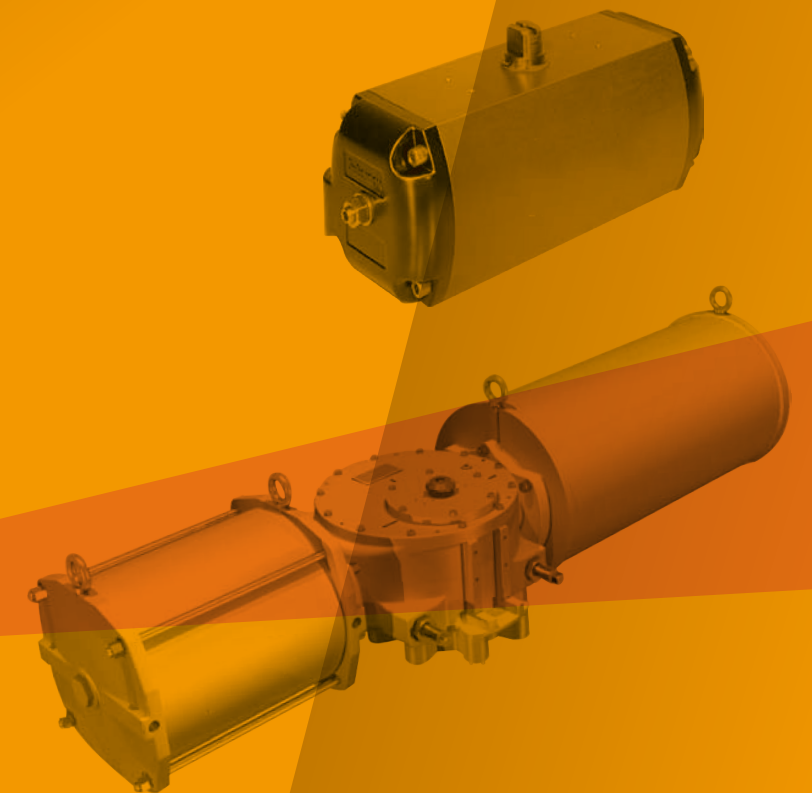




PNEUMATIC ACTUATORS

LPH Series Scotch Yoke Actuators | LPA Series Rack & Pinion Actuators



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LPH Series Scotch Yoke Actuators

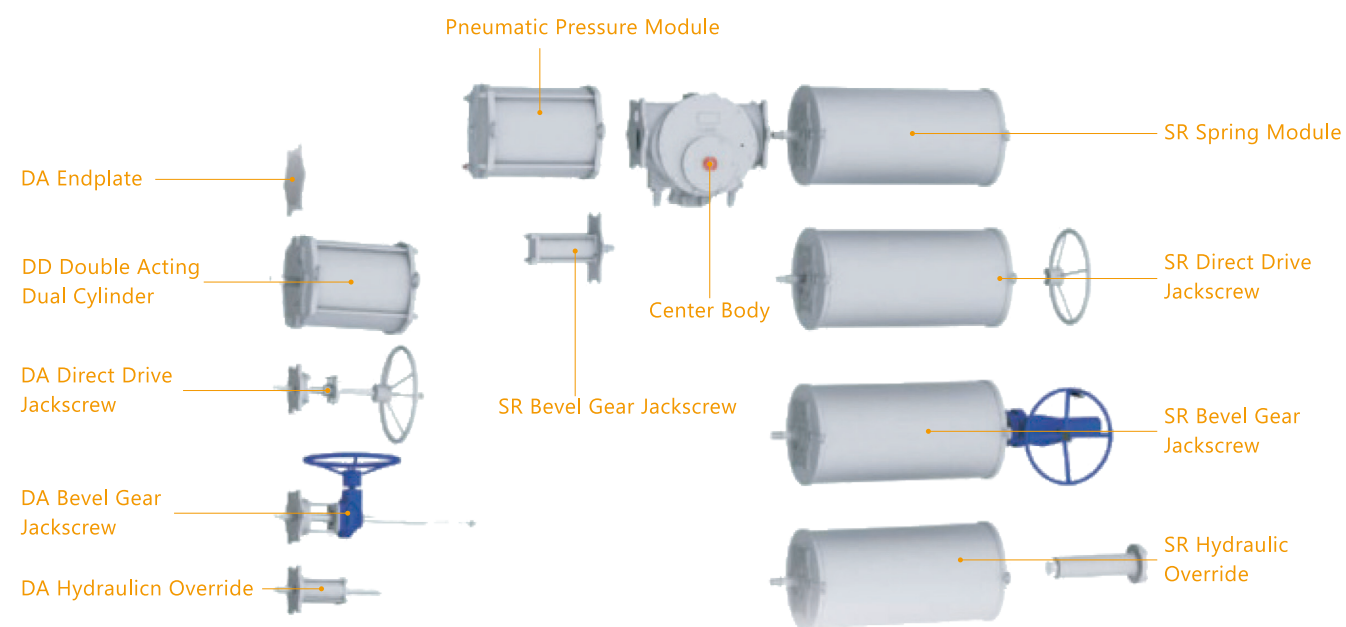
■ Introduction

- **LPH General Service:** Application of the conventional quarter-turn valves drive control.
- **LPHST Symmetrical:** Especially suitable for opening and closing torque value high quarter-turn valves.
- **LPHCT Canted Yoke:** Especially suitable for high start torque value quarter-turn valves.

■ Technical specifications

- **Standard:** -20t~+80°C
- **High temperature:** -20°C ~+150°C
- **Low temperature:** -40°C ~+80°C
Comply with IP66 protection class.
- **Characteristics:**
 - LPH series conventional torque control to a 90 ° rotating on/off or fluid control
 - LPHST series is symmetrical swing arm, torque output at 0 ° and 90 ° for maximum, minimum middle position.
 - LPHCT series is tilted swing arm, larger initial output torque can be obtained.

■ Modular Combination



LPH Series provides up to 248,000 Nm of heavy-duty Scotch yoke torque. Enhanced performance is achieved by using a superior yoke support system that significantly reduces transverse loads.

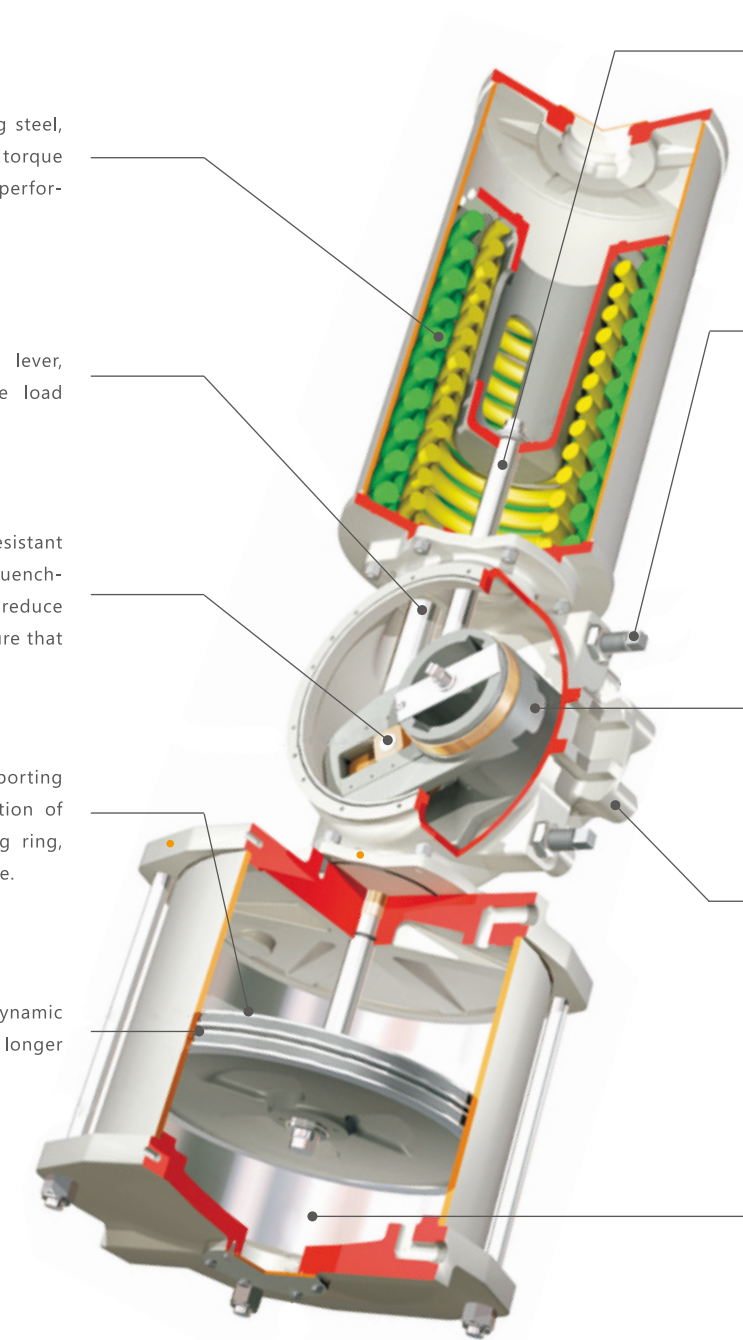
High strength alloy spring steel, to maintain consistent torque output and cycle life performance.

Chrome plated steel lever, provides the transverse load support.

High-strength wear-resistant copper slide block and quenching process shaft pin, can reduce the contact stress, to ensure that the service life cycle.

Double support ring supporting the pistons, better protection of the service life of sealing ring, make its protective to slide.

Special design of the dynamic sealing ring to ensure a longer service life.



Strengthen the chrome plated spring rod, provides a larger impact load, corrosion resistance and abrasion resistance.

