TUSA®

REGULATORS

OWNER'S MANUAL

BEFORE USING ANY TUSA REGULATOR,
READ THIS MANUAL COMPLETELY.

12th

CE EN250

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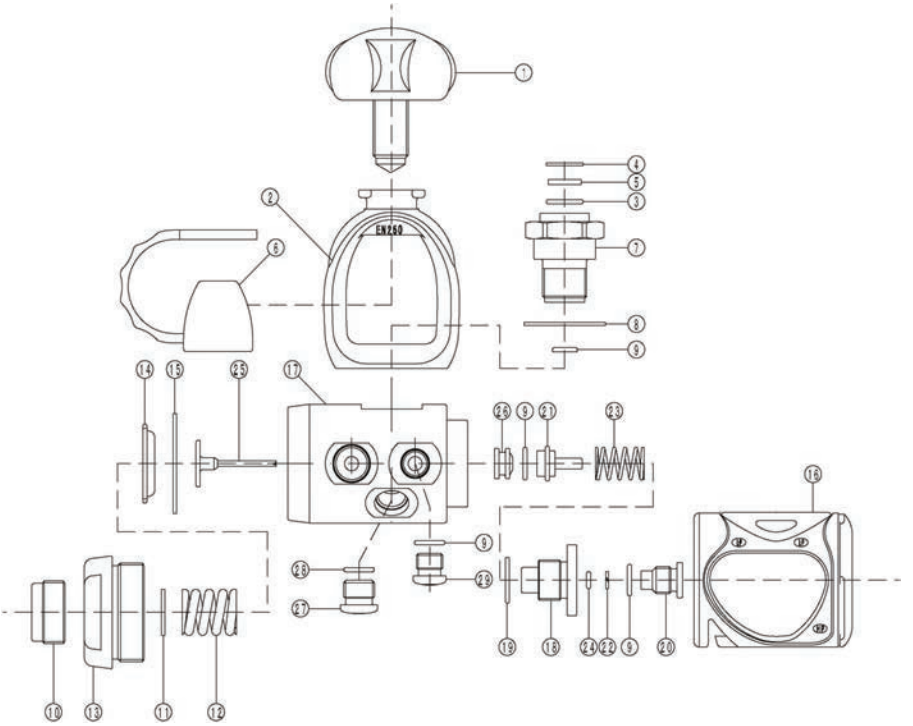
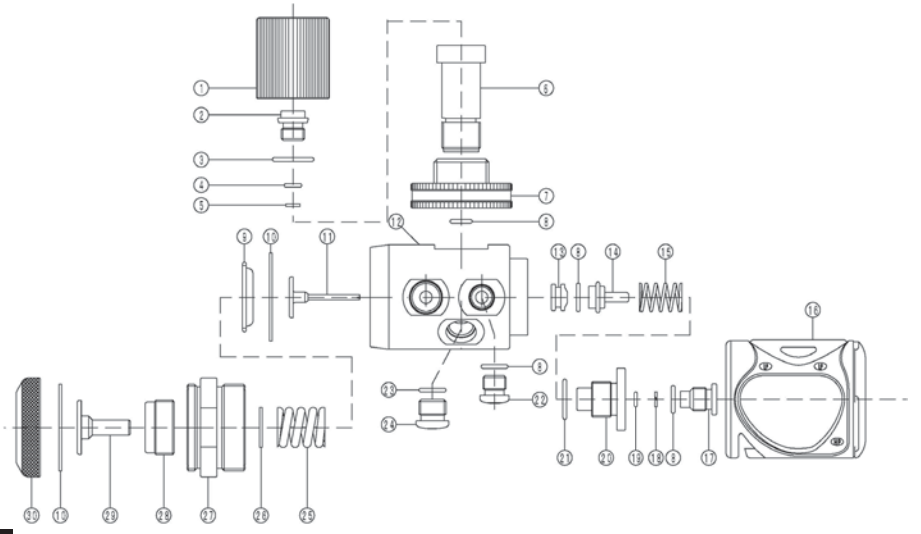
Technical Specification and Performance Page No.

R-300



R-300DIN



R-300

ITEM NO.	PART NO.	DESCRIPTION
1	R300-110	YOKE KNOB
2	R300-090	YOKE
3	013	O-RING
4	HO-50	RETAINING RING
5	R300-120	FILTER
6	TR-401-38	DUST COVER
7	R300-130	YOKE RETAINER
8	R300-080	WASHER,YOKE
9	011	O-RING
10	R300-010	SPRING CONTROLLER
11	R300-020	WASHER,SPRING
12	R300-030	DIAPHRAGM SPRING
13	R300-040	LOCK NUT
14	R300-050	SPRING BASE
15	R300-060	DIAPHRAGM
16	R300-070	PROTECTOR
17	R300-140	BODY
18	R300-150	RETAINING CAP
19	014	O-RING
20	R300-160	BACK-UP PLUG
21	/R300-181	POPPET SEAT
22	BR007	BACK-UP RING
23	R300-190	BACK-UP SPRING
24	007-80	O-RING
25	R300-260	HP POPPET BUTTON ASSY
26	R300-221	ORIFICE
27	R300-210	HP PLUG
28	012	O-RING
29	R300-250	LP PLUG

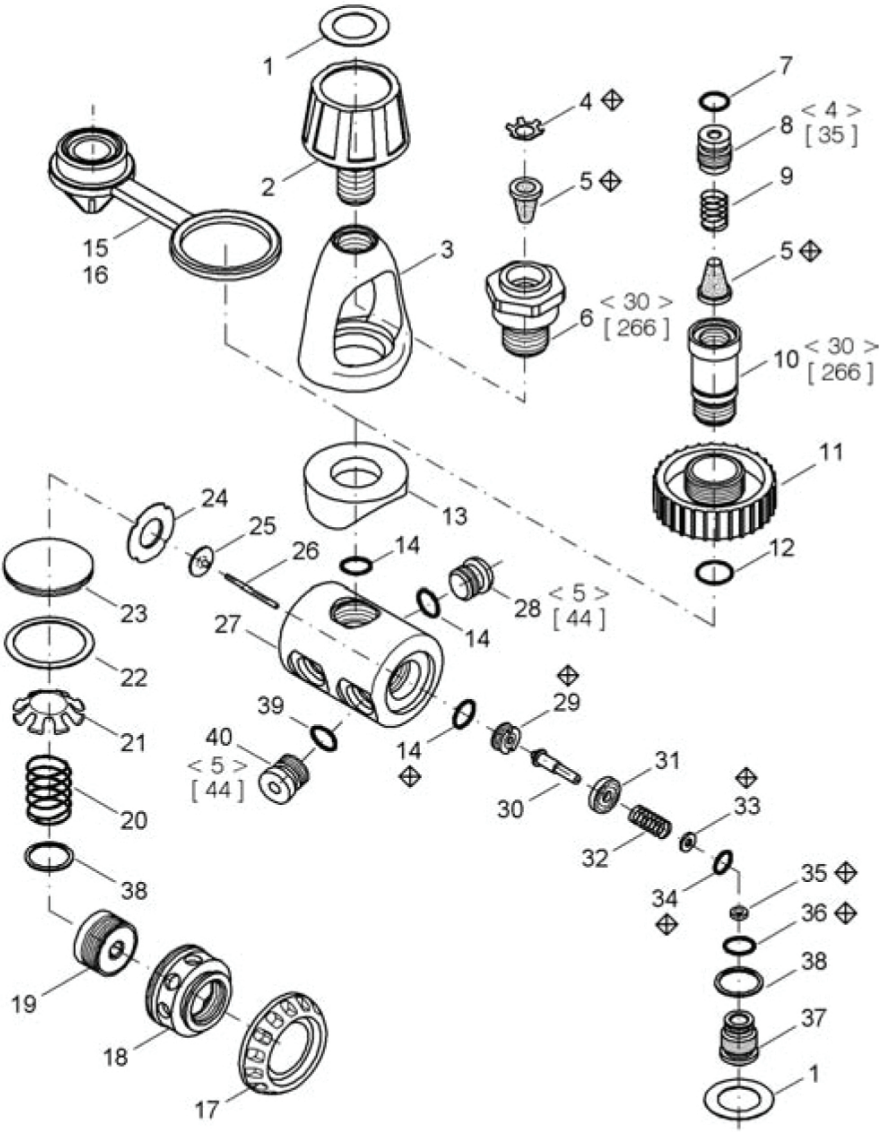
R-300DIN

ITEM NO	PART NO.	DESCRIPTION
1	/RSU215	DIN CAP
2	R300-280	FILTER RETAINER
3	B112A-90	O-RING
4	S6	O-RING
5	R300-290	FILTER
6	/R300-271	NIPPLE,DIN ADAPTER
7	R300-300	HANDWHEEL,DIN ADAPTER
8	011	O-RING
9	R300-050	SPRING BASE
10	R300-060	DIAPHRAGM
11	R300-260	HP POPPET BUTTON ASSY
12	R300-140	BODY
13	R300-221	ORIFICE
14	/R300-181	POPPET SEAT
15	R300-190	BACK UP SPRING
16	R300-070	PROTECTOR
17	R300-160	BACK UP PLUG
18	BR007	BACK UP RING
19	007-80	O-RING
20	R300-150	RETAINING CAP
21	014	O-RING
22	R300-250	LP PLUG
23	012	O-RING
24	R300-210	HP PLUG
25	R300-030	DIAPHRAGM SPRING
26	R300-020	WASHER,SPRING
27	R300-330	LOCK NUT
28	R300-010	SPRING CONTROLLER
29	R300-350	PISTON
30	R300-340	END CAP

