

T R U T O R Q

E - T Y P E A C T U A T O R S



Features and Benefits

TRUVISION INDICATOR

LOCAL VISUAL INDICATOR COMPATIBLE WITH FITTED NAMUR SWITCHBOX AND POSITIONERS OR AS A PUCK FOR PROXIMITY SENSORS. (OPTIONAL EXTRA)

TWIN GUIDE BARS

UNIQUE TWIN GUIDE BAR ABSORBS ADVERSE SIDE LOADING FROM RACK AT THE START OF EACH STROKE AND MAINTAINS EVEN ENGAGEMENT BETWEEN RACK & PINION FOR SMOOTH OPERATION

BACK UP BEARING

INCREASES LIFE SPAN OF THE PISTON 'O' SEAL AND IMPROVES "REDUCES" FRICTION TRAVEL. PAT.# 6, 173, 965

DRIVESHAFT & CAM

THE SHAFT AND ADJUSTMENT CAM ARE MACHINED FROM SOLID BAR MATERIAL. THE CAM MECHANISM ALLOWS FOR 2.5 DEG. OVERTRAVEL IN BOTH DIRECTIONS. THE INNER DEPTH OF THE DRIVESHAFT ALLOWS FOR TOTAL ENGAGEMENT OF ANY VALVE SHAFT HEIGHT FOR DIRECT MOUNT. PAT.APP# 10, 126, 064

BODY ADAPTOR KIT & STOP ADJUSTMENTS

RECESSED INTO THE ACTUATOR'S MAIN BODY, THE "B.A.K." IS DRILLED IN ACCORDANCE TO DIN/ISO STANDARDS OR VALVE TOPWORKS PCD, FOR DIRECT MOUNTING OPTIONS. PAT.APP# 10, 126, 001 THE "B.A.K." IS ALSO FITTED WITH OUR UNIQUE OPEN & CLOSED STOP END ADJUSTMENT AND LOCKING SCREWS. THIS BEING EXTERNAL TO ACTUATOR PRESSURE COMPLIES TO FUTURE P.E.D. DIRECTIVES PAT.#. 6, 446, 539 PAT.APP# 10, 125, 990/# 10, 126, 062 #10, 126, 066/# 10, 126, 084

TRIPLE SHAFT BEARINGS

ELIMINATES METAL TO METAL CONTACT AND ABSORBS THE IMPACT LOAD ON THE STOP CAM DRIVE MECHANISM.

PISTON WEAR PADS

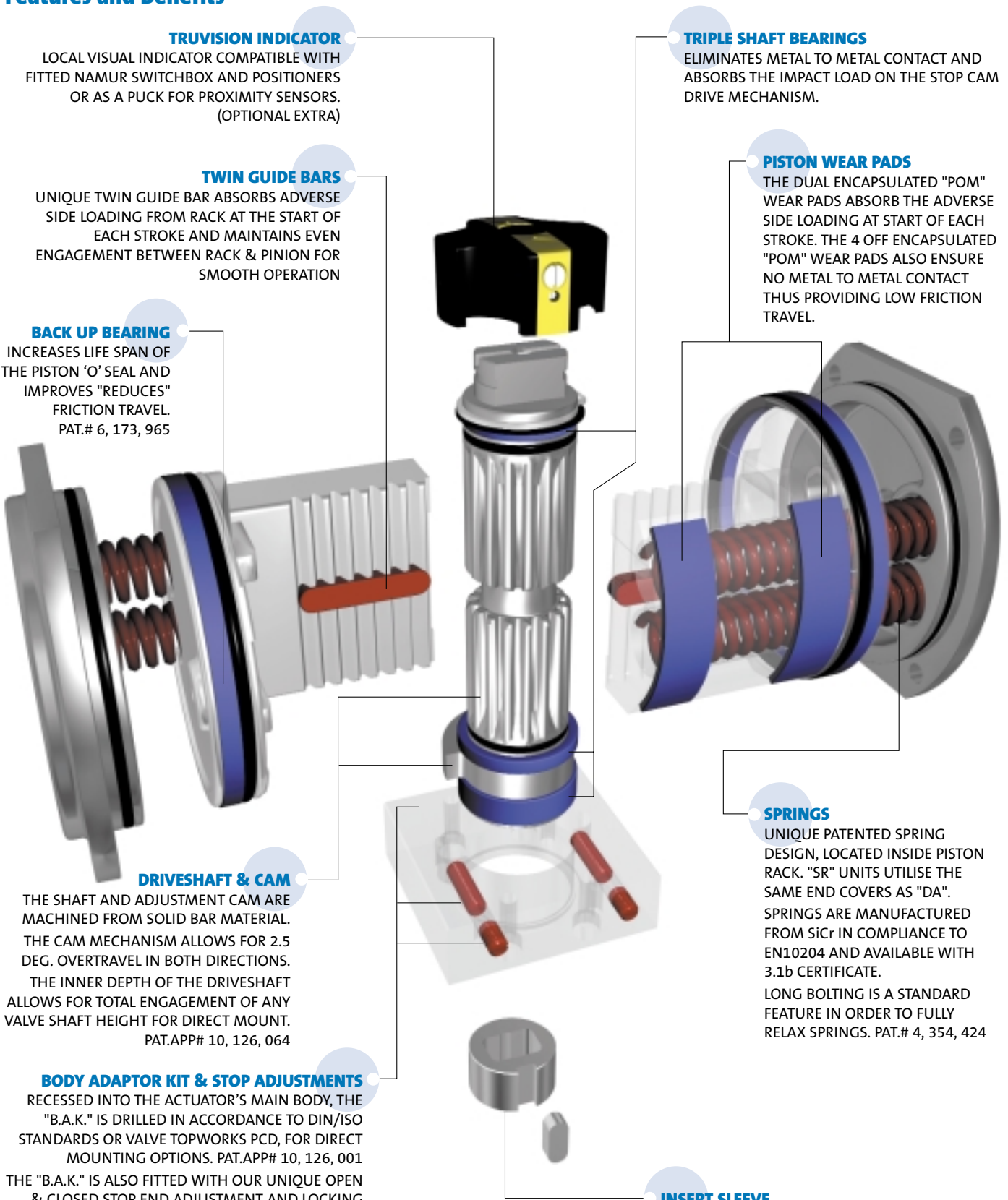
THE DUAL ENCAPSULATED "POM" WEAR PADS ABSORB THE ADVERSE SIDE LOADING AT START OF EACH STROKE. THE 4 OFF ENCAPSULATED "POM" WEAR PADS ALSO ENSURE NO METAL TO METAL CONTACT THUS PROVIDING LOW FRICTION TRAVEL.