Two-way stroke control, precise adjustment open and closed position, improve the service life of the valve seat.

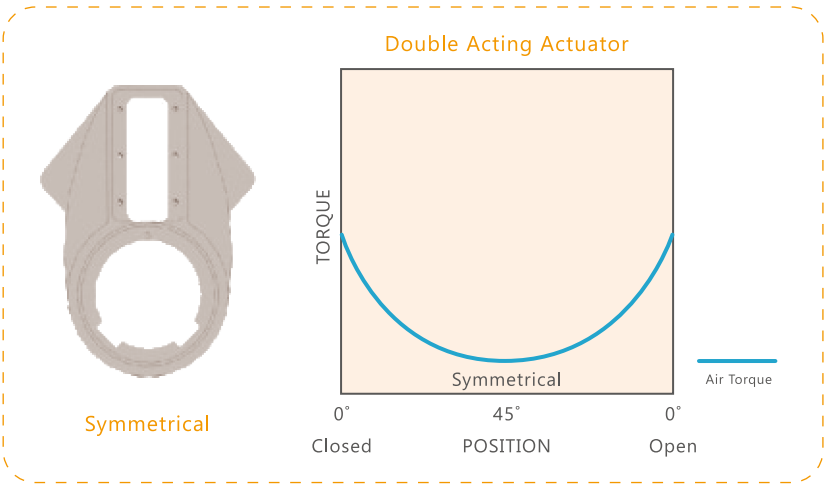
Symmetry and tilt design of nodular cast iron swing arm and closed chute, increase the overall strength, dual keyway design support parallel and vertical installation.

Conform ISO 5211 standard flange connections make sure that the output torque in the flange is adjustable.

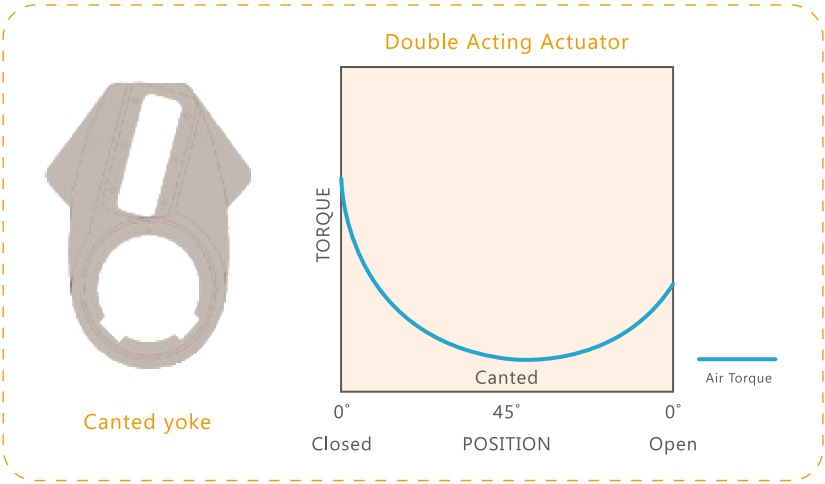
Cylinder wall after grinding hard chromium plating technology, has a superior corrosion resistance and abrasion resistance.

Torque data

Symmetrical Double Acting



Canted yoke Double Acting



Interchangeable Yoke System

- Ductile iron casting.
- Totally enclosed yoke slot for increased strength and cycle life.
- Canted yoke results in approx. 20% higher break torque.
- 2 keyway provision for flexibility of parallel or perpendicular mountinc.

LPHCT Series Remarkable Features

- Ductile iron casting.
- Totally enclosed yoke slot for increased strength and cycle life.
- Same starting torque, can choose smaller specifications , save space and cost.
- 2keyway provision for flexibility of parallel or perpendicular mounting.

Double Acting

Unit:nm

MODEL	4.0Bar			5.0Bar			6.0Bar			7.0Bar		
	0°	R	90°	0°	R	90°	0°	R	90°	0°	R	90°
LPHST-S1-15/DA	620	369	608	775	461	760	930	554	912	1085	646	1061
LPHST-S1-20/DA	1103	656	1091	1378	820	1363	1654	984	1636	1929	1148	1905
LPHST-S1-25/DA	1723	1025	1711	2153	1282	2138	2584	1538	2566	3105	1794	2991
LPHST-S1-30/DA	2481	1477	2469	3101	1846	3086	3721	2215	3703	4341	2584	4317
LPHST-S2-20/DA	1303	776	1284	1629	969	1606	1954	1163	1925	2280	1357	2242
LPHST-S2-25/DA	2036	1212	2017	2545	1515	2522	3054	1818	3025	3563	2121	3525
LPHST-S2-30/DA	2932	1745	2913	3665	2181	3642	4398	2618	4369	5130	3054	5092
LPHST-S2-35/DA	3990	2375	3971	4988	2969	4965	5986	3563	5957	6983	4157	6945
LPHST-S3-25/DA	2349	1398	2310	2936	1748	2887	3524	2097	3466	4111	2447	4033
LPHST-S3-30/DA	3383	2014	3344	4228	2517	4179	5074	3020	5016	5920	3524	5842
LPHST-S3-35/DA	4604	2741	4565	5755	3426	5706	6906	4111	6848	8057	4796	7979
LPHST-S3-40/DA	6014	3580	5975	7517	4475	7468	9021	5369	8963	10524	6264	10446
LPHST-S4-35/DA	5648	3362	5595	7060	4202	6994	8472	5043	8393	9884	5883	9779
LPHST-S4-40/DA	7377	4391	7324	9221	5489	9155	11065	6586	10986	12909	7684	12804
LPHST-S4-45/DA	9336	5557	9283	11670	6947	11604	14004	8336	13925	16339	9725	16234
LPHST-S4-50/DA	11526	6861	11473	14408	8576	14342	17289	10291	17210	20171	12007	20066
LPHST-S5-45/DA	14715	8759	14641	18394	10949	18302	22072	13138	21961	25751	15328	25604
LPHST-S5-50/DA	18166	10813	18092	22708	13517	22616	27250	16220	27139	31791	18923	31644
LPHST-S5-55/DA	21981	13084	21907	27477	16355	27385	32972	19626	32861	38468	22897	38321
LPHST-S5-60/DA	26160	15571	26086	32700	19464	32608	39240	23357	39129	45780	27250	45633
LPHST-S6-50/DA	23178	13796	23071	28972	17245	28839	34767	20695	34608	40561	24144	40349
LPHST-S6-55/DA	28045	16694	27938	35057	20867	24924	42068	25040	41909	49079	29214	48867
LPHST-S6-60/DA	33376	19867	33269	41720	24833	41587	50064	29800	49905	58408	34767	58196
LPHST-S6-70/DA	45429	27041	45322	56786	33801	56653	68143	40561	67984	79500	47322	79288
LPHST-S6-80/DA	59335	35319	59228	74169	44148	74036	89003	52978	88844	103837	61808	103625
LPHST-S7-60/DA	39691	23625	39523	49613	29532	49403	59536	35438	59284	69459	41344	69124
LPHST-S7-70/DA	54023	32157	53855	67529	40196	67319	81035	48235	80783	94541	56274	94206
LPHST-S7-80/DA	70561	42001	70393	88201	52501	87991	105842	63001	105590	123482	73501	123147
LPHST-S7-90/DA	89304	53157	89136	111630	66446	111420	133956	79736	133704	156282	93025	155947
LPHST-S7-100/DA	110252	65626	110084	137815	82033	137605	165378	98439	165126	192940	114846	192605
LPHST-S8-80/DA	89805	53455	89564	112256	66819	111955	134708	80183	134347	157159	93547	156679
LPHST-S8-90/DA	113659	67654	113418	142074	84568	141773	170489	101482	170128	198904	118395	198424
LPHST-S8-100/DA	140320	83524	140079	175400	104405	175099	210480	125286	210119	245561	146167	245081