SPECIFICATIONS & PERFORMANCE DESCRIPTION

WORKING PRESSURE:	3360 PSI	232 bar: (300 bar: R-300DIN only)
INTERMEDIATE PRESSURE:	130-140 PSI	9.5 - 10.0 bar
DIMENSIONS:	LENGTH:	3.15 IN. 80 MM
	Ø :	1.89 IN. 48 MM
WEIGHT:(w/o Hose)		2.2 LBS. 1000 GRAM

R-400, R-400DIN



R-400, R-400DIN

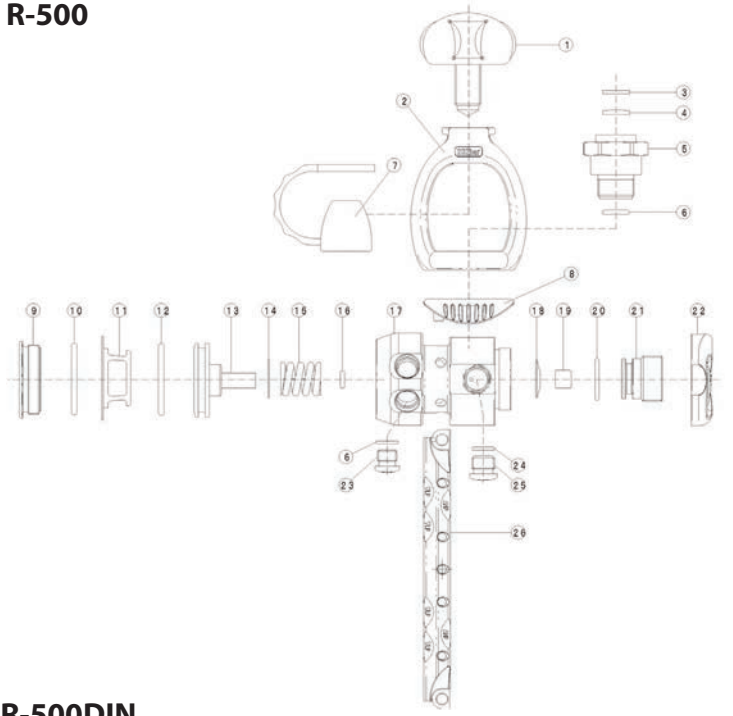
ITEM NO.	PART NO.	DESCRIPTION
1	01006516T	DECAL
2	10200008	YOKE SCREW
3	10705957T	YOKE 9/16"
4	01073101	RETAINER
5	01028109	FILTER
6	10103115	YOKE RETAIN.
7	01050428	O-RING
8	10400124	FILTER RET. 300B
9	01020700	SPRING
10	10400126	KNOB RET. 300B
11	10105122	KNOB, 300B
12	01050347	O-RING
13	10600111	SADDLE
14	01050138	O-RING
15	10101212	INLET PROTECT. INT
16	10101211	INLET PROTECT. DIN
17	10705104	CAP
18	10705109	DIAPHR. HOLDER
19	10705114	SPRING SCREW
20	01020209	SPRING T. I .S.
21	10705123	DIAPHR. DISC
22	10705110	DIAPHR. RING
23	10705119	DIAPHRAGM
24	01025200	DISC

ITEM NO.	PART NO.	DESCRIPTION
25	01025201	INSERT, DISC
26	10755112	DIAPHR. PIN
27	10116101T	BODY
28	10101139	PLUG H. P.
29	10755161	SEAT
30	10755105	H. P. POPPET
31	10755106	SLEEVE
32	01020228	SPRING
33	01060107	WASHER
34	01050117	O-RING
35	10755104	RING
36	01050145	O-RING
37	10756102	BAL. CHAMBER
38	01060500	WASHER
39	01050132	O-RING
40	10101104	PLUG L. P.

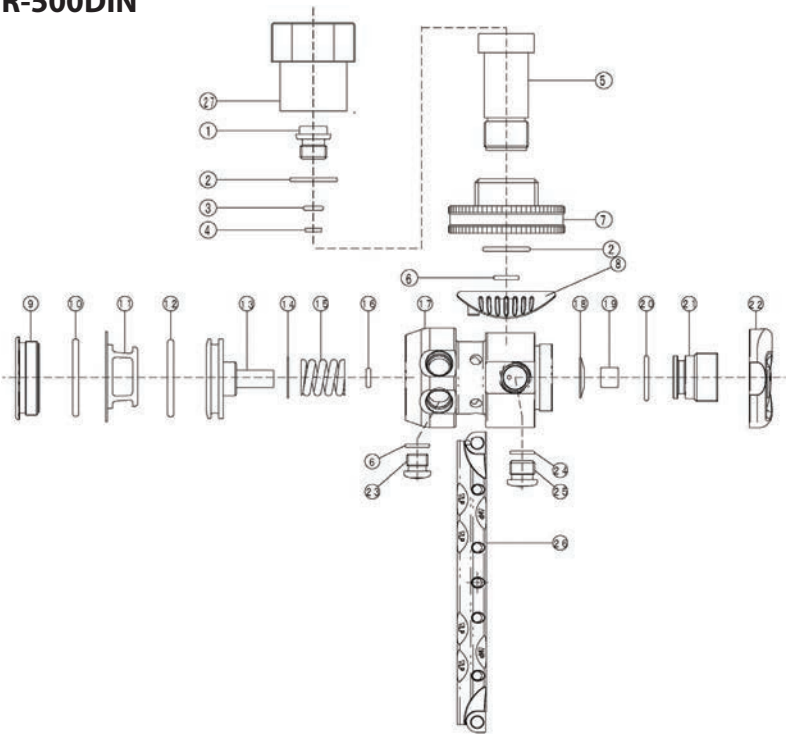
SPECIFICATIONS & PERFORMANCE DESCRIPTION

WORKING PRESSURE:	3360 PSI	232 bar: (300 bar R-700DIN only)			
INTERMEDIATE PRESSURE:	130-140 PSI	9.2 - 10 bar			
DIMENSIONS:	LENGTH:	5.30	IN.	135	MM
	Ø :	2.72	IN.	69	MM
WEIGHT:(w/o Hose)		1.87	LBS.	850	GRAM

R-500



R-500DIN



R-500

ITEM NO.	PART NO.	DESCRIPTION
1	R300-110	YOKE KNOB
2	/R500-040	YOKE
3	HO-50	RETAINING RING
4	R300-120	FILTER
5	/R500-060	YOKE RETAINER
6	011	O-RING
7	TR-401-38	DUST COVER
8	/R500-110	SADDLE
9	/R500-050	LP CHAMBER PLUG
10	024	O-RING
11	/R500-030	PISTON STOPPER
12	020	O-RING
13	/R500-020	PISTON
14	/R500-090	SPACER
15	/R500-130	SPRING
16	009	O-RING
17	/R500-010	BODY
18	/R500-140	ADJ SPRING
19	/R500-080	HP SEAT
20	013	O-RING
21	/R500-070	HP SEAT PLUG
22	/R500-120	CAP
23	R300-250	LP PLUG
24	012	O-RING
25	R300-210	HP PLUG
26	/R500-100	BELT

