BIFFI TPD/TPS COMPACT PNEUMATIC ACTUATORS

HELICAL SPLINE DESIGN

Compact quarter-turn pneumatic actuators for on-off and modulating control of ball, butterfly, plug or damper style valves in heavy duty service. Generating output torques up to 300,000 Nm, it is the ideal solution where space is limited.



PRODUCT OVERVIEW

Designed with a unique helical spline design, which transforms the linear movement of a piston into a quarter-turn rotation, generating high break torques to actuate large valves. With its spring integrated into the cylinder, it is very compact with the same dimensions whether for double-acting or spring return; spring to open or spring to close operations.

APPROVALS

Safety Integrity Level:
(IEC 61508-1÷7:2010): SIL3
Hazardous area:
European Directive ATEX
Enclosure Standards:
(IEC 60529): IP66/IP67M
Machinery Directive:
2006/42/EC

TECHNICAL DATA

Supply pressure:	3.0 to 10.0 bar g
Max allowable pressure:	12.0 bar g
Supply medium:	air, nitrogen
Output torque:	to 60,000 Nm
Ambient temperature	
Standard range	
(PED compliant):	-20°C to +100°C /-4°F to +210°F
Low temperature	
range (PED compliant):	-40°C to +100°C /-40°F to +210°F
Low temperature ranges:	-60°C to +100°C /-76°F to +210°F
External angular	
stroke adjustment:	± 5°
Valve attachment interface:	to ISO 5211

FEATURES

- Customizable helical profile to suit valve-specific torque profile (special execution).
- Modular design enables fine-tuned performance and easy customization.
- Totally enclosed, weatherproof housing in fabricated carbon steel provides maximum strength.
- Corrosion resistant to EN 15714-3; C5I/C5M.
- Internal coating and special surface treatment protects against corrosion.
- Hard chrome-plated piston rod for corrosion resistance and minimal friction.
- Electroless nickel-plated cylinder bore provides maximum corrosion resistance and reliability.
- Low hysteresis and high response enhance modulating service.
- Bearings in bronze or sintered bronze impregnated with PTFE provide reliability, smooth operation and extended service life.
- Adjustable end stopper installed below cylinder flange for easy access.
- Position indicator directly connected to output drive.
- Design and sizing to most recognized International standards and FEA tools.
- Extensively tested for long life.
- Suitable for use in SIL 3 applications.

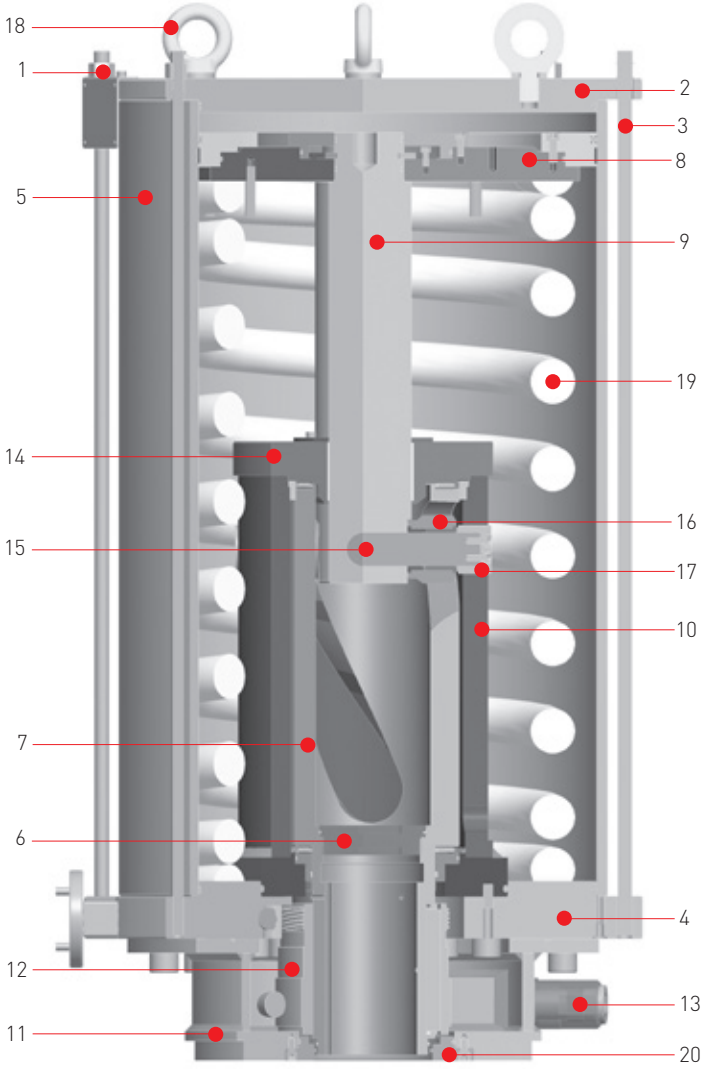
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BIFFI TPD/TPS COMPACT PNEUMATIC ACTUATORS

HELICAL SPLINE DESIGN

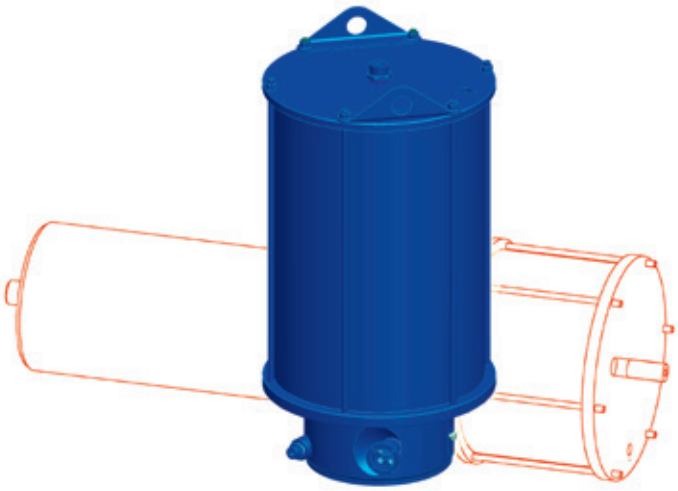
MATERIALS

Part		Material
1	Tie rod nut	Alloy steel (stainless steel optional)
2	End flange	Carbon steel
3	Tie rod	Alloy steel (stainless steel optional)
4	Head flange	Carbon steel
5	Cylinder	Carbon steel
6	Closing plug	Carbon steel
7	Output drive	Alloy steel
8	Piston	Carbon steel
9	Piston rod	Alloy steel hard chrome plated
10	Central tube	Carbon steel
11	Base	Carbon steel
12	Adjustment sector	Carbon steel
13	Stopper & protection cover	Alloy steel (stainless steel optional)
14	Upper flange	Carbon steel
15	Pin	Alloy steel
16	Roller	Alloy steel
17	Slide	Bronze
18	Lifting eyebolt	Standard
19	Spring	Alloy steel
20	Lower flange	Carbon steel
Parts not shown		
21	Position indicator	Alloy steel
22	Bushing	Bronze/steel bronze PTFE
23	Seals	Nitrile rubber



COMPACT DIMENSIONS

The compact helical spline design maximizes efficiency and optimizes overall equipment dimensions compared to a conventional Scotch yoke design.



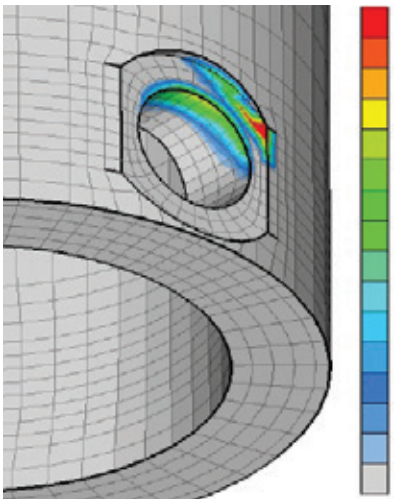
DESIGN AND TESTING CAPABILITIES

The Compact Series TP has been developed with 3D design tools integrated with numeric simulation (FEA technologies) for virtual prototyping. The sizing criteria are in accordance with most international standards and best engineering practice. All designs have then been proven and optimized following rigorous and extensive testing.



TESTING SPECIFICATIONS

Extensive testing carried out in full accordance with the following international specifications:
- Compliant with API 6A PR2 qualification test. Temperature range from -20°C to +65°C
- Endurance test performed for SIL 3 qualification according to IEC 61508
- Endurance test according to Biffi test specification



BIFFI TPS COMPACT SPRING RETURN PNEUMATIC ACTUATORS

OUTPUT TORQUES - MODELS TPS 0.1 TO 1.5

OUTPUT TORQUES

						Operating supply pressure (bar g)											
	MOT[2]	MOP[2]	Spring torque (Nm)			Nm at 3.5 bar g			Nm at 4 bar g			Nm at 5 bar g			Nm at 6 bar g		
Actuator type	[Nm]	[bar]	SET	SRT	SST	AST	ART	AET	AST	ART	AET	AST	ART	AET	AST	ART	AET
TPS 0.1 RP1 - 235	1000	7.5	551	695	839							518	359	200	743	584	425
TPS 0.1 RP2 - 235	1000	7.0	473	578	683				379	262	146	604	488	371	829	713	597
TPS 0.1 SY1 - 235	1000	6.5	688	405	1033							635	208	254	914	339	533
TPS 0.1 SY2 - 235	1000	6.0	590	337	842				464	152	185	743	283	464			
TPS 0.1 RP1 - 280	1000	5.5	551	695	839	511	352	193	670	512	353	990	832	673			
TPS 0.1 RP2 - 280	1000	5.0	473	578	683	597	481	364	757	641	524	1077	961	844			
TPS 0.1 RP3- 280	1000	5.5	628	785	942				586	412	239	906	732	559			
TPS 0.1 SY1 - 280	1000	4.5	688	405	1033	626	204	245	824	297	443						
TPS 0.1 SY2 - 280	1000	4.5	590	337	842	735	279	456	933	372	654						
TPS 0.1 SY3- 280	1000	5.0	784	457	1160	520	146	105	718	239	303						
TPS 0.3 RP1 - 280	3000	10.0	1006	1309	1612							988	653	318	1408	1073	738
TPS 0.3 RP2 - 280	3000	9.0	571	675	780	839	723	608	1049	933	818	1468	1353	1238	1888	1773	1658
TPS 0.3 SY1 - 280	3000	8.5	1257	763	1984							1210	379	407	1730	623	927
TPS 0.3 SY2 - 280	3000	7.5	711	393	961	1034	420	757	1294	542	1017	1814	787	1537	2334	1031	2057
TPS 0.3 RP1 - 335	3000	7.0	1006	1309	1612	992	657	323	1293	958	623	1894	1559	1224	2495	2160	1825
TPS 0.3 RP2 - 335	3000	6.5	571	675	780	1473	1357	1242	1773	1658	1543	2374	2259	2144	2975	2860	2745
TPS 0.3 RP3- 335	3000	8.0	1388	1834	2279							1472	979	486	2073	1580	1087
TPS 0.3 SY1 - 335	3000	6.0	1257	763	1984	1215	381	412	1588	556	785	2332	905	1529			
TPS 0.3 SY2 - 335	3000	5.5	711	393	961	1819	789	1542	2191	964	1915	2935	1314	2659			
TPS 0.3 SY3- 335	3000	7.0	1736	1068	2805							1803	567	621	2547	917	1366
TPS 0.3 RP1 - 385	3000	5.5	1006	1309	1612	1667	1332	997	2064	1729	1394	2858	2523	2188			
TPS 0.3 RP2 - 385	3000	5.0	571	675	780	2148	2032	1917	2545	2429	2314						
TPS 0.3 RP3- 385	3000	6.0	1388	1834	2279	1245	752	259	1642	1149	656	2436	1943	1450			
TPS 0.3 SY1 - 385	3000	4.5	1257	763	1984	2051	774	1248	2543	1004	1740						
TPS 0.3 SY2 - 385	3000	4.0	711	393	961	2654	1182	2378									
TPS 0.3 SY3- 385	3000	5.5	1736	1068	2805	1522	435	341	2014	666	832	2997	1128	1815			
TPS 0.9 RP1 - 385	9000	10.0	2542	3136	3731							2105	1448	791	3088	2431	1774
TPS 0.9 RP2 - 385	9000	10.0	1889	2220	2551	1353	987	621	1844	1478	1113	2827	2461	2096	3810	3444	3079
TPS 0.9 SY1 - 385	9000	10.0	3171	1827	4596							2581	840	1005	3798	1411	2223
TPS 0.9 SY2 - 385	9000	10.0	2352	1293	3145	1660	572	783	2269	858	1392	3486	1430	2609	4703	2002	3826
TPS 0.9 RP1 - 435	9000	9.5	2542	3136	3731	1583	926	268	2210	1553	896	3465	2808	2151	4720	4063	3406
TPS 0.9 RP2 - 435	9000	9.0	1889	2220	2551	2304	1938	1573	2932	2566	2200	4186	3821	3455	5441	5076	4710
TPS 0.9 RP3- 435	9000	10.0	3487	4372	5256							2420	1442	465	3675	2697	1720
TPS 0.9 SY1 - 435	9000	8.5	3171	1827	4596	1934	536	358	2711	901	1135	4264	1630	2689	5818	2360	4242
TPS 0.9 SY2 - 435	9000	7.5	2352	1293	3145	2838	1126	1962	3615	1491	2738	5169	2221	4292	6723	2951	5846
TPS 0.9 SY3- 435	9000	9.0	4352	2547	6473							2958	835	614	4512	1565	2167
TPS 0.9 RP1 - 485	9000	8.0	2542	3136	3731	2650	1993	1336	3430	2773	2116	4990	4333	3676	6550	5893	5236
TPS 0.9 RP2 - 485	9000	7.5	1889	2220	2551	3372	3006	2640	4152	3786	3420	5712	5346	4980	7272	6906	6540
TPS 0.9 RP3- 485	9000	8.5	3487	4372	5256							3946	2968	1990	5506	4528	3550
TPS 0.9 SY1 - 485	9000	6.5	3171	1827	4596	3256	1157	1680	4221	1610	2646	6153	2518	4577	8084	3425	6509
TPS 0.9 SY2 - 485	9000	6.5	2352	1293	3145	4160	1747	3284	5126	2201	4249	7058	3108	6181	8989	4015	8112
TPS 0.9 SY3- 485	9000	7.5	4352	2547	6473							4847	1722	2502	6778	2629	4434
TPS 1.5 RPI- 485	15000	10.0	4753	6003	7254							4946	3564	2182	6986	5604	4222
TPS 1.5 RP2- 485	15000	10.0	4130	5211	6291	2575	1380	186	3595	2400	1206	5635	4440	3246	7675	6480	5286
TPS 1.5 SY1 - 485	15000	9.0	5934	3497	8932							6070	2067	2756	8596	3254	5282

NOTES

1. Design pressure: 12 bar g (maximum allowable pressure applicable to pressure equipment).
2. Maximum operating pressure (MOP) is the pressure required to produce the maximum operating torque (MOT) of the actuator.
3. SET: Spring Ending Torque
   SRT: Spring Running Torque
   SST: Spring Starting Torque
   AST: Air Starting Torque
   ART: Air Running Torque
   AET: Air Ending Torque

BIFFI TPS COMPACT SPRING RETURN PNEUMATIC ACTUATORS

OUTPUT TORQUES - MODELS TPS 1.5 TO 6

OUTPUT TORQUES

						Operating supply pressure (bar g)											
	MOT[2]	MOP[2]	Spring torque (Nm)			Nm at 3.5 bar g			Nm at 4 bar g			Nm at 5 bar g			Nm at 6 bar g		
Actuator type	[Nm]	[bar]	SET	SRT	SST	AST	ART	AET	AST	ART	AET	AST	ART	AET	AST	ART	AET
TPS 1.5 SY2 - 485	15000	8.5	5156	3035	7747	3141	798	277	4404	1391	1540	6930	2578	4066	9455	3764	6592
TPS 1.5 RP1 - 535	15000	8.5	4753	6003	7254	3434	2052	670	4676	3293	1911	7158	5776	4393	9640	8258	6876
TPS 1.5 RP2 - 535	15000	8.0	4130	5211	6291	4123	2928	1734	5364	4170	2975	7846	6652	5457	10328	9134	7940
TPS 1.5 RP3- 535	15000	9.0	5590	7395	9200							6232	4237	2242	8714	6720	4725
TPS 1.5 SY1 - 535	15000	7.5	5934	3497	8932	4198	1188	884	5735	1910	2421	8808	3354	5494	11881	4797	8567
TPS 1.5 SY2 - 535	15000	7.0	5156	3035	7747	5058	1698	2194	6594	2420	3731	9668	3864	6804	12741	5308	9877
TPS 1.5 SY3- 535	15000	7.5	6993	4309	11320							7638	2456	2855	10711	3900	5928
TPS 1.5 RP1 - 585	15000	7.0	4753	6003	7254	5134	3752	2370	6618	5236	3854	9586	8204	6822	12554	11172	9790
TPS 1.5 RP2 - 585	15000	7.0	4130	5211	6291	5823	4628	3434	7306	6112	4918	10274	9080	7886	13242	12048	10853
TPS 1.5 RP3- 585	15000	7.5	5590	7395	9200	4209	2214	219	5693	3698	1703	8660	6666	4671	11628	9633	7639
TPS 1.5 SY1 - 585	15000	6.0	5934	3497	8932	6303	2177	2989	8140	3040	4826	11814	4766	8500			
TPS 1.5 SY2 - 585	15000	6.0	5156	3035	7747	7162	2687	4299	8999	3550	6136	12674	5276	9810			
TPS 1.5 SY3- 585	15000	6.5	6993	4309	11320	5132	1279	349	6970	2142	2187	10644	3869	5861	14319	5595	9536
TPS 3 RP1 - 585	30000	10.0	8007	10348	12689							9918	7330	4743	13671	11084	8496
TPS 3 RP2 - 585	30000	10.0	6533	8172	9811	5916	4105	2293	7793	5982	4170	11546	9735	7924	15300	13488	11677
TPS 3 SY1 - 585	30000	9.0	10005	6029	15619				7531	2069	1327	12178	4253	5974	16825	6436	10621
TPS 3 SY2 - 585	30000	8.5	8154	4760	12083	7254	2380	2911	9577	3472	5234	14225	5655	9882	18872	7838	14529
TPS 3 RP1 - 635	30000	9.0	8007	10348	12689	6629	4042	1454	8841	6253	3665	13263	10675	8088	17686	15098	12510
TPS 3 RP2 - 635	30000	8.5	6533	8172	9811	8258	6446	4635	10469	8658	6846	14891	13080	11269	19314	17503	15691
TPS 3 RP3- 635	30000	9.5	9782	13001	16220							11301	7743	4185	15723	12165	8607
TPS 3 SY1 - 635	30000	7.5	10005	6029	15619	8106	2340	1902	10844	3626	4640	16320	6198	10116	21795	8771	15591
TPS 3 SY2 - 635	30000	7.5	8154	4760	12083	10153	3742	5810	12891	5028	8548	18366	7601	14024	23842	10173	19499
TPS 3 SY3- 635	30000	8.0	12238	7576	19956							13852	4489	5321	19328	7061	10797
TPS 3 RP1 - 685	30000	8.0	8007	10348	12689	9163	6575	3988	11736	9148	6561	16882	14295	11707	22029	19441	16854
TPS 3 RP2 - 685	30000	7.5	6533	8172	9811	10791	8980	7169	13364	11553	9742	18511	16700	14888	23657	21846	20035
TPS 3 RP3- 685	30000	8.0	9782	13001	16220							14920	11362	7804	20067	16509	12951
TPS 3 SY1 - 685	30000	6.5	10005	6029	15619	11243	3814	5039	14429	5310	8225	20801	8304	14597	27173	11297	20969
TPS 3 SY2 - 685	30000	6.5	8154	4760	12083	13290	5216	8947	16476	6712	12133	22848	9706	18505	29220	12699	24877
TPS 3 SY3- 685	30000	7.0	12238	7576	19956	8775	2104	245	11961	3600	3431	18333	6594	9803	24705	9587	16175
TPS 6 RP1 - 735	60000	10.0	14967	20056	25145							21901	16277	10653	29590	23966	18341
TPS 6 RP2 - 735	60000	10.0	14380	19341	24301				14861	9379	3896	22550	17068	11585	30239	24756	19274
TPS 6 SY1 - 735	60000	8.5	18732	11687	30932				17376	4971	3891	26896	9444	13410	36415	13916	22930
TPS 6 SY2 - 735	60000	8.5	18000	11271	29893							27704	9904	14559	37224	14377	24079
TPS 6 RP1 - 785	60000	9.0	14967	20056	25145				18539	12915	7290	27310	21685	16061	36080	30456	24832
TPS 6 RP2 - 785	60000	9.0	14380	19341	24301				19188	13705	8223	27958	22476	16993	36729	31246	25764
TPS 6 RP3- 785	60000	9.0	16405	23241	30076							25720	18165	10610	34491	26936	19381
TPS 6 SY1 - 785	60000	7.5	18732	11687	30932				22733	7488	9248	33592	12590	20107	44451	17691	30966
TPS 6 SY2 - 785	60000	7.5	18000	11271	29893				23542	7949	10397	34401	13050	21256	45260	18152	32115
TPS 6 SY3- 785	60000	8.0	20581	13547	36970							31548	10534	13434	42407	15635	24293
TPS 6 RP1 - 835	60000	8.0	14967	20056	25145				23151	17526	11902	33074	27450	21825	42997	37373	31749
TPS 6 RP2 - 835	60000	8.0	14380	19341	24301				23799	18317	12834	33723	28240	22758	43646	38164	32681
TPS 6 RP3- 835	60000	8.0	16405	23241	30076							31485	23929	16374	41408	33853	26298
TPS 6 SY1 - 835	60000	7.0	18732	11687	30932				28442	10170	14957	40729	15942	27244	53015	21714	39530
TPS 6 SY2 - 835	60000	7.0	18000	11271	29893				29251	10631	16106	41538	16403	28393	53824	22175	40679
TPS 6 SY3- 835	60000	7.0	20581	13547	36970							38685	13887	20571	50971	19659	32857

NOTES

1. Maximum operating torque is maximum rating of helical spline mechanism.
2. Design pressure: 12 bar g (maximum allowable pressure applicable to pressure equipment).
3. Maximum operating pressure (MOP) is the pressure required to produce the maximum operating torque (MOT) of the actuator.
4. AST: Air Starting Torque
   ART: Air Running Torque
   AET: Air Ending Torque

BIFFI TPD COMPACT DOUBLE ACTING PNEUMATIC ACTUATORS

OUTPUT TORQUES - MODELS TPD 0.1 TO 6

OUTPUT TORQUES

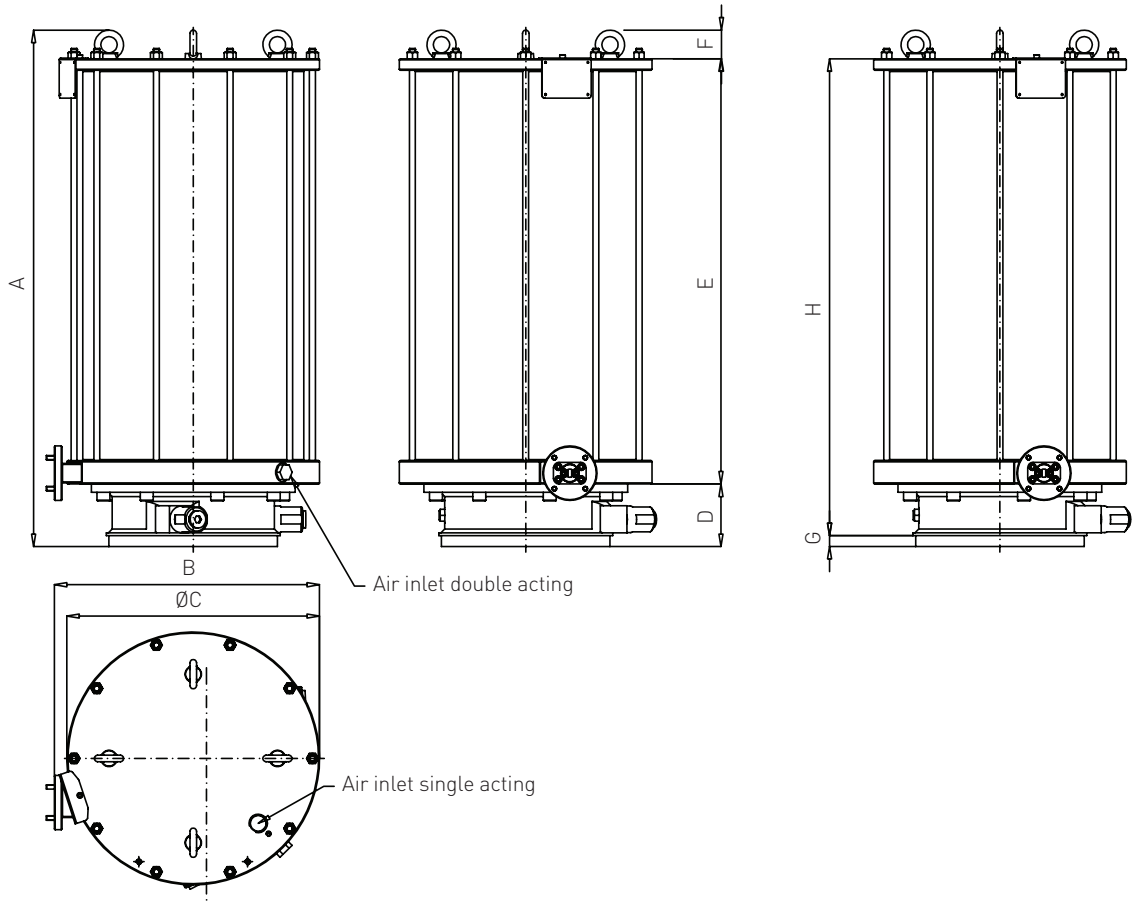
			Operating supply pressure (bar g)											
	MOT[2]	MOP[2]	Nm at 3.5 bar g			Nm at 4 bar g			Nm at 5 bar g			Nm at 6 bar g		
Actuator type	[Nm]	[bar]	AST	ART	AET	AST	ART	AET	AST	ART	AET	AST	ART	AET
TPD 0.1 RP-235	1000	4.5	789	789	789	902	902	902	1127	1127	1127	1352	1352	1352
TPD 0.1 SY-235	1000	4.0	977	459	977	1116	524	1116	1395	655	1395	1674	787	1674
TPD 0.3 RP-280	3000	7.5	1470	1470	1470	1680	1680	1680	2100	2100	2100	2520	2520	2520
TPD 0.3 SY-280	3000	6.0	1820	855	1820	2080	977	2080	2600	1221	2600	3120	1466	3120
TPD 0.3 RP-335	3000	5.0	2104	2104	2104	2404	2404	2404	3006	3006	3006	3607	3607	3607
TPD 0.3 SY-335	3000	4.5	2605	1224	2605	2977	1399	2977	3721	1748	3721	4466	2098	4466
TPD 0.9 RP-385	9000	9.5	3440	3440	3440	3932	3932	3932	4915	4915	4915	5898	5898	5898
TPD 0.9 SY-385	9000	7.5	4260	2001	4260	4868	2287	4868	6085	2859	6085	7302	3431	7302
TPD 0.9 RP-435	9000	7.5	4392	4392	4392	5020	5020	5020	6274	6274	6274	7529	7529	7529
TPD 0.9 SY-435	9000	6.0	5438	2555	5438	6215	2920	6215	7769	3650	7769	9322	4379	9322
TPD 1.5 RP-485	15000	7.5	7140	7140	7140	8160	8160	8160	10200	10200	10200	12240	12240	12240
TPD 1.5 SY-485	15000	6.0	8840	4153	8840	10103	4746	10103	12628	5933	12628	15154	7119	15154
TPD 1.5 RP-535	15000	6.5	8688	8688	8688	9929	9929	9929	12411	12411	12411	14893	14893	14893
TPD 1.5 SY-535	15000	5.0	10757	5053	10757	12293	5775	12293	15367	7219	15367	18440	8663	18440
TPD 3 RP-585	30000	8.0	13137	13137	13137	15014	15014	15014	18767	18767	18767	22521	22521	22521
TPD 3 SY-585	30000	6.5	16265	7641	16265	18589	8733	18589	23236	10916	23236	27884	13099	27884
TPD 3 RP-635	30000	7.0	15479	15479	15479	17690	17690	17690	22112	22112	22112	26535	26535	26535
TPD 3 SY-635	30000	5.5	19165	9003	19165	21903	10290	21903	27378	12862	27378			
TPD 6 RP-735	60000	8.0	26911	26911	26911	30755	30755	30755	38444	38444	38444	46133	46133	46133
TPD 6 SY-735	60000	6.5	33319	15653	33319	38079	17889	38079	47599	22361	47599	57119	26834	57119
TPD 6 RP-785	60000	7.0	30697	30697	30697	35082	35082	35082	43853	43853	43853	52623	52623	52623
TPD 6 SY-785	60000	6.0	38007	17855	38007	43436	20406	43436	54295	25507	54295			

NOTES

1. Maximum operating torque is maximum rating of helical spline mechanism.
2. Design pressure: 12 bar g (maximum allowable pressure applicable to pressure equipment).
3. Maximum operating pressure (MOP) is the pressure required to produce the maximum operating torque (MOT) of the actuator.
4. AST: Air Starting Torque
   ART: Air Running Torque
   AET: Air Ending Torque

BIFFI TPD/TPS COMPACT PNEUMATIC ACTUATORS

OVERALL DIMENSIONS - ACTUATOR



DIMENSIONS

	Dimension (mm)						Weight (kg)				Air inlet connection (in)		Air consumption (litres)	
										Double acting				
Model	**A**	**B**	**ØC**	**D**	**E**	**F**	**RP1/SY1**	**RP2/SY2**	**RP3/SY3**	**RP/SY**	*	**	*	**
TPS/TPD 0.1-235	610	374	325.0	50.0	507.0	53	145	140	N/A	130	¾	½	5.3	13
TPS/TPD 0.1-280	610	394	365.0	50.0	507.0	53	165	160	165	150	¾	½	7.6	18.5
TPS/TPD 0.3-280	700	390	365.5	50.0	592.0	53	200	185	N/A	170	¾	½	10	28
TPS/TPD 0.3-335	700	445	420.5	50.0	595.0	53	245	230	265	215	¾	½	15	40
TPS/TPD 0.3-385	700	495	470.5	50.0	595.0	53	285	270	310	255	¾	½	20	53
TPS/TPD 0.9-385	975	495	465.0	115.0	782.0	53	450	415	N/A	345	1	¾	24	75
TPS/TPD 0.9-435	975	540	515.0	115.0	782.0	53	495	465	525	395	1	¾	30	95
TPS/TPD 0.9-485	975	600	580.0	115.0	782.5	53	565	535	600	465	1	¾	37	118
TPS/TPD 1.5-485	1100	600	580.0	125.5	884.5	74	710	680	N/A	565	1	¾	49	136
TPS/TPD 1.5-535	1100	650	630.0	125.5	886.5	74	780	745	810	605	1	¾	60	166
TPS/TPD 1.5-585	1100	700	680.0	125.5	891.5	74	860	830	900	725	1	¾	71	198
TPS/TPD 3-585	1321	700	680.0	140.0	1107.0	74	1205	1155	N/A	940	1	¾	90	251
TPS/TPD 3-635	1321	748	735.0	140.0	1107.0	74	1325	1275	1385	1070	1	¾	105	296
TPS/TPD 3-685	1321	800	785.0	140.0	1107.0	74	1410	1360	1470	1150	1	¾	123	345
TPS/TPD 6-735	1679	840	835.0	170.0	1415.0	94	2455	2345	N/A	1675	1	1/1	174	467
TPS/TPD 6-785	1679	895	895.0	170.0	1415.0	94	2585	2495	2660	1795	1	1/1	198	533
TPS/TPD 6-835	1679	945	945.0	170.0	1415.0	94	2710	2620	2790	1910	1	1/1	224	603

