

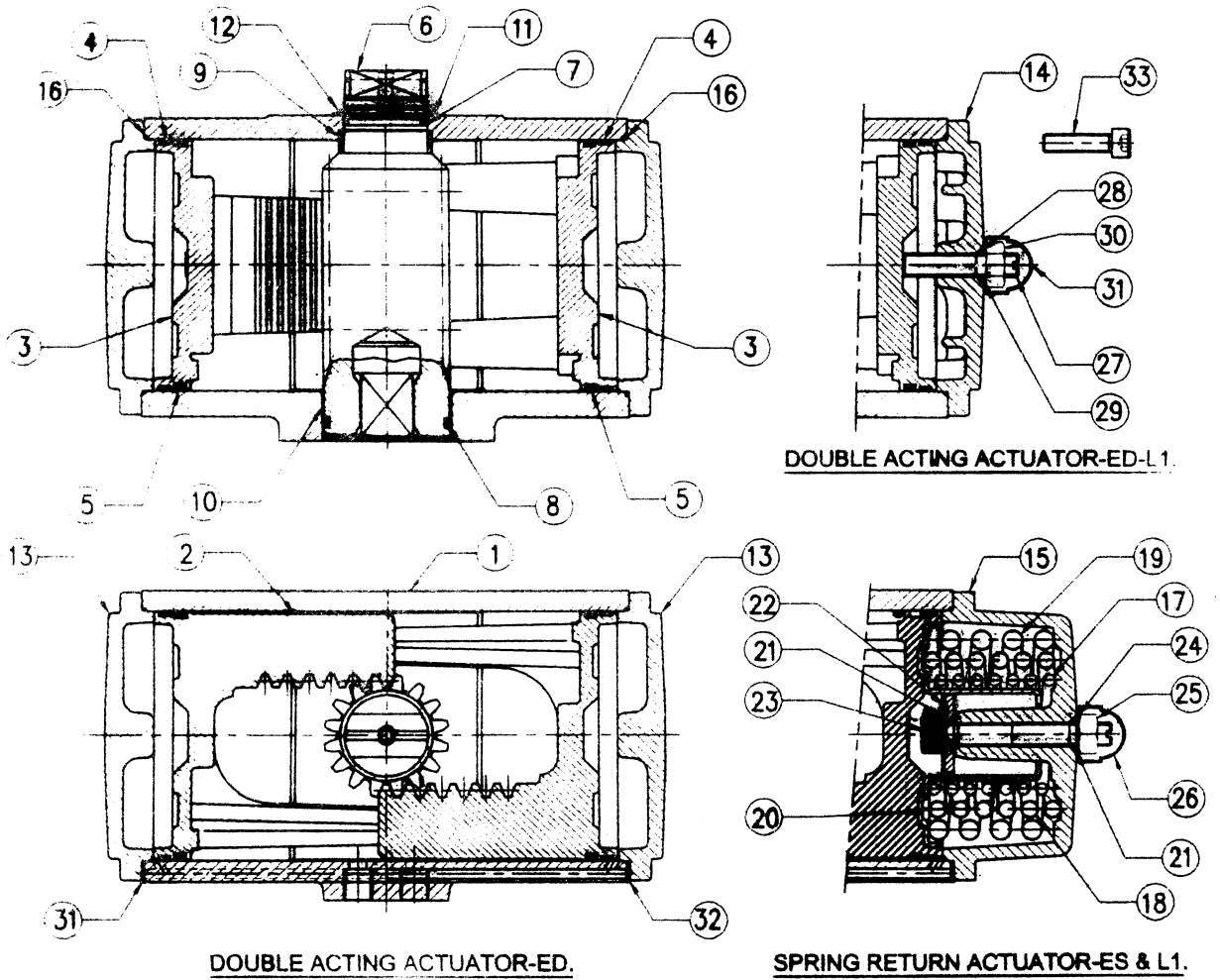
**CAUTION**

When spring return actuators are used in a highly corrosive atmosphere, or when installed in the open, there are chances of corrosive media or water entering during suction through the silencer / breather provided on the spring chamber port (Port 'B'). This may lead to corrosion to springs or excessive wear and early failure to piston sealing ring.