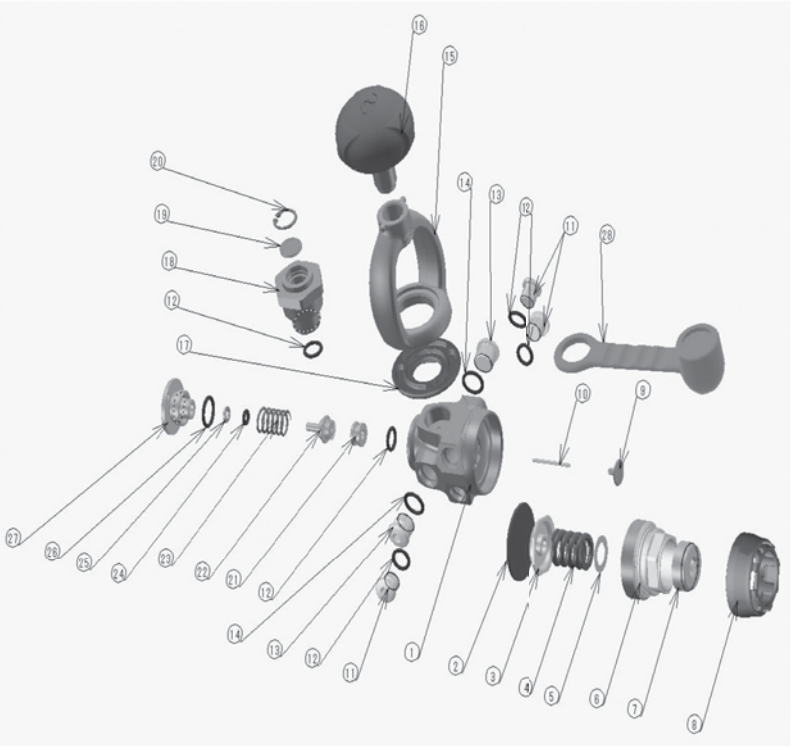
R-500DIN

ITEM NO	PART NO.	DESCRIPTION
1	R300-280	FILTER RETAINER
2	112A-90	O-RING
3	S6	O-RING
4	R300-290	FILTER
5	R300-271	NIPPLE,DIN ADAPTER
6	011	O-RING
7	R300-300	HANDWHEEL,DIN ADAPTER
8	/R500-110	SADDLE
9	/R500-050	LP CHAMBER PLUG
10	024	O-RING
11	/R500-030	PISTON STOPPER
12	020	O-RING
13	/R500-020	PISTON
14	/R500-090	SPACER
15	/R500-130	SPRING
16	009	O-RING
17	/R500-010	BODY
18	/R500-140	ADJ SPRING
19	/R500-080	HP SEAT
20	013	O-RING
21	/R500-070	HP SEAT PLUG
22	/R500-120	CAP
23	R300-250	LP PLUG
24	012	O-RING
25	R300-210	HP PLUG
26	/R500-100	BELT
27	/RSU215	DIN CAP

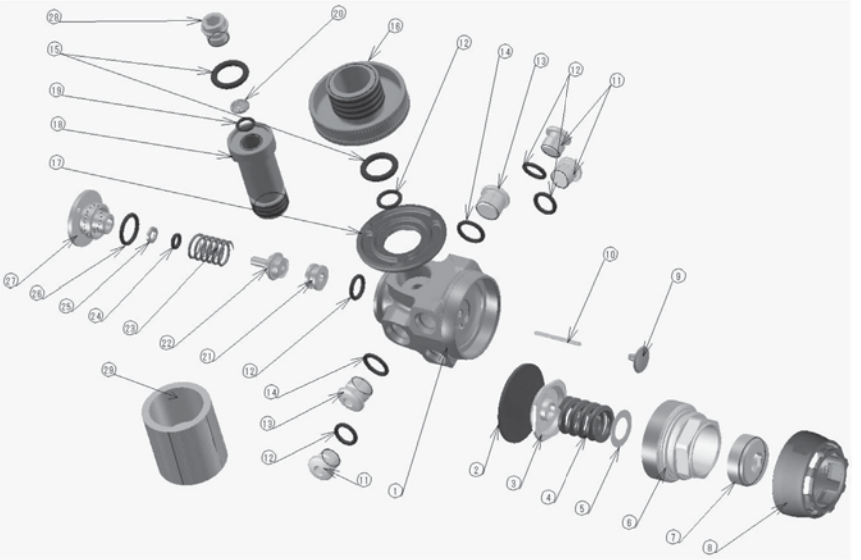
SPECIFICATIONS & PERFORMANCE DESCRIPTION

WORKING PRESSURE:	3360 PSI	232 bar: (300 bar: R-500DIN only)			
INTERMEDIATE PRESSURE:	130-140 PSI	9.2 - 10 bar			
DIMENSIONS:	LENGTH:	2.48	IN.	62.9	MM
	Ø :	1.61	IN.	41	MM
WEIGHT:(w/o Hose)		1.543	LBS.	700	GRAM

R-600



R-600DIN



R-600

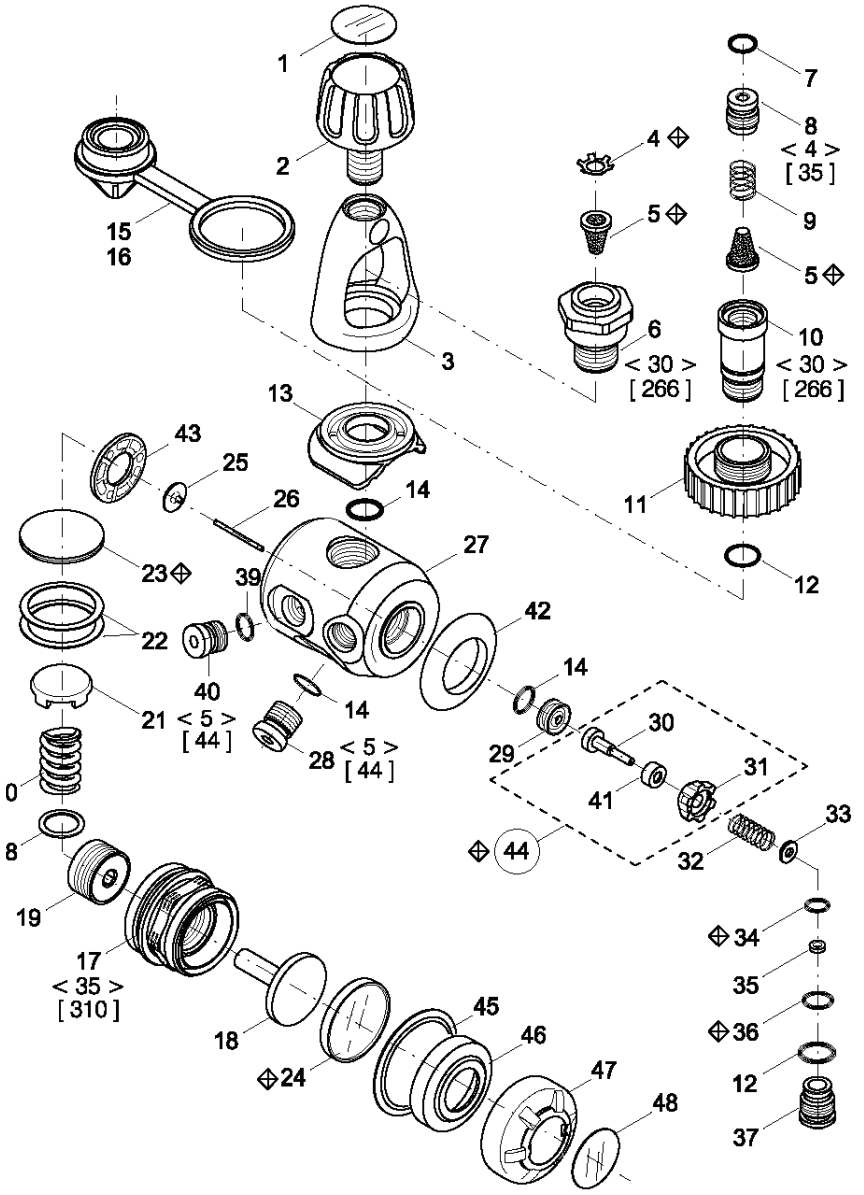
ITEM NO.	PART NO.	DESCRIPTION
1	/R600-010	BODY
2	R300-060	DIAPHRAGM
3	R300-050	SPRING BASE
4	R300-030	DIAPHRAGM SPRING
5	R300-020	WASHER SPRING
6	/R600-020	LOCK NUT
7	/R600-030	CONTROLLER
8	/R600-070	CAP
9	/R600-040	BUTTON
10	/R600-050	BOB PIN
11	R300-250	LP PLUG
12	011	O-RING
13	R300-210	HP PLUG
14	012	O-RING
15	/R500-040	YOKE
16	/R300-111	YOKE KNOB
17	/R600-080	SADDLE
18	/R500-060	YOKE RETAINER
19	/R300-120	FILTER
20	HO-50	RETAINING RING
21	R300-221	ORIFICE
22	/R300-181	POPPET SEAT
23	R300-190	BACK-UP SPRING
24	007-80	O-RING
25	/SBR007	BACK-UP RING
26	014	O-RING
27	/R600-061	BLC PLUG
28	TR-401-38	DUST COVER