SPRINGS

UNIQUE PATENTED SPRING DESIGN, LOCATED INSIDE PISTON RACK. "SR" UNITS UTILISE THE SAME END COVERS AS "DA". SPRINGS ARE MANUFACTURED FROM SiCr IN COMPLIANCE TO EN10204 AND AVAILABLE WITH 3.1b CERTIFICATE. LONG BOLTING IS A STANDARD FEATURE IN ORDER TO FULLY RELAX SPRINGS. PAT.# 4, 354, 424

INSERT SLEEVE

MANUFACTURED FROM STAINLESS STEEL BAR, IT CAN BE ROTATED FOR CROSS & PARALLEL MOUNTING AND SUIT MOST VALVE SHAFTS. THE INSERT IS HELD INSIDE THE DRIVESHAFT BY MEANS OF A CIRCLIP.



Basic Operating Details

TDA = Double Acting

Port 'A' = Air To Open (Anti-Clockwise)

Port 'B' = Air To Close (Clockwise)

TSR = Spring Return

Port 'A' = Air To Open (Anti-Clockwise compressing springs)

Port 'B' = Spring To Close (Clockwise)

Fail Safe Open = Rotate Pistons 180° About Own Axis

Drive Medium = Air (Dry or Lubricated); Non Corrosive Gas;
Light Hydraulic Oil

Temperature = Buna Nitrile 'O' Seals
-40 to +100°C or -40 to +212°F

Viton 'O' Seals
-25 to +250°C or -13 to +482°F

Maximum Operating Time Per Second (5.5 barg/80 psig)

Actuator Size	8	12	20	35	55	70	100	150
DA open	<1	1.5	2	2.5	3.5	4	4.5	5
DA close	<1	1.5	2	2.5	3.5	4	4.5	5
SR open	<1	1.5	2	2.5	3.5	4	5.5	7
SR close	<1	1	1.5	2	3	3	3	4

Air Consumption per Stroke

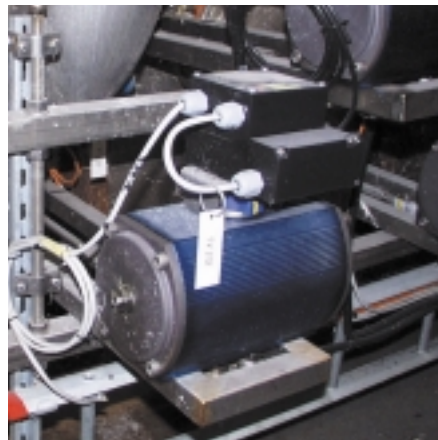
Actuator Size	8	12	20	35	55	70	100	150
Port 'A' to open (liters)	0.34	0.49	0.90	1.69	2.80	3.05	5.52	7.60
Port 'B' to close (liters)	0.41	0.64	1.00	1.90	3.40	3.70	5.90	9.60
Port 'A' to open (cubic inch)	20.75	29.90	54.92	103.13	170.87	186.12	336.85	463.78
Port 'B' to close (cubic inch)	25.02	39.06	61.02	115.95	207.48	225.79	360.04	585.83

Overall Actuator Weight

Actuator Size	8	12	20	35	55	70	100	150
DA Kilograms	3.1	4.5	6.9	11.5	20.0	22.4	31.2	44.4
SR Kilograms	3.4	5.2	7.7	13.2	22.7	26.5	35.8	52.8
DA pounds	6.8	9.9	15.2	25.3	44.0	49.3	68.6	97.7
SR pounds	7.5	11.4	16.9	29.0	49.9	58.3	78.8	116.2

Minimum Recommended Solenoid Valve Cv

Actuator Size	8	12	20	35	55	70	100	150
Solenoid Cv	0.5	0.5	0.5	0.5	0.8	0.8	1.1	1.1





Torques DA (Double acting)

Pound Inches

Actuator Model	Air Supply - psi						
	40	50	60	70	80	90	100
TDA 8	365	456	548	639	730	821	913
TDA 12	497	621	746	870	994	1118	1243
TDA 20	819	1024	1229	1433	1638	1843	2048
TDA 35	1518	1897	2276	2656	3035	3414	3794
TDA 55	2371	2964	3557	4149	4742	5335	5928
TDA 70	3345	4181	5017	5853	6689	7525	8361
TDA 100	4553	5691	6829	7967	9105	10243	11381
TDA 150	6713	8391	10069	11747	13425	15103	16781

Torques - Spring Return (In/lbs)

Actuator Model	Spring Quantity		Spring Stroke in.lbs		Actuator Air Stroke							
					60psi		70psi		80psi		90psi	
	Outer	Inner	Start	End	Start	End	Start	End	Start	End	Start	End
TSR 8	4	0	340	187	361	208	452	299	543	390	634	481
	4	2	425	234			405	214	496	305	588	396
	4	3	467	257					473	263	564	354
	4	4	510	280					450	220	541	311
TSR 12	4	0	464	255	491	282	615	406	739	530	863	654
	4	2	580	319			551	290	675	414	800	539
	4	3	638	350					644	356	768	481
	4	4	696	382					612	298	736	423
TSR 20	4	0	768	422	806	460	1011	665	1216	870	1420	1074
	4	2	960	528			905	473	1110	678	1315	882
	4	3	1056	581					1057	582	1262	786
	4	4	1152	634					1004	486	1209	690
TSR 35	4	0	1423	783	1493	853	1873	1232	2252	1612	2632	1991
	4	2	1779	978			1677	877	2057	1256	2436	1635
	4	3	1957	1076					1959	1078	2338	1457
	4	4	2135	1174					1861	900	2240	1280
TSR 55	4	0	2269	1248	2309	1287	2901	1880	3494	2473	4087	3065
	4	2	2837	1560			2589	1313	3182	1905	3775	2498
	4	3	3120	1716					3026	1622	3619	2214
	4	4	3404	1872					2870	1338	3463	1931
TSR 70	4	0	3133	1723	3294	1883	4130	2720	4966	3556	5802	4392
	4	2	3917	2154			3699	1936	4535	2772	5371	3609
	4	3	4308	2369					4320	2381	5156	3217
	4	4	4700	2585					4104	1989	4940	2825
TSR 100	4	0	4266	2346	4483	2563	5621	3701	6759	4839	7897	5977
	4	2	5333	2933			5034	2634	6172	3772	7310	4910
	4	3	5866	3226					5879	3239	7017	4377
	4	4	6399	3520					5585	2706	6724	3844
TSR 150	4	0	6291	3460	6609	3777	8287	5456	9965	7134	11643	8812
	4	2	7864	4325			7422	3883	9100	5561	10778	7239
	4	3	8651	4758					8667	4774	10345	6453
	4	4	9437	5190					8235	3988	9913	5666

Torques DA (Double acting)

Newton Meters

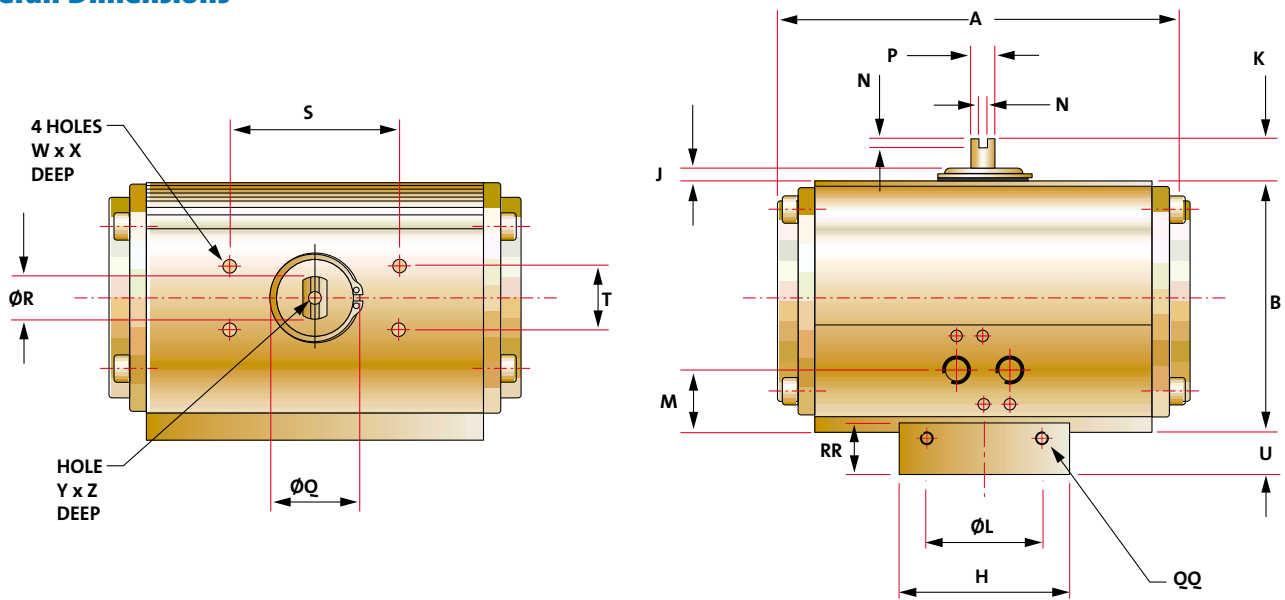
Actuator Model	Air Supply - bar						
	2	3	4	5	5.5	6	7
TDA 8	30.0	45.0	60.0	75.0	82.5	90.0	105.0
TDA 12	40.8	61.3	81.7	102.1	112.3	122.5	142.9
TDA 20	67.3	101.0	134.6	168.3	185.1	201.9	235.6
TDA 35	124.7	187.0	249.4	311.7	342.9	374.1	436.4
TDA 55	194.8	292.3	389.7	487.1	535.8	584.5	681.9
TDA 70	275	412	550	687	756	824	962
TDA 100	374	561	748	935	1029	1122	1309
TDA 150	552	827	1103	1379	1517	1655	1931

Torques - Spring Return (Nm)

Actuator Model	Spring Quantity		Spring Stroke in.lbs		Actuator Air Stroke							
					4 BAR		5 BAR		5.5 BAR		6 BAR	
	Outer	Inner	Start	End	Start	End	Start	End	Start	End	Start	End
TSR 8	4	0	38.4	21.1	38.9	21.6	53.9	36.6	61.4	44.1	68.9	51.6
	4	2	48.0	26.4			48.6	27.0	56.1	34.5	63.6	42.0
	4	3	52.8	29.0			46.0	22.2	53.5	29.7	61.0	37.2
	4	4	57.6	31.7					50.8	24.9	58.3	32.4
TSR 12	4	0	52.4	28.8	52.9	29.3	73.3	49.7	83.5	59.9	93.7	70.1
	4	2	65.5	36.0			66.1	36.6	76.3	46.8	86.5	57.0
	4	3	72.1	39.6			62.5	30.0	72.7	40.3	82.9	50.5
	4	4	78.6	43.2					69.1	33.7	79.3	43.9
TSR 20	4	0	86.8	47.7	86.9	47.8	120.6	81.5	137.4	98.3	154.2	115.1
	4	2	108.5	59.7			108.6	59.8	125.4	76.6	142.3	93.4
	4	3	119.4	65.6			102.6	48.9	119.5	65.8	136.3	82.6
	4	4	130.2	71.6					113.5	54.9	130.3	71.7
TSR 35	4	0	160.8	88.4	161.0	88.7	223.4	151.0	254.6	182.2	285.7	213.4
	4	2	201.0	110.5			201.3	110.8	232.5	142.0	263.6	173.2
	4	3	221.1	121.6			190.2	90.7	221.4	121.9	252.6	153.1
	4	4	241.2	132.6					210.4	101.8	241.5	133.0
TSR 55	4	0	256	141	257	141	356	241	406	291	456	340
	4	2	321	176			321	177	371	227	420	276
	4	3	353	194			303	145	353	194	403	244
	4	4	385	212					335	162	385	212
TSR 70	4	0	354	195	355	196	493	333	561	402	630	471
	4	2	443	243			444	245	513	314	581	382
	4	3	487	268			420	201	488	269	557	338
	4	4	531	292					464	225	533	294
TSR 100	4	0	482	265	483	266	670	453	764	547	857	640
	4	2	603	331			604	333	697	426	791	520
	4	3	663	365			571	272	664	366	758	459
	4	4	723	398					631	306	725	399
TSR 150	4	0	711	391	712	392	988	668	1126	806	1264	944
	4	2	889	489			890	491	1028	629	1166	766
	4	3	977	538			842	402	979	540	1117	678
	4	4	1066	586					931	451	1069	589



Overall Dimensions



Overall Dimensions (Metric)