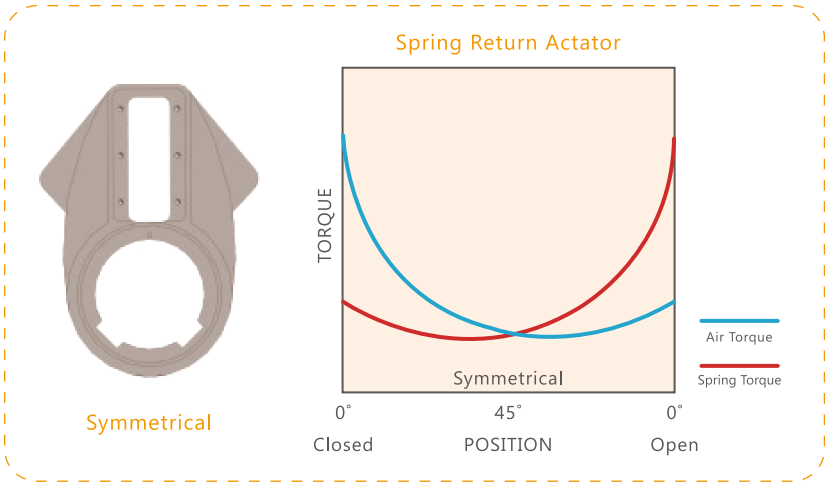
Canted Yoke Double Acting

Unit:nm

MODEL	4.0Bar			5.0Bar			6.0Bar			7.0Bar		
	0°	R	90°	0°	R	90°	0°	R	90°	0°	R	90°
LPHCT-S1-15/DA	812	369	487	1015	461	609	1218	554	731	1421	646	853
LPHCT-S1-20/DA	1444	656	866	1805	820	1083	2166	984	1299	2527	1148	1516
LPHCT-S1-25/DA	2256	1025	1354	2820	1282	1692	3384	1538	2030	3948	1794	2369
LPHCT-S1-30/DA	3248	1477	1949	4061	1846	2436	4873	2215	2924	5685	2584	3411
LPHCT-S2-20/DA	1706	776	1024	2133	969	1280	2559	1163	1536	2986	1357	1792
LPHCT-S2-25/DA	2666	1212	1600	3333	1515	2000	3999	1818	2399	4666	2121	2799
LPHCT-S2-30/DA	3839	1745	2303	4799	2181	2879	5759	2618	3455	6718	3054	4031
LPHCT-S2-35/DA	5225	2375	3135	6532	2969	3919	7838	3563	4703	9145	4157	5487
LPHCT-S3-25/DA	3076	1398	1846	3845	1748	2307	4614	2097	2769	5383	2447	3230
LPHCT-S3-30/DA	4430	2014	2658	5537	2517	3322	6645	3020	3987	7752	3524	4651
LPHCT-S3-35/DA	6029	2741	3618	7537	3426	4522	9044	4111	5426	10551	4796	6331
LPHCT-S3-40/DA	7875	3580	4725	9844	4475	5906	11813	5369	7088	13781	6264	8269
LPHCT-S4-35/DA	7396	3362	4438	9245	4202	5547	11094	5043	6656	12943	5883	7766
LPHCT-S4-40/DA	9660	4391	5796	12075	5489	7245	14490	6586	8694	16905	7684	10143
LPHCT-S4-45/DA	12226	5557	7336	15283	6947	9170	18339	8336	11004	21396	9725	12837
LPHCT-S4-50/DA	15094	6861	9056	18867	8576	11320	22641	10291	13585	26414	12007	15849
LPHCT-S5-45/DA	19269	8759	11562	24087	10949	14452	28904	13138	17342	33722	15328	20233
LPHCT-S5-50/DA	23789	10813	14274	29737	13517	17842	35684	16220	21410	41631	18923	24979
LPHCT-S5-55/DA	28785	13084	17271	35982	16355	21589	43178	19626	25907	50374	22897	30224
LPHCT-S5-60/DA	34257	15571	20554	42821	19464	25693	51385	23357	30831	59949	27250	35970
LPHCT-S6-50/DA	30352	13796	18211	37940	17245	22764	45528	20695	27317	53116	24144	31870
LPHCT-S6-55/DA	36726	16694	22036	45907	20867	27544	55089	25040	33053	64207	29214	38562
LPHCT-S6-60/DA	43707	19867	26224	54634	24833	32780	65560	29800	39336	76487	34767	45892
LPHCT-S6-70/DA	59490	27041	35694	74362	33801	44617	89235	40561	53541	104107	47322	62464
LPHCT-S6-80/DA	77701	35319	46621	97126	44148	58276	116552	52978	69931	135977	61808	81586
LPHCT-S7-60/DA	51976	23625	31185	64970	29532	38982	77964	35438	46778	90958	41344	54575
LPHCT-S7-70/DA	70745	32157	42447	88431	40196	53059	106117	48235	63670	123803	56274	74282
LPHCT-S7-80/DA	92401	42001	55441	115502	52501	69301	138602	63001	83161	161702	73501	97021
LPHCT-S7-90/DA	116946	53157	70167	146182	66446	87709	175418	79736	105251	204655	93025	122793
LPHCT-S7-100/DA	144377	65626	86626	180472	82033	108283	216566	98439	129939	252660	114846	151596
LPHCT-S8-80/DA	117602	53455	70561	147002	66819	88201	176403	80183	105842	205803	93547	123482
LPHCT-S8-90/DA	148840	67654	89304	186050	84568	111630	223260	101482	133956	260470	118395	156282
LPHCT-S8-100/DA	183753	83524	110252	229691	104405	137815	275629	125286	165378	321567	146167	192940

Torque data

- Symmetrical Spring Return



Spring Return

Unit:um

MODEL		Spring Torque			Torque:Air Supply Pressure											
					4.0 Bar			5.0 Bar			6.0 Bar			7.0 Bar		
		0°	R	90°	0°	R	90°	0°	R	90°	0°	R	90°	0°	R	90°
LPHST-S1-15	SR4	257	204	428	363	165	180	518	257	332	673	350	332			
	SR5	307	253	521				468	209	239	623	301	239	605	393	540
LPHST-S1-20	SR4	457	363	762	646	294	329	921	458	602	1197	622	602			
	SR5	546	449	926				833	371	437	1108	535	437	1090	699	979
LPHST-S1-25	SR4	714	567	1190	1009	459	521	1439	715	948	1870	971	948			
	SR5	852	702	1447				1301	580	691	1732	837	691	1714	1093	1544
LPHST-S1-30	SR4	1028	816	1714	1452	661	755	2073	1030	1372	2693	1399	1372			
	SR5	1228	1010	2084				1873	835	1002	2493	1205	1002	2475	1574	2233
LPHST-S2-20	SR4	540	429	900	763	347	384	1089	541	706	1414	735	706			
	SR5	645	531	1094				984	439	511	1310	633	511	1281	827	1148
LPHST-S2-25	SR4	844	670	1406	1192	542	611	1701	845	1115	2210	1148	1115			
	SR5	1007	829	1710				1537	686	812	2046	989	812	2017	1292	1815
LPHST-S2-30	SR4	1215	964	2025	1717	781	888	2450	1217	1616	3182	1653	1616			
	SR5	1451	1194	2463				2214	987	1179	2937	1424	1179	2918	1860	2630
LPHST-S2-35	SR4	1654	1313	2756	2336	1063	1215	3334	1656	2208	4332	2250	2208			
	SR5	1975	1625	3352				3013	1344	1613	4011	1938	1613	3982	2531	3593