To avoid such problems customers are advised to use **BREATHER BLOCK**.

Breather block avoids suction of atmospheric air into spring chamber (Port 'B'). During spring stroke it allows air from centre chamber (Port 'A') to fill the spring chamber and then exhaust to atmosphere.

16. E SERIES : CONSTRUCTION, PARTS AND MATERIALS

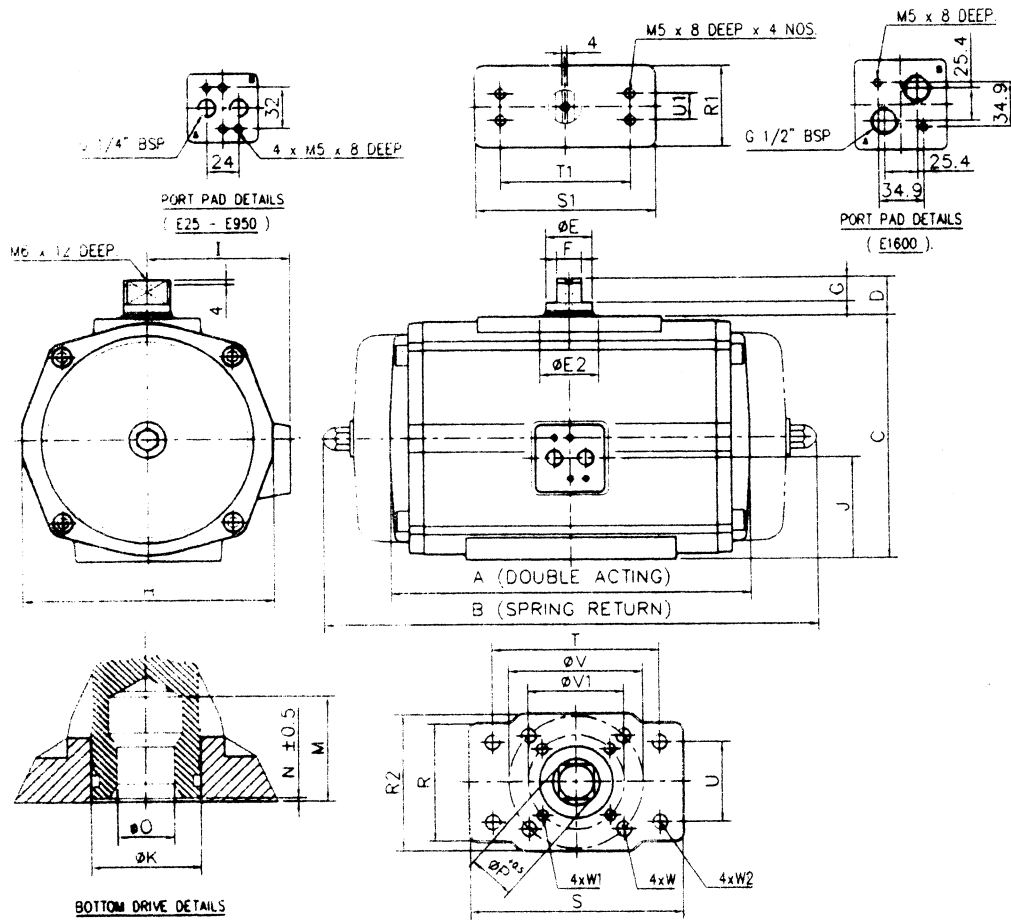


Nr.	Description	Qty.	Material
1	Body (Hsg.)	1	Aluminium Alloy
2	Guide Band (Hsg.)	1	Nyatron GS
3	Piston	2	Aluminium Alloy
4	Guide Band (Piston)	2	PTFE, Carbon Filled
5	O-ring, Piston	2	Nitrile Rubber
6	Drive Shaft	1	Steel
7	O-ring, Shaft, Top	1	Nitrile Rubber
8	O-ring, Shaft, Bottom	1	Nitrile Rubber
9	Bearing Bush, Top	1	Delrin
10	Bearing Band, Bottom	1	Nyatron GS
11	Washer	1	Delrin
12	Spring Clip	1	Steel
13	End Cap ED	2	Aluminium Alloy
14	End Cap ED L	2	Aluminium Alloy
15	End Cap ES	2	Aluminium Alloy
16	O-ring, Endcap	2	Nitrile Rubber