R-600DIN

ITEM NO	PART NO.	DESCRIPTION
1	/R600-010	BODY
2	R300-060	DIAPHRAGM
3	R300-050	SPRING BASE
4	R300-030	DIAPHRAGM SPRING
5	R300-020	WASHER SPRING
6	/R600-020	LOCK NUT
7	/R600-030	CONTROLLER
8	/R600-070	CAP
9	/R600-040	BUTTON
10	/R600-050	BOB PIN
11	R300-250	LP PLUG
12	011	O-RING
13	R300-210	HP PLUG
14	012	O-RING
15	112 A-90	O-RING
16	R300-300	HANDWHEEL,DIN ADAPTER
17	/R600-080	SADDLE
18	/R300-271	NIPPLE DIN ADAPTER
19	S6	O-RING
20	R300-290	FILTER
21	R300-221	ORIFICE
22	/R300-181	POPPET SEAT
23	R300-190	BACK-UP SPRING
24	007-80	O-RING
25	/SBR007	BACK-UP RING
26	014	O-RING
27	/R600-061	BLC PLUG
28	R300-280	FILTER RETAINER
29	/RSU215	PROTECTIVE CAP

SPECIFICATIONS & PERFORMANCE DESCRIPTION					
WORKING PRESSURE:	3360 PSI	232 bar: (300 bar R-600DIN only)			
INTERMEDIATE PRESSURE:	130-140 PSI	9.2 - 10 bar			
DIMENSIONS:	LENGTH:	2.48	IN.	62.9	MM
	Ø :	1.61	IN.	41	MM
WEIGHT:(w/o Hose)		1.543	LBS.	640	GRAM

R-700, R-700DIN



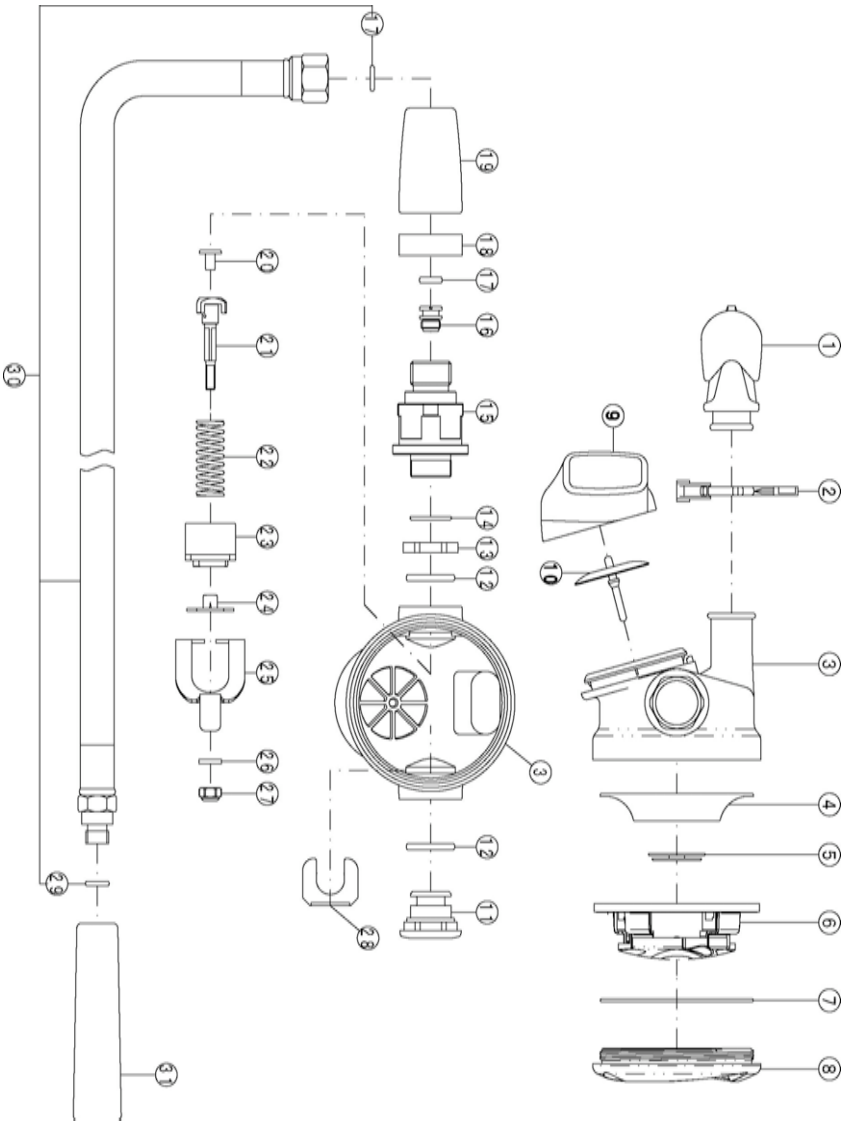
R-700, R-700DIN

ITEM NO.	PART NO.	DESCRIPTION
1	/R700-010	DECAL
2	/R700-020	YOKE SCREW
3	/R700-030	YOKE
4	/R400-040	RETAINER
5	/R400-050	FILTER
6	/R400-060	YOKE RETAIN
7	/111-PUR85	O-RING
8	/R700-040	FILTER RET. 200 bar
	/R400-080	FILTER RET. 300 bar
9	/R400-090	SPRING
10	/R700-050	KNOB RET. 200 bar
	/R400-100	KNOB RET. 300 bar
11	/R700-060	KNOB. 200 bar
	/R400-110	KNOB. 300 bar
12	/014-EP85	O-RING
13	/R700-070	SADDLE
14	/011-90	O-RING
15	/R400-150	INLET PROTECT. INT
16	/R400-160	INLET PROTECT. DIN
17	/R700-080	CHAMBER AF
18	/R700-090	LOAD TRANSMITTER
19	/R400-190	SPRING SCREW
20	/R400-200	SPRING T.I.S.
21	/R700-100	DIAPHR. DISC
22	/R400-220	DIAPHR. RING

ITEM NO.	PART NO.	DESCRIPTION
23	/R700-110	DIAPHRAGM
24	/R700-120	DIAPHRAGM. AF
25	/R400-250	DISC. MET.
26	/R400-260	DIAPHR. PIN
27	/R700-130	BODY
28	/R400-280	PLUG H.P.
29	/R700-140	ORIFICE
30	/R700-150	H.P. VALVE
31	/R700-160	SLEEVE
32	/R400-320	SPRING
33	/R400-330	WASHER CENTRING
34	/R700-170	O-RING
35	/R400-350	RING
36	/012-EP85	O-RING
37	/R700-180	BAL. CHAMBER
38	/R700-190	WASHER
39	/010-EP	O-RING
40	/R400-400	PLUG L.P.
41	/R700-200	CUP
42	/R700-210	BUMPER
43	/R400-240	DISC
44	/R700-220	HP VALVE COMPL
45	/R700-230	WASHER
46	/R700-240	DIAPH. RET. AF
47	/R700-250	BUMPER AF
48	/R700-260	DECAL

SPECIFICATIONS & PERFORMANCE DESCRIPTION					
WORKING PRESSURE:	3360 PSI	232 bar: (300 bar R-700DIN only)			
INTERMEDIATE PRESSURE:	130-140 PSI	9.2 - 10 bar			
DIMENSIONS:	LENGTH:	5.30	IN.	135	MM
	Ø :	2.72	IN.	69	MM
WEIGHT:(w/o Hose)		1.87	LBS.	850	GRAM