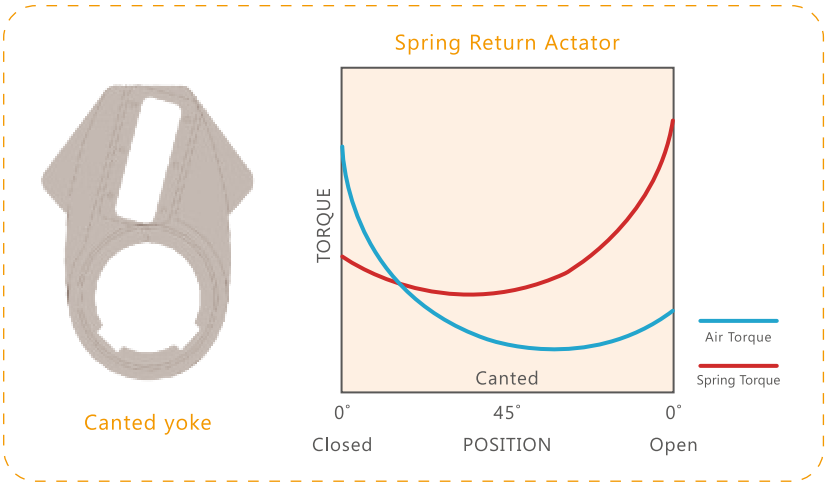
Spring Return

Unit:nm

MODEL		Spring Torque			Torque:Air Supply Pressure											
					4.0 Bar			5.0 Bar			6.0 Bar			7.0 Bar		
		0°	R	90°	0°	R	90°	0°	R	90°	0°	R	90°	0°	R	90°
LPHST-S3-25	SR4	974	773	1623	1375	626	687	1963	975	1265	2550	1325	1843			
	SR5	1162	957	1973				1774	791	914	2361	1141	1492	2303	1490	2060
LPHST-S3-30	SR4	1402	1113	2337	1981	901	1007	2826	1404	1843	3672	1908	2679			
	SR5	1674	1378	28741				2555	1139	1338	3400	1643	2175	3342	2146	3000
LPHST-S3-35	SR4	1908	1515	3181	2696	1226	1385	3847	1911	2526	4998	2596	3668			
	SR5	2278	1875	2868				3477	1551	1839	4628	2236	2981	4570	2921	4112
LPHST-S3-40	SR4	2493	1978	4154	3521	1601	1821	5025	2496	3314	6528	3391	4808			
	SR5	2976	2449	5051				4541	2025	2417	6045	2920	3911	5987	3815	5395
LPHST-S4-35	SR4	2341	1858	3902	3307	1504	1693	4719	2344	3092	6131	3185	4491			
	SR5	2795	2300	4744				4265	1902	2250	5677	2743	3649	5598	3583	5035
LPHST-S4-40	SR4	3058	2427	2096	4319	1964	2228	6164	3062	4059	8008	4160	5890			
	SR5	3650	3004	6196				5571	2484	2959	7415	3582	4790	7336	4608	6608
LPHST-S4-45	SR4	3870	3071	6449	5467	2486	2834	7801	3876	5155	10135	5265	7476			
	SR5	4620	3802	7842				7050	3144	3762	9385	4534	6083	9306	5923	8391
LPHST-S4-50	SR4	4777	3792	7962	6749	3069	3511	9631	4785	6380	12512	6500	9248			
	SR5	5704	4694	9682				8704	3882	4660	11586	5597	7528	11507	7312	10384
LPHST-S5-45	SR4	6099	4840	10165	8616	3918	4476	12295	6108	8137	15973	8298	11796			
	SR5	7281	5993	12360				11112	4056	5941	14791	7145	9601	14608	9335	13244
LPHST-S5-50	SR4	7530	5976	12549	10637	4838	5543	15179	7541	10067	19720	10244	14589			
	SR5	8989	7399	15260				13719	6118	7356	18260	8821	11879	18149	11525	16385
LPHST-S5-55	SR4	9111	7231	15185	12871	5853	6723	18366	9124	12200	23861	12396	17677			
	SR5	10877	8952	18464				16600	7403	8921	22095	10674	14397	21984	13945	19856
LPHST-S5-60	SR4	10843	8605	18071	15317	6966	8015	21857	10859	14537	28397	14752	21058			
	SR5	12945	10654	21974				19755	8810	10634	26295	12703	17155	26184	16596	23659
LPHST-S6-50	SR4	9607	7624	16011	13571	6172	7060	19366	9621	12828	25160	13070	18597			
	SR5	11469	9440	19469				17503	7806	9370	23298	11255	15139	23139	14704	20880
LPHST-S6-55	SR4	11624	9225	19373	16421	7468	8565	23433	11642	15550	30444	15815	22536			
	SR5	13878	11422	23558				21179	9445	11366	28190	13618	18351	28031	17792	25309
LPHST-S6-60	SR4	13834	10979	23056	19543	8888	10213	27887	13854	18531	36231	18821	26849			
	SR5	16516	13593	28036				25205	11240	13552	33549	16207	21870	33390	21174	30161
LPHST-S6-70	SR4	18829	14944	31382	26600	12097	13940	37957	18857	25271	49314	25618	36602			
	SR5	22480	18502	38160				34306	15299	18493	45664	22060	29824	45505	28820	41129
LPHST-S6-80	SR4	24593	19518	40988	34742	15800	18240	49576	24630	33048	64410	33460	47856			
	SR5	29361	24165	49841				44808	19983	24195	59642	28813	39003	59483	37642	53784
LPHST-S7-60	SR4	16451	13056	27418	23240	10569	12105	33163	16476	21985	43085	22382	31866			
	SR5	19640	116165	33340				29973	13367	16064	39896	19273	25944	39644	25180	35784
LPHST-S7-70	SR4	22391	17771	37319	31632	14386	16537	45138	22425	30000	58644	30464	43464			
	SR5	26732	22002	45379				40797	18194	21940	54303	26233	35404	54051	34272	48827
LPHST-S7-80	SR4	29246	23211	48743	41315	18790	21650	58956	29290	39248	76596	39790	56847			
	SR5	34916	28737	59271				53286	23764	28721	70926	34264	46319	70674	44764	63876
LPHST-S7-90	SR4	37014	29376	61690	52290	23781	27446	74616	37070	49730	96942	50459	72014			
	SR5	44190	36371	75014				67440	30076	36405	89765	43365	58689	89513	56654	80932
LPHST-S7-100	SR4	45696	36267	76161	64555	29359	33923	92118	45766	61444	119681	62172	88965			
	SR5	54556	44902	92610				83259	37131	44994	110822	53537	72515	110570	69944	99995
LPHST-S8-80	SR4	37222	29541	62036	52583	23914	27528	75034	37278	49919	97486	50642	72310			
	SR5	44438	36575	75435				67818	30244	36520	90269	43608	58911	89908	56972	81243
LPHST-S8-90	SR4	47109	37388	78515	66551	30266	34904	94965	47180	63259	123380	64094	91613			
	SR5	56242	46290	95473				85832	38278	46300	114247	55192	74655	113886	72105	102951
LPHST-S8-100	SR4	58159	46158	96932	82161	37366	43148	117241	58247	78168	152321	79128	113188			
	SR5	69435	57148	117868				105966	47257	57232	141046	68138	92252	140685	89019	127213

Torque data

- Canted Yoke Spring Return



Canted Yoke Spring Return

Unit:nm

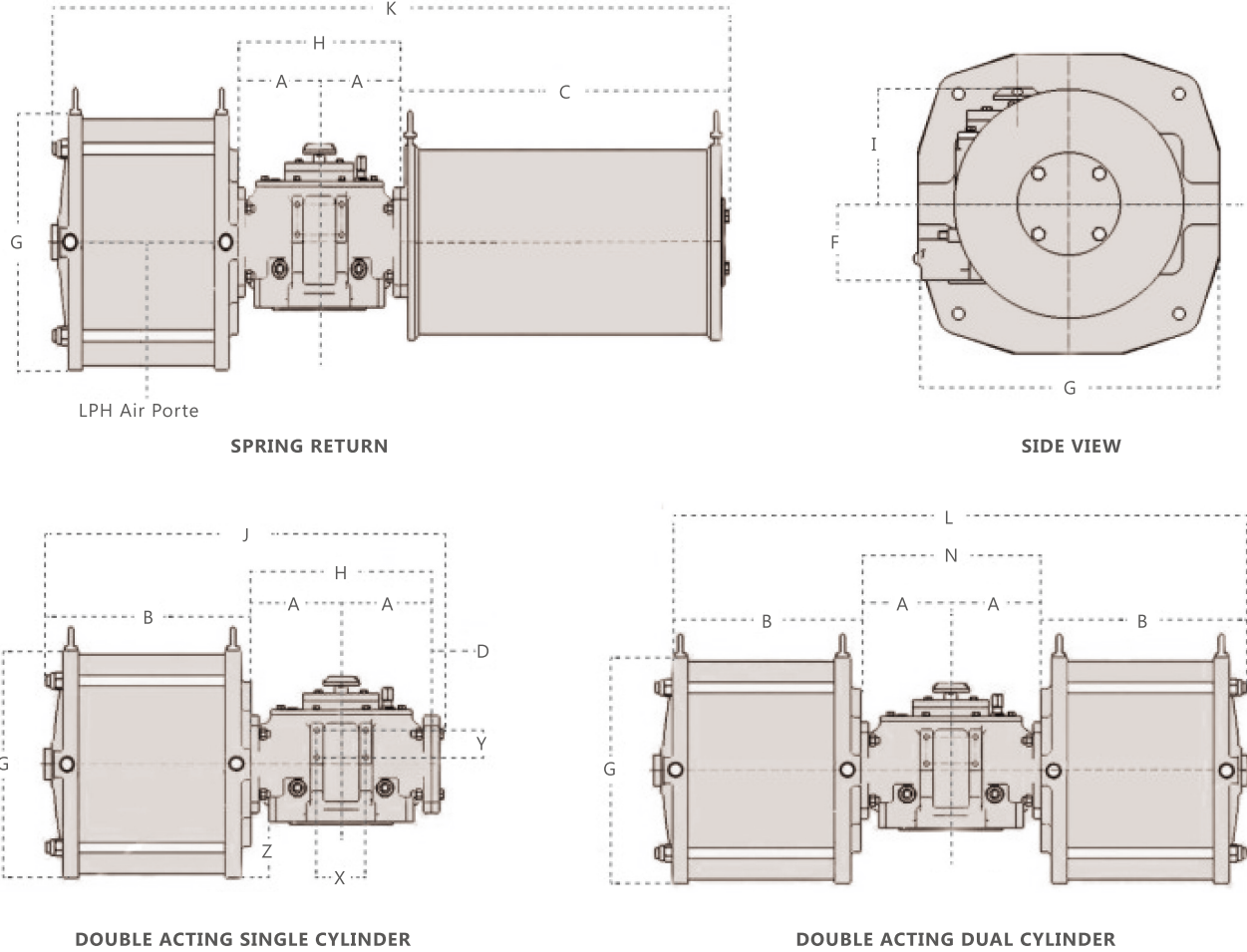
MODEL		Spring Torque			Torque:Air Supply Pressure											
					4.0 Bar			5.0 Bar			6.0 Bar			7.0 Bar		
		0°	R	90°	0°	R	90°	0°	R	90°	0°	R	90°	0°	R	90°
LPHCT-S1-15	SR4	270	175	333	542	194	154	745	286	276	948	378	398			
	SR5	322	217	405				693	244	204	896	337	326	1099	429	447
LPHCT-S1-20	SR4	411	312	593	1033	344	274	1393	508	490	1754	672	707			
	SR5	573	494	721				1232	326	362	1593	490	579	1954	655	795
LPHCT-S1-25	SR4	643	487	926	1613	538	428	2177	794	766	2741	1051	1104			
	SR5	895	772	1126				1925	510	566	2489	766	905	3053	1023	1243
LPHCT-S1-30	SR4	925	702	1333	2323	775	616	3135	1144	1103	3947	1513	1590			
	SR5	1289	1111	1621				2272	734	815	3584	1104	1302	4396	1473	1790
LPHCT-S2-20	SR4	486	369	700	1220	407	324	1647	601	579	2073	795	835			
	SR5	677	584	852				1456	386	428	1882	580	684	2309	774	940
LPHCT-S2-25	SR4	759	576	1094	1907	636	505	2573	939	905	3240	1242	1305			
	SR5	1058	912	1330				2275	603	669	2941	906	1069	4608	1209	1469
LPHCT-S2-30	SR4	1094	829	1576	2746	916	728	3705	1352	1304	2665	1788	1880			
	SR5	1523	1313	1916				3276	868	963	4235	1304	1539	5195	1740	2115
LPHCT-S2-35	SR4	1489	1129	2145	3737	1246	991	5043	1840	1775	6350	2434	2558			
	SR5	2073	1788	2608				4459	1181	1311	5765	1775	2095	7071	2369	2879