Nr.	Description	Qty.	Material
17	Spring, Inner	2	Steel
18	Spring, Middle	2	Steel
19	Spring, Outer	2	Steel
20	Spring Holder	2	Steel
21	O-ring, ES arrgt.	4	Nitrile Rubber
22	Washer ES (S. Holder)	2	Steel
23	Limit Stop Bolt ES	2	Stainless Steel
24	Washer ES	2	Nylon
25	Nut	2	Stainless Steel
26	Nut Cover (Plastic)	2	Polyethylene
27	Limit Stop Bolt ED	2	Stainless Steel
28	O-ring, ED L1	2	Nitrile Rubber
29	Washer ED L1	2	Nylon
30	Nut ED	2	Stainless Steel
31	Nut Cover ED	2	Plastic
32	O-ring, Passage	2	Nitrile Rubber

\* = Repair kit items

15. E SERIES - ACTUATOR DIMENSIONS

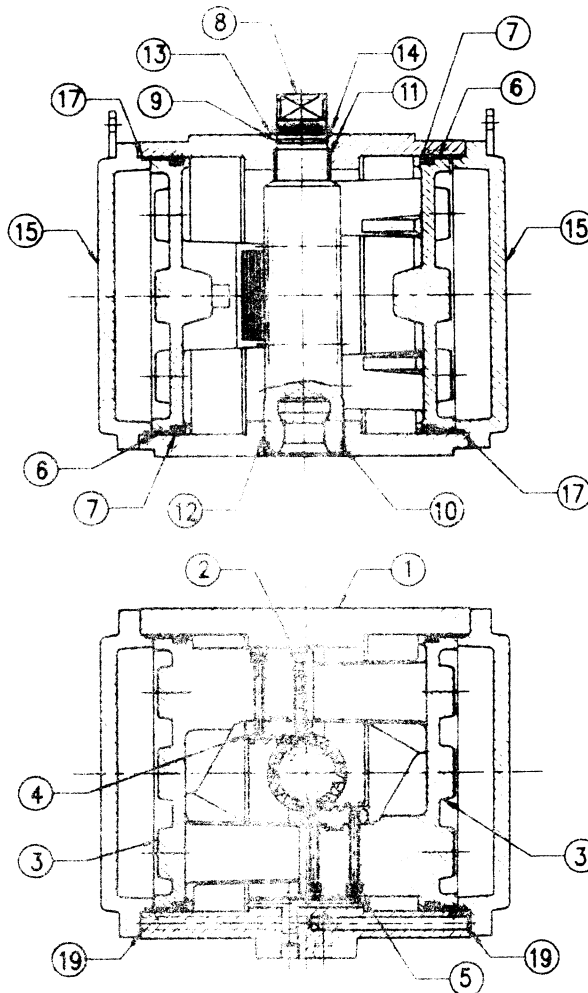


DIM	E25	E40	E100	E200	E350	E600	E950	E1600
A	135	147	176	237	305	335	370	450
B	178	204	267	360	387	420	460	570
C	80	94	118	143	181	220	259	297
D	20	20	20	20	20	30	30	30
ØE	16	22	22	36	36	55	55	64
ØE2	23	23	30	45	45	65	65	75
F	10	14	14	19	19	36	36	36
G	12	12	12	12	10	10	10	10
H	74	86	108	128	173	207	231	265
I	46	53	63	73	95	113	126	142
J	32	33.5	40.5	50.5	73	84.5	105.5	120.5
K	24	33	38	55	55	68	75	95
M	27	27	27	31	38	38	51	66
N	1.0	1.0	1.5	1.5	1.5	1.5	1.5	1.5
Omax	11.11	14.11	19.13	22.13	27.13	27.13	36.16	46.16
Omin.	11.00	14.00	19.00	22.00	27.00	27.00	36.00	46.00
ØP	14.1	18.1	25.2	28.2	36.2	36.2	48.2	60.2