S-20/SS-20 SECOND STAGE

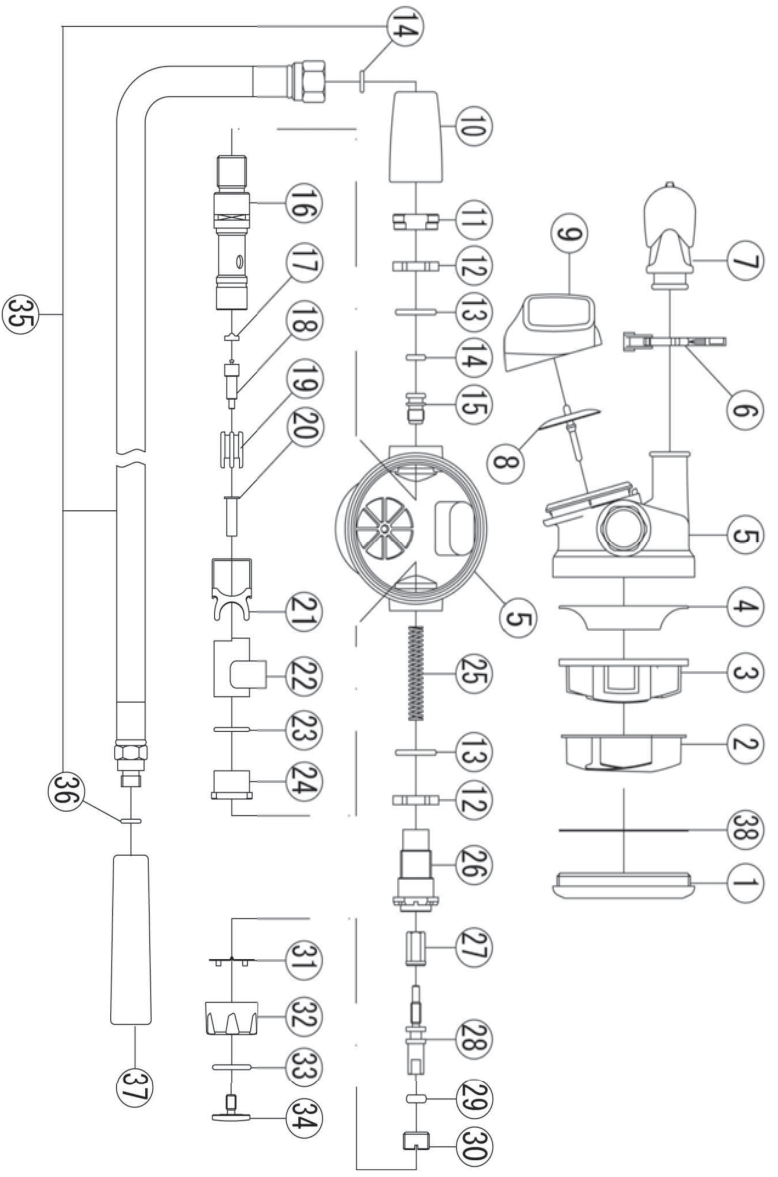


S-20/SS-20 SECOND STAGE

ITEM NO.	PART NO.	DESCRIPTION
1	S40-010,/RSU 196	MOUTHPIECE
2	RSU116	MOUTHPIECE CLIP
3	S10-111	CASE
4	S50-050	DIAPHRAGM
5	S50-040	DIAPHRAGM DISC
6	/S20-110	DIAPHRAGM COVER
7	034	O-RING
8	/S20-120	DIAPHRAGM RETAINER
9	S30-011	EXHAUST TEE
10	S30-271	EXHAUST VALVE
11	/S20-100	PLUG
12	017	O-RING
13	S30-250	SPACER
14	S14	O-RING
15	/S20-010	DEMAND HOUSING
16	S30-040	ORIFICE
17	010	O-RING
18	/S40-021	NUT RING
19	S30-030	SLEEVE
20	/S50-191	DEMAND SEAT
21	/S20-060	DEMAND STEM
22	S50-160	DEMAND SPRING
23	/S20-030	DEMAND HOUSING CAP
24	/S20-040	DEMAND STEM GUIDE
25	/S20-050	DEMAND LEVER
26	ST-003-92	WASHER
27	ST-003-02	LOCK NUT
28	/S20-090	WEDGE
29	OR106	O-RING
30	LPU067 / LPU151	L.P.HOSE(L=30")ASSY
31	TR-402-371	HOSE COVER

SPECIFICATIONS					
DIMENSIONS:	Height:	2.91	IN.	74	MM
	Length:	4.05	IN.	103	MM
	Width:	4.05	IN.	103	MM
WEIGHT: (incl. Hose)		0.771	LBS.	350	GRAM
HOSE:	Length:	30/39	IN.	76/99	CM

S-30 SECOND STAGE



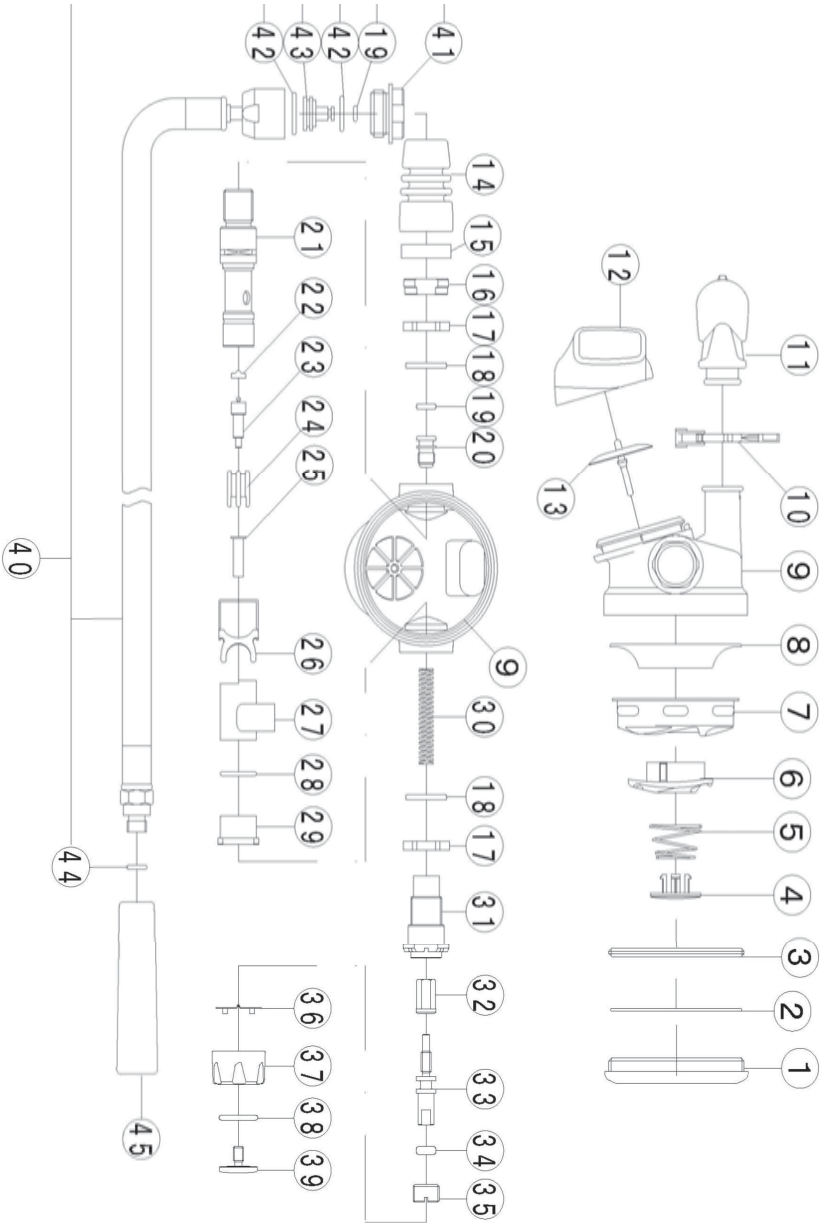
S-30 SECOND STAGE

ITEM NO.	PART NO.	DESCRIPTION
1	S30-052	DIAPHRAGM RETAINER
2	S30-100	PURGE GUARD
3	S30-081	DIAPHRAGM COVER
4	S30-062	DIAPHRAGM
5	S30-221	CASE
6	RSU116	MOUTHPIECE CLIP
7	/RSU196	MOUTHPIECE
8	S30-271	EXHAUST VALVE
9	S30-011	EXHAUST TEE
10	S30-030	SLEEVE
11	S30-260	NUT,DEMAND HOUSING
12	S30-250	SPACER
13	017	O-RING
14	010	O-RING
15	S30-040	ORIFICE
16	/S30-022	DEMAND HOUSING
17	S30-240	DEMAND SEAT
18	S30-231	DEMAND STEM
19	S30-210	DEMAND STEM GUIDE
20	S30-280	DEMAND SPRING GUIDE
21	S30-073	DEMAND LEVER
22	S30-092	DEFLECTOR
23	014	O-RING
24	S30-110	GRAND RETAINER

ITEM NO.	PART NO.	DESCRIPTION
25	S40-060	DEMAND SPRING
26	S30-171	GRAND NUT
27	S30-120	PISTON SPRING FOLLOWER
28	S30-130	ADJ. SCREW
29	107	O-RING
30	S30-150	RETAINING SCREW
31	S30-180	CLICK RING
32	S30-141	KNOB
33	113	O-RING
34	S30-160	SCREW, KNOB
35	LPU067	L.P.HOSE(L=30")ASSY
36	OR106	O-RING
37	/TR-402-372	HOSE COVER
38	034	O-RING

SPECIFICATIONS					
DIMENSIONS:	Height:	2.91	IN.	74	MM
	Length:	4.27	IN.	108.5	MM
	Width:	3.86	IN.	98	MM
WEIGHT: (incl. Hose)		0.794	LBS.	360	GRAM
HOSE:	Length:	30	IN.	76	CM

