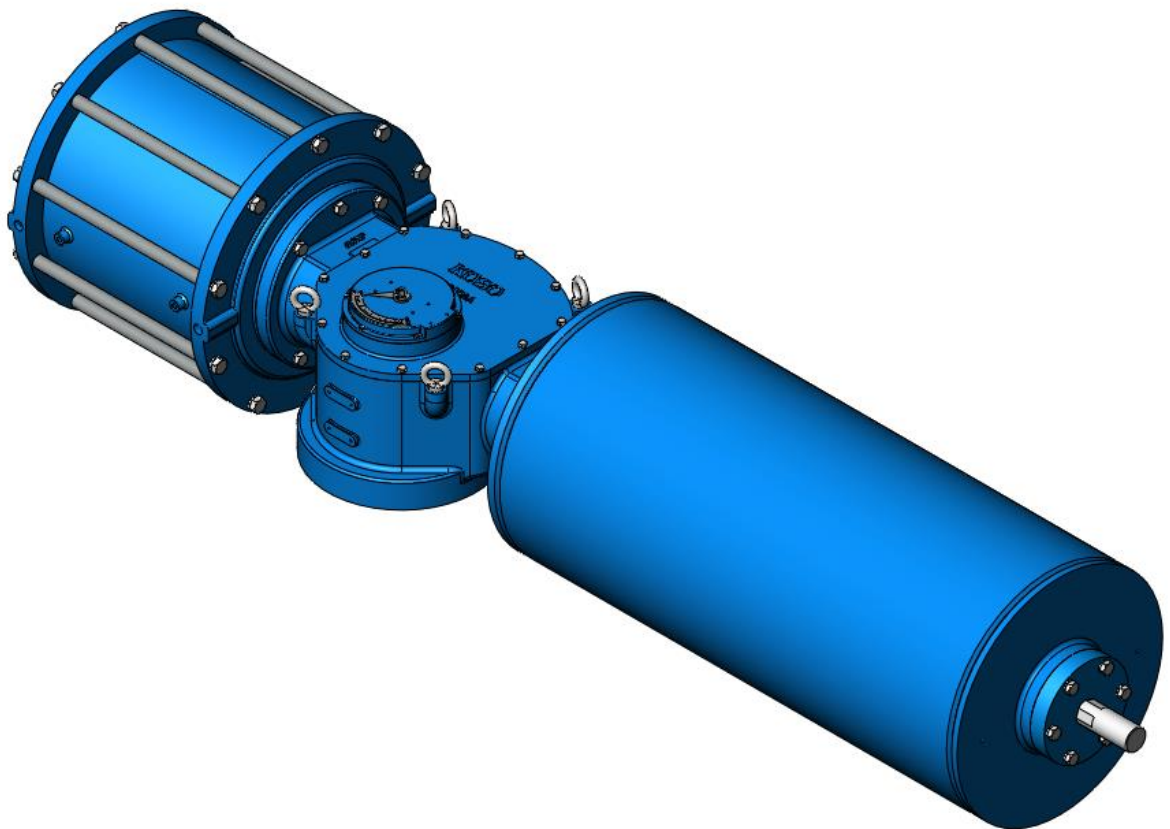


ROTARY STEM MOTION TYPE PNEUMATIC CYLINDER ACTUATORS

7200RA

KSY SERIES



KOSO
NIHON KOSO Co.,Ltd.

GENERAL

This Series provides double-acting and spring return pneumatic cylinder actuators characterized by large output and high-performance. Combined with rotary stem motion type control valves, the actuators of this Series are suited for modulating and on-off services. Uses with other rotary motion devices are also good.

STANDARD SPECIFICATIONS

Model	7200RA
Series	KSY Series
Output Type	Rotary Stem Motion Type
Function	Double Acting Type, Spring Return Type
Output Torque	See page 9~19.
Air Supply	Double Acting Type : 3~10.5 bar [gauge]
Air connection	See page 8
Angle rotation	90° or 60°
Performance	Hysteresis: Less than 1.5% of full stroke with positioner Linearity : Less than $\pm 2.0\%$ of full stroke with positioner
Ambient temperature	Standard type -20~+60°C High temperature service (option) 0~+100°C Low temperature service (option) -40~+60°C
Painting colour	Mansell N-6 (Epoxy resin group)
Accessories	E/P Positioner, P/P Positioner, Air-set, Booster relay, Air-valve, Limit switch, Solenoid valve, Lock-valve, Speed controller, Position transmitter, etc.
Option	Manual hand wheel (small size), Hydraulic Manual override, Adjustable Rotation stopper, Low temperature service, High temperature service, Tropical area proof, Salty environment proof, Cold area proof, Non-standard painting, etc.

FEATURES

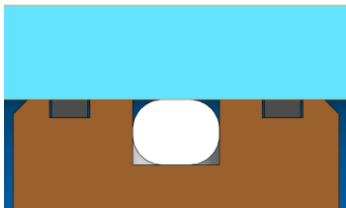
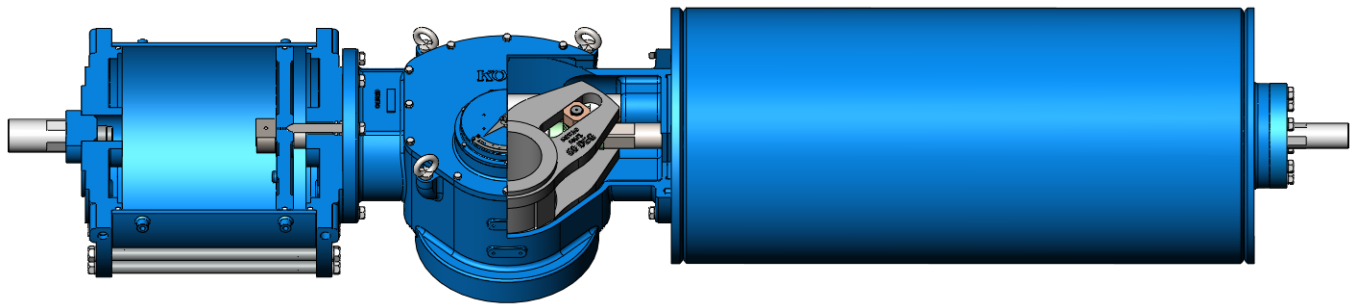
- Symmetric yoke options
- Hard chrome plated wear surfaces
- Travel stops with $\pm 5^\circ$ adjustment in both directions
- Epoxy coating for corrosion resistance
- ISO 5211 standard valve mounting
- Modular Construction
- Field reversible

CONFIGURATIONS

- Double Acting (Air to Air) operation
- Spring Return (Air to Spring) operation, Fail-Close or Fail-Open
- Standard Rotation (CCW open)

SPECIAL FEATURES

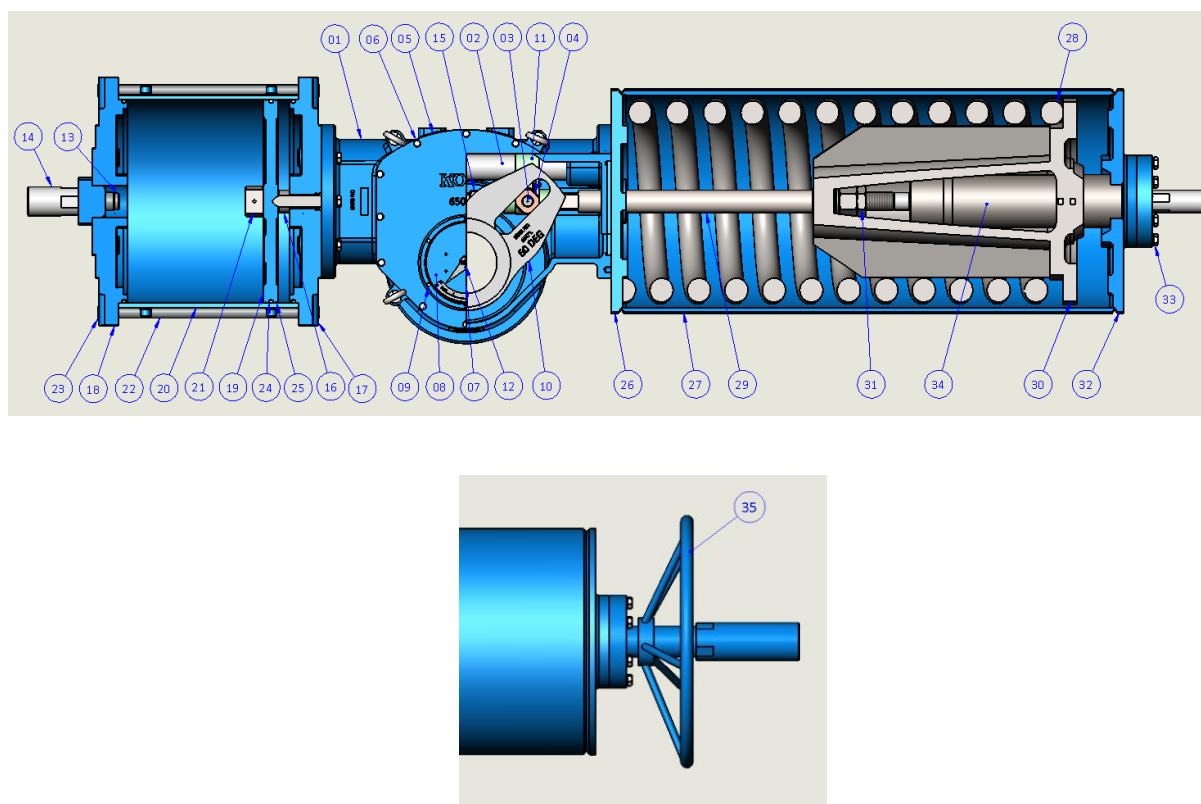
- DU bushes are provided to reduce friction loss
- The actuator can easily be converted to fail open from fail close, by interchanging the spring and pneumatic modules.
- The pneumatic cylinders are hard chrome plated - smooth to reduce wear of piston seal for long life.