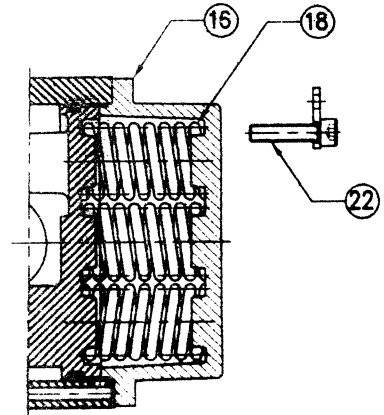
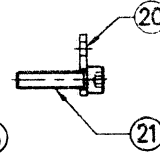
DIM	E25	E40	E100	E200	E350	E600	E950	E1600
R	52	65	70	90	114	124	130	132
R1	50	50	60	60	60	90	90	125
R2	-	-	-	-	-	-	-	154
S	52	65	70	90	114	124	142	280
S1	100	100	100	100	100	170	170	210
T	-	-	-	-	-	-	-	234.6
T1	80	80	80	80	80	130	130	130
U	-	-	-	-	-	-	-	97.2
U1	30	30	30	30	30	30	30	30
ØV	50	70	70	102	102	125	140	165
ØV1	-	50	50	70	70	102	102	-
W	M6 X9	M8 X10	M8 X10	M10 X12	M10 X16	M12 X20	M16 X20	M20 X25
W1	-	M6 X9	M6 X9	M8 X10	M8 X10	M10 X16	M10 X16	-
W2	-	-	-	-	-	-	-	M16 X25

NOTE : ALL DIMENSIONS IN mm.

14. P SERIES : CONSTRUCTION, PARTS AND MATERIALS



DOUBLE ACTING ACTUATOR-PD.



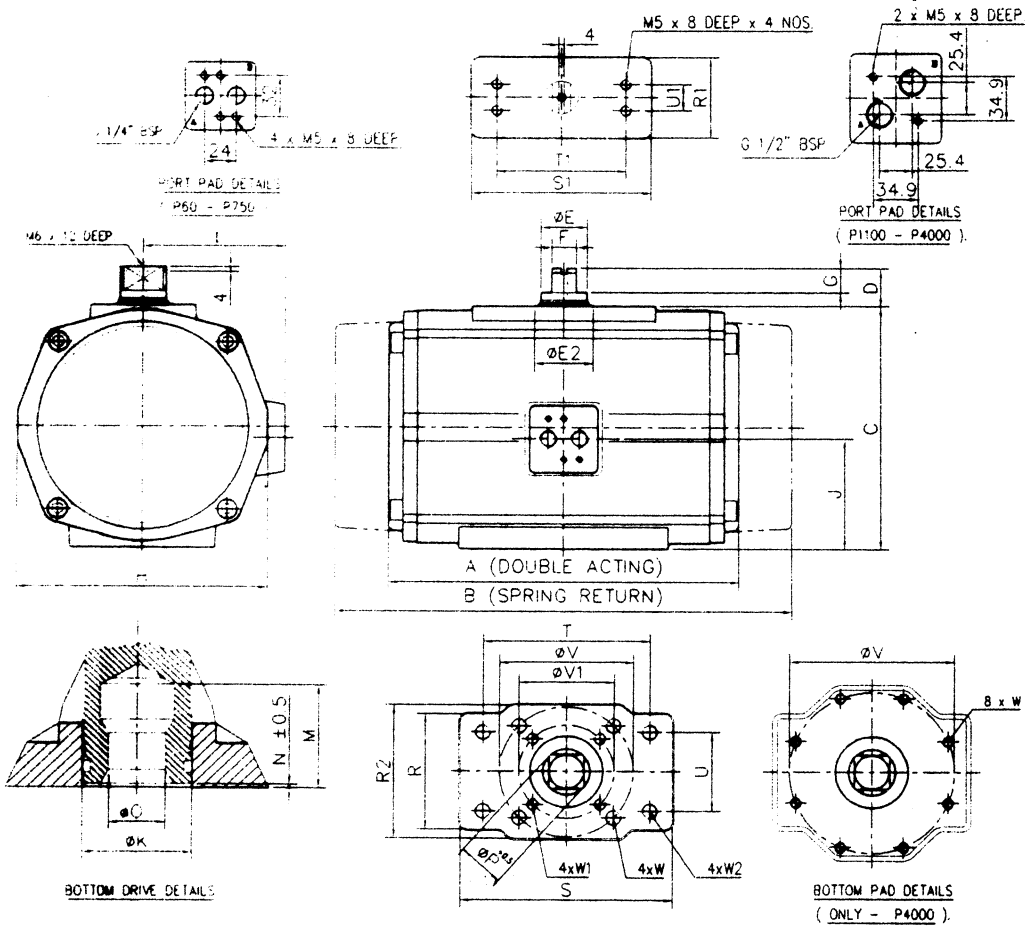
SPRING RETURN ACTUATOR-PE.

Nr.	Description	Qty.	Material
1	Body (Hsg.)	1	Aluminium Alloy
2	Guide Band (Hsg.)	2	PTFE, Carbon Filled
3	Piston	1	Aluminium Alloy
4	Gear Rack	1	Steel
5	Bolt Rack	2	HTS
6	Guide Band (Piston)	2	PTFE, Carbon Filled
7	O-ring, Piston	2	Nitrile Rubber
8	Drive Shaft	1	Steel
9	O-ring, Shaft Top	1	Nitrile Rubber
10	O-ring, Shaft Bottom	1	Nitrile Rubber
11	Bearing Bush	1	Delrin

Nr.	Description	Qty.	Material
12	Bearing Band	1	Nylatron GS
13	Thrust Washer	1	Delrin
14	Spring Clip	1	Spring Steel
15	End Cap PD	2	Aluminium Alloy
16	End Cap PE	2	Aluminium Alloy
17	O-ring, Endcap	2	Nitrile Rubber
18	Spring	14	Steel
19	O-ring, Passage	2/4	Nitrile Rubber
20	Lifting Lug	2	Steel
21	Endcap Bolt PD	8/20	Stainless Steel
22	Endcap Bolt PE	8/20	Stainless Steel

= Repair kit items      \*\* = Sizes above P1100

**13. P SERIES : ACTUATOR DIMENSIONS (APPLICABLE FOR 90°)**



DIM	P60	P150	P280	P500	P750	P1100	P2500	P4000
A	155	186	232	271	285	340	380	498
B	184	217	312	352	388	478	568	835
C	101	135	150	189	234	247	360	380
D	20	20	20	30	30	30	30	30
∅E	16	22	26	36	36	45	55	64
∅E2	23	30	35	45	45	55	65	75
F	10	14	14	19	19	30	36	36
G	12	12	12	19	19	10	10	10
H	103	138	168	192	239	250	344	372
I	58	75	89	109	134	135	185	200
J	43	53	69	95	116	125	178	190
K	28	38	48	56	56	75	85	119.5
M	27	27	31	38	38	51	66	77
N	1	1	1.5	1.5	2	2.5	3	1.5
Omax	14.11	19.13	22.13	27.13	27.13	36.16	46.16	55.19
Omin	14.00	19.00	22.00	27.00	27.00	36.00	46.00	55.00
P	18.1	25.2	28.2	36.2	36.2	48.2	60.2	72.2
R	62	80	101	111	140	140	170	170

