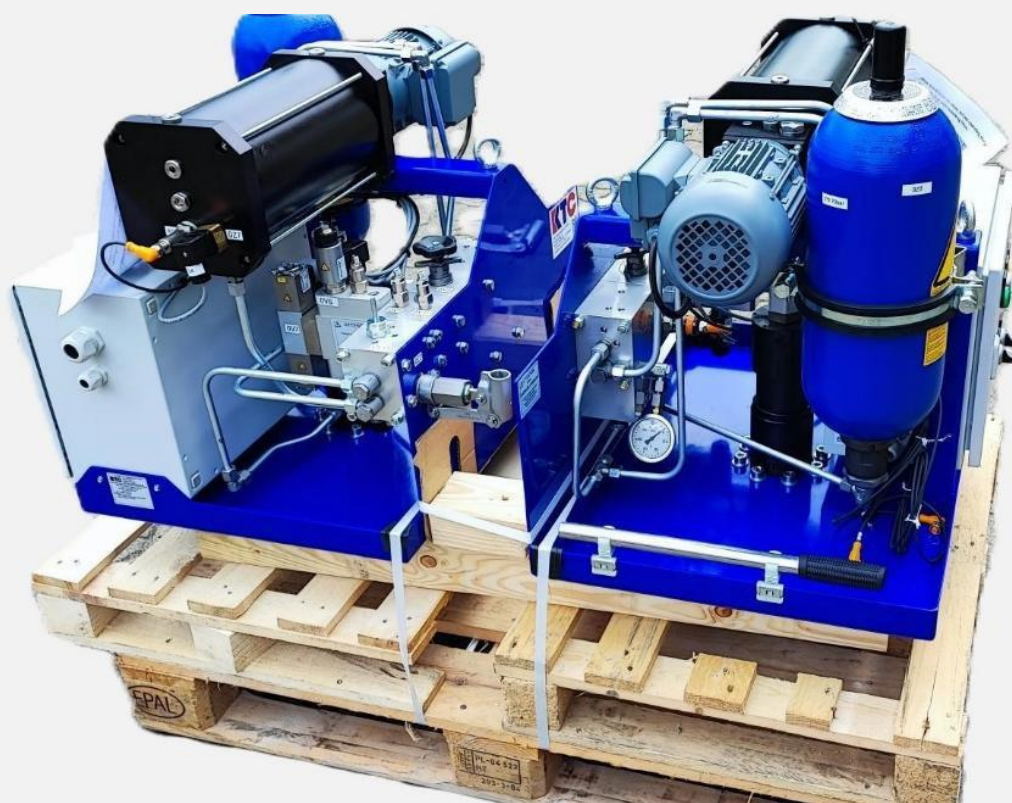
Proportional valves have a very fast response time, which allows for quick adjustments of operating conditions and thus enables precise control even in dynamic systems.

Load Compensation:

Many proportional valves offer load compensation, ensuring that the regulated parameter remains constant regardless of load changes. This increases system stability and prevents undesirable fluctuations.

Energy Efficiency:

By precisely controlling the oil flow or pressure, energy consumption is optimized since only the necessary amount of energy is provided, avoiding unnecessary losses from over-dimensioning or inaccurate control.



RPC / Signal configuration:

- Input: 4-20mA, 0-10VDC
- Output: 4-20mA
- Power and/or Signal Fail Safe Position: Close / Open / Stop

Accumulators:

- Stores hydraulic energy by compressing a gas.
- Releases stored energy when system demand exceeds pump capacity or during pressure drops.
- Located in the hydraulic circuit, typically near the pump or actuator.

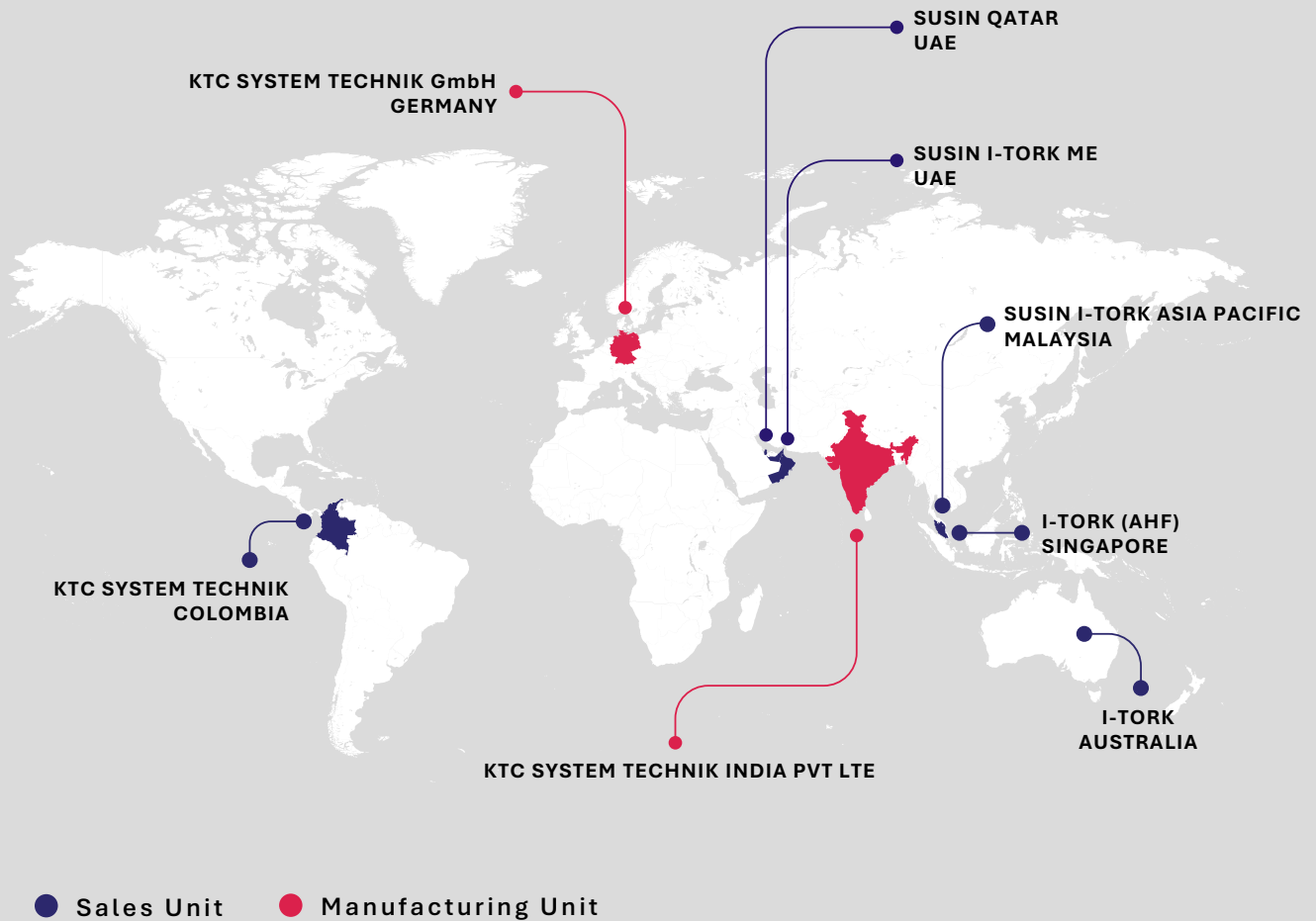
Power supply:

- Main Power: 3Ph / 220/380/440 VAC,
- 1Ph / 110/220 VAC
- 24DC

Features / Options:

- ATEX Zone 1
- Outdoor operation
- Optional
- Profinite

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