PISTON SEAL & GUIDE

- The piston is guided by Turcite Wear ring to ensure no metal to metal contact.
- Turcite wear rings provide long life.
- O-rings are using for avoiding air leakage.

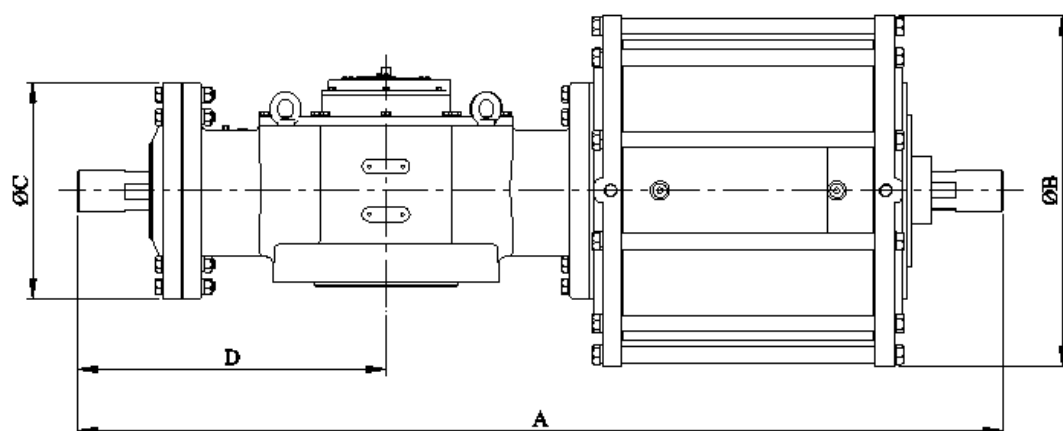
MATERIALS OF CONSTRUCTION



NO.	DESCRIPTION	MATERIAL
1	Case	Ductile Iron
2	Guide Bar	Stainless Steel
3	Joint Pin	Stainless Steel
4	Slide Bearing	Tool Steel
5	Case Cover	Ductile Iron
6	Case Cover Bolt	Carbon Steel
7	Feed Back Drive Plate	Ductile Iron
8	Top Cover	Carbon Steel
9	Top Cover Bolt	Ductile Iron
10	Torque Lever	Ductile Iron
11	Sliding Joint	Ductile Iron
12	Feed Back Drive Pin	Stainless Steel
13	Stopper	Carbon Steel
14	Stopper Bolt Cover	Carbon Steel
15	Piston Rod Connector	Carbon Steel
16	Piston Rod	Stainless Steel
17	Cylinder Bottom Cover	Ductile Iron
18	Cylinder Head Cover	Ductile Iron

NO.	DESCRIPTION	MATERIAL
19	Piston	Ductile Iron
20	Air Cylinder	Carbon Steel
21	Lock Nut	Stainless Steel
22	Tie Rod	Carbon Steel
23	Tie Rod Bolt	Carbon Steel
24	Piston O-ring	Nitrile Rubber
25	Wear Ring	Turcite
26	Spring Adaptor	Carbon Steel
27	Spring Cylinder	Carbon Steel
28	Spring	Spring Steel
29	Spring Piston Rod	Carbon Steel
30	Spring Seat Guide	Carbon Steel
31	Spring Rod Lock Nut	Carbon Steel
32	Spring End Cover	Carbon Steel
33	Spring End Cover Bolt	Carbon Steel
34	Hydraulic Manual Override	Carbon Steel
35	Hand wheel Manual Override	Carbon Steel

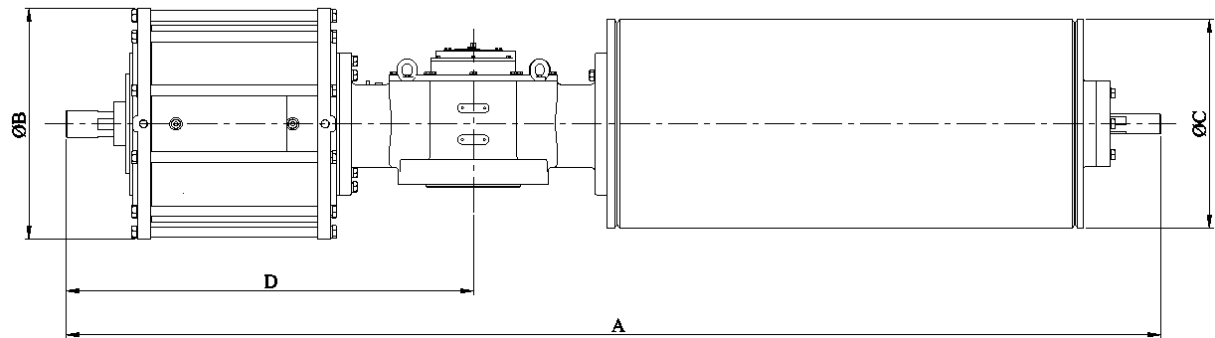
OVERALL DIMENSIONS FOR DOUBLE ACTING



ACTUATOR MODEL	A	ØB	ØC	D	ACTUATOR WEIGHT (kg)
72-KSY1-1020	1150	330	250	395	80
72-KSY1-1025	1150	380	250	395	105
72-KSY1-1030	1150	430	250	395	120
72-KSY1-1035	1150	480	250	395	140
72-KSY2-1025	1310	380	300	445	155
72-KSY2-1030	1310	430	300	445	170
72-KSY2-1035	1310	480	300	445	185
72-KSY2-1040	1310	530	300	445	210
72-KSY3-1030	1500	430	350	505	250
72-KSY3-1035	1500	480	350	505	265
72-KSY3-1040	1500	530	350	505	300
72-KSY3-1050	1500	630	350	505	400
72-KSY4-1040	1700	530	400	570	600
72-KSY4-1045	1700	580	400	570	650
72-KSY4-1050	1700	630	400	570	700
72-KSY4-1060	1700	730	400	570	825
72-KSY4-1070	1700	830	400	570	950

ACTUATOR MODEL	A	ØB	ØC	D	ACTUATOR WEIGHT (kg)
72-KSY5-1045	1950	580	400	645	820
72-KSY5-1050	1950	630	450	645	900
72-KSY5-1060	1950	730	450	645	1050
72-KSY5-1070	1950	830	450	645	1250
72-KSY5-1080	1950	930	450	645	1475
72-KSY6-1055	2225	670	500	730	1250
72-KSY6-1060	2225	730	500	730	1325
72-KSY6-1070	2225	830	500	730	1525
72-KSY6-1080	2225	950	500	730	1755
72-KSY6-1090	2225	1050	500	730	2050
72-KSY6-1100	2225	1150	500	730	2400
72-KSY7-1070	2540	850	550	825	2525
72-KSY7-1080	2540	950	550	825	2750
72-KSY7-1090	2540	1050	550	825	3025
72-KSY7-1100	2540	1150	550	825	3375
72-KSY7-1110	2540	1250	550	825	3750
72-KSY7-1120	2540	1350	550	825	4050

OVERALL DIMENSIONS FOR SPRING RETURN



ACTUATOR MODEL	A	ØB	ØC	D	ACTUATOR WEIGHT (kg)
72-KSY1-1020S01	1623	330	175	755	92
72-KSY1-1020S02	1680	330	190	755	102
72-KSY1-1020S03	1737	330	250	755	131
72-KSY1-1020S04	1761	330	285	755	153
72-KSY1-1025S02	1680	380	190	755	127
72-KSY1-1025S03	1737	380	250	755	156
72-KSY1-1025S04	1761	380	285	755	178
72-KSY1-1025S05	1866	380	310	755	221
72-KSY1-1030S03	1737	430	250	755	171
72-KSY1-1030S04	1761	430	285	755	193
72-KSY1-1030S05	1866	430	310	755	236
72-KSY1-1030S06	1935	430	300	755	264
72-KSY1-1035S04	1761	480	285	755	213
72-KSY1-1035S05	1866	480	310	755	256
72-KSY1-1035S06	1935	480	300	755	284
72-KSY2-1025S01	1881	380	210	865	180
72-KSY2-1025S02	1953	380	235	865	202
72-KSY2-1025S03	2025	380	315	865	264
72-KSY2-1025S04	2059	380	355	865	307
72-KSY2-1030S02	1953	430	235	865	217
72-KSY2-1030S03	2025	430	315	865	279
72-KSY2-1030S04	2059	430	355	865	322
72-KSY2-1030S05	2164	430	375	865	392
72-KSY2-1035S03	2025	480	315	865	294
72-KSY2-1035S04	2059	480	355	865	337
72-KSY2-1035S05	2164	480	375	865	407
72-KSY2-1035S06	2231	480	365	865	446

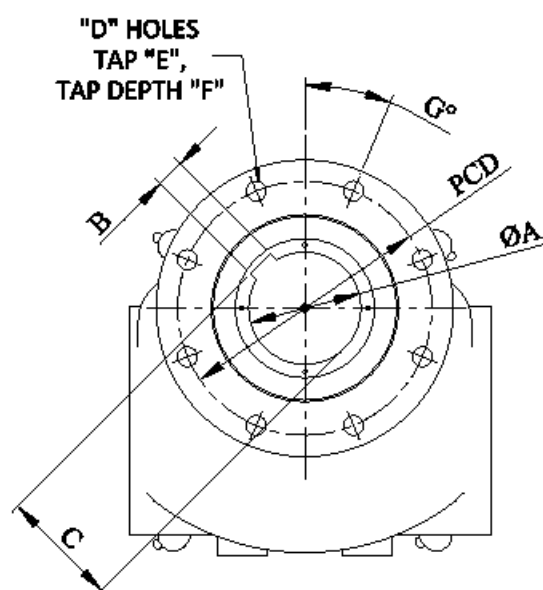
ACTUATOR MODEL	A	ØB	ØC	D	ACTUATOR WEIGHT (kg)
72-KSY2-1040S04	2059	530	355	865	362
72-KSY2-1040S05	2164	530	375	865	432
72-KSY2-1040S06	2231	530	365	865	471
72-KSY3-1030S01	2117	430	225	995	289
72-KSY3-1030S02	2187	430	260	995	322
72-KSY3-1030S03	2292	430	335	995	416
72-KSY3-1030S04	2321	430	375	995	470
72-KSY3-1035S02	2187	480	260	995	337
72-KSY3-1035S03	2292	480	335	995	431
72-KSY3-1035S04	2321	480	375	995	485
72-KSY3-1035S05	2436	480	400	995	584
72-KSY3-1040S03	2292	530	335	995	466
72-KSY3-1040S04	2321	530	375	995	520
72-KSY3-1040S05	2436	530	405	995	619
72-KSY3-1040S06	2496	530	385	995	651
72-KSY3-1050S04	2321	630	375	995	620
72-KSY3-1050S05	2436	630	405	995	719
72-KSY4-1040S01	2546	530	320	1130	703
72-KSY4-1040S02	2654	530	355	1130	787
72-KSY4-1040S03	2748	530	472	1130	1008
72-KSY4-1040S04	2787	530	495	1130	1167
72-KSY4-1045S02	2654	580	355	1130	837
72-KSY4-1045S03	2748	580	472	1130	1058
72-KSY4-1045S04	2787	580	545	1130	1217
72-KSY4-1045S05	2945	580	565	1130	1416
72-KSY4-1050S03	2748	630	472	1130	1108
72-KSY4-1050S04	2787	630	545	1130	1267

OVERALL DIMENSIONS FOR SPRING RETURN (Cont.)

ACTUATOR MODEL	A	ØB	ØC	D	ACTUATOR WEIGHT (kg)
72-KSY4-1050S05	2945	630	565	1130	1466
72-KSY4-1050S06	2989	630	535	1130	1483
72-KSY4-1060S04	2787	730	545	1130	1392
72-KSY4-1060S05	2945	730	565	1130	1591
72-KSY4-1060S06	2989	730	535	1130	1608
72-KSY4-1070S05	2945	830	565	1130	1716
72-KSY4-1070S06	2989	830	535	1130	1733
72-KSY5-1045S01	3029	580	375	1305	967
72-KSY5-1045S02	3155	580	415	1305	1090
72-KSY5-1045S03	3269	580	565	1305	1432
72-KSY5-1045S04	3358	580	650	1305	1726
72-KSY5-1050S02	3155	630	415	1305	1170
72-KSY5-1050S03	3269	630	565	1305	1512
72-KSY5-1050S04	3358	630	650	1305	1806
72-KSY5-1050S05	3401	630	650	1305	1881
72-KSY5-1060S03	3269	730	565	1305	1662
72-KSY5-1060S04	3358	730	640	1305	1956
72-KSY5-1060S05	3401	730	650	1305	2031
72-KSY5-1060S06	3496	730	650	1305	2262
72-KSY5-1070S04	3358	830	640	1305	2156
72-KSY5-1070S05	3401	830	650	1305	2231
72-KSY5-1070S06	3496	830	650	1305	2462
72-KSY5-1080S05	3401	930	650	1305	2456
72-KSY5-1080S06	3496	930	650	1305	2687
72-KSY6-1060S01	3517	730	415	1495	1670
72-KSY6-1060S02	3702	730	475	1495	1980
72-KSY6-1060S03	3789	730	570	1495	2357
72-KSY6-1060S04	3937	730	660	1495	2819
72-KSY6-1070S02	3702	830	475	1495	2180

ACTUATOR MODEL	A	ØB	ØC	D	ACTUATOR WEIGHT (kg)
72-KSY6-1070S03	3789	830	570	1495	2557
72-KSY6-1070S04	3937	830	660	1495	3019
72-KSY6-1070S05	4093	830	710	1495	3668
72-KSY6-1080S03	3789	930	570	1495	2787
72-KSY6-1080S04	3937	930	660	1495	3249
72-KSY6-1080S05	4093	930	710	1495	3898
72-KSY6-1080S06	4226	930	760	1495	4666
72-KSY6-1090S04	3937	1050	660	1495	3544
72-KSY6-1090S05	4093	1050	710	1495	4193
72-KSY6-1090S06	4226	1050	760	1495	4961
72-KSY6-1100S05	4093	1150	710	1495	4543
72-KSY6-1100S06	4226	1150	760	1495	5311
72-KSY7-1070S01	4010	830	510	1715	3119
72-KSY7-1070S02	4184	830	650	1715	3675
72-KSY7-1070S03	4305	830	690	1715	4256
72-KSY7-1070S04	4394	830	730	1715	4656
72-KSY7-1080S02	4184	930	650	1715	3900
72-KSY7-1080S03	4305	930	690	1715	4481
72-KSY7-1080S04	4394	930	730	1715	4881
72-KSY7-1080S05	4721	930	840	1715	6111
72-KSY7-1090S03	4305	1050	690	1715	4756
72-KSY7-1090S04	4394	1050	730	1715	5156
72-KSY7-1090S05	4721	1050	840	1715	6386
72-KSY7-1090S06	4880	1050	890	1715	7491
72-KSY7-1100S04	4394	1150	730	1715	5506
72-KSY7-1100S05	4721	1150	840	1715	6736
72-KSY7-1100S06	4880	1150	890	1715	7841
72-KSY7-1110S05	4721	1250	840	1715	7111
72-KSY7-1110S06	4880	1250	890	1715	8216

MOUNTING DETAILS



ACTUATOR MODEL	ØA	B	C	D	E	F	PCD	G°	ISO 5211 MOUNTING
72-KSY1	100	28	106.4	8	M16X2	24	254	22.5	F25
72-KSY2	120	32	127.4	8	M20X2.5	30	298	22.5	F30
72-KSY3	120	32	127.4	8	M20X2.5	30	298	22.5	F30
72-KSY4	160	40	169.4	8	M30X3.5	45	356	22.5	F35
72-KSY5	180	45	190.4	8	M36X4	54	406	22.5	F40
72-KSY6	220	50	231.4	12	M36X4	54	483	15	F48
72-KSY7	280	63	292.4	20	M36X4	54	603	9	F60

AIR CONNECTION DETAILS

ACTUATOR CYLINDER SIZE	PORT SIZE	QTY
200 - 450	3/4" NPT	2+2
500 - 600	1" NPT	2+2
700 - 900	1-1/2" NPT	2+2
1000 - 1200	2" NPT	2+2

DOUBLE ACTING TORQUE CHART

ACTUATOR MODEL	Cylinder Size	Stroke Position	Operating Pressure (barG)													Max. Operating Pressure (barG)	
			3	3.5	4	5	5.5	6	7	7.5	8	8.5	9	10	10.5		
			Output Torque (Nm)														
72-KSY1-1020	200	Start	984	1148	1312	1640	1804	1968	2296	2460	2624	2788	2952	3280	3444	10.7	
		Min	543	634	724	905	996	1087	1268	1358	1449	1540	1630	1811	1902		
		End	984	1148	1312	1640	1804	1968	2296	2460	2624	2788	2952	3280	3444		
72-KSY1-1025	250	Start	1552	1811	2070	2588	2847	3105	3623	3882	4141	4400	Exceeds MOP			8.7	
		Min	857	1000	1143	1429	1572	1715	2001	2144	2287	2430					
		End	1552	1811	2070	2588	2847	3105	3623	3882	4141	4400					
72-KSY1-1030	300	Start	2248	2622	2997	3746	4121	4496	Exceeds MOP							6.2	
		Min	1241	1448	1655	2069	2276	2483									
		End	2248	2622	2997	3746	4121	4496									
72-KSY1-1035	350	Start	3069	3581	4092	Exceeds MOP										4.2	
		Min	1695	1977	2260												
		End	3069	3581	4092												
72-KSY2-1025	250	Start	1969	2298	2626	3283	3611	3939	4596	4924	5252	5581	5909	6566	6894	10.7	
		Min	1087	1269	1450	1813	1994	2175	2538	2719	2900	3082	3263	3626	3807		
		End	1969	2298	2626	3283	3611	3939	4596	4924	5252	5581	5909	6566	6894		
72-KSY2-1030	300	Start	2863	3340	3818	4772	5249	5727	6681	7158	7636	8113	Exceeds MOP			8.7	
		Min	1581	1845	2108	2635	2899	3162	3690	3953	4217	4480					
		End	2863	3340	3818	4772	5249	5727	6681	7158	7636	8113					
72-KSY2-1035	350	Start	3919	4573	5226	6533	7186	7839	Exceeds MOP							6.2	
		Min	2164	2525	2886	3607	3968	4329									
		End	3919	4573	5226	6533	7186	7839									
72-KSY2-1040	400	Start	5138	5994	6851	8564	Exceeds MOP										5.2
		Min	2837	3310	3783	4729											
		End	5138	5994	6851	8564											
72-KSY3-1030	300	Start	3479	4059	4639	5799	6379	6959	8119	8699	9279	9859	10439	11599	12179	10.7	
		Min	1921	2242	2562	3203	3523	3843	4484	4804	5124	5445	5765	6406	6726		
		End	3479	4059	4639	5799	6379	6959	8119	8699	9279	9859	10439	11599	12179		
72-KSY3-1035	350	Start	4770	5566	6361	7951	8746	9541	11132	11927	12722	Exceeds MOP				8.2	
		Min	2634	3073	3513	4391	4830	5269	6147	6587	7026						
		End	4770	5566	6361	7951	8746	9541	11132	11927	12722						
72-KSY3-1040	400	Start	6260	7303	8347	10434	11477	12521	Exceeds MOP							6.2	
		Min	3457	4033	4609	5762	6338	6914									
		End	6260	7303	8347	10434	11477	12521									
72-KSY3-1050	500	Start	9835	11474	Exceeds MOP										4.2		
		Min	5431	6337													
		End	9835	11474													

DOUBLE ACTING TORQUE CHART (Cont.)

ACTUATOR MODEL	Cylinder Size	Stroke Position	Operating Pressure (barG)													Max. Operating Pressure (barG)
			3	3.5	4	5	5.5	6	7	7.5	8	8.5	9	10	10.5	
			Output Torque (Nm)													
72-KSY4-1040	400	Start	7908	9226	10544	13180	14498	15816	18452	19770	21088	22406	23724	26360	27678	10.7
		Min	4367	5095	5823	7279	8006	8734	10190	10918	11646	12374	13102	14558	12285	
		End	7908	9226	10544	13180	14498	15816	18452	19770	21088	22406	23724	26360	27678	
72-KSY4-1045	450	Start	10056	11732	13409	16761	18437	20113	23465	25141	26818	28494	Exceeds MOP			8.7
		Min	5554	6479	7405	9256	10182	11108	12959	13885	14810	15736				
		End	10056	11732	13409	16761	18437	20113	23465	25141	26818	28494				
72-KSY4-1050	500	Start	12458	14534	16610	20763	22839	24916	29069	Exceeds MOP						7.7
		Min	6880	8026	9173	11467	12613	13760	16053							
		End	12458	14534	16610	20763	22839	24916	29069							
72-KSY4-1060	600	Start	18019	21022	24025	30032	Exceeds MOP									5.2
		Min	9951	11609	13268	16585										
		End	18019	21022	24025	30032										
72-KSY4-1070	700	Start	24591	28690	Exceeds MOP										3.7	
		Min	13580	15844												
		End	24591	28690												
72-KSY5-1045	450	Start	12838	14977	17117	21369	23536	25676	29955	32095	34234	36374	38514	42793	44933	10.7
		Min	7089	8271	9453	11816	12998	14179	16543	17724	18906	20088	21269	23633	24814	
		End	12838	14977	17117	21396	23536	25676	29955	32095	34234	36374	38514	42793	44933	
72-KSY5-1050	500	Start	15925	18579	21234	26542	29196	31851	37159	39813	42468	45122	Exceeds MOP			8.7
		Min	8795	10260	11726	14658	16124	17590	20521	21987	23453	24919				
		End	15925	18579	21234	26542	29196	31851	37159	39813	42468	45122				
72-KSY5-1060	600	Start	23075	26921	30767	38459	42305	46150	53842	Exceeds MOP						7.2
		Min	12743	14867	16991	21239	23363	25487	29735							
		End	23075	26921	30767	38459	42305	46150	53842							
72-KSY5-1070	700	Start	31525	36779	42033	52542	Exceeds MOP									5.2
		Min	17410	20312	23213	29017										
		End	31525	36779	42033	52542										
72-KSY5-1080	800	Start	41275	48154	Exceeds MOP										3.7	
		Min	22794	26594												
		End	41275	48154												
72-KSY6-1055	550	Start	23431	27336	31241	39051	42957	46862	54672	58577	62483	66388	70293	78103	82009	10.7
		Min	12940	15096	17253	21567	23723	25880	30193	32350	34507	36663	38820	43134	45290	
		End	23431	27336	31241	39051	42957	46862	54672	58577	62483	66388	70293	78103	82009	
72-KSY6-1060	600	Start	27999	32665	37332	46665	51331	55998	65331	69998	74664	79331	83997	93330	97997	10.7
		Min	15462	18040	20617	25771	28348	30925	36080	38657	41234	43811	46388	51543	54120	
		End	27999	32665	37332	46665	51331	55998	65331	69998	74664	79331	83997	93330	97997	
72-KSY6-1070	700	Start	38326	44714	51102	63878	70266	76653	89429	95817	102205	Exceeds MOP				8.2
		Min	21166	24694	28222	35277	38805	42333	49388	52916	56444					
		End	38326	44714	51102	63878	70266	76653	89429	95817	102205					

DOUBLE ACTING TORQUE CHART (Cont.)

ACTUATOR MODEL	Cylinder Size	Stroke Position	Operating Pressure (barG)													Max. Operating Pressure (barG)
			3	3.5	4	5	5.5	6	7	7.5	8	8.5	9	10	10.5	
			Output Torque (Nm)													
72-KSY6-1080	800	Start	50243	58617	66991	83739	92113	100487	Exceeds MOP							6.2
		Min	27747	32372	36997	46246	50870	55495								
		End	50243	58617	66991	83739	92113	100487								
72-KSY6-1090	900	Start	63749	74373	84998	106248	Exceeds MOP							5.2		
		Min	35206	41074	46941	58677										
		End	63749	74373	84998	106248										
72-KSY6-1100	1000	Start	78843	91984	105124	Exceeds MOP							4.2			
		Min	43542	50799	58056											
		End	78843	91984	105124											
72-KSY7-1070	700	Start	46622	54393	62163	77704	85475	93245	108786	116557	124327	132098	139868	155409	163180	10.7
		Min	25748	30039	34330	42913	47205	51496	60079	64370	68661	72953	77244	85827	90118	
		End	46622	54393	62163	77704	85475	93245	108786	116557	124327	132098	139868	155409	163180	
72-KSY7-1080	800	Start	61247	71455	81663	102079	112287	122495	142911	153119	163327	183535	183743	Exceeds MOP		9.2
		Min	33825	39462	45100	56375	62012	67650	78925	84562	90200	95837	101475			
		End	61247	71455	81663	102079	112287	122495	142911	153119	163327	173535	183743			
72-KSY7-1090	900	Start	77822	90793	103763	129704	142675	155645	181586	194557	Exceeds MOP					7.7
		Min	42978	50141	57305	71631	78794	85957	100283	107446						
		End	77822	90793	103763	129704	142675	155645	181586	194557						
72-KSY7-1100	1000	Start	96347	112405	128463	160579	176637	192695	Exceeds MOP							6.2
		Min	53209	62077	70945	88682	97550	106418								
		End	96347	112405	128463	160579	176637	192695								
72-KSY7-1110	1100	Start	116822	136293	155763	194704	Exceeds MOP							5.2		
		Min	64517	75269	86022	107528										
		End	116822	136293	155763	194704										
72-KSY7-1120	1200	Start	139247	162455	185663	Exceeds MOP							4.2			
		Min	76901	89718	102535											
		End	139247	162455	185663											

SPRING RETURN TORQUE CHART

ACTUATOR MODEL	Cylinder Size	Stroke Position	Spring Torque (Nm)	Operating Pressure (barG)													Max. Operating Pressure (barG)
				3	3.5	4	5	5.5	6	7	7.5	8	8.5	9	10	10.5	
				Pressure Torque Output (Nm)													
72-KSY1-1020S01	200	Start	674	649	813	977	1305	1469	1633	1961	2125	2289	2454	2618	2946	3110	10.7
		Min	281	269	360	451	632	722	813	994	1085	1175	1266	1357	1538	1628	
		End	343	328	492	656	984	1148	1312	1640	1804	1968	2132	2296	2624	2788	
72-KSY1-1020S02	200	Start	1129				1082	1246	1410	1738	1902	2066	2230	2394	2723	2887	10.7
		Min	469				448	539	629	810	901	991	1082	1173	1354	1444	
		End	572				541	705	869	1197	1361	1525	1689	1853	2181	2345	
72-KSY1-1020S03	200	Start	1803								1246	1410	1574	1738	2066	2230	10.7
		Min	842								539	629	720	810	991	1082	
		End	1247								705	869	1033	1197	1525	1689	
72-KSY1-1020S04	200	Start	2140											1410	1738	1902	10.7
		Min	1028											629	810	901	
		End	1584											869	1197	1361	
72-KSY1-1025S02	250	Start	1129		1248	1507	2025	2283	2542	3060	3319	3578	3836	4095	Exceeds MOP		9.2
		Min	469		538	681	967	1110	1253	1539	1382	1825	1968	2110			
		End	572		701	960	1478	1737	1996	2513	2772	3031	3290	3549			
72-KSY1-1025S03	250	Start	1803				1621	1880	2397	2656	2915	3174	3433	3950	4209	10.7	
		Min	842				744	887	1173	1316	1459	1602	1745	2030	2173		
		End	1247				1074	1333	1851	2109	2368	2627	2886	3404	3662		
72-KSY1-1025S04	250	Start	2140							2066	2325	2584	2842	3101	3619	3878	10.7
		Min	1028							990	1133	1276	1276	1562	1847	1990	
		End	1584							1519	1778	2037	2037	2555	3072	3331	
72-KSY1-1025S05	250	Start	3344											2225	2743	3002	10.7
		Min	1606											993	1279	1422	
		End	2475											1371	1889	2148	
72-KSY1-1030S03	300	Start	1803			1765	2514	2889	3263	4013	4387	Exceeds MOP					7.7
		Min	842			823	1236	1443	1650	2064	2271						
		End	1247			1215	1965	2339	2714	3463	3838						
72-KSY1-1030S04	300	Start	2140				2181	2556	2930	3680	4054	4429	Exceeds MOP				8.2
		Min	1028				1053	1259	1466	1880	2087	2294					
		End	1584				1631	2006	2381	3130	3505	3880					
72-KSY1-1030S05	300	Start	3344								3174	3549	3923	4298	Exceeds MOP		9.2
		Min	1606								1516	1722	1929	2136			
		End	2475								2315	2690	3065	3439			
72-KSY1-1030S06	300	Start	4549											3746	4496	Exceeds MOP	10.2
		Min	2093											1655	2069		
		End	3033											2248	2997		
72-KSY1-1035S04	350	Start	2140		2010	2522	3545	4057	4568	Exceeds MOP							6.2
		Min	1028		958	1240	1805	2088	2371								
		End	1584		1459	1971	2994	3506	4017								
72-KSY1-1035S05	350	Start	3344				2662	3174	2685	4708	Exceeds MOP					7.2	
		Min	1606				1232	1515	1797	2362							
		End	2475				1801	2312	2824	3847							

SPRING RETURN TORQUE CHART (Cont.)

ACTUATOR MODEL	Cylinder Size	Stroke Position	Spring Torque (Nm)	Operating Pressure (barG)												Max. Operating Pressure (barG)		
				3	3.5	4	5	5.5	6	7	7.5	8	8.5	9	10		10.5	
				Pressure Torque Output (Nm)														
72-KSY1-1035S06	350	Start	4549							4155	4667	Exceeds MOP					7.7	
		Min	2093							1879	2162							
		End	3033							2652	3163							
72-KSY2-1025S01	250	Start	1354	1313	1641	1969	2626	2954	3283	3939	4267	4596	4924	5252	5909	6737	10.7	
		Min	560	543	725	906	1269	1450	1631	1994	2175	2357	2538	2719	3082	3263		
		End	677	656	984	1313	1969	2298	2626	3283	3611	3939	4267	4596	5252	5581		
72-KSY2-1025S02	250	Start	2268					2166	2495	2823	3479	3808	4136	4464	4793	5449	5778	10.7
		Min	944					897	1078	1260	1622	1804	1985	2166	2347	2710	2891	
		End	1151					1083	1411	1739	2396	2724	3053	3381	3709	4366	4694	
72-KSY2-1025S03	250	Start	3622							2495	2823	3151	3479	4136	4464	10.7		
		Min	1692							1078	1260	1441	1622	1985	2166			
		End	2505							1411	1739	2068	2396	3053	3381			
72-KSY2-1025S04	250	Start	4299										2823	3479	3808	10.7		
		Min	2065										1260	1622	1804			
		End	3182										1739	2396	2724			
72-KSY2-1030S02	300	Start	2268		2213	2691	3645	4122	4600	5554	6032	6509	6986	7463	Exceeds MOP	9.2		
		Min	944		920	1184	1711	1974	2238	2765	3029	3292	3556	3819				
		End	1151		1120	1597	2552	3029	3506	4461	4938	5415	5892	6370				
72-KSY2-1030S03	300	Start	3622					2797	3274	4229	4706	5183	5660	6138	7092	7569	10.7	
		Min	1692					1242	1506	2033	2297	2560	2824	3087	3614	3878		
		End	2505					1703	2180	3135	3612	4089	4567	5044	5998	6476		
75-KSY2-1030S04	300	Start	4299							3566	4043	4520	4997	5475	6429	6907	10.7	
		Min	2065							1667	1931	2194	2458	2721	3248	3512		
		End	3182							2472	2949	3426	3904	4381	5336	5813		
72-KSY2-1030S05	300	Start	6191										4104	5058	5536	10.7		
		Min	2974										1831	2358	2622			
		End	4582										2529	3483	3961			
72-KSY2-1035S03	350	Start	3622				2759	4066	4719	5373	6679	7332	7986	8639	Exceeds MOP	8.7		
		Min	1692				1220	1942	2302	2663	3385	3746	4106	4467				
		End	2505				1659	2966	3619	4273	5579	6233	6886	7539				
72-KSY2-1035S04	350	Start	4299					3399	4053	4706	6013	6666	7319	7972	8626	Exceeds MOP	9.2	
		Min	2065					1573	1934	2295	3017	3377	3738	4099	4460			
		End	3182					2299	2953	3606	4913	5566	6219	6872	7526			
72-KSY2-1035S05	350	Start	6191							5287	5941	6594	7247	8554	Exceeds MOP	10.2		
		Min	2974							2482	2843	3204	3565	4286				
		End	4582							3703	4357	5010	5663	6970				
72-KSY2-1035S06	350	Start	7962										6533	7839	8492	10.7		
		Min	3664										2886	3607	3968			
		End	5308										3919	5226	5879			
72-KSY2-1040S04	400	Start	4299		2850	3706	5419	6275	7132	8845	Exceeds MOP					7.2		
		Min	2065		1269	1742	2688	3161	3634	4580								
		End	3182		1746	2602	4315	5172	6028	7741								
72-KSY2-1040S05	400	Start	6191					4035	4892	5748	7461	8318	Exceeds MOP			7.7		
		Min	2974					1789	2262	2735	3681	4154						
		End	4582					2446	3302	4159	5871	6728						

SPRING RETURN TORQUE CHART (Cont.)

ACTUATOR MODEL	Cylinder Size	Stroke Position	Spring Torque (Nm)	Operating Pressure (barG)												Max. Operating Pressure (barG)	
				3	3.5	4	5	5.5	6	7	7.5	8	8.5	9	10		10.5
				Pressure Torque Output (Nm)													
72-KSY2-1040S06	400	Start	7962							6744	7600	8457	Exceeds MOP			8.2	
		Min	3664							3000	3473	3946					
		End	5308							4121	4977	5834					
72-KSY3-1030S01	300	Start	2383	2319	2899	3479	4639	5219	5799	6959	7539	8119	8699	9279	10439	11019	10.7
		Min	987	960	1281	1601	2242	2562	2882	3523	3843	4164	4484	4804	5445	5765	
		End	1191	1159	1739	2319	3479	4059	4639	5799	6379	6959	7539	8119	9279	9859	
72-KSY3-1030S02	300	Start	3992				3827	4407	4987	6147	6727	7307	7887	8467	9627	10207	10.7
		Min	1661				1585	1905	2226	2866	3187	3507	3827	4148	4788	5108	
		End	2025				1913	2493	3073	4233	4813	5393	5973	6553	7713	8293	
72-KSY3-1030S03	300	Start	6375							4407	4987	5567	6147	7307	7887	10.7	
		Min	2977							1905	2226	2546	2866	3507	3827		
		End	4409							2493	3073	3653	4233	5393	5973		
72-KSY3-1030S04	300	Start	7567										4987	6147	6727	10.7	
		Min	3636										2226	2866	3187		
		End	5600										3073	4233	4813		
72-KSY3-1035S02	350	Start	3992		3579	4374	5965	6760	7555	9145	9941	10736	11531	12326	Exceeds MOP	9.2	
		Min	1661		1444	1883	2762	3201	3640	4518	4957	5396	5836	6275			
		End	2025		1651	2447	4037	4832	5627	7218	8013	8808	9603	10398			
72-KSY3-1035S03	350	Start	6375					4423	5218	6809	7604	8399	9194	9989	11580	12375	10.5
		Min	2977					1910	2349	3228	3667	4106	4545	4984	5862	6302	
		End	4409					2495	3290	4881	5676	6471	7266	8061	9652	10447	
72-KSY3-1035S04	350	Start	7567							5640	6435	7231	8026	8821	10411	11206	10.7
		Min	3636							2582	3021	3461	3900	4339	5217	5656	
		End	5600							3712	4508	5303	6098	6893	8483	9278	
72-KSY3-1035S05	350	Start	10299										6838	8428	9223	10.7	
		Min	4949										3051	3930	4369		
		End	7623										4214	5804	6599		
72-KSY3-1040S03	400	Start	6375			4004	6090	7134	8177	10264	11308	12351	Exceeds MOP			8.2	
		Min	2977			1676	2828	3405	3981	5133	5710	6286					
		End	4409			2067	4154	5197	6240	8327	9371	10414					
72-KSY3-1040S04	400	Start	7567				4917	5960	7003	9090	10134	11177	12221	Exceeds MOP		8.7	
		Min	3636				2180	2756	3333	4485	5061	5638	6214				
		End	5600				2980	4023	5067	7153	8197	9240	10284				
72-KSY3-1040S05	400	Start	10299							8141	9185	10228	11272	Exceeds MOP		9.2	
		Min	4949							3768	4344	4921	5497				
		End	7623							5505	6549	7592	8635				
72-KSY3-1040S06	400	Start	12711										10434	12521	Exceeds MOP	10.2	
		Min	5849										4609	5762			
		End	8474										6260	8347			
72-KSY3-1050S04	500	Start	7567		5927	7566	10845	12484	Exceeds MOP								5.7
		Min	3636		2735	3641	5451	6357									
		End	5600		3980	5619	8897	10537									
72-KSY3-1050S05	500	Start	10299				8842	10481	12120	Exceeds MOP						6.2	
		Min	4949				4151	5056	5961								
		End	7623				6191	7830	9469								

SPRING RETURN TORQUE CHART (Cont.)

ACTUATOR MODEL	Cylinder Size	Stroke Position	Spring Torque (Nm)	Operating Pressure (barG)												Max. Operating Pressure (barG)	
				3	3.5	4	5	5.5	6	7	7.5	8	8.5	9	10		10.5
				Pressure Torque Output (Nm)													
72-KSY4-1040S01	400	Start	5392	5272	6590	7908	10544	11862	13180	15816	17134	18452	19770	21088	23724	25042	10.7
		Min	2233	2183	2911	3639	5095	5823	6551	8006	8734	9462	10190	10918	12374	13102	
		End	2696	2636	3954	5272	7908	9226	10544	13180	14498	15816	17134	18452	21088	22406	
72-KSY4-1040S02	400	Start	9032				8699	10017	11335	13971	15289	16607	17925	19243	21879	23197	10.7
		Min	3759				3603	4331	5058	6514	7242	7970	8698	9426	10882	11610	
		End	4583				4349	5667	6985	9621	10939	12257	13575	14893	17529	18847	
72-KSY4-1040S03	400	Start	14425								10017	11335	12653	13971	16607	17925	10.7
		Min	6738								4331	5058	5786	6514	7970	8698	
		End	9976								5667	6985	8303	9621	12257	13575	
72-KSY4-1040S04	400	Start	17121											11335	13971	15289	10.7
		Min	8227											5058	6514	7242	
		End	12672											6985	9621	10939	
72-KSY4-1045S02	450	Start	9032			8906	12258	13934	15610	18963	20639	22315	23991	25667	29019	Exceeds MOP	10.2
		Min	3759			3711	5563	6488	7414	9265	10191	11117	12042	12968	14819		
		End	4583			4535	7888	9564	11240	14592	16268	17944	19621	21297	24649		
72-KSY4-1045S03	450	Start	14425				8637	10313	13665	15341	17017	18694	20370	23722	25398	10.7	
		Min	6738				3563	4488	6340	7265	8191	9117	10042	11894	12819		
		End	9976				4266	5943	9295	10971	12647	14323	15999	19352	21028		
72-KSY4-1045S04	450	Start	17121							11016	12693	14369	16045	17721	21073	22749	10.7
		Min	8227							4877	5803	6728	7654	8580	10431	11357	
		End	12672							6646	8322	9998	11674	13351	16703	18379	
72-KSY4-1045S05	450	Start	21669											14414	17767	19443	10.7
		Min	10412											6433	8284	9210	
		End	16038											8883	12235	13911	
72-KSY4-1050S03	500	Start	14425				10929	13006	15082	19235	21311	23388	25464	27540	Exceeds MOP		9.2
		Min	6738				4825	5972	7118	9412	10558	11705	12852	13998			
		End	9976				6544	8621	10697	14850	16926	19002	21079	23155			
72-KSY4-1050S04	500	Start	17121						12424	16577	18654	20730	22806	24883	29035	Exceeds MOP	10.2
		Min	8227						5650	7944	9091	10237	11384	12531	14824		
		End	12672						8039	12192	14268	16345	18421	20497	24650		
72-KSY4-1050S05	500	Start	21669								15336	17412	19488	21565	25717	27794	10.7
		Min	10412								6936	8083	9230	10377	12670	13817	
		End	16038								9785	11862	13938	16014	20167	22244	
72-KSY4-1050S06	500	Start	25277											20763	24916	26992	10.7
		Min	11633											9173	11467	12613	
		End	16851											12458	16610	18687	
72-KSY4-1060S04	600	Start	17121			11478	17485	20488	23491	29498	Exceeds MOP						7.2
		Min	8227			5123	8440	10098	11757	15074							
		End	12672			7074	13080	16083	19087	25093							
72-KSY4-1060S05	600	Start	21669					17155	20159	26165	29168	Exceeds MOP				7.7	
		Min	10412					7935	9593	12910	14569						
		End	16038					11581	14584	20590	23593						
72-KSY4-1060S06	600	Start	26752							22440	25443	28477	Exceeds MOP				8.2
		Min	12854							10492	12151	13809					
		End	19800							15558	18561	21564					

SPRING RETURN TORQUE CHART (Cont.)

ACTUATOR MODEL	Cylinder Size	Stroke Position	Spring Torque (Nm)	Operating Pressure (barG)												Max. Operating Pressure (barG)	
				3	3.5	4	5	5.5	6	7	7.5	8	8.5	9	10		10.5
				Pressure Torque Output (Nm)													
72-KSY4-1070S05	700	Start	21669			16866	25064	29162	Exceeds MOP							5.7	
		Min	10412			7771	12298	14562									
		End	16038			11277	19474	23573									
72-KSY4-1070S06	700	Start	26752					25427	29526	Exceeds MOP						6.2	
		Min	12854					12137	14400								
		End	19800					18527	22625								
72-KSY5-1045S01	450	Start	8774	8558	10698	12838	17117	19257	21396	25676	27815	29955	32095	34234	38514	40653	10.7
		Min	3634	3544	4726	5908	8271	9453	10634	12998	14179	15361	16543	17724	20088	21269	
		End	4387	4279	6419	8558	12838	14977	17117	21396	23536	25676	27815	29955	34234	36374	
72-KSY5-1045S02	450	Start	14698				14121	16261	18401	22680	24820	26959	29099	31239	35518	37658	10.7
		Min	6118				5849	7030	8212	10575	11757	12939	14120	15302	17665	18847	
		End	7458				7060	9200	11340	15619	17759	19898	22038	24178	28457	30597	
72-KSY5-1045S03	450	Start	23473								16261	18401	20540	22680	26959	29099	10.7
		Min	10964								7030	8212	9394	10575	12939	14120	
		End	16233								9200	11340	13479	15619	19898	22038	
72-KSY5-1045S04	450	Start	27860											18401	22680	24820	10.7
		Min	13387											8212	10575	11757	
		End	20621											11340	15619	17759	
72-KSY5-1050S02	500	Start	14698			13924	19232	21886	24541	29849	32503	35158	37812	40466	45775	48429	10.7
		Min	6118			5730	8662	10128	11594	14525	15991	17457	18923	20389	23320	24786	
		End	7458			6829	12137	14792	17446	22754	25409	28063	30717	33371	38680	41334	
72-KSY5-1050S03	500	Start	23473					13287	15941	21249	23904	26558	29212	31866	37175	39829	10.7
		Min	10964					5378	6844	9776	11242	12708	14174	15639	18571	20037	
		End	13233					6192	8846	14155	16809	19463	22117	24772	30080	32734	
72-KSY5-1050S04	500	Start	27860							16950	19604	22258	24912	27567	32875	35529	10.7
		Min	13387							7401	8867	10333	11799	13265	16196	17662	
		End	20621							9855	12509	15163	17817	20472	25780	28434	
72-KSY5-1050S05	500	Start	31687											25480	30789	33443	10.7
		Min	15031											11653	14585	16051	
		End	22749											16721	22030	24684	
72-KSY5-1060S03	600	Start	23473				22450	26296	30142	37834	41680	45526	49371	53217	Exceeds MOP		9.2
		Min	10964				10427	12551	14675	18923	21047	23171	25295	27419			
		End	16233				15311	19157	23003	30695	34541	38387	42232	46078			
72-KSY5-1060S04	600	Start	27860						25815	33507	37353	41199	45045	48891	56583	Exceeds MOP	10.2
		Min	13387						12285	16533	18657	20781	22905	25029	29277		
		End	20621						18676	26368	30214	34060	37906	41752	49444		
72-KSY5-1060S05	600	Start	31687							31408	35254	39100	42946	46791	54483	Exceeds MOP	10.2
		Min	15031							14911	17035	19159	21283	23407	27655		
		End	22749							22594	26440	30286	34132	37978	45670		
72-KSY5-1060S06	600	Start	41729											40766	48458	52304	10.7
		Min	19492											19009	23257	25381	
		End	28859											28075	35767	39612	
72-KSY5-1070S04	700	Start	27860			21622	32131	37385	42639	53148	Exceeds MOP						7.2
		Min	13387			9962	15766	18668	21569	27373							
		End	20621			14457	24965	30219	35474	45982							

SPRING RETURN TORQUE CHART (Cont.)

ACTUATOR MODEL	Cylinder Size	Stroke Position	Spring Torque (Nm)	Operating Pressure (barG)												Max. Operating Pressure (barG)		
				3	3.5	4	5	5.5	6	7	7.5	8	8.5	9	10		10.5	
				Pressure Torque Output (Nm)														
72-KSY5-1070S05	700	Start	31687					30024	35278	40532	51041	56295	Exceeds MOP				7.7	
		Min	15031					14138	17040	19942	25745	28647						
		End	22749					21177	26432	31686	42194	47449						
72-KSY5-1070S06	700	Start	41729							44993	50247	55501	Exceeds MOP			8.2		
		Min	19492							21330	24232	27134						
		End	28859							32254	37508	42763						
72-KSY5-1080S05	800	Start	31687		25582	32461	46219	53099	Exceeds MOP							5.7		
		Min	15031		11679	15478	23076	26876										
		End	22749		16714	23593	37352	44231										
72-KSY5-1080S06	800	Start	41729					40157	47036	53916	Exceeds MOP						6.2	
		Min	19492					18651	22450	26249								
		End	28859					27387	34267	41146								
72-KSY6-1060S01	600	Start	19066	18666	23332	27999	37332	41998	46665	55998	60664	65331	69998	74664	83997	88664	10.7	
		Min	7897	7731	10308	12885	18040	20617	23194	28348	30925	33503	36080	38657	43811	46388		
		End	9533	9333	13999	18666	27999	32665	37332	46665	51331	55998	60664	65331	74664	79331		
72-KSY6-1060S02	600	Start	31936					30799	35465	40132	49465	54131	58798	63464	68131	77464	82131	10.7
		Min	13293					12756	15334	17911	23065	25642	28219	30797	33374	38528	41105	
		End	16206					15399	20066	24732	34065	38732	43398	48065	52731	62064	66731	
72-KSY6-1060S03	600	Start	41469							40132	44798	49465	54131	58798	68131	72797	10.7	
		Min	18558							17911	20488	23065	25642	28219	33374	35951		
		End	25739							24732	29399	34065	38732	43398	52731	57398		
72-KSY6-1060S04	600	Start	51003											49465	58798	63464	10.7	
		Min	23823											23065	28219	30797		
		End	35273											34065	30797	48065		
72-KSY6-1070S02	700	Start	31936				35146	47921	54309	60697	73473	79860	86248	92636	99024	111800	118187	10.7
		Min	13293				15133	22188	25716	29244	36300	39827	43355	46883	50411	57466	60994	
		End	16206				19658	32434	38822	45210	57985	64373	70761	77149	83537	96312	102700	
72-KSY6-1070S03	700	Start	41469					44923	51311	64086	70474	76862	83250	89638	102413	108801	10.7	
		Min	18558					20533	24060	31116	34644	38171	41699	45227	52282	55810		
		End	25739					29436	35823	48599	54987	61375	67763	74150	86926	93314		
72-KSY6-1070S04	700	Start	51003							54700	61088	67476	73864	80251	93027	99415	10.7	
		Min	23823							25932	29460	32988	36513	40043	47099	50627		
		End	35273							39213	45601	51989	58376	64764	77540	83928		
72-KSY6-1070S05	700	Start	69421											67710	80486	86874	10.7	
		Min	32426											31573	38629	42156		
		End	48010											46631	59406	65794		
72-KSY6-1080S03	800	Start	41469				41555	58303	66677	75051	91799	100173	108547	116921	Exceeds MOP		8.7	
		Min	18558				18657	27906	32531	37155	46405	51029	55654	60279				
		End	25739				26011	42759	51133	59507	76255	84629	93003	101376				
72-KSY6-1080S04	800	Start	51003					48882	57256	65630	82378	90752	99126	107500	115874	Exceeds MOP		9.2
		Min	23823					22704	27328	31953	41202	45827	50451	55076	59701			
		End	35273					33338	41712	50086	66834	75208	83582	91956	100330			
72-KSY6-1080S05	800	Start	69421							53043	69791	78165	86539	94913	103287	Exceeds MOP		9.2
		Min	32426							23451	32701	37325	41950	46575	51199			
		End	48010							31886	48634	57008	65382	73756	82129			

SPRING RETURN TORQUE CHART (Cont.)

ACTUATOR MODEL	Cylinder Size	Stroke Position	Spring Torque (Nm)	Operating Pressure (barG)													Max. Operating Pressure (barG)
				3	3.5	4	5	5.5	6	7	7.5	8	8.5	9	10	10.5	
				Pressure Torque Output (Nm)													
72-KSY6-1080S06	800	Start	90672										88763	105511	113885	10.7	
		Min	42353										41390	50639	55264		
		End	62708										61129	77877	86251		
72-KSY6-1090S04	900	Start	51003			50054	71304	81929	92554	113804	Exceeds MOP					7.2	
		Min	23823			23340	35075	40943	46811	58546							
		End	35273			34471	55721	66346	76971	98220							
72-KSY6-1090S05	900	Start	69421				58685	69310	79935	101185	111810	Exceeds MOP				7.7	
		Min	32426				26553	32421	38288	50024	55891						
		End	48010				37475	48100	58725	79975	90599						
72-KSY6-1090S06	900	Start	90672							86625	97250	107875	Exceeds MOP				8.2
		Min	42353							40190	46058	51925					
		End	62708							58922	69546	80171					
72-KSY6-1100S05	1000	Start	69421		44336	57476	83758	96898	Exceeds MOP							5.7	
		Min	32426		18618	25875	40389	47646									
		End	48010		23088	36228	62509	75650									
72-KSY6-1100S06	1000	Start	90672				69172	82312	95453	Exceeds MOP							6.2
		Min	42353				30537	37794	45051								
		End	62708				41419	54559	67700								
72-KSY7-1070S01	700	Start	31849	31081	38852	46622	62163	69934	77704	93245	101016	108786	116557	124327	139868	147639	10.7
		Min	13192	12874	17165	21456	30039	34330	38622	47205	51496	55787	60079	64370	72953	77244	
		End	15924	15540	23311	31081	46622	54393	62163	77704	85475	93245	101016	108786	124327	132098	
72-KSY7-1070S02	700	Start	53348				51285	59055	66826	82367	90137	97908	105678	113449	128990	136760	10.7
		Min	22206				21424	25533	29824	38407	42699	46990	51281	55573	64155	68447	
		End	27072				25642	33413	41183	56724	64495	72265	80036	87806	103347	111118	
72-KSY7-1070S03	700	Start	69273							66826	74596	82367	90137	97908	113449	121219	10.7
		Min	31001							29824	34116	38407	42699	46990	55573	59864	
		End	42997							41183	48954	56724	64495	72265	87806	95577	
72-KSY7-1070S04	700	Start	85198										82367	97908	105678	10.7	
		Min	39796										38407	46990	51281		
		End	58922										56724	72265	80036		
72-KSY7-1080S02	800	Start	53348			55091	75507	85715	95923	116339	126547	136755	146963	157171	177587	187795	10.7
		Min	22206			23303	34578	40215	45853	57128	62765	68403	74040	79678	90953	96590	
		End	27072			29300	49716	59924	70132	90548	100756	110964	121172	131379	151795	162003	
72-KSY7-1080S03	800	Start	69273					70084	80292	100708	110916	121124	131332	141540	161956	172164	10.7
		Min	31001					31583	37220	48495	54133	59770	65408	71045	82320	87958	
		End	42997					44293	54501	74917	85125	95333	105541	115749	136164	146372	
72-KSY7-1080S04	800	Start	85198							85077	95285	105493	115701	125909	146325	156533	10.7
		Min	39796							39863	45500	51138	56775	62413	73688	79325	
		End	58922							59286	69494	79702	89910	100118	120534	130741	
72-KSY7-1080S05	800	Start	111279										108204	128620	138828	10.7	
		Min	51978										50455	61730	67368		
		End	76959										74518	94934	105142		
72-KSY7-1090S03	900	Start	69273			61393	87334	100305	113275	139216	152186	165157	178127	Exceeds MOP		8.7	
		Min	31001			26755	41081	48245	55408	69734	76897	84060	91223				
		End	42997			35500	61441	74412	87382	113323	126294	139264	152235				

SPRING RETURN TORQUE CHART (Cont.)

ACTUATOR MODEL	Cylinder Size	Stroke Position	Spring Torque (Nm)	Operating Pressure (barG)												Max. Operating Pressure (barG)	
				3	3.5	4	5	5.5	6	7	7.5	8	8.5	9	10		10.5
				Pressure Torque Output (Nm)													
72-KSY7-1090S04	900	Start	85198				71641	84612	97582	123523	136494	149464	162435	175405			9.2
		Min	39796				32415	39578	46741	61067	68231	75394	82557	89720	Exceeds MOP		
		End	58922				45748	58719	71689	97630	110601	123571	136542	149512			
72-KSY7-1090S05	900	Start	111279						79808	105749	118719	131690	144660	157631	183572	Exceeds MOP	10.2
		Min	51978						34736	49063	56226	63389	70552	77715	92041		
		End	76959						45989	71930	84900	97871	110841	123812	149753		
72-KSY7-1090S06	900	Start	140838										137487	163428	176398	10.7	
		Min	65785										64110	78436	85599		
		End	97402										94684	120625	133595		
72-KSY7-1100S04	1000	Start	85198			70237	102353	118411	134469	166585	182643	198701	Exceeds MOP			8.2	
		Min	39796			31619	49356	58224	67092	84829	93697	102565					
		End	58922			44271	76387	92445	108503	140619	156677	172735					
72-KSY7-1100S05	1000	Start	111279				84529	100587	116645	148761	164819	180877	196934	Exceeds MOP		8.7	
		Min	51978				37317	46185	55054	72790	81658	90527	99395				
		End	76959				50614	66672	82730	114846	130904	146962	163020				
72-KSY7-1100S06	1000	Start	140838						128560	144618	160676	176734	192792	Exceeds MOP		9.2	
		Min	65785						59146	68015	76883	85751	94619				
		End	97402						85637	101695	117753	133811	149869				
72-KSY7-1110S05	1100	Start	111279			79555	118496	137966	157437	196378	Exceeds MOP					7.2	
		Min	51978			34551	56056	66809	77562	99068							
		End	76957			45570	84511	103981	123452	162393							
72-KSY7-1110S06	1100	Start	140838				98253	117723	137194	176135	195605	Exceeds MOP			7.7		
		Min	65785				42384	53137	63890	85396	96149						
		End	97402				55241	74711	94182	133123	152593						

DECODIFICATION OF DOUBLE ACTING ACTUATOR

72-KSYX-XXXX							
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72-KSYX-XXXX	Actuator Model (To be taken from Torque selection table)						
Angle of Rotation	9						90°
	6						60°
	X						Non Std *
Manual Override	N						None
	M						Manual Hand wheel (up to KSY4)
	H						Hydraulic (KSY5 & above)
Stopper Options	N						None
	1						Min. Rotation stopper (adjustable) 0-45°
	2						Max. Rotation stopper (adjustable) 45-90°
Service Temperature	S						Standard
	L						Low temperature
	H						High temperature
Application	S						Standard
	F						Off shore
Special Requirements	000						Standard
	001						Consult with Design *
	002						

DECODIFICATION OF SPRING RETURN ACTUATOR

72-KSYX-XXXXSXX							
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72-KSYX-XXXXSXX	Actuator Model (To be taken from Torque selection table)						
Action	D						Direct
	R						Reverse
Angle of Rotation	9						90°
	6						60°
	X						Non Std *
Manual Override	N						None
	M						Manual Hand wheel (up to KSY4)
	H						Hydraulic (KSY5 & above)
Stopper Options	N						None
	1						Min. Rotation stopper (adjustable) 0-45°
	2						Max. Rotation stopper (adjustable) 45-90°
Service Temperature	S						Standard
	L						Low temperature
	H						High temperature
Application	S						Standard
	F						Off shore
Special Requirements	000						Standard
	001						Consult with Design *
	002						

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