DIM	P60	P150	P280	P500	P750	P1100	P2500	P4000
R1	51	60	71	81	100	120	160	160
R2	70	100	-	-	-	-	-	262
S	111	130	141	161	210	210	290	290
S1	111	130	141	141	160	210	245	245
T	-	-	-	-	-	-	234.6	-
T1	80	80	80	130	130	130	130	130
U	-	-	-	-	-	-	97.2	-
U1	30	30	30	30	30	30	30	30
∅V	70	102	102	125	125	140	165	254
∅V1	50	70	70	102	102	-	-	-
W	M8 X10	M10 X12	M10 X12	M12 X15	M12 X15	M16 X20	M20 X25	M16 X20
W1	M6 X9	M8 X10	M8 X10	M10 X12	M10 X12	-	-	-
W2	-	-	-	-	-	-	M16 X20	-

NOTE : ALL DIMENSIONS IN mm.

SR. NO.	FAULT	PROBABLE CAUSE	REMEDIAL ACTION
4.	Noise inside Actuator	<p>Improper clearance between rack and pinion. Broken or loosened rack bolts.</p> <p>Insufficient lubrication (Due to prolonged use at high ambient temperatures.)</p> <p>Metal to metal contact due to worn out sealing / guiding elements.</p>	<p>Open Actuator and check tightness of rack bolts. If loose tighten properly. If worn out replace racks / shaft.</p> <p>Open Actuator, clean and lubricate with specified lubricant/ grease.</p> <p>Replace guide bands / sealing elements.</p>
B.  5.	<p><b>ACTUATORS CONTROLLED WITH POSITIONERS</b> (Additional checks.)</p> <p>Actuator not functioning on increasing signal pressure.</p>	<p>Leakage in signal line signal not reaching positioner.</p> <p>Insufficient supply air pressure.</p> <p>Faulty positioner / seized spool valve.</p>	<p>Check signal line fittings and tighten properly. Check for blockage in signal line.</p> <p>Check and ensure specified air supply pressure.</p> <p>Check and repair (see positioner instruction manual) or replace positioner.</p>
6.	Incorrect positioning	<p>Feedback mechanism not functioning / broken.</p> <p>Excessive play in feedback mechanism.</p> <p>Wrong span and zero adjustment.</p> <p>Wrong selection of feedback cam profile.</p>	<p>Check positioner feedback linkage and ensure positive feedback.</p> <p>Check linkage and connect properly. Tighten grub screws provided on adapter.</p> <p>Check span and readjust to obtain specified span. Correct zero adjustment.</p> <p>Check selected cam profile and ensure that the required profile only is selected.</p>

SR. NO.	FAULT	PROBABLE CAUSE	REMEDIAL ACTION
2.	Actuator functions but exhibits lack of power.	<p>Leakage in pneumatic line</p> <p>Leakage across pistons or between Ports A &amp; B (can happen only due to prolonged operation over a period of time.)</p> <p>Low air supply pressure.</p> <p>Severe misalignment between Actuator and valve</p>	<p>Check all pneumatic connections and tighten properly. Use teflon tape / thread sealants on threads.</p> <p>Pressurise Port A/B and check for leakage from the other. Change sealing parts if required.</p> <p>Check supply pressure and ensure correct air supply pressure.</p> <p>Check linkage. Loosen mounting bolts and align Actuator correctly for friction free rotation.</p>
3.	Full stroke of Actuator not achieved.	<p>Excessive friction in gland packing.</p> <p>Excessive clearance / play in adapter / linkage.</p> <p>Mounting bolts loose or wrongly oriented.</p> <p>Limit stops on Actuator (if provided not set correctly.)</p> <p>Limit stops on MO (incase of systems with MO) not set properly.</p> <p>Obstruction in valve or linkage.</p> <p>Excessive spring torque/(incase of spring return Actuators). Low air supply pressure.</p>	<p>Check gland and loosen if required.</p> <p>Change adapter.</p> <p>Align correctly and tighten bolts.</p> <p>Check and reset limit stop screws to achieve required stroke.</p> <p>Check limit stop settings on MO and readjust if required to achieve full rotation.</p> <p>Check for mechanical obstructions if any and remove.</p> <p>Check air supply pressure and ensure specified supply pressure. Check spring selection.</p>