S-40 SECOND STAGE



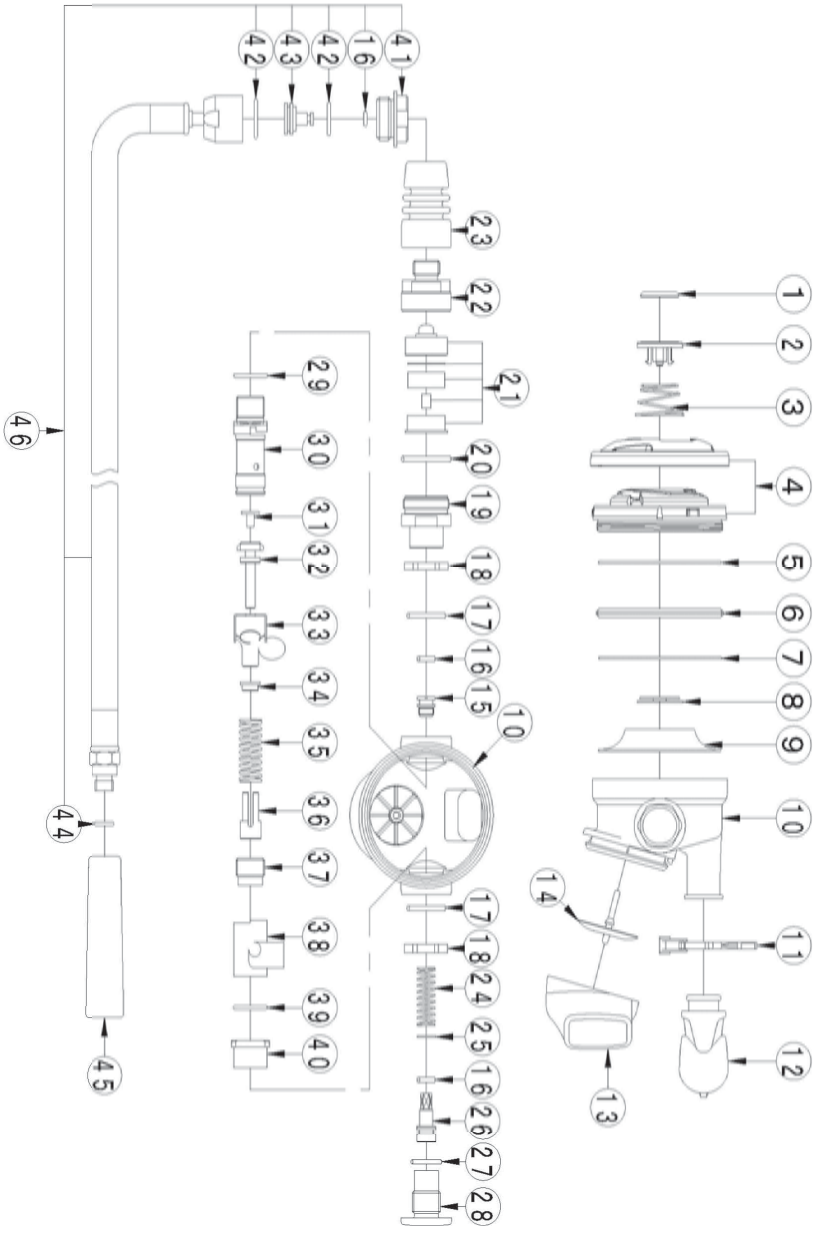
S-40 SECOND STAGE

ITEM NO.	PART NO.	DESCRIPTION
1	S30-052	DIAPHRAGM RETAINER
2	034	O-RING
3	S40-030	SAFTY RING
4	S10-030	PURGE BUTTON
5	S10-040	PURGE SPRING
6	S40-041	RETAINER, PURGE BUTTON
7	S40-050	DIAPHRAGM COVER
8	S30-062	DIAPHRAGM
9	S30-221	CASE
10	RSU116	MOUTHPIECE CLIP
11	/RSU196	MOUTHPIECE
12	S30-011	EXHAUST TEE
13	S30-271	EXHAUST VALVE
14	S40-080	RUBBER SLEEVE
15	/S40-021	NUT RING
16	S30-260	NUT, DEMAND HOUSING
17	S30-250	SPACER
18	017	O-RING
19	010	O-RING
20	S30-040	ORIFICE

ITEM NO.	PART NO.	DESCRIPTION
21	S30-021	DEMAND HOUSING
22	S30-240	DEMAND SEAT
23	S30-231	DEMAND STEM
24	S30-210	DEMAND STEM GUIDE
25	S30-280	DEMAND SPRING GUIDE
26	S30-072	DEMAND LEVER
27	S30-092	DEFLECTOR
28	014	O-RING
29	S30-110	GRAND RETAINER
30	S40-060	DEMAND SPRING
31	S30-171	GRAND NUT
32	S30-120	PISTON SPRING FOLLOWER
33	S30-130	ADJ. SCREW
34	107	O-RING
35	S30-150	RETAINING SCREW
36	S30-180	CLICK RING
37	S30-141	KNOB
38	113	O-RING
39	S30-160	SCREW,KNOB
40	PU119(L=700)	L.P.HOSE ASSY
41	LPU119-030	END RING
42	S16	O-RING
43	LPU119-040	INNER TUBE
44	011	O-RING
45	TR-402-371	HOSE COVER

SPECIFICATIONS					
DIMENSIONS:	Height:	2.91	IN.	74	MM
	Length:	4.27	IN.	108.5	MM
	Width:	4.06	IN.	103	MM
WEIGHT: (incl. Hose)		0.903	LBS.	410	GRAM
HOSE:	Length:	27.56	IN.	70	CM

S-50 SECOND STAGE



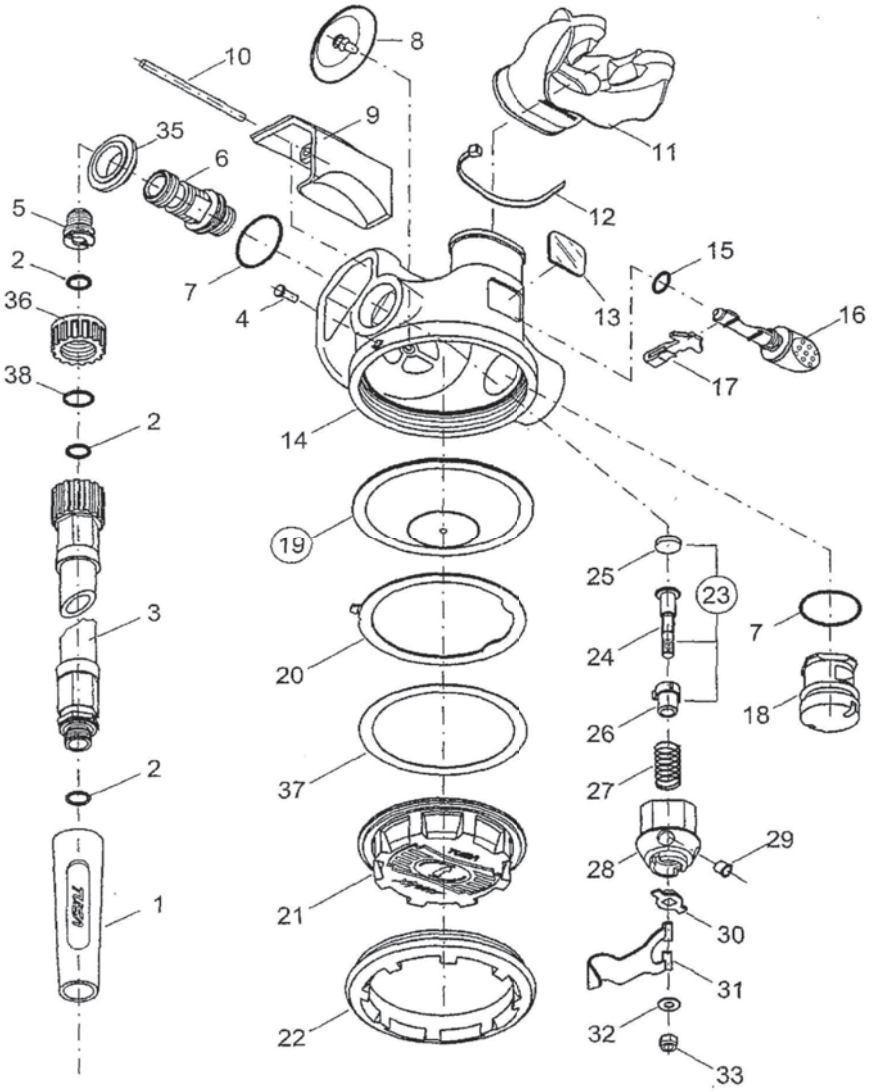
S-50 SECOND STAGE

ITEM NO	PART NO.	DESCRIPTION
1	/S50-241	DECAL
2	/S50-081	PURGE BUTTON
3	S10-040	PURGE SPRING
4	RSU146	METAL DIAPHRAGM RETAINER ASSY
5	034	O-RING
6	S40-030	SAFETY RING
7	S10-050	WASHER,DIAPHRAGM
8	S50-040	DIAPHRAGM DISC
9	S50-050	DIAPHRAGM
10	S30-221	CASE
11	RSU116	MOUTHPIECE CLIP
12	/RSU196	MOUTHPIECE
13	S30-011	EXHAUST TEE
14	S30-271	EXHAUST VALVE
15	S50-200	ORIFICE
16	010	O-RING
17	017	O-RING
18	S30-250	SPACER
19	S50-210	FILTER HOUSING
20	020	O-RING
21	RSU136	ACTIVE CARBON FILTER
22	S50-010	FILTER CAP

ITEM NO	PART NO.	DESCRIPTION
23	S40-080	RUBBER SLLEVE
24	S50-090	ADJ.SPRING
25	S50-130	WASHER,ADJ.STEM
26	S50-110	ADJ.STEM
27	906	O-RING
28	S50-120	RETAINING PLUG
29	S14	O-RING
30	S50-020	DEMAND HOUSING
31	/S50-191	DEMAND SEAT
32	/S50-182	DEMAND STEM
33	S50-030	DEMAND LEVER
34	S50-170	WASHER,DEMAND STEM
35	S50-160	DEMAND SPRING
36	S50-150	CHAMBER,DEMAND STEM
37	S50-140	DEMAND SCREW
38	S30-092	DEFLETOR
39	014	O-RING
40	S10-070	SQUARE NUT
41	LPU121-030	END RING
42	S16	O-RING
43	LPU121-040	INNER TUBE
44	013	O-RING
45	TR-402-371	HOSE COVER
46	LPU121	LP HOSE ASSY

SPECIFICATIONS					
DIMENSIONS:	HEIGHT:	2.91	IN.	74	MM
	LENGTH:	4.76	IN.	121	MM
	WIDTH:	4.09	IN.	104	MM
WEIGHT: (incl. Hose)		0.97	LBS.	440	GRAM
HOSE:	LENGTH:	27.56	IN.	70	CM

S-60 SECOND STAGE



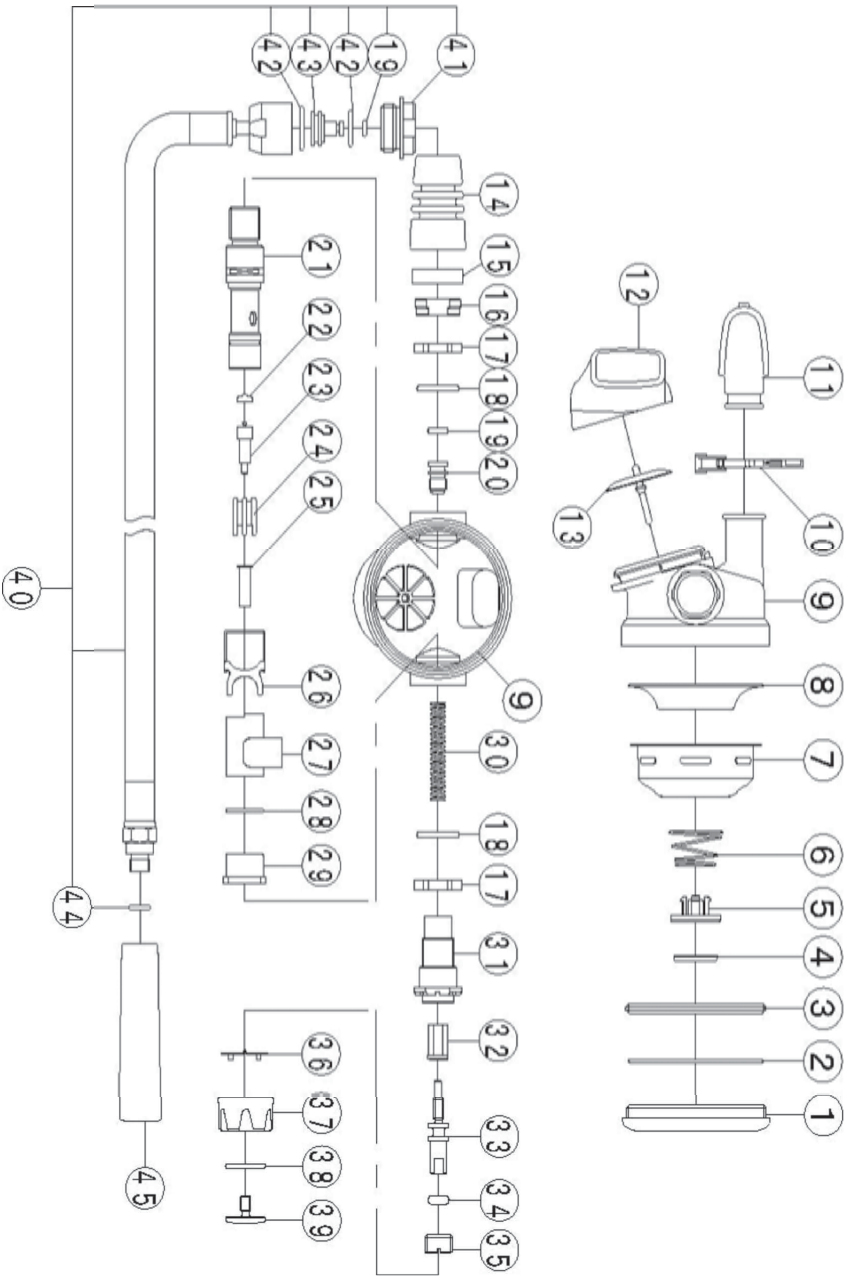
S-60 SECOND STAGE

ITEM NO.	PART NO.	DESCRIPTION
1	11029100T	PROT. SLEEVE
2	01050132	O-RING
3	01309030T	L.P.HOSE cm.75
4	01075131	PIN, CASE
5	11500109	ORIFICE
6	11190219	BODY, VALVE
7	01050160	O-RING
8	11250103	EXHAUST VALVE
9	11600007	COVER, EXHAUST
10	11190106	PIN, COVER EXHAUST
11	01040141T	MOUTHPIECE
12	01088101	CLIP LIGHT
13	01006883T	DECAL DIVE/PREDIVE
14	11380021	CASE
15	01050126	O-RING
16	11500011	FLOW VANE
17	11380022	FLOW REDUCER
18	11190104	PLUG
19	11500012	DIAPHRAGM ASSY
20	11500035	WASHER, ANTIFRICT
21	11391036T	COVER
22	11500037	RETAINING RING
23	11300003	POPPET ASSY
24	11300028	STEM

ITEM NO.	PART NO.	DESCRIPTION
25	11108101	SEAT
26	11300027	POPPET
27	01020216	SPRING
28	11380105	HOUSING
29	11300037	PLUG, HOUSING
30	21080121	INSERT, HOUSING
31	11380118	LEVER
32	01060108	WASHER
33	01122101	NUT
34		
35	11190217	WASHER
36	11755120	NUT, JAM
37	11600050	RING
38	01050347	O-RING

SPECIFICATIONS					
DIMENSIONS:	Height:	2.91	IN.	74	MM
	Length:	4.27	IN.	108	MM
	Width:	4.09	IN.	104	MM
WEIGHT: (incl. Hose)		0.33	LBS.	150	GRAM
HOSE:	Length:	29	IN.	74	CM

S-70 SECOND STAGE



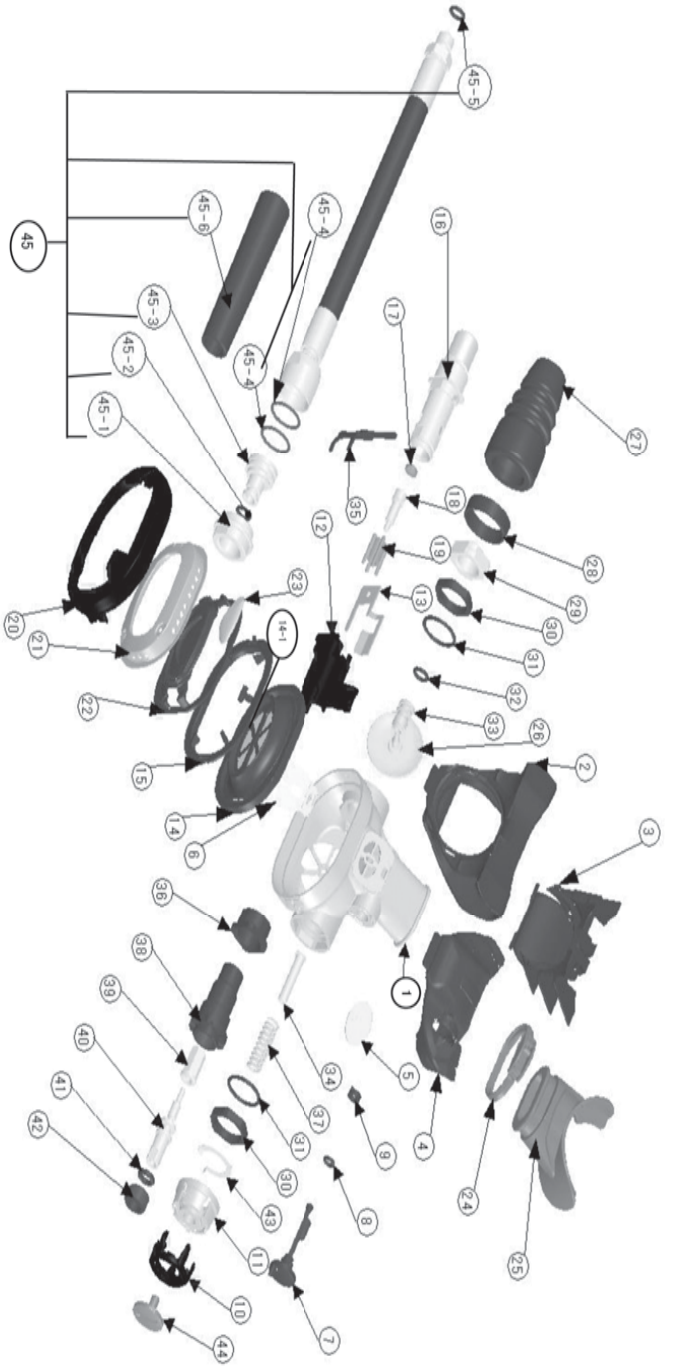
S-70 SECOND STAGE

ITEM NO.	PART NO.	DESCRIPTION
1	S30-300	DIAPHRAGM RETAINER
2	034	O-RING
3	S40-030	SAFTY RING
4	/S50-241	DECAL
5	/S50-081	PURGE BUTTON
6	S10-040	PURGE SPRING
7	/S70-010	DIAPHRAGM COVER
8	S30-062	DIAPHRAGM
9	S30-221	CASE
10	RSU116	MOUTHPIECE CLIP
11	/RSU196	MOUTHPIECE
12	S30-011	EXHAUST TEE
13	S30-271	EXHAUST VALVE
14	S40-080	RUBBER SLEEVE
15	/S40-021	NUT RING
16	S30-260	NUT, DEMAND HOUSING
17	S30-250	SPACER
18	017	O-RING
19	010	O-RING
20	S30-040	ORIFICE
21	/S30-022	DEMAND HOUSING
22	S30-240	DEMAND SEAT
23	S30-231	DEMAND STEM
24	S30-210	DEMAND STEM GUIDE
25	S30-280	DEMAND SPRING GUIDE

ITEM NO.	PART NO.	DESCRIPTION
26	S30-073	DEMAND LEVER
27	S30-092	DEFLECTOR
28	014	O-RING
29	S30-110	GRAND RETAINER
30	S40-060	DEMAND SPRING
31	S30-171	GRAND NUT
32	S30-120	PISTON SPRING FOLLOWER
33	S30-130	ADJ. SCREW
34	107	O-RING
35	S30-150	RETAINING SCREW
36	S30-180	CLICK RING
37	S30-141	KNOB
38	113	O-RING
39	S30-160	SCREW,KNOB
40	LPU119(L=700)	L.P.HOSE ASSY
41	LPU119-030	END RING
42	S16	O-RING
43	LPU119-040	INNER TUBE
44	011	O-RING
45	TR-402-371	HOSE COVER

SPECIFICATIONS					
DIMENSIONS:	Height:	2.91	IN.	74	MM
	Length:	4.76	IN.	121	MM
	Width:	4.09	IN.	104	MM
WEIGHT: (incl. Hose)		0.97	LBS.	420	GRAM
HOSE:	Length:	27.56	IN.	70	CM

S-80 SECOND STAGE



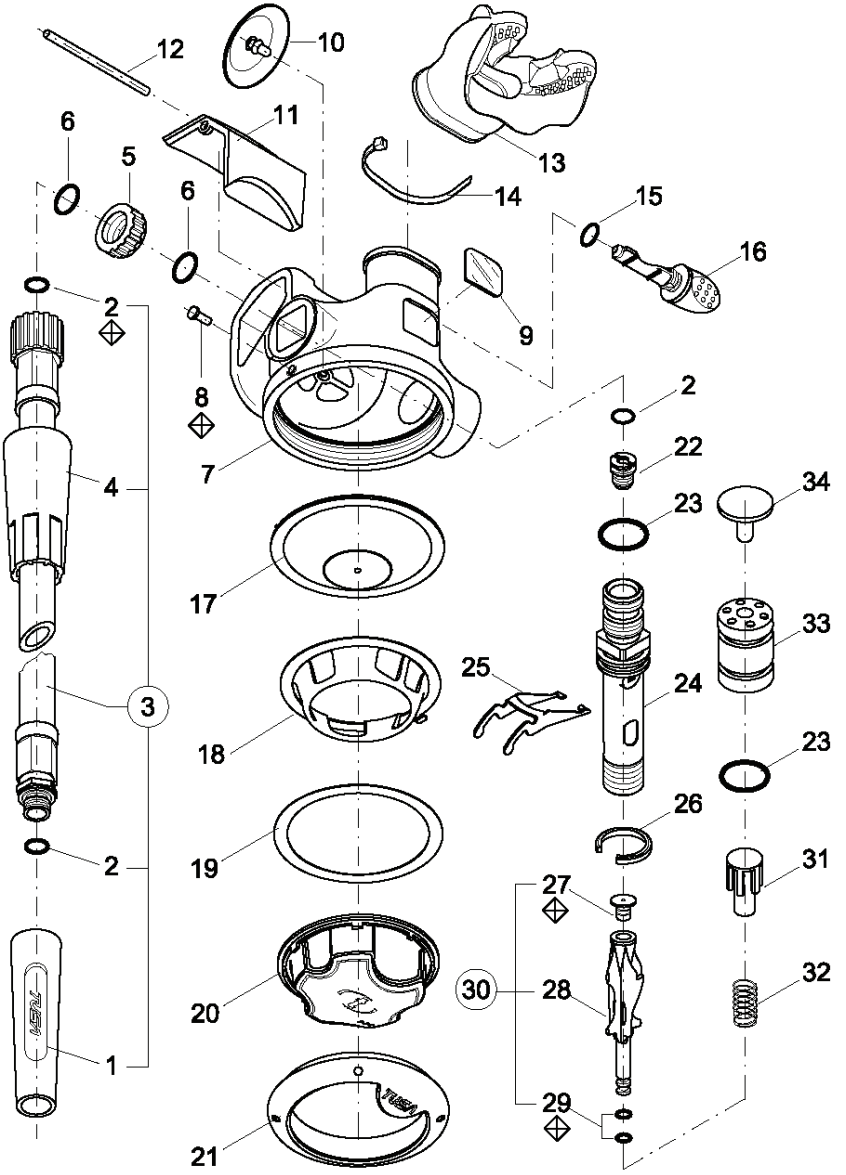
S-80 SECOND STAGE

ITEM NO.	PART NO.	DESCRIPTION
1	/S80-010	CASE
2	/S80-020	EX TEE
3	/S80-030	EX TEE FRAME
4	/S80-040	UPPER EX TEE
5	/S80-050	UPPER EX VALVE
6	/S80-060	CHECK VALVE
7	/S80-070	FLAP
8	007	O-RING
9	/S80-080	FLAP RETAINER
10	/S80-100	KNOB RIDGE
11	/S80-090	KNOB
12	/S80-110	DEFLECTEOR
13	/S80-120	HEAT EX PLATE
14	/S80-130	DIAPHRAGM
14-1	/S80-140	DIAPHRAGM DISK
15	/S80-150	DIAPHRAGM RETAINER
16	/S80-160	HOUSING
17	S30-240	DEMAND SEAT
18	S30-231	DEMAND STEM
19	S30-210	DEMAND STEM GUIDE
20	/S80-190	FACE RING
21	/S80-210	METAL COVER
22	/S80-200	DIAPHRAGM COVER
23	/S80-220	DECAL
24	ST-004-01	MOUTHPIECE CLIP

ITEM NO.	PART NO.	DESCRIPTION
25	/RSU196	MOUTHPIECE
26	S30-271	EXHAUST VALVE
27	S40-080	RUBBER SLEEