CHEMSUN Pneumatic Actuator

Type PTS / PTD Rack & Pinion Actoator

Suitable for petrochemical, electric-power, metallurgy, Mining, light industry and HVAC industry

Certificate:	CE; ATEX Ex I M2 (Only for Body material Cast Stainless Steel)
Acting type:	PTS, Single Acting Piston; PTD, Double Acting Piston
Tem. Range:	-40°C···+150°C (-40°F···+302°F)
Output Torque:	5-5280 Nm

Application

Single- or double-acting piston actuator for control and shutoff valves with rotating flow restrictors, especially with high process demand in chemical plants:

- Quarter turn 90°+4
- Air supply to 8 bar
- Temperatures -20°C to 80°C (Normal.)

The pneumatic quarter-turn actuators type PTS and PTD are piston actuators for Control or On/off operation. The actuators distinguish themselves by:

- Externally adjustable end stops (±4°);
- Square position diagonal (Europ. Standard) or parallel;
- Freely-adjustable position indicator (in 45°steps);
- Assembly and modification without special tools;
- Encapsulated spring assembly;
- Transmission through involute gearing;
- Direction of rotation reversible without additional components;
- Proven surface refinement by means of Kesternich and salt spray test;
- Connection of additional equipment according to VDI/VDE3845;
- Attachments according to DIN/ISO 5211.

CHEMSUN Pneumatic Rack & Pinion Actuator,
Type PTS-145-90-SF-10-AI

Versions

- **Type PTS**

Pneumatic quarter-turn actuator, single-acting with spring-return mechanism in the sizes 050 to 420.

- **Type PTD**

Pneumatic quarter-turn actuator, double-acting without spring-return mechanism in the sizes 050 to 420.

CHEMSUN Pneumatic Rack & Pinion Actuator,
Type PTS-180-90-SF-10-SS(ATEX Ex I M2)

Special designs

- With emergency manual actuation;
- For continuous operation at temperatures from -20° to 150°C through use of Viton O-rings;
- For continuous operation at temperatures from -40° to 80°C with silicon seals;
- Actuators with extended turning range 120° and 180°;
- Dosage actuator with adjustable central position;
- 3-position actuator;
- Actuator with hydraulic adjustment of rotating speed;
- Stainless steel Body material for ATEX Ex I M2.

Additional equipment and add-on pieces

For the actuators, the following accessories are available either individually or in combination:
· Positioner
· Limit switch
· Solenoid valves
· Air supply stations
· Pressure gauge set
· Throttling device
Further accessories are available on request for customer specifications. Details on request.

Principle of operation

The regulating pressure pst generates a force at the piston surface which, in the single-acting version, can be compensated by the springs arranged in the actuator, and in the double-acting version, by an appropriate back pressure. The force generated at the pistons is converted into rotation by means of the pinion shaft. Adjustable end stops for OPEN and CLOSED operation permit a fine setting of the end positions by ±4°.

In the case of the single-acting version, the number of springs determines the spring return torque and the required air supply pressure.

Safety position

For the actuator type PTS two different directions of rotation are possible, becoming effective by release pressure on the pistons or in the case of air supply failure. The viewing direction is from the actuator to the valve.

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Springs rotating to the right

In case of pressure loss, rotation to the right.

Springs rotating to the left

In case of pressure loss, rotation to the left.

The actuator type PTD is designed without springs. A defined final position is not achieved in the case of air supply failure.

General technical data

Operation	Single-acting I Double-acting
Max. perm, air supply pressure	8 bar
Sizes	050 * 063 * 075 * 088 * 100 115 * 125 * 145 * 160 * 180 200 * 240 * 265 * 330 * 420
Perm, temperature range	Normal operation -20°C
Connection to valve	DIN / ISO 5211
Type 050 to 100	VDI / VDE 3845, size 1
Type 115 to 160	VDI / VDE 3845, size 2
Type 180 to 330	VDI / VDE 3845, size 4
Type 420	VDI / VDE 3845, size 5
Connection for solenoid valve	VDI / VDE 3845

Table 1 - Technical Data

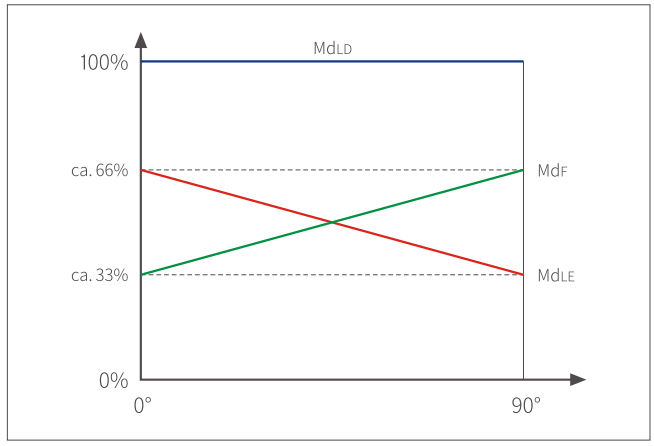
Materials

Body	AlMgSiO, 5 F25, CF8
Cap	GD - AlSi8.5 Cu3.5 Fe
Shaft	ASTM A105, CF8
Spring-cartridge	ASTM A401
Pistons	GD - AlSi8 , 5 Cu3.5 Fe, CF8

Table 2 - Materials (WN = Material code)

Air drive torque

Fig. 3 shows the available air drive torque
· MdLE for the single-acting version
· MdLD for the double-acting version
and the available spring drive moment MdF in relation to the angle of rotation.
The course of the operating torque is valid for the correct combination of the respective air supply pressure with the wright number of springs (values in the data sheet underlined and printed bold).



Course of operating torque at recommended air inlet pressure

Operating torques

The operating torques for double- and single-acting actuators are available in the data sheet.

Interesting innovations in this generation of actuators

The quarter-turn actuators are characterized by a number of technical improvements and interesting innovations, and were developed with an eye on the latest amendments to the ISO 5211.

· Position of the end caps with security against faulty handling

The setting of the two end stops is effected at the external stop screws via a cam system (Fig. 4). In order to rule out any risk of injury when unscrewing the stop screws while under pressure, these screws are fitted with special air vent slots. Due to the clearly audible venting of the actuator before completion of unscrewing, the employee is sufficiently warned.
In order to provide visual proof of the adjustment of the screws, they are coated ex works with a sealing wax.

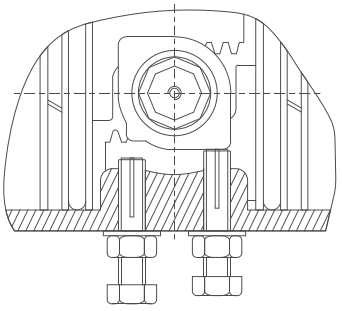


Fig. 4 - Positioning of the end stops

Setting of the square end

A more flexible installation is achieved through the 45° - step setting of the square in the shaft drive.

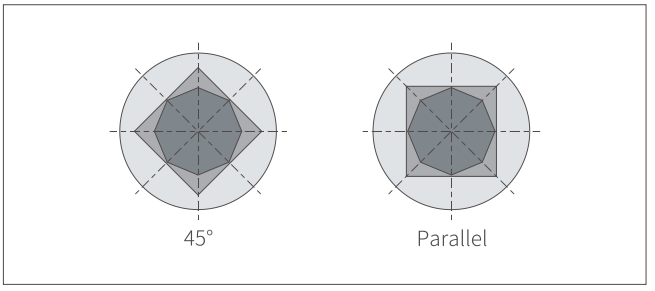


Fig. 5 - Setting of the square

The required settings can be achieved through a rotation of the shaft. In order to obtain the correct display of position, the seat of the position indicator (upper end of shaft) has been octagonally finished, therefore permitting the position indicator also to be mounted in 45°- steps.

Multifunctional position indicator

The new position indicator may be employed for a 45° or 90° position (Fig. 6). An optical display is realized by means of inserts in the position indicator. These may be variably installed.

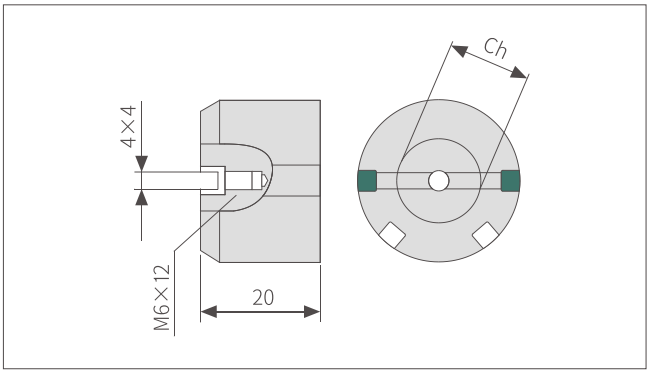


Fig. 6 - Position indicator

Direct assembly

By exchanging the standard inserts by metal inserts, the multifunctional position indicator can be quickly and simply prepared for the direct attachment of special limit switches.

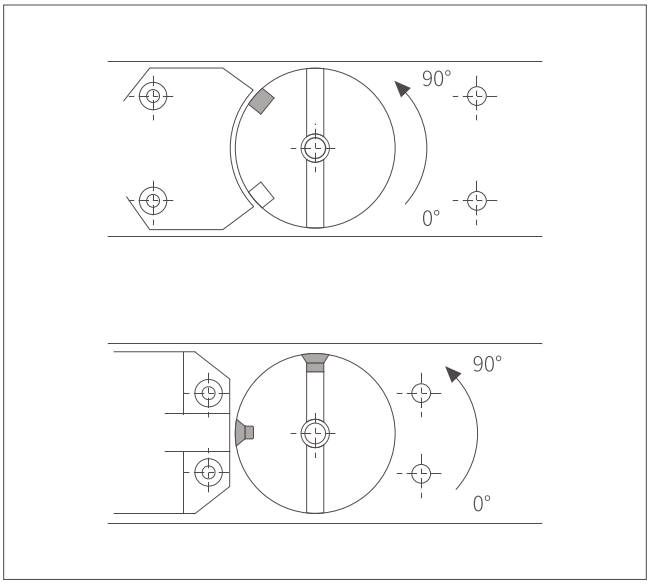


Fig. 7 - Multifunctional position indicator

Technical details

The tooth profile and therefore the force transmission of the toothed rack - shaft principle were consequently optimised by employing involute gearing.

A further technical measure is the strengthening of the shaft diameter and bearing shells. This permits an even greater force absorption by the newly developed body.

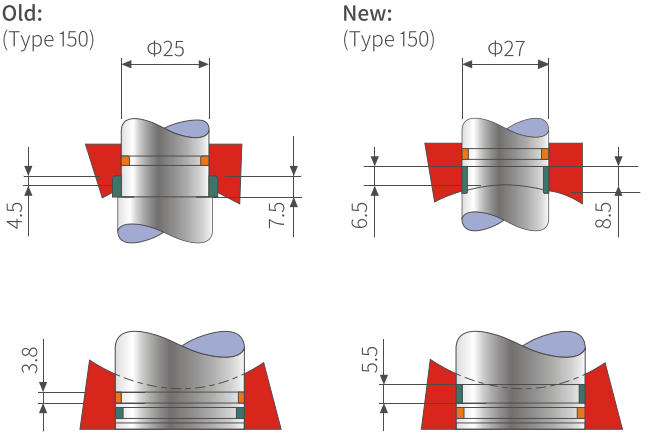


Fig. 8 - Bearing

The position indicator has a VDIA/DE - interface. This permits practically all standard accessories to be mounted without difficulty.

Torques in Nm for Double-acting Type PTD Actuators

Type PTD	2.5bar	3.0bar	3.5bar	4.0bar	4.5bar	5.0bar	5.5bar	6.0bar	7.0bar	8.0bar
PTD-050	8.3	10	11.6	13.3	15	16.6	18.3	19.9	23.3	26.6
PTD-063	14.7	17.6	20.5	23.5	26.4	29.3	32.2	35.2	41	46.9
PTD-075	29.1	34.9	40.7	46.5	52.3	58.2	64	69.8	81.4	93
PTD-088	45.7	54.9	64	73.2	82.3	91.5	101	110	128	146
PTD-100	66.5	79.7	93	106	120	133	146	160	186	213
PTD-115	107	129	150	172	193	215	236	258	301	344
PTD-125	138	166	194	221	249	277	304	332	387	443
PTD-145	217	261	304	348	391	434	478	521	608	695
PTD-160	283	340	397	453	510	567	623	680	793	907
PTD-180	383	459	536	612	689	765	842	918	1071	1224
PTD-200	531	638	744	850	956	1063	1169	1275	1488	1700
PTD-240	935	1122	1309	1496	1683	1870	2057	2244	2618	2992
PTD-265	1347	1617	1886	2156	2425	2695	2964	3234	3772	4311
PTD-330	1976	2371	2743	3135	3526	3919	4273	4662	5396	6170
PTD-420	4060	4872	5683	6496	7305	8120	9115	9744	11368	12992

Torques in Nm for Single-acting Type PTS Actuators

Type	Qty. of spr.	Air torques in Nm																Spring torques	
		3.0bar		3.5bar		4.0bar		4.5bar		5.0bar		6.0bar		7.0bar		8.0bar			
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	90°	0°
		Start	Stop	Start	Stop	Start	Stop	Start	Stop	Start	Stop	Start	Stop	Start	Stop	Start	Stop	Start	Stop
PTS-050	5	6.6	5.1	8.2	6.8	9.9	8.4	11.6	10.1	13.2	11.7							4.9	3.4
	6	5.9	4.1	7.6	5.8	9.2	7.4	10.9	9.1	12.5	10.8							5.8	4.1
	7	5.2	3.2	6.9	4.8	8.5	6.5	10.2	8.1	11.9	9.8	15.2	13.1					6.8	4.7
	8			6.2	3.8	7.9	5.5	9.5	7.2	11.2	8.8	14.5	12.1	17.8	15.5			7.8	5.4
	9					7.2	4.5	8.9	6.2	10.5	7.8	13.8	11.2	17.2	14.5	20.5	17.8	8.8	6.1
	10							8.2	5.2	9.8	6.9	13.2	10.2	16.5	13.5	19.8	16.8	9.7	6.8
	11									9.2	5.9	12.5	9.2	15.8	12.5	19.1	15.9	10.7	7.4
	12											11.8	8.2	15.1	11.6	18.4	14.9	11.7	8.1
PTS-063	5	12	9.1	15	12	17.9	15	20.8	17.9	23.7	20.8							8.5	5.5
	6	10.9	7.4	13.8	10.3	16.8	13.3	19.7	16.2	22.6	19.1							10.2	6.7
	7	9.8	5.7	12.7	8.7	15.7	11.6	18.6	14.5	21.5	17.4	27.4	23.3					11.8	7.8
	8			11.6	7	14.6	9.9	17.5	12.8	20.4	15.8	26.3	21.6	32.1	27.5			13.5	8.9
	9					13.4	8.2	16.4	11.1	19.3	14.1	25.2	19.9	31	25.8	36.9	31.6	15.2	10
	10							15.3	9.4	18.2	12.4	24.1	18.2	29.9	24.1	35.8	29.9	16.9	11.1
	11									17.1	10.7	22.9	16.5	28.8	22.4	34.7	28.2	18.6	12.2
	12											21.8	14.8	27.7	20.7	33.5	26.6	20.3	13.3
PTS-075	5	23.6	17.6	29.6	23.4	35.4	29.2	41.2	35	47.1	40.8							17.3	11.1
	6	21.6	14.1	27.4	19.9	33.2	25.7	39	31.5	44.8	37.3							20.8	13.3
	7	19.4	10.6	25.2	16.4	31	22.3	36.8	28.1	42.6	33.9	54.3	45.5					24.2	15.5
	8			23	13	28.8	18.8	34.6	24.6	40.4	30.4	52	42	63.7	53.7			27.7	17.7
	9					26.6	15.3	32.4	21.1	38.2	27	49.8	38.6	61.5	50.2	73.1	61.8	31.1	19.9
	10							30.2	17.7	36	23.5	47.6	35.1	59.2	46.7	70.9	58.4	34.6	22.1
	11									33.8	20	45.4	31.7	57	43.3	68.7	54.9	38.1	24.3
	12											43.2	28.2	54.8	39.8	66.4	51.4	41.5	26.5
PTS-088	5	36.5	26	45.7	35.1	54.8	44.3	63.9	53.4	73.1	62.6							28.9	18.3
	6	32.8	20.2	42	29.3	51.1	38.5	60.3	47.6	69.4	56.8							34.7	22
	7	29.2	14.4	38.3	23.6	47.5	32.7	56.6	41.9	65.7	51	84	69.3					40.4	25.7
	8			34.6	17.8	43.8	26.9	52.9	36.1	62.1	45.2	80.4	63.5	98.6	81.8			46.2	29.4
	9					40.1	21.2	49.3	30.3	58.4	39.5	76.7	57.7	95	76	113	94.3	52	33
	10							45.6	24.5	54.7	33.7	73	52	91.3	70.2	110	88.5	57.8	36.7
	11									51.1	27.9	69.3	46.2	87.6	64.5	106	82.8	63.5	40.4
	12											65.7	40.4	84	58.7	102	77	69.3	44
PTS-100	5	54.4	40.3	67.7	53.6	81	66.8	94.2	80.1	108	93.4							39.4	25.3
	6	49.3	32.4	62.6	45.7	75.9	58.9	89.2	72.2	103	85.5							47.3	30.4
	7	44.3	24.5	57.6	37.8	70.8	51.1	84.1	64.3	97.4	77.6	124	104					55.2	35.4
	8			52.5	29.9	65.8	43.2	79.1	56.5	92.3	69.7	119	96.3	146	123			63.1	40.5
	9					60.7	35.3	74	48.6	87.3	61.9	114	88.4	140	115	167	142	71	45.5
	10							68.9	40.7	82.2	54	109	80.5	135	107	162	134	78.8	50.6
	11									77.2	46.1	104	72.7	130	99	157	126	86.7	55.6
	12											98.7	64.8	125	92	152	110	94.6	60.7

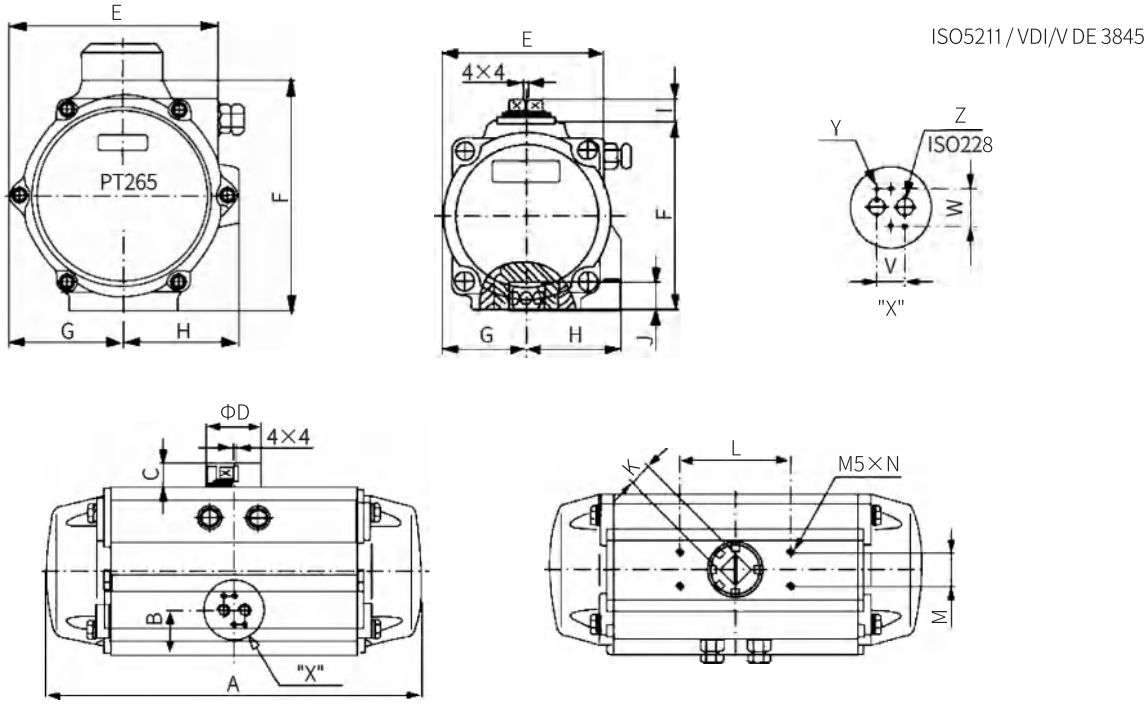
Torques in Nm for Single-acting Type PTS Actuators

Type	Qty. of spr.	Air torques in Nm																Spring torques	
		3.0bar		3.5bar		4.0bar		4.5bar		5.0bar		6.0bar		7.0bar		8.0bar			
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	90°	0°
		Start	Stop	Start	Stop	Start	Stop	Start	Stop	Start	Stop	Start	Stop	Start	Stop	Start	Stop	Start	Stop
PTS-115	5	87.8	63.3	109	84.7	131	106	152	128	174	149							65.6	41
	6	79.6	50.1	101	71.6	123	93.1	144	115	165	136							78.7	49.3
	7	71.3	37	92.8	58.5	114	80	136	101	157	123	200	166					91.8	57.5
	8			84.6	45.4	106	66.9	128	88.3	149	110	192	153	235	196			105	65.7
	9					97.9	53.8	119	75.2	141	96.7	184	140	227	183	270	226	118	74
	10							111	62.1	133	83.6	176	127	219	170	261		131	82
	11									124	70.5	167	113	210	156	253	199	144	90.3
	12											159	100	202	143	245	186	157	98.5
PTS-125	5	114	84	141	111	169	139	197	167	224	194							82.5	52.5
	6	103	67	131	95	158	122	186	150	214	178							98.9	62.9
	7	92.6	50.6	120	78	148	106	176	134	203	161	259	217					115	73.4
	8			110	62	137	89.4	165	117	193	145	248	200	304	256			132	83.9
	9					127	72.9	155	101	182	128	238	184	293	239	348	294	148	94.4
	10							144	84	172	112	227	167	283	223	338	278	165	105
	11									161	95.3	217	151	272	206	327	261	181	115
	12											206	134	262	190	317	245	198	126
PTS-145	5	178	132	222	175	265	219	309	262	352	305							129	82.3
	6	162	106	205	149	249	193	292	236	336	280							155	98.7
	7	146	80.1	189	124	232	167	276	210	319	254	406	341					181	115
	8			173	97.7	216	141	259	185	303	228	390	315	477	402			206	132
	9					200	115	243	159	286	202	373	289	460	376	547	463	232	148
	10							227	133	270	177	357	263	444	350	531	437	258	165
	11									254	151	340	238	427	324	514	411	284	181
	12											324	212	411	299	498	386	310	197
PTS-160	5	228	174	285	231	341	187	398	344	455	401							166	112
	6	206	141	262	197	319	254	376	311	432	367							199	135
	7	183	108	240	164	296	221	353	278	410	334	523	448					233	157
	8			217	131	274	188	331	244	387	301	501	414	614	528			266	179
	9					252	154	308	211	365	268	478	381	592	494	705	608	299	202
	10							286	178	343	235	456	348	569	461	683	575	332	224
	11									320	201	433	315	547	428	660	541	365	247
	12											411	281	524	395	638	508	399	269
PTS-180	5	301	222	378	299	454	375	531	452	607	528							237	158
	6	270	175	346	251	423	328	499	404	576	481							284	190
	7	238	127	315	204	391	280	468	357	544	433	697	586					332	221
	8			283	157	359	233	436	310	512	386	665	539	818	692			379	253
	9					328	186	404	262	481	339	634	492	787	645	940	798	426	284
	10							373	215	449	291	602	444	755	597	908	750	474	316
	11									418	244	571	397	724	550	877	703	521	347
	12											539	350	692	503	845	656	569	379
PTS-200	5	425	323	532	429	638	535	744	641	850	748							315	212
	6	383	260	489	366	595	472	702	578	808	685							378	255
	7	340	197	447	303	553	409	659	515	765	622	978	834					441	297
	8			404	240	510	346	617	452	723	559	935	771	1148	984			504	340
	9					468	283	574	389	680	496	893	708	1105	921	1318	1133	567	382
	10							532	326	638	433	850	645	1063	858	1275	1070	630	425
	11									595	370	808	582	1020	795	1233	1007	693	467
	12											766	519	978	732	1191	944	756	510
PTS-240	5	688	506	875	693	1062	880	1249	1067	1436	1254							616	434
	6	601	383	788	570	975	757	1162	944	1349	1131							740	521
	7	514	259	701	446	888	633	1075	820	1262	1007	1636	1381					863	608
	8			614	323	801	510	988	697	1175	884	1549	1258	1923	1632			986	695
	9					714	387	901	574	1088	761	1463	1135	1837	1509	2211	1883	1109	782
	10							815	451	1002	638	1376	1012	1750	1386	2124	1760	1233	869
	11									915	514	1289	888	1663	1262	2037	1636	1356	955
	12											1202	765	1576	1139	1950	1513	1479	1042
PTS-265	5	1050	834	1319	1104	1589	1373	1858	1643	2128	1912							783	567
	6	936	678	1206	947	1475	1217	1745	1486	2014	1756							939	680
	7	823	521	1092	791	1362	1060	1631	1330	1901	1599	2440	2138					1096	794
	8			979	634	1249	904	1518	1173	1787	1443	2326	1981	2865	2520			1252	907
	9					1135	747	1405	1017	1674	1286	2213	1825	2752	2364	3291	2903	1409	1021
	10							1291	860	1561	1130	2100	1668	2638	2207	3177	2746	1565	1134
	11									1447	973	1986	1512	2525	2051	3064	2590	1722	1247
	12											1873	1355	2412	1894	2951	2433	1878	1361

NOTE(1) If need the dimensions data of Type PTS/D-330 / 375 / 420, please consult our technical department.

NOTE(2) If operating condition ATEX Ex I M2 for Mining, The body material must be cast stainless steel, and consult our technical department.

Dimensions (mm) and weights (kgs) for Type PTS/D-Al (Body Anodised Al.)



Dimensions (mm) and weights (kgs) for Type PTS/D-Al (Body Anodised Al.)

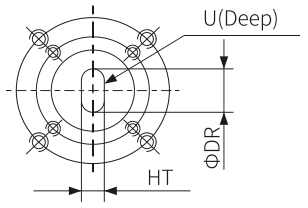
Unit: mm

PTS/D (Body Al)	50	63	75	88	100	115	125	145	160	180	200	240	265	330	420
ISO flange	F04	F05	F05/07	F05/07	F07/10	F07/10	F07/10	F10/12	F10/12	F12	F14	F16	F16	F16	F25/30
A	140.5	158.5	210.5	247.5	268.5	315	345	408.5	437.5	487	543	633	728	876	949.5
B	26.5	30	30.5	32.5	37.5	42.5	45	47.5	52	58.5	62.5	78.5	165	180	230
C	20	20	20	20	20	30	30	30	30	50	50	50	50	50	50
D	40	40	40	40	40	56	56	65	65	80	80	115	115	115	115
E	59	72	84.5	97.5	111	127	136	156.5	169	190.5	213	251	298.5	388	505
F	69	85	102	115	127	145	157	177	196	220.5	245	298.5	330	405	518
G	29	36	42.5	49.5	56	64	69.5	80	88	99	110	131	163.5	201	255
H	41.5	47	52	56.8	67	77	82	91.5	99	105	112	131	166	207	273
I	14.5	14.5	14.5	14.5	14.5	24.5	24.5	24.5	24.5	44.5	44.5	44.5	44.5	44.5	44.5
Jmin	12	16	16	19	19	24	24	29	29	29	38	38	48	57	87
K	11	11	17	17	17	27	27	27	27	36	36	36	36	36	36
L	80	80	80	80	80	80	80	80	80	130	130	130	130	130	130
M	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
N	M5×4	M5×8	M5×8	M5×8	M5×8	M5×8	M5×8	M5×8	M5×8	M5×8	M5×8	M5×8	M5×8	M5×8	M5×8
V	24	24	24	24	24	24	24	24	24	24	24	40	40	40	40
W	32	32	32	32	32	32	32	32	32	32	32	45	45	45	45
Y	M5×8	M5×8	M5×8	M5×8	M5×8	M5×8	M5×8	M5×8	M5×8	M5×8	M5×8	M6×10	M6×10	M6×10	M6×10
Z	1/8"	1/8"	1/8"	1/8^{M}	1/4"	1/4^{H}	1/4"	1/4"	1/4"	1/4^{M}	1/4"	3/8"	1/2^{H}	1/2^{H}	1/2^{H}

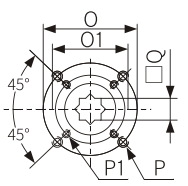
Dimensions (mm) and interfaces for attachment to valve and accessories

Type PTS/D-Al (Body Anodised Al.)

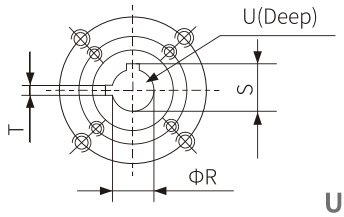
H:



P:



W:



Unit: mm

PTS/D (Body Al)	50	63	75	88	100	115	125	145	160	180	200	240	265	330	420
R	12.7	12.7	12.7	15.88	19.05	22.23	22.23	28.58	28.5	31.75	31.75	33.34	38.1	-	-
S	14.2	14.2	14.2	18.4	21.6	24.8	24.8	32.1	32.1	35.3	35.3	37.4	42.4	-	-
T	3	3	5	5	5	5	5	8	8	8	8	10	10	-	-
U	32	32	32	32	32	45	45	45	45	45	45	51	51	-	-
DR	13	13	13	16.1	19.2	22.4	22.4	28.8	28.8	32	32	33.6	38.4	-	-
HT	10	10	10	12	14	17	17	22	22	24	24	27	27	-	-
O1	42	50	50	50	70	70	70	102	102	125	140	165	165	165	254
O	-	-	70	70	102	102	102	125	125	-	-	-	-	-	298
P1	4-M6	4-M6	4-M6	4-M6	4-M8	4-M8	4-M8	4-M10	4-M10	4-M12	4-M16	4-M20	4-M20	4-M20	8-M20
P	-	-	4-M8	4-M8	4-M10	4-M10	4-M10	4-M12	4-M12	-	-	-	-	-	8-M30
□Q	11	14	14	17	17	22	22	27	27	27	36	36	46	55	75
PTS/W.(Kg)	1.5	2	3.5	4.5	6.5	10	13	18.6	24	32	46	67	110	165	325

NOTE(1) If need the dimensions data of Type PTS/D-330 / 375 / 420, please consult our technical department.
NOTE(2) If operating condition ATEX Ex I M2 for Mining, The body material must be cast stainless steel, and consult our technical department.

Structure drawing, Parts and material for Type PTS/D-Al (Body Anodised Al.)

Pos.	Description	Pos.	Description
1	Stop arrangement	16	O-ring
2	End stop screw	17	Spring cartridge
3	Nut	18	Spring clip
4	Washer	19	Position indicator
5	Bearing (Piston back)	20	O-ring
6	Bearing (Pinion top)	21	O-ring
7	Bearing (Pinion)	22	Right end cap
8	Thrust bearing	23	Left end cap
9	Plug	24	Cap screw (Indicator)
10	Thrust washer	25	Pistons
11	O-ring	26	Identification label
12	Piston guide	27	Identification label
13	Cap screw	28	Centering
14	O-ring	29	Body
15	Bearing (Piston head)	30	Shaft

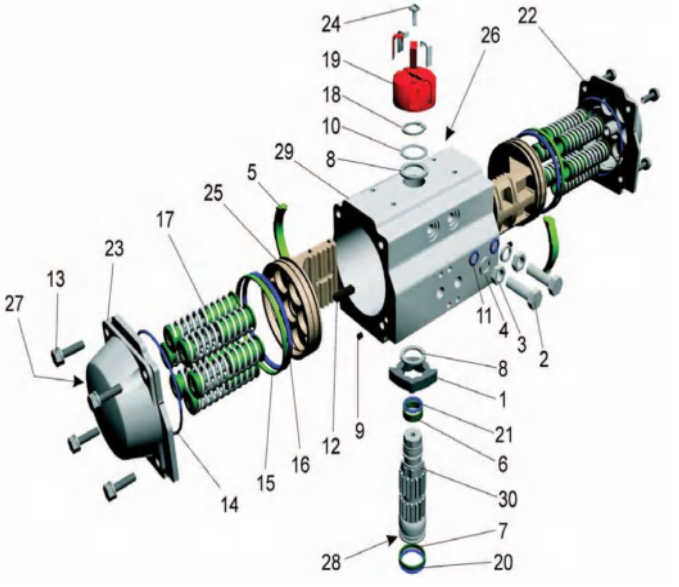
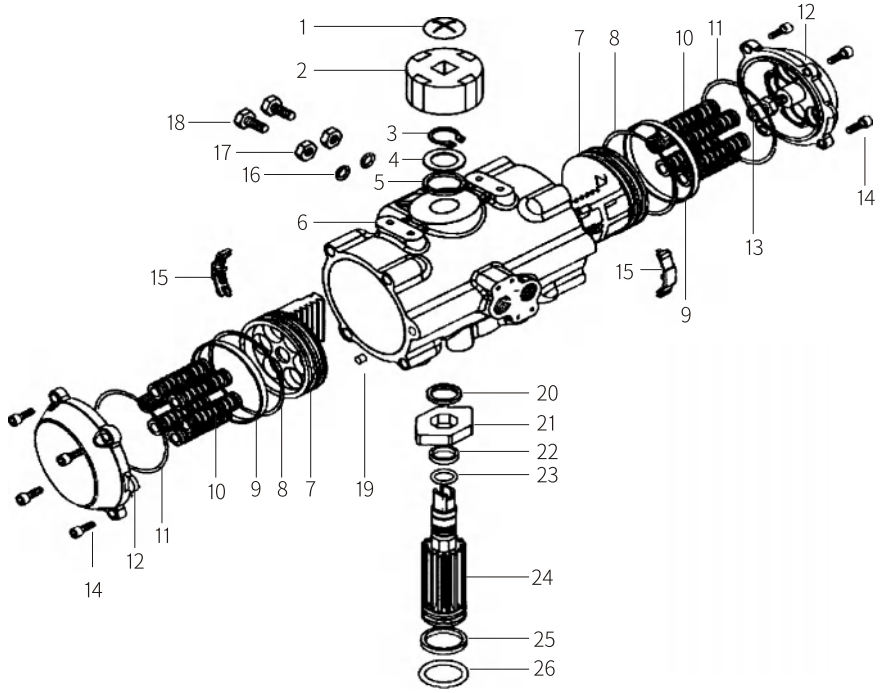


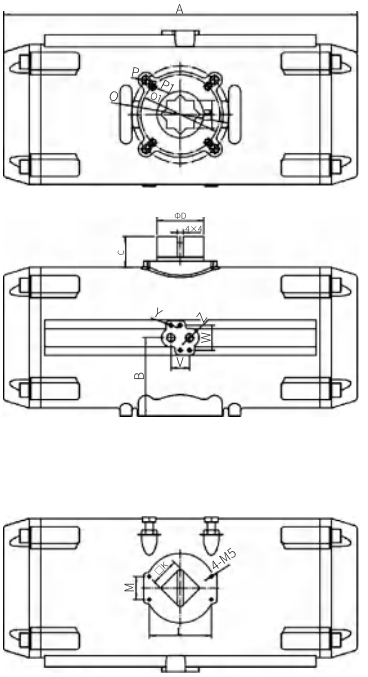
Fig. 9 Cross-sectional drawing

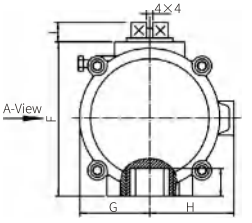
Structure drawing, Parts and material for Type PTS/D-SS (Body material: CF8/304SS)

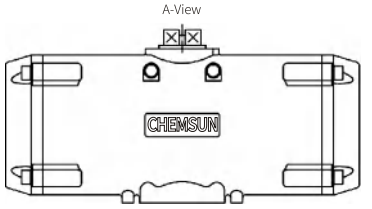


No.	Parts description	Qty.	Material
1	Indicator Scyew	1	Plastic
2	Indicator	1	Plastic
3	Snap Ring	1	Stainless steel
4	Washer	1	Stainless steel
5	Outside Washer	1	Engineering Plastics
6	Body	1	Stainless steel
7	Piston	2	Stainless steel
8	Piston O-ring	2	Viton/NBR
9	Piston Bearing	2	Engineering Plastics
10	Spring Spring Retainer(L,R) Retainer Connector	0-12	Spring Steel Nylon 66 Brass
11	End-Cap O-ring	2	Viton/NBR
12	End-Cap	2	Stainless steel
13	Guide Piston	2	Nylon 66
14	O-ring （Adjust screw）	2	NBR
15	Nut(Adjust screw)	2	Stainless steel
16	Adjust screw	2	Stainless steel
17	Plug	2	NBR
18	Inside Washer	1	Engineering Plastics
19	Cam	1	Stainless steel
20	Bearing Top	1	Engineering Plastics
21	O-ring(Top)	1	Viton/NBR
22	Pinion	1	Stainless steel
23	Bearing Bottom	1	Engineering Plastics
24	O-ring Bottom	1	Viton/NBR

Dimensions (mm) and weights (kgs) for Type PTS/D-SS (Body material: CF8/304SS)







ISO5211 / VDI / V DE 3845

Unit: mm

PTS/D (Body Al)	50	63	75	88	100	115	145	160	180	200	240	265	330	375	420
ISO flange	F04/05	F05/07	F05/07	F05/07	F07/10	F07/10	F10/12	F10/12	F14	F14	F16	F16	F16	F16	F16/25
A	146	173	184	204	270	302	394	456	528	568	660	740	798	880	950
B	36	44	50	54	66.5	77.5	86	99	115	127.5	146	165.5	177	206	232
C	20	20	20	20	20	20	20	20	30	30	30	30	30	30	30
D	40	40	40	40	40	56	56	65	80	80	80	115	115	115	115
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	72	88	100	108	133	155	172	198	227	257	291	330	354	408	464
G	30	36	44	48	50	58	69	75	86	101	115	126	144	161	180
H	49	57	61.5	65.5	87	98.5	104	120	149	154	179	201	211	234	259
I	14.5	14.5	14.5	14.5	14.5	24.5	24.5	24.5	24.5	44.5	44.5	44.5	44.5	44.5	44.5
Jmin	13	18	20	19	26	27	32	32	40	40	49	49	49	56	61
K	11	11	17	17	17	27	27	27	27	36	36	36	36	36	36
L	80	80	80	80	80	80	80	80	130	130	130	130	130	130	130
M	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
N	M5×4	M5×4	M5×4	M5×4	M5×4	M5×4	M5×4	M5×4	M5×4	M5×4	M5×4	M5×4	M5×4	M5×4	M5×4
V	24	24	24	24	24	24	24	24	24	24	24	40	40	40	40
W	32	32	32	32	32	32	32	32	32	32	32	45	45	45	45
Y	M5×8	M5×8	M5×8	M5×8	M5×8	M5×8	M5×8	M5×8	M5×8	M5×8	M5×8	M6×10	M6×10	M6×10	M6×10
Z	1/8"	1/8"	1/8"	1/8M	1/4"	1/4H	1/4"	1/4"	1/4"	1/4M	1/4"	1/2"	1/2"	1/2"	1/2"
O1	36	50	50	50	70	70	102	102	140	140	165	165	165	165	165
O	50	70	70	70	102	102	125	125	-	-	-	-	-	-	254
P1	4-M5	4-M6	4-M6	4-M6	4-M8	4-M8	4-M10	4-M10	4-M16	4-M16	4-M20	4-M20	4-M20	4-M20	8-M16
P	4-M6	4-M8	4-M8	4-M8	4-M10	4-M10	4-M12	4-M12	-	-	-	-	-	-	8-M20
□Q	11	14	14	17	22	22	27	27	36	36	46	46	46	46	55
PTS/W.(Kg)	2.5	3	5.5	7	9.5	14	19	27	35	46	65	94	149	215	422

CHEMSUN Pneumatic Actuators
PTS/D Series Rack & Pinion Actuator, Selection type table

CHEMSUN 气动执行器 型号：PT	S	180	90	S	F	10	AI
Acting type / 作用形式							
Single-acting / 单作用	S						
Double-acting / 双作用	D						
Actuator Diameter / 执行器大小							
050 / 063 / 075 / 088 / 100 / 115 / 125 / 145							
160 / 180 / 200 / 240 / 265 / 330 / 350 / 420							
Rotary angle / 执行器角行程							
90°			90				
120°			120				
180°			180				
Three position / 三位式执行器（具体角度位置下单时说明）			T				
Special angle（On request）			S				
Ambient temperature / 环境温度							
-20°C~+80°C				S			
-40°C~+70°C				L			
-15°C~+150°C				H			
Running direction / 运行方向							
Anticlockwise / 逆时针(FC)					F		
Clockwise / 顺时针（FO）					R		
Without / 无(双作用气缸)					N		
Spring quantity / 弹簧根数							
00 / 05 / 06 / 07 / 08 / 09 / 10 / 11 / 12							
Body material / 缸体材质							
Anodised Aluminium / 阳极氧化铝							Al
A351 CF8 / 铸不锈钢 304SS（ATEX Ex I M2）							SS

*** Specifications subject to change without notice, please focus on our infor in web./数据变更，不另行通知，请关注公司网站信息。