Spring Return

Unit:Nm

MODEL		Spring Torque			Torque:Air Supply Pressure											
		0°	R	90°	4.0 Bar			5.0 Bar			6.0 Bar			7.0 Bar		
		0°	R	90°	0°	R	90°	0°	R	90°	0°	R	90°	0°	R	90°
LPHCT-S3-25	SR4	876	665	1262	2200	734	583	2969	1083	1045	3738	1433	1506			
	SR5	1221	1052	1535				2625	695	772	3394	1045	1233	4163	1395	1695
LPHCT-S3-30	SR4	1262	957	1818	3168	1057	840	4275	1560	1504	5383	2063	2169			
	SR5	1758	1515	2211				3780	1001	1112	4887	1505	1776	5995	2008	2441
LPHCT-S3-35	SR4	1718	1303	2474	4312	1438	1143	5819	2123	2048	7327	2808	2952			
	SR5	2392	2063	3009				5144	1363	1513	6652	2048	2418	8159	2733	3322
LPHCT-S3-40	SR4	2243	1701	3232	5632	1878	1493	7601	2773	2674	9569	3668	3856			
	SR5	3125	2694	3930				6719	1780	1976	8868	2675	3158	10657	3570	4339
LPHCT-S4-35	SR4	2107	1598	3035	5289	1764	1402	7138	2605	2512	8987	3445	3621			
	SR5	2934	2530	3691				6311	1672	1856	8160	2513	2965	10009	3353	4075
LPHCT-S4-40	SR4	2752	2087	3965	6908	2304	1832	9323	3402	3281	11738	4500	4730			
	SR5	3833	3305	4721				8242	2184	2424	106547	3282	3873	13072	4379	5322
LPHCT-S4-45	SR4	3483	2641	5018	8743	2916	2318	11800	4305	4152	14856	5695	5986			
	SR5	4851	4183	6101				10432	2764	3068	13488	4153	4902	16545	5543	6736
LPHCT-S4-50	SR4	4300	8261	6195	10794	3600	2862	14568	5315	5126	18341	7031	7390			
	SR5	5989	5164	7533				12879	3412	3788	16652	5128	6052	20426	6843	8316
LPHCT-S5-45	SR4	5489	4163	7908	13780	4596	3653	18598	6786	6544	23415	8975	9434			
	SR5	7645	6592	9616				16441	4356	4836	21259	6546	7726	26076	8736	10617
LPHCT-S5-50	SR4	6777	5139	9763	17013	5674	4510	22960	8378	8079	28908	11081	11647			
	SR5	9439	8138	11872				20298	6378	5970	26245	8082	9538	32193	10785	13107
LPHCT-S5-55	SR4	8200	6218	11814	20586	6866	5458	27782	10137	9775	34978	13408	14093			
	SR5	11421	9848	14365				24561	6508	7224	31757	9779	11542	38953	13050	15859
LPHCT-S5-60	SR4	9758	7400	14059	24499	8171	6495	33063	12064	11633	41627	15956	16772			
	SR5	13592	11719	17096				29229	7745	8597	37793	11637	13735	46357	15530	18874
LPHCT-S6-50	SR4	8646	6557	12457	21706	7239	5755	29294	10689	10307	36882	14138	14860			
	SR5	12043	10384	15147				25897	66862	7617	33485	10311	12170	41073	13760	16723
LPHCT-S6-55	SR4	10462	7934	15072	26264	8760	6963	35446	12933	12472	44627	17107	17981			
	SR5	14572	12564	18328				31336	8303	9217	40517	12476	14725	49699	16650	20234
LPHCT-S6-60	SR4	12450	9442	17938	31257	10425	8287	42183	15392	14843	53110	20358	21399			
	SR5	17341	14952	21812				37292	9881	10968	48219	14848	17524	59146	19814	24080
LPHCT-S6-70	SR4	16946	12852	24415	42544	14189	11279	57416	20950	20203	72289	27710	29126			
	SR5	23603	20352	29688				50759	13449	14929	65631	20210	23853	80504	26970	32776
LPHCT-S6-80	SR4	22134	16786	31889	55567	18533	14732	74993	27363	26387	94418	36192	38042			
	SR5	30829	26582	38776				66297	17566	19499	85723	26396	31155	105148	35226	42810
LPHCT-S7-60	SR4	14806	11228	21331	37170	12397	9854	50164	18303	17651	63158	24210	25447			
	SR5	20622	17781	25938				44348	11751	13044	57342	17657	20840	70335	23563	28636
LPHCT-S7-70	SR4	20152	15283	29034	50593	16874	13413	68297	24913	24025	85965	32952	34636			
	SR5	28069	24202	35305				60362	15994	17754	78048	24033	28365	95734	32072	38977
LPHCT-S7-80	SR4	26321	19961	37933	66080	22039	17519	89181	32539	31379	112281	43040	45239			
	SR5	36662	31611	46113				78840	20890	23188	101941	31390	37049	125041	41890	50909
LPHCT-S7-90	SR4	33313	25264	47995	83633	27893	22172	112869	41183	39714	142106	54472	57256			
	SR5	46400	40008	58361				99782	26439	29348	129018	39728	46890	158255	53017	64432
LPHCT-S7-100	SR4	41127	31190	59253	103250	34436	27373	139345	50843	49030	175439	67249	70686			
	SR5	57284	49392	72051				123188	32640	36232	159282	49047	57889	195376	65453	79545
LPHCT-S8-80	SR4	33500	25405	48264	84102	28050	22297	113503	41414	39937	142903	54778	57577			
	SR5	46660	40232	58689				100342	26587	29513	129742	39951	47153	159143	53315	64793
LPHCT-S8-90	SR4	42398	32154	61084	106442	35501	28219	143652	52414	50545	180862	69328	72871			
	SR5	59054	50919	74278				126995	33649	37352	164205	50563	59678	201415	67476	82004
LPHCT-S8-100	SR4	52343	39696	75413	131410	43828	34839	177348	64709	62402	223286	85590	89965			
	SR5	72907	62863	91701				156784	41542	41542	202723	62423	73676	248661	83304	101239

■ Dimensions data



Actuators Data Sheet

Actuator Dimensions : mm													
SERIES	A	B	C	D	E	F	I	J	K	L	H	X	Y
LPH1	141	310	395	185	219	99	129	6105	1090	902	282	60	60
LPH2	162	368	476	20	232	110	144	712	1278	1060	324	60	60
LPH3	175	444	605	23	245	126	151	817	1500	1238	350	80	80
LPH4	243	565	743	23	299	1445	175	1074	1919	1616	486	80	80
LPH5	312	716	1022	26	371	1755	1895	1366	2348	2056	624	100	100
LPH6	394	756	1470	28	457	208	218	1572	3184	2300	788	100	100
LPH7	500	810	1969	50	610	265	310	1880	3840	2620	1000	120	120
LPH8	665	860	1894	55	680	306	360	2245	4790	3050	1330	120	120

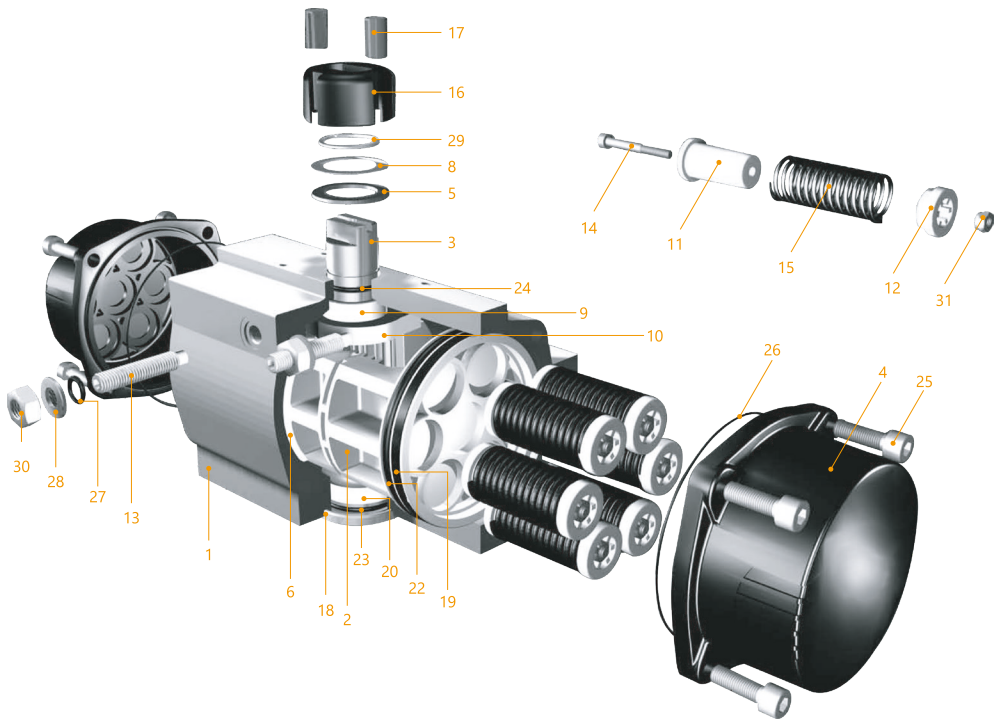
LPA Series Pininon Actuators

Introduction

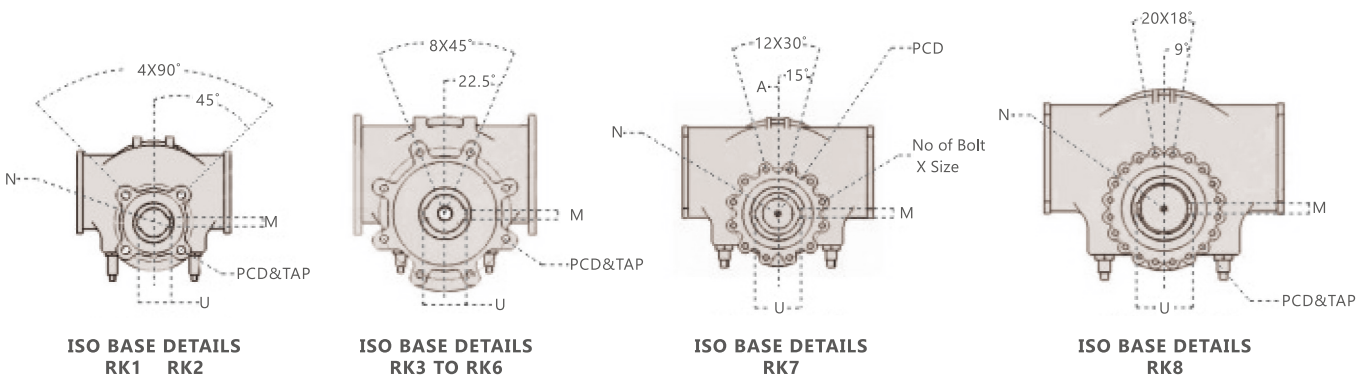
- Extruded aluminum ASTM6005 body with both internal and external corrosion protection having honed cylinder surface for longer life and low coefficient of friction.
- Dual piston rack and pinion design for compact construction,symmetric mounting position, high—cycle life and fast operation,reverse rotation can be accomplished in the field by simply inverting the Pistons.
- Multiple bearings and guides on racks and pistons,low friction,high cycle life and prevent shaft blowout.
- Modular preloaded spring cartridge design, with coated spring for simple versatile range,greater safely and corrosion resistance,longer cycle life.
- Fully machined teeth on piston and pinion for accurate low backlash rack and pinion engagement,maximum efficiency,Stainless steal fasteners for long term corrosion resistance
- Full conformance to the latest specifications: IS05211 p DIN3337 and Namur or product interchange ability and easy mounting of solenoids,limit switches and other accessories.
- LPA has a complete line of rack and pinion actuators,which is the best choice for butterfly and ball valves control. Reliable,readity availabel products supplying in a broad variety of operating enircnments. Our products are Namur&ISO compliant and are manu-factured under ISO 9001:2000 certification and are CE approved.

Parts and Material

- LPA Series



No.	Parts
1	Body
2	Piston
3	Pinion
4	End Caps
5	Soft/Washer Pinion
6	Slide Piston
7	Lug
8	Pinion Washer
9	Upper Pinion Bearing
10	Stop
11	Spring's Long Support
12	Spring's Short Support
13	Adjustament Storke Screw
14	Bolt
15	Spring
16	Position Indicator
17	Cam
18	Centering Ring
19	Slide Guide
20	Lower Pinion Bearing
21	Stop Washer Pinion
22	O-Ring
23	O-Ring
24	O-Ring
25	Bolt
26	O-Ring
27	O-Ring
28	Washer
29	Slip Washer
30	Nut
31	Nut

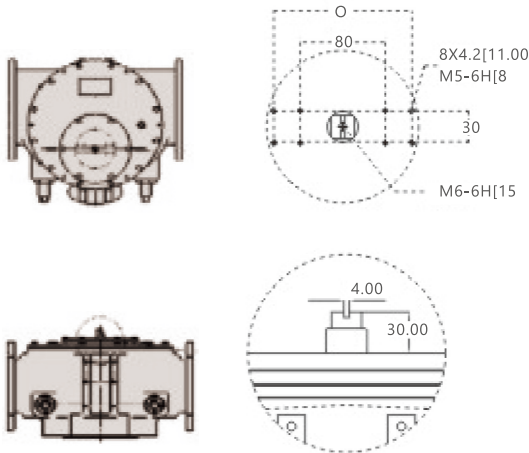


Cylinders Data Sheet

Dimension Z . mm														
Cylinder Size	150	200	250	300	350	400	450	500	550	600	700	800	900	1000
LPH1	-10	11	38	63										
LPH2		0	27	52	81									
LPH3			11	36	65	94								
LPH4					46	75	100	125						
LPH5							69	94	123	152				
LPH6								62	94	120	198	250		
LPH7										63	144	197	227	281
LPH8												140	190	240
G	170	220	274	324	384	440	490	540	598	656	812	912	1012	1112
Port Size RC	3/8"	3/8"	1/2"	1/2"	3/4"	3/4"	1"	1"	1"	1"	1 1/2"	1 1/2"	1 1/2"	1 1/2"

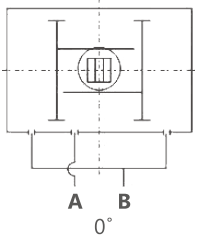
Mounting Base Data Sheet

Mounting Base Details & Dimensions , mm							
SERIES	ISO BASE	PCD	N	M	TAP	U	O
LPH1	F14	140	50	14	4XM16	53.8	-
LPH2	F16	165	60	18	4XM20	64.4	-
LPH3	F25	254	80	22	8XM16	85.4	130
LPH4	F30	298	100	28	8XM20	106.4	130
LPH5	F35	356	160	40	8XM30	169.4	130
LPH6	F40	406	180	45	8XM36	190.4	130
LPH7	F48	483	220	50	12XM36	231.4	130
LPH8	F60	603	280	63	20XM36	292.4	130

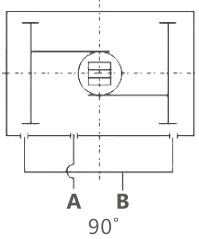


■ Double acting actuators

CCW



0°

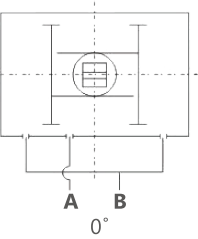


90°

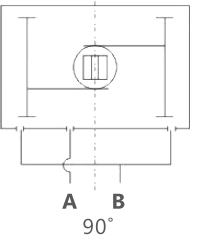
Air to Port A forces the pistons outwards,causing the pinion to turn counterclockwise while the air is being exhausted from Port B.

Air to Port B forces the pistons inwards,causing the pinion to turn clockwise while the air is being exhausted from Port A.

CW



0°



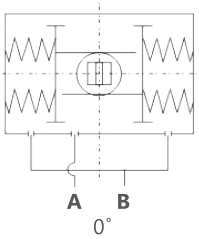
90°

Air to Port A forces the pistons outwards,causing the pinion to turn clockwise while the air is being exhausted from PortB.

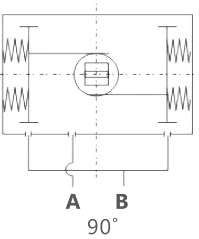
Air to Port B forces the pistons inwards,causing the pinion to turn counterclockwise while the air is being exhausted from Port A.

■ Spring return actuators

CCW



0°

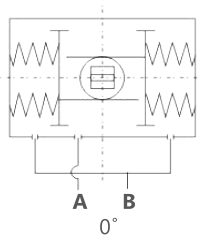


90°

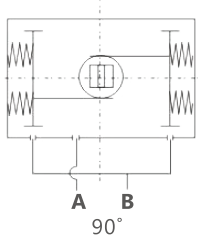
Air to port A forces the pistons outwards,causing the springs to compress,The pinion turns counterclockwise while air is being exhausted from port B.

Loss of air pressure on port A, the stored energy In the springs forces the pistons inwards.The pinion turns clockwise while air is being exhausted from port A.

CW



0°



90°

Air to port B forces the pistons outwards,causing the springs to compress,The pinion turns counterclockwise while air is being exhausted from port B.

Loss of air pressure on port A,the stored energy in the springs forces the pistons inwards.The pinion turns clockwise while air is being exhausted from port A.

Output Torque of LPA Series Pneumatic Actuator with Double Acting Unit:nm

Model	Air pressure(Bar)									
	2	2.5	3	4	4.5	5	5.5	6	7	8
LPA-D52	8.1	10.1	12.1	16.1	18.1	20.2	22.2	24.2	28.2	32.3
LPA-D63	14.2	17.8	21.3	28.4	32.0	35.5	39.1	42.6	49.7	56.8
LPA-D75	20.1	25.2	30.2	40.3	45.3	50.3	55.4	60.4	70.5	80.5
LPA-D83	30.8	38.5	46.2	61.6	69.4	77.1	84.8	92.5	107.9	123.3
LPA-D92	45.4	56.8	68.2	90.9	102.3	113.6	125.0	136.3	159.1	181.8
LPA-D105	65.8	82.2	98.7	131.6	148.0	164.4	280.9	197.3	230.2	263.1
LPA-D125	103	128	154	205	231	256	282	308	359	410
LPA-D140	175	219	263	351	395	439	482	526	614	702
LPA-D160	267	334	401	535	601	668	735	802	935	1069
LPA-D190	431	538	646	861	969	1077	1185	1292	1508	1723
LPA-D210	526	658	789	1052	1184	1316	1447	1579	2842	2105
LPA-D240	773	966	1160	1564	1740	1933	2126	2320	2706	3093
LPA-D270	1174	1468	1761	2349	2642	2936	3229	3523	34110	4697
LPA-D300	1526	1908	2289	3052	3434	3815	4197	4578	5341	6104
LPA-D350	2285	2856	3427	4570	5141	5712	6283	6854	7997	9139
LPA-D400	3256	4069	4883	6511	7325	8139	8953	9767	11394	13022
LPA-D450	5076	6345	7614	10153	11422	12691	13960	15229	17768	20306
LPA-D500	7162	8953	10744	14325	16116	17907	19697	21488	25069	28651
LPA-D550	9750	12187	14625	19500	21938	24375	26813	29251	34126	39001
LPA-D600	12893	16116	19339	25786	29009	32232	35455	28679	45125	51572
LPA-D700	21058	26323	31588	42117	47382	52646	57911	63176	73705	84234
LPA-D800	32089	40111	48134	64178	72201	80223	88246	96268	112313	128357

Output Torque of LPA Series Pneumatic Actuator with Spring Return Unit:nm

Model	Spring Q.ty	Air Pressure (Bar)																		Springs'output	
		2		2.5		3		4		5		6		7		8					
		0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	Start	End
LPA-S52	5	3.7	1.6	5.7	3.6															6.2	4.2
	6	2.8	0.3	4.8	2.3	6.8	4.3													7.4	5.1
	7			3.9	1.0	5.9	3.0	9.9	7.0	14.0	11.1									8.6	5.9
	8					5.0	1.7	9.0	5.7	13.1	9.8									9.9	6.8
	9							8.1	4.4	12.2	8.5	16.2	12.5							11.1	7.6
	10							7.2	3.1	11.3	7.2	15.3	11.2	19.3	15.2	23.4	19.3			12.4	8.5
	11									10.4	5.9	14.4	9.9	18.4	13.9	22.5	18.0			13.6	9.3
	12									9.5	4.6	13.5	8.6	17.5	12.6	21.6	16.7			14.8	10.1
	5	7.0	3.2	10.6	6.8															10.4	6.8
	6	5.6	1.0	9.2	4.6	12.7	8.1													12.5	8.2
	7			7.7	2.4	11.2	5.9	18.3	13.0	26.8	21.9									14.6	9.6
LPA-S63	8					9.8	3.7	16.9	10.8	24.0	17.9									16.7	10.9
	9							15.4	8.6	22.5	15.7	29.6	22.8							18.8	12.3
	10							14.0	6.4	21.1	13.5	28.2	20.6	35.3	27.7	42.4	34.8			20.9	13.7
	11									19.7	11.3	26.8	18.4	33.9	25.5	41.0	32.6			22.9	15.0
	12									18.2	9.1	25.3	16.2	32.4	23.3	39.5	30.4			25.0	16.4
	5	9.0	4.9	14.1	10.0															14.5	10.5
	6	6.8	1.8	11.9	6.9	16.9	11.9													17.4	12.7
	7			9.7	3.9	14.7	8.9	24.8	19.0	35.4	29.9									20.3	14.8
	8					12.4	5.8	22.5	15.9	32.5	25.9									23.2	16.9
	9							20.3	12.9	30.3	22.9	40.4	33.0							26.1	19.0
	10							18.1	9.8	28.1	19.8	38.2	29.9	48.3	40.0	58.3	50.0			29.1	21.1
LPA-S75	11									25.9	16.8	36.0	26.9	46.1	37.0	56.1	47.0			31.9	23.2
	12									23.7	13.7	33.8	23.8	43.9	33.9	53.9	43.9			34.7	25.3
	5	14.2	6.6	21.9	14.3															23.0	15.8
	6	10.8	1.7	18.5	9.4	26.2	17.1													27.6	19.0
	7			15.2	4.6	22.9	12.3	3.8	27.7	56.2	46.2									32.2	22.1
	8					19.6	7.4	35.0	22.8	50.5	38.3									36.8	25.3
	9							31.6	18.0	47.1	33.5	62.5	48.9							41.4	28.5
	10							28.3	13.2	43.8	28.7	59.2	44.1	74.6	59.5	90.0	74.9			46.0	31.6
	11									40.5	23.8	55.9	39.2	71.3	54.6	86.7	70.0			50.6	34.8
	12									37.1	19.0	52.5	34.4	67.9	49.8	83.3	65.2			55.2	38.0

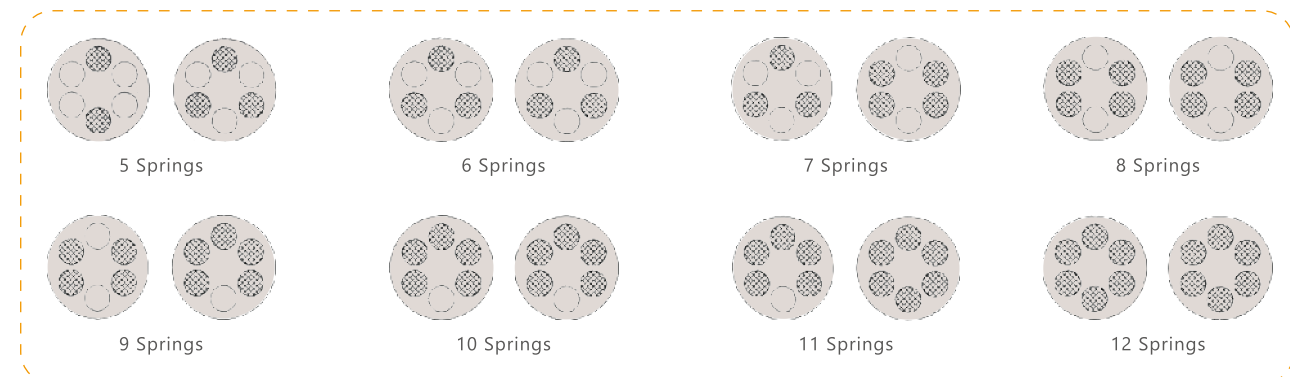
Unit: nm

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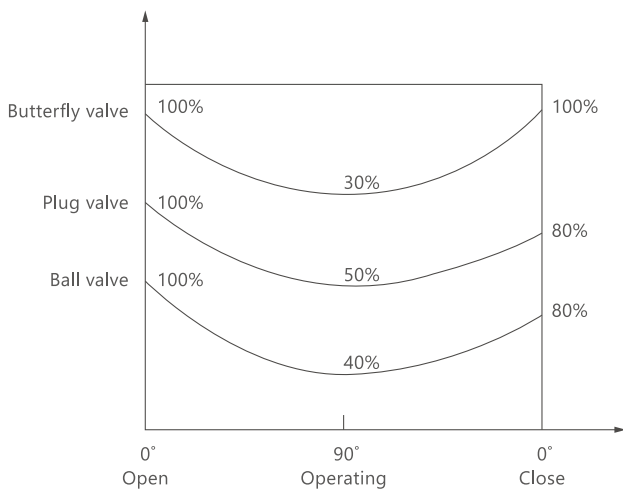
Unit: nm

Model	Spring Qty	Air Pressure (Bar)																		Springs/output	
		2		2.5		3		4		5		6		7		8					
		0' Start	90' End	0' Start	90' End	0' Start	90' End	0' Start	90' End	0' Start	90' End	0' Start	90' End	0' Start	90' End	0' Start	90' End				
LPA-S300	5	715	347	1097	729														1061	730	
	6	553	112	935	494	1316	875												1273	876	
	7			772	258	1153	639	1916	1402										1485	1022	
	8					991	403	1754	1166	2517	1929								1697	1168	
	9							1592	930	2355	1693	3118	2456						1909	1314	
	10							1430	695	2193	1458	2956	2221	3719	2984	4482	3747		2122	1466	
	11									2030	1222	2793	1985	3556	2748	4319	3511		2334	1606	
	12									1868	986	2631	1749	3394	2512	4157	3275		2546	1752	
LPA-S350	5	982	393	1553	964														1702	1173	
	6	721	15	1292	586	1863	1157												2043	1408	
	7			1031	208	1602	779	2745	1922										2383	1642	
	8					1341	410	2484	1544	3626	2686								2724	1877	
	9							2224	1165	3366	2307	4508	3449						3064	2112	
	10							1963	787	3105	1929	4247	3071	5390	4214	6532	5356		3405	2346	
	11									2804	1551	3986	2693	5129	3836	6271	4978		3745	2581	
	12									2584	1172	3726	2314	4869	3457	6011	4599		4086	2816	
LPA-S400	7	1215	56	2028	869														2880	1837	
	8			1736	411	2550	1225												3292	2100	
	9					2259	768	3887	2396										3703	2362	
	10					1967	311			3595	1939	5223	3567						4115	2624	
	11							3303	1482	4931	3110	6559	4738							4526	2887
	12							3012	1025	4640	2653	6268	4281	7895	5908	9523	7536		4938	3249	
	13							4348	2195	5976	3823	7603	5450	9231	7078				5349	3412	
	14							4057	1738	5685	3866	7312	4993	8940	6621	5761	6171		5761	1674	
LPA-S450	15									3765	1281	5393	2909	7020	4536	8648	6164		6172	3937	
	16											5101	2452	6728	4079	8356	5707		6584	4199	
	4					4888	3235	7497	5844	10130	8452	12715	11061	15324	13670	17932	16279	4591	2937		
	6					3420	2227	6028	3548	8837	6157	11246	8766	13855	11375	16464	13983	6886	4406		
	8							4560	1252	7168	3861	9777	6470	12386	9079	14995	11688	9182	5875		
	10									5698	1566	8307	4174	10916	6783	13525	9392	11478	7345		
	12										6838	1879	9447	4488	12056	7096	13773	8814			
	4					7536	5985	11558	9010	15580	13032	19602	17054	23624	21076	27646	85098	7078	4530		
LPA-S500	6					5271	2541	9293	5471	13315	9493	17337	13515	21359	17537	25381	21559	10617	6795		
	8							7028	1932	11050	5954	15072	9976	19094	13998	23116	18020	14156	9060		
	10										8785	2414	12807	6436	16829	10458	20851	14480	17696		
	12											10542	2897	14564	6919	18586	10941	21235	13590		
LPA-S600	4					11589	7670	17774	13855	23960	20041	30145	26226	36330	32410	42516	38596	10885	6966		
	6					8106	4008	14290	8412	20476	14598	26661	20782	32846	26967	39032	33153	16328	10449		
	8							10807	2968	16993	9154	23178	15339	29362	21524	35548	27710	21771	13933		
	10										13509	3711	19694	9896	25879	16081	32065	22267	27214		
LPA-S700	12													16212	4454	22396	10639	28582	16825	32656	
	4									26662	20783	35941	30062	45219	39340	54497	48618	63775	57896	16329	
	6									21436	12618	30715	21897	39993	31175	49271	40453	58549	49731	24494	
	8									16211	4453	25490	13732	34160	23010	44046	32288	53324	41566	32659	
LPA-S800	10											20264	5567	29542	14845	38820	24123	48098	33401	40824	
	12													24317	6681	33595	15959	42873	25237	48988	
	4									46083	35922	62120	51958	78156	67994	94192	84031	110229	100068	28224	
	6									37051	21810	53088	37846	69123	53882	85160	69919	101197	85956	42336	
LPA-S900	8									28020	7698	44056	23734	60092	39770	76129	55807	92166	71844	56448	
	10											35024	9622	51060	25658	67096	41695	83133	57732	70560	
	12													42028	11546	58065	27583	74102	43620	84672	
	14															67994	94192	84031	110229	100068	