N/A = Not applicable

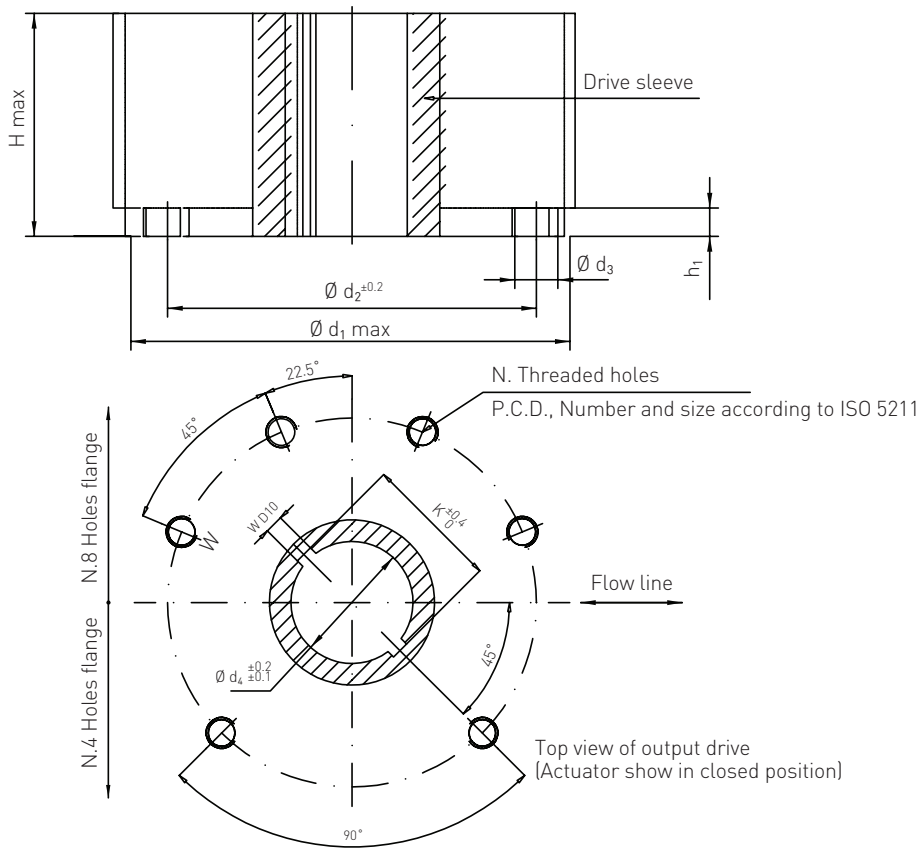
* Single acting

** Double acting

NOTES

1. Overall dimensions and weights given are without any accessories (limit switch box, manual override device or others).
2. For mounting flange details see separate coupling dimensions leaflet.
3. Air inlet thread according to NPT standard.
4. Air consumption (air volume required for one stroke); for double acting, dead volume is included.

OVERALL DIMENSIONS - COUPLINGS



DIMENSIONS (mm)

Model	Flange type	Ød1 max	PCD	Ød3	N	h1	H max	Ød4	W	K
0.1	F12	150	125	M12	4	20	93	55	10	60.6
0.3	F16	210	165	M20	4	20	93	70	12	75.6
0.9	F25	300	254	M16	8	20	172	86	14	93.6
1.5	F30	350	298	M20	8	20	177	112	18	119.6
3	F35	415	356	M30	8	25	215	157	25	167.8
6	F40	475	406	M36	8	40	241	200	28	212.8
14	F48	560	483	M36	12	35	280	175	45	195.8
18	F60	686	603	M36	20	35	300	200	45	220.8
32	F60	780	603	M36	20	40	350	220	50	242.8

NOTES

1. Actuators are suitable for direct mounting. Mounting brackets or adaptor flange optional if required.
2. For mounting flange details see separate coupling dimensions leaflet.

FULL RANGE OF CONTROL ACCESSORIES

Biffi can supply a full range of options and accessories including: special coatings for offshore or corrosive environments; witness test on demands; manual hydraulic pump for override; custom control systems (On/Off – Modulating service); valve position and control monitors; partial stroke testing. If you have a specific requirement please contact your local sales office.



POSITION MONITORS, CONTROL MONITORS AND POSITIONERS

TP compact actuators are available with a comprehensive range of monitoring and control devices representing the latest technology for the monitoring and control of automated quarter-turn valves including wireless valve monitoring systems. This includes both analog and intelligent positioners for actuator calibration, position feedback, performance verification and valve status intelligence; a fully certified range of position monitors suitable for most process environments and a range of control monitors with integrated solenoid valves eliminating the need for costly adaptors to mount solenoids onto larger type actuators. Position monitors are directly connected to the output drive showing the exact valve position.

The Compact Series is designed with integrated support brackets to allow the mounting of control accessories in a convenient and easily accessible position at the base of the actuator for plant engineers.

ACTUATOR MANUAL OVERRIDE

Biffi actuators are available with optional manual override devices designed to allow the actuator to be operated manually when there is a lack of air supply.

CONTROL SYSTEM

Biffi applies advanced engineering technology to the design and manufacture of pneumatic controls and accessories. Years of experience allows the company to meet the most stringent needs for control modes and operating conditions through the correct selection of schematics, components, materials and protection treatments.
The actuator service can be on-off or modulating. Actuator control can be local or remote via electric or pneumatic signals.
The control system can include devices for automatic operation or 'stay put' in case of emergency (electric or pneumatic supply failure, high temperature, low or high pipeline pressure etc.).
Specially designed control valves can be supplied for heavy duty service or special working conditions (e.g. low working temperature, sour gas supply, special emergency operation, etc.).

Control systems can be supplied as:

- panel mounted or enclosed in a weatherproof cabinet
- separate or assembled onto the actuator

The actuator housing has dedicated supports for the mounting of control systems and accessories.





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