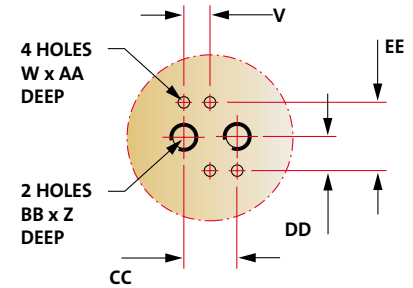
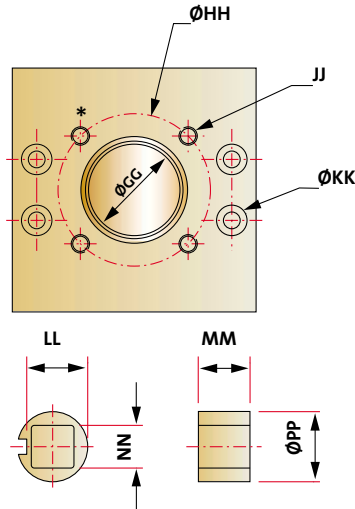
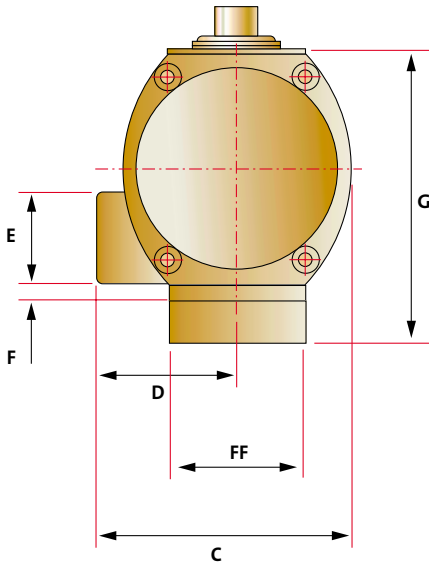
	F Size	A	B	C	D	E	F	G	H	J	K	ØL	M	N	P	ØQ	ØR	S	T	U
TT 8	F05	162.0	109.0	105.0	57.0	42.0	7.5	127.0	80.0	5.0	20.0	35.0	27.0	4.0	11.5	35.0	20.0	80.0	30.0	20.0
TT 8	F07	162.0	109.0	105.0	57.0	42.0	7.5	127.0	80.0	5.0	20.0	35.0	27.0	4.0	11.5	35.0	20.0	80.0	30.0	20.0
TT 12	F05	194.0	118.5	121.0	67.0	43.0	8.0	138.5	80.0	5.5	20.0	35.0	29.5	4.0	11.5	46.0	20.0	80.0	30.0	20.0
TT 12	F07	194.0	118.5	121.0	67.0	43.0	8.0	138.5	80.0	5.5	20.0	35.0	29.5	4.0	11.5	46.0	20.0	80.0	30.0	20.0
TT 20	F07	218.0	140.5	136.5	72.0	43.0	8.0	164.5	90.0	6.5	20.0	55.0	29.5	4.0	19.0	50.0	32.0	80.0	30.0	24.0
TT 35	F07	266.0	166.5	156.0	78.0	43.0	8.5	198.7	120.0	7.0	30.0	55.0	30.0	4.0	19.0	61.0	32.0	80.0	30.0	30.0
TT 35	F10	266.0	166.5	156.0	78.0	43.0	8.5	198.7	120.0	7.0	30.0	55.0	30.0	4.0	19.0	61.0	32.0	80.0	30.0	30.0
TT 55	F10	312.0	207.5	191.0	95.5	43.0	20.5	242.5	140.0	7.5	30.0	85.0	42.0	4.0	25.4	61.0	40.0	130.0	30.0	35.0
TT 55	F12	312.0	207.5	191.0	95.5	43.0	20.5	242.5	140.0	7.5	30.0	85.0	42.0	4.0	25.4	61.0	40.0	130.0	30.0	35.0
TT 70	F10	340.0	207.5	191.0	95.5	43.0	20.5	243.6	140.0	7.0	30.0	85.0	42.0	4.0	25.4	72.0	40.0	130.0	30.0	36.1
TT 70	F12	340.0	207.5	191.0	95.5	43.0	20.5	243.6	140.0	7.0	30.0	85.0	42.0	4.0	25.4	72.0	40.0	130.0	30.0	36.1
TT 100	F14	361.0	250.0	227.0	113.5	43.0	39.5	300.8	160.0	7.0	30.0	100.1	61.0	4.0	25.4	78.0	40.0	130.0	30.0	50.8
TT 150	F14	390.0	300.0	280.0	140.0	43.0	56.5	349.0	160.0	7.0	30.0	100.1	78.0	4.0	25.4	78.0	40.0	130.0	30.0	49.0

Overall Dimensions (Imperial)

	F Size	A	B	C	D	E	F	G	H	J	K	ØL	M	N	P	ØQ	ØR	S	T	U
TT 8	F05	6.38	4.29	4.13	2.24	1.65	0.30	5.00	3.15	0.20	0.79	1.38	1.06	0.16	0.45	0.79	0.79	3.15	1.18	0.79
TT 8	F07	6.38	4.29	4.13	2.24	1.65	0.30	5.00	3.15	0.20	0.79	1.38	1.06	0.16	0.45	0.79	0.79	3.15	1.18	0.79
TT 12	F05	7.64	4.67	4.67	2.64	1.69	0.31	5.45	3.15	0.22	0.79	1.38	1.16	0.16	0.45	0.79	0.79	3.15	1.18	0.79
TT 12	F07	7.64	4.67	4.67	2.64	1.69	0.31	5.45	3.15	0.22	0.79	1.38	1.16	0.16	0.45	0.79	0.79	3.15	1.18	0.79
TT 20	F07	8.58	5.53	5.37	2.83	1.69	0.31	6.48	3.54	0.26	0.79	2.17	1.16	0.16	0.75	1.26	1.26	3.15	1.18	0.94
TT 35	F07	10.47	6.56	6.14	3.07	1.69	0.33	7.82	4.72	0.28	1.18	2.17	1.18	0.16	0.75	1.26	1.26	3.15	1.18	1.18
TT 35	F10	10.47	6.56	6.14	3.07	1.69	0.33	7.82	4.72	0.28	1.18	2.17	1.18	0.16	0.75	1.26	1.26	3.15	1.18	1.18
TT 55	F10	12.28	6.56	7.52	3.76	1.69	0.81	9.55	5.51	0.30	1.18	3.35	1.65	0.16	1.00	1.57	1.57	5.12	1.18	1.38
TT 55	F12	12.28	6.56	7.52	3.76	1.69	0.81	9.55	5.51	0.30	1.18	3.35	1.65	0.16	1.00	1.57	1.57	5.12	1.18	1.38
TT 70	F10	13.39	8.17	7.52	3.76	1.69	0.81	10.59	5.51	0.28	1.18	3.35	1.65	0.16	1.00	2.83	1.57	5.12	1.18	1.42
TT 70	F12	13.39	8.17	7.52	3.76	1.69	0.81	10.59	5.51	0.28	1.18	3.35	1.65	0.16	1.00	2.83	1.57	5.12	1.18	1.42
TT 100	F14	14.21	9.84	8.94	4.47	1.69	1.56	11.84	6.30	0.28	1.18	3.94	2.40	0.16	1.00	3.07	1.57	5.12	1.18	2.00
TT 150	F14	15.35	11.81	11.02	5.51	1.69	2.22	13.74	6.30	0.28	1.18	3.94	3.07	0.16	1.00	3.07	1.57	5.12	1.18	1.93

BODY ADAPTOR & SLEEVE

SOLENOID MOUNTING

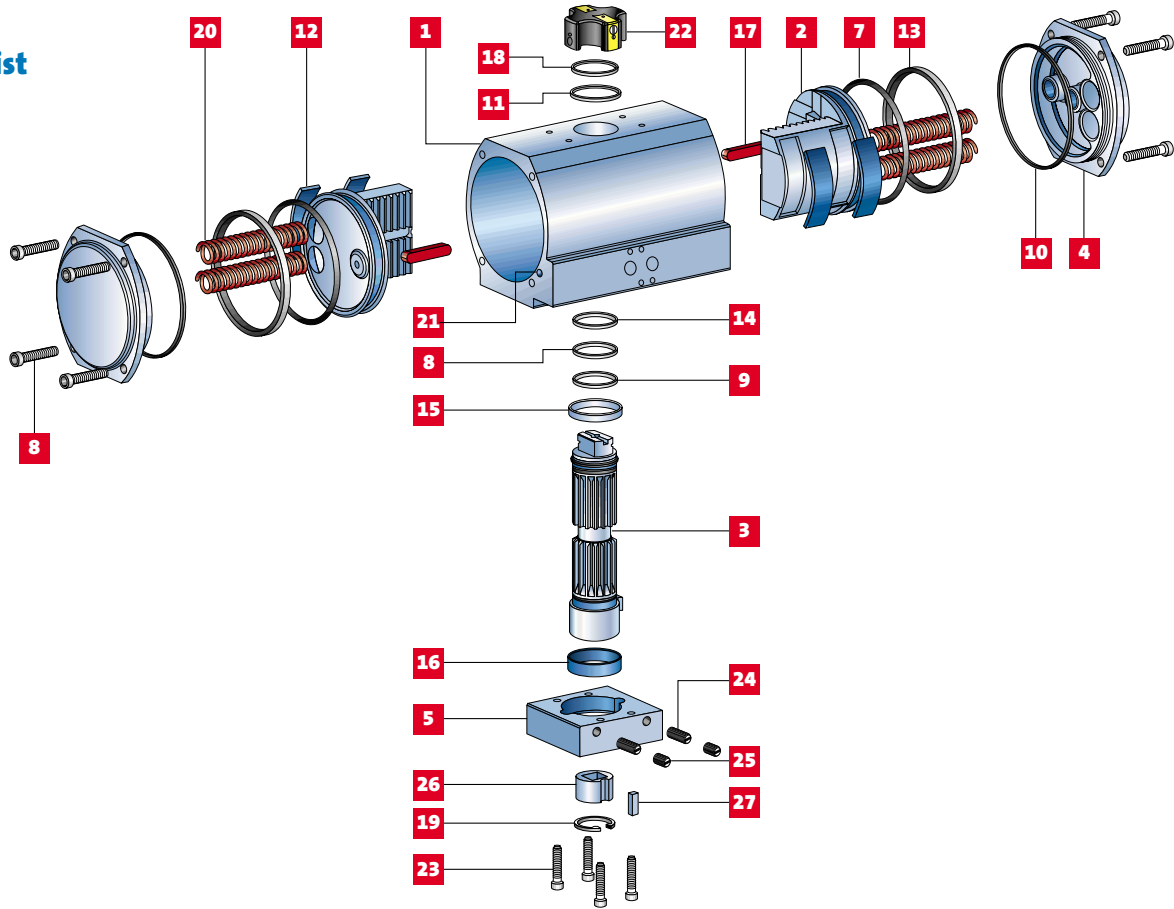


*NOTE:
CERTAIN BAK'S ARE DUAL DRILLED. PLEASE REFER TO BAK DIMENSIONAL DATASHEETS FOR DETAILED INFORMATION.

	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF	ØGG	ØHH	JJ	ØKK	LL	MM	NN	ØPP	QQ	RR
TT 8	12.0	M5	5.0	M6	12.0	8.0	G1/8"	24.0	16.0	32.0	79.9	30.0	50.0	M6	5.5	20.0	17.0	14.0	23.0	M5	22.0
TT 8	12.0	M5	5.0	M6	12.0	8.0	G1/8"	24.0	16.0	32.0	79.9	47.0	70.0	M8	5.5	29.5	17.0	17.0	33.0	M6	24.0
TT 12	12.0	M5	5.0	M6	12.0	8.0	G1/4"	24.0	16.0	32.0	79.9	30.0	50.0	M6	5.5	20.0	17.0	14.0	23.0	M5	22.0
TT 12	12.0	M5	5.0	M6	12.0	8.0	G1/4"	24.0	16.0	32.0	79.9	47.0	70.0	M8	5.5	29.5	17.0	17.0	33.0	M6	24.0
TT 20	12.0	M5	5.0	M6	12.0	8.0	G1/4"	24.0	16.0	32.0	89.9	46.0	70.0	M8	6.6	29.5	20.0	17.0	33.0	M8	28.0
TT 35	12.0	M5	5.0	M6	12.0	8.0	G1/4"	24.0	16.0	32.0	119.9	46.0	70.0	M8	9.0	29.5	20.0	17.0	33.0	M10	34.0
TT 35	12.0	M5	5.0	M6	12.0	8.0	G1/4"	24.0	16.0	32.0	119.9	61.0	70.0	M10	9.0	39.0	25.0	22.0	44.0	M10	34.0
TT 55	12.0	M5	5.0	M6	12.0	8.0	G1/4"	24.0	16.0	32.0	139.9	61.0	102.0	M10	11.0	39.0	25.0	22.0	44.0	M10	40.0
TT 55	12.0	M5	5.0	M6	12.0	8.0	G1/4"	24.0	16.0	32.0	139.9	75.0	125.0	M12	11.0	50.0	25.0	27.0	55.0	M10	40.0
TT 70	12.0	M5	5.0	M6	12.0	8.0	G1/4"	24.0	16.0	32.0	139.9	61.0	102.0	M10	11.0	39.0	25.0	22.0	44.0	M10	40.0
TT 70	12.0	M5	5.0	M6	12.0	8.0	G1/4"	24.0	16.0	32.0	139.9	75.0	125.0	M12	11.0	50.0	25.0	27.0	55.0	M10	40.0
TT 100	12.0	M5	5.0	M6	12.0	8.0	G1/4"	24.0	16.0	32.0	159.9	88.0	140.0	M16	14.0	62.5	35.0	36.0	68.0	M14	57.0
TT 150	12.0	M5	5.0	M6	12.0	8.0	G1/4"	24.0	16.0	32.0	159.9	88.0	140.0	M16	14.0	62.5	35.0	36.0	68.0	M14	57.0

	V	W _(unf)	X	Y	Z	AA	BB	CC	DD	EE	FF	ØGG	ØHH	JJ _(unc)	ØKK	LL	MM	NN	ØPP	QQ	RR
TT 8	0.47	10-32	0.20	M6	0.50	0.31	NPT 1/8	0.94	0.63	1.26	3.14	1.18	1.97	1/4-20	0.22	0.80	0.67	0.55	0.90	M5	0.87
TT 8	0.47	10-32	0.20	M6	0.50	0.31	NPT 1/8	0.94	0.63	1.26	3.14	1.85	2.76	5/16-18	0.22	1.16	0.67	0.67	1.30	M6	0.94
TT 12	0.47	10-32	0.20	M6	0.50	0.31	NPT 1/4	0.94	0.63	1.26	3.14	1.18	1.97	1/4-20	0.22	0.80	0.67	0.55	0.90	M5	0.87
TT 12	0.47	10-32	0.20	M6	0.50	0.31	NPT 1/4	0.94	0.63	1.26	3.14	1.85	2.76	5/16-18	0.22	1.16	0.67	0.67	1.30	M6	0.94
TT 20	0.47	10-32	0.20	M6	0.50	0.31	NPT 1/4	0.94	0.63	1.26	3.54	1.81	2.76	5/16-18	0.26	1.16	0.79	0.67	1.30	M8	1.10
TT 35	0.47	10-32	0.20	M6	0.50	0.31	NPT 1/4	0.94	0.63	1.26	4.71	1.81	2.76	5/16-18	0.35	1.16	0.79	0.67	1.30	M10	1.34
TT 35	0.47	10-32	0.20	M6	0.50	0.31	NPT 1/4	0.94	0.63	1.26	4.71	2.40	4.02	3/8-16	0.35	1.54	0.98	0.87	1.73	M10	1.34
TT 55	0.47	10-32	0.20	M6	0.50	0.31	NPT 1/4	0.94	0.63	1.26	5.51	2.40	4.02	3/8-16	0.43	1.54	0.98	0.87	1.73	M10	1.57
TT 55	0.47	10-32	0.20	M6	0.50	0.31	NPT 1/4	0.94	0.63	1.26	5.51	2.95	4.92	1/2-13	0.43	1.97	0.98	1.06	2.16	M10	1.57
TT 70	0.47	10-32	0.20	M6	0.50	0.31	NPT 1/4	0.94	0.63	1.26	5.51	2.40	4.02	3/8-16	0.43	1.54	0.98	0.87	1.73	M10	1.57
TT 70	0.47	10-32	0.20	M6	0.50	0.31	NPT 1/4	0.94	0.63	1.26	5.51	2.95	4.92	1/2-13	0.43	1.97	0.98	1.06	2.16	M10	1.57
TT 100	0.47	10-32	0.20	M6	0.50	0.31	NPT 1/4	0.94	0.63	1.26	6.30	3.46	5.51	5/8-11	0.55	2.46	1.38	1.42	2.68	M14	2.24
TT 150	0.47	10-32	0.20	M6	0.50	0.31	NPT 1/4	0.94	0.63	1.26	6.30	3.46	5.51	5/8-11	0.55	2.46	1.38	1.42	2.68	M14	2.24

Parts List



Ref No	Description	Quantity	Material Std Unit	Material CNI® Unit	Comments
1	Cylinder	1	Alum. Anodized	Alum/CNI 530T	
2	Piston	2	Alum. Anodized	Alum/CNI 425	
3	Driveshaft	1	Steel	Stainless Steel	Option CNI 530T Shaft
4	Endcap	2	Alum. Anodized	Alum/CNI 530T	
5	Body Adaptor	1	Alum. Anodized	Alum/CNI 530T	
6	Endcap Bolt	8	Stainless Steel	Stainless Steel	
7*	Piston 'O' ring	2	Buna Nitrile	Buna Nitrile	Option Viton or Silicone
8*	Driveshaft upper 'O' ring	1	Buna Nitrile	Buna Nitrile	Option Viton or Silicone
9*	Driveshaft lower 'O' ring	1	Buna Nitrile	Buna Nitrile	Option Viton or Silicone
10*	Endcap 'O' ring	2	Buna Nitrile	Buna Nitrile	Option Viton or Silicone
11*	Washer	1	Polyethylene	Polyethylene	
12*	Wear Pads	4	POM Delrin	POM Delrin	
13*	Backup Bearing	2	POM Delrin	POM Delrin	
14*	Driveshaft Upper Bearing	1	POM Delrin	POM Delrin	
15*	Driveshaft Lower Bearing	1	POM Delrin	POM Delrin	
16*	Body Adaptor Bearing	1	POM Delrin	POM Delrin	
17*	Guide Bar	2	Steel	Stainless Steel	
18*	Circlip Upper	1	Steel	Stainless Steel	
19	Circlip Lower	1	Stainless Steel	Stainless Steel	
20	Spring	4	SiCr	SiCr	
21*	Ball Bearing	2	Composite	Composite	
22	TruVision Indicator	1	Nylon	Nylon	TruVision optional on Std unit
23	Body Adaptor Bolts	4	Stainless Steel	Stainless Steel	
24	Stop Adjustment Screws	2	High Tensile Steel	High Tensile Steel	Dacrolit Coated
25	Lock Screws	2	Steel	Steel	Dacrolit Coated
26	Insert Sleeve	1	Stainless Steel	Stainless Steel	
27	Insert Sleeve Key	1	Keysteel	Keysteel	

* Items marked with and asterisk are included in repair kit.

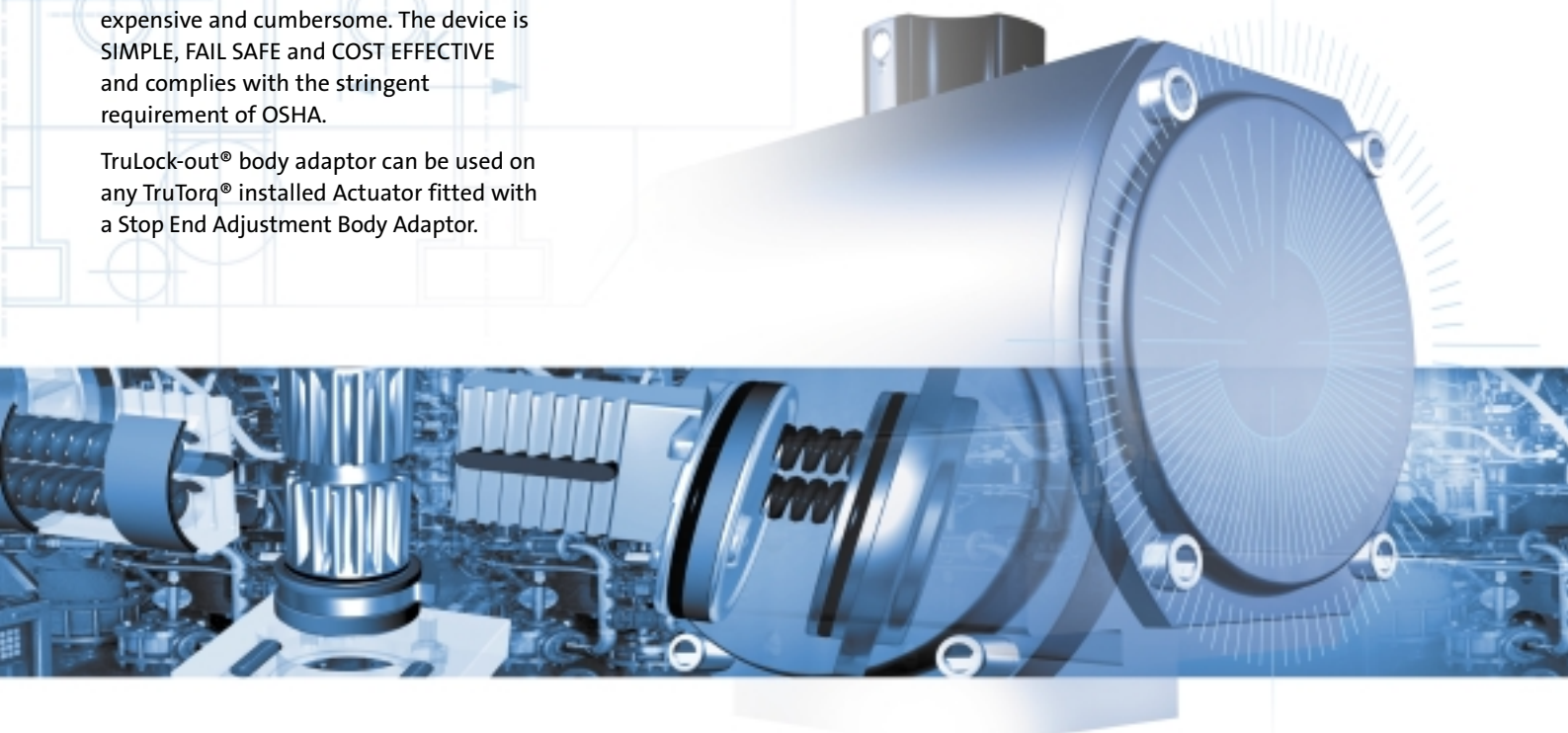
TruLock-Out® Device

to O.S.H.A. Standard 1910.147

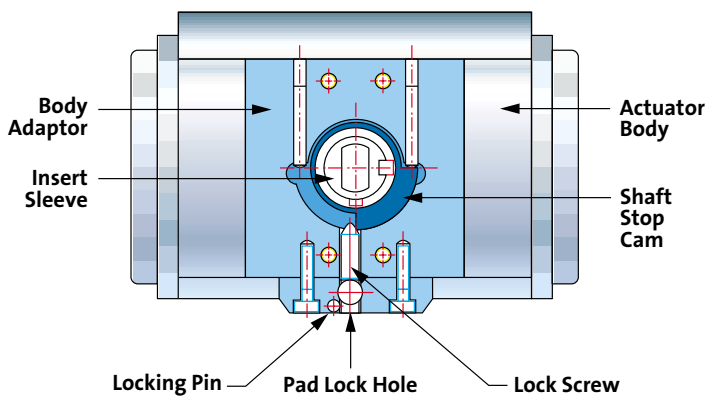
TruLock-out® is a system application designed to meet the stringent requirements for LockOut/TagOut by "OSHA" for the control of hazardous energy.

TruLock-out® device allows for the ability to simply "lock out – Pad Lock" Valve and Actuators from Flow Systems. Current lockout devices on the market are expensive and cumbersome. The device is SIMPLE, FAIL SAFE and COST EFFECTIVE and complies with the stringent requirement of OSHA.

TruLock-out® body adaptor can be used on any TruTorq® installed Actuator fitted with a Stop End Adjustment Body Adaptor.



Actuator viewed from below in Closed Position



Instructions for use

When the Actuator is in operating mode, the Lock Screw is pulled back from the lock position and locks against the Locking pin. The Pad Lock hole is engaged (closed). When Valve/Actuator is required to be in the Lock Mode, apply pressure to Valve closed position, the Lock Screw is then fully wound in and will lock the Stop Cam mechanism of the drive shaft in the closed position. The Lock Screw now fully wound in, opens the Pad Lock hole and allows for the pad lock to be inserted and ensures Valve will remain in closed position.

The Fail Safe systems is a guaranteed factory assembly, the Locking Pin being factory fitted ensures that the Lock Screw can only be set in one position, either in Operating Mode, Lock Screw "closed" Pad Lock hole or in Lock Mode, Lock Screw engaged in Actuator Drive Mechanism "Open" Pad Lock hole. PAT.APP# 09, 908, 025.

Body Adaptor Kit Assembly Instructions

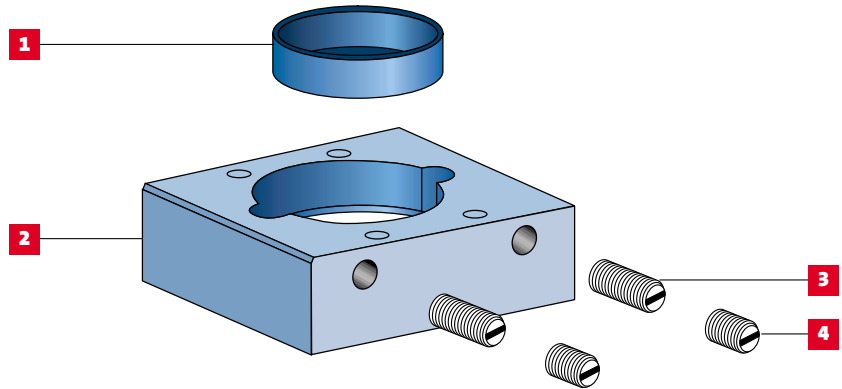
Body adaptor kit dis-assembly

Remove retainer circlip (7) to allow removal of insert sleeve (5) and insert key (6).

Remove 2 x lock screws (4) from body adaptor and partially unscrew 2 x stop screws (3).

Remove 4 x bolts (8) from body adaptor (2).

Gently remove body adaptor (2) ensuring stop adjustment bearing (1) is also removed and placed into body adaptor (2) after dis-assembly.



Adaptor kit assembly

Insert body adaptor bearing (1) into body adaptor (2) and apply a small amount of grease.

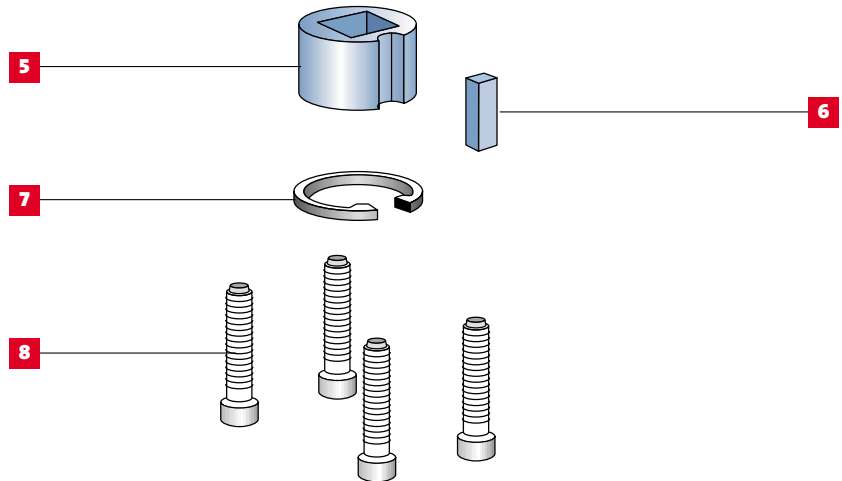
Place body adaptor (2) over driveshaft ensuring stop screw holes are facing the front of the actuator (same position as air inlet ports).

Insert 4 x body adaptor bolts (8) into body adaptor (2) and fasten.

Insert 2 x stop screws (3) and adjust to required position, then secure with 2 x lock screws (4).

Place insert sleeve (5) and key (6) ensuring it is in the correct orientation (in-line or cross mount).

Replace retainer circlip (7) to secure insert sleeve (5) and key (6).



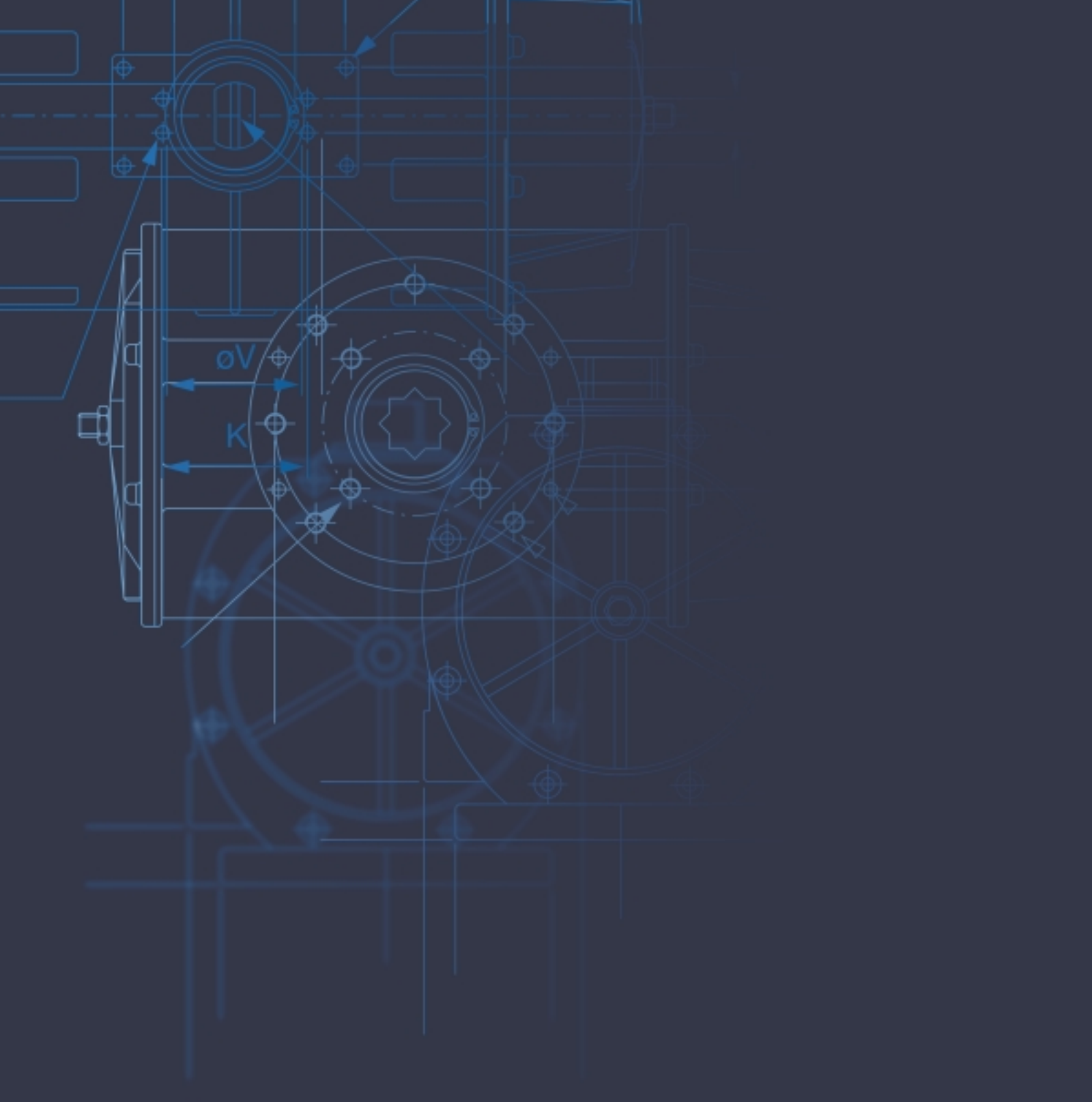
Stop Screw Turns Required from Screw being Flush with BAK

	8 F05	8 F07	12 F05	12 F07	20 F07	35 F07	35 F10	55 F10	55 F12	70 F10	70 F12	100/150 F14
0° Closed	12.50	11.00	10.00	10.00	11.60	10.00	10.00	13.30	13.30	13.30	13.30	16.00
90° Open	12.50	11.00	10.00	10.00	11.60	10.00	10.00	13.30	13.30	13.30	13.30	16.00
0-2.5° Adj.	1.13	1.20	1.20	1.20	0.96	1.06	1.06	1.25	1.25	1.25	1.25	1.22



TruLock-Out® Device

TruSet™



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The data presented in this brochure is for general information only. The manufacturer is not responsible for acceptability of these products in relation to system requirements. TruTorq Actuators reserves the right to change product design and specifications without notice.