■ Springs mounting form for spring return actuators

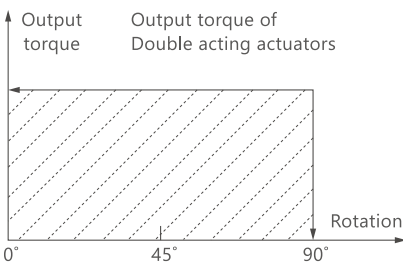


■ LPA series actuator dimension table



• **Example:**
The max torque needed by the butterfly valve=104N.m
The torque after opened (operating)104 x 30%=32N.m
Airsupply=5Bar
We can select the SR 125 K11 output torque is:
Air stroke 0° =134N.m>104N.m
Air stroke90° =74N.m>32N.m
Spring stroke90° =172N.m>32N.m
Spring stroke90° =115N.m>104N.m
The above datas show the actuator's torque can satisfy the requirement of the butterfly valve.

■ Sizing: Double Acting Actuator

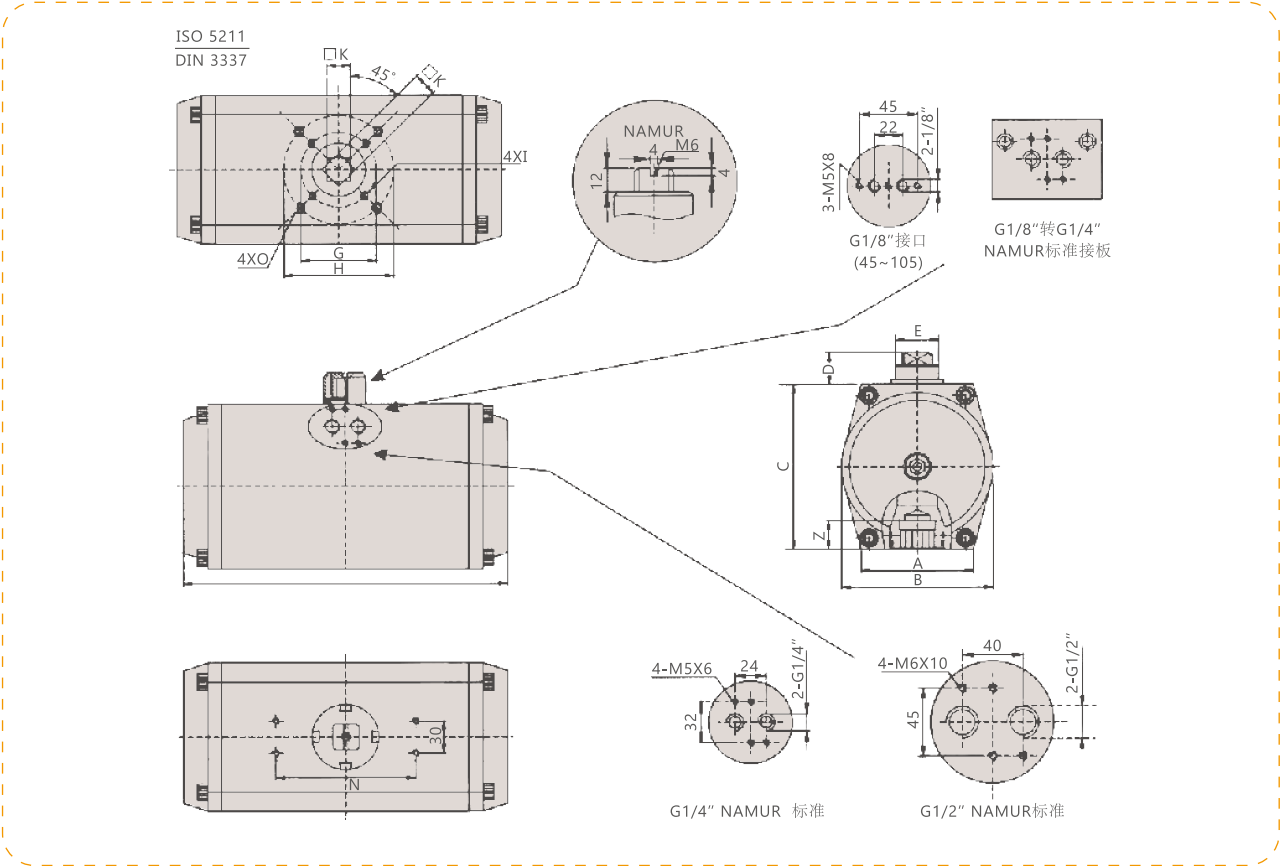


The suggested safety factor for double acting actuators under normal working conditions is 20%-30%.

• **Example:**
The torque needed by valve=100N.m
The torque considered safety factor(1+30%)=130N.m
Air Supply=5Bar
According to the above table, we can choose the minimum model is DA105.

■ Operating conditions

- Openrating media Dry or lubricated air, the non-corrosive gases or oil.
- Air supply pressure Double acting:2~8Bar;
Sprtnng return: 2~8Bar.
- Openrating temperature Standard:-20°C~+80°C
Low temperature: -40~+80°C High temp6rature: -20°C~+150°C
- Travel adjustment Have adjustment range of ±4° for the rotation at 90°
- Lubrication Under normal operating condition,need not accrete lubricant.
- Application Either indoor or outdoor.
- Highest pressure The maximum input pressure is 8 Bar.



Dimension Table														Unit:mm
Model	A	B	C	D	E	G	H	I	K	L	N	O	Z	Air Connection
DA/SR-45	48	58	65	20	14	Φ36	Φ50	M5X8	11	150	80	M6X10	14	G1/8"
DA/SR-52	50	59	74	20	14	Φ36	Φ50	M5X8	11	150	80	M6X10	14	G1/8"
DA/SR-63	60	72	88	20	18	Φ50	Φ70	M6X10	14	173	80	M8X13	18	G1/8"
DA/SR-75	65	83	100	20	18	Φ50	Φ70	M6X10	14	187	80	M8X13	18	G1/8"
DA/SR-83	68	91	110	20	18	Φ50	Φ70	M6X10	17	214	80	M8X13	21	G1/8"
DA/SR-92	79	104	120	20	25	Φ50	Φ70	M6X10	17	265	80	M8X13	21	G1/8"
DA/SR-105	84	114	132.5	20	25	Φ70	Φ102	M8X13	22	276	80	M10X16	26	G1/8"
DA/SR-125	103	137	160	30	40	Φ70	Φ102	M8X13	22	306	130	M10X16	26	NAMUR G1/4"
DA/SR-140	107	150	170	30	40	Φ102	Φ125	M10X16	27	400	130	M12X20	31	NAMUR G1/4"
DA/SR-160	110	172	197	30	40	Φ102	Φ125	M10X16	27	465	130	M12X20	31	NAMUR G1/4"
DA/SR-190	115	206	226	30	60		Φ140		36	530	130	M16X25	40	NAMUR G1/4"
DA/SR-210	135	226	260	30	60		Φ140		36	536	130	M16X25	40	NAMUR G1/4"
DA/SR-240	155	256	290	30	60		Φ165		46	602	130	M20X25	50	NAMUR G1/4"
DA/SR-270	172	294	320	30	60		Φ165		46	715	130	M20X25	50	NAMUR G1/2"
DA/SR-300	196	324	348	30	60		Φ165		46	742	130	M20X25	50	NAMUR G1/2"
DA/SR-350	220	380	408	30	60		Φ165		46	860	130	M20X25	50	NAMUR G1/2"

■ Air Consumption

Air consumption rest with air supply. Air volume and action cycle times,expressions:

$$L/min = \text{Air volume (Air volume Opening+Air volume closing)} \times \left[\frac{\text{Air Supply(kpa)} + 101.3}{101.3} \right] \times \text{Action cycle times(L/min)}$$

Unit:L

Model	Volume opening	Volume closing
DA-32	0.04	0.04
DA-45	0.08	0.11
DA-52	0.11	0.14
DA-63	0.20	0.23
DA-75	0.29	0.38
DA-83	0.41	0.55
DA-92	0.62	0.91
DA-105	0.94	1.18
DA-125	1.47	1.85
DA-140	2.43	3.20
DA-160	3.65	5.03
DA-190	5.9	7.9
DA-210	7.4	9.7
DA-240	10.7	14.3
DA-270	16.9	22.5
DA-300	23.8	29.7
DA-350	35.1	46.3
DA-400	52.6	36
DA-450		
DA-500		
DA-550		
DA-600		
DA-700		
DA-800		

LPA Series Weight Table

Model	Weight(SR)	Weight(DA)
45	1.12kg	1.05kg
52	1.20kg	1.07kg
63	1.85kg	1.70kg
75	2.40kg	2.18kg
83	3.25kg	2.95kg
92	5.10kg	4.35kg
105	6.10kg	5.35kg
125	10.40kg	9.40kg
140	14.70kg	12.90kg
160	21.90kg	18.90kg
190	34.70kg	29.50kg
210	34.90kg	36.20kg
240	62.00kg	50.70kg
270	88.80kg	71.10kg
300	130.00kg	110.00kg
350	234.40kg	186.50kg
400	360.40kg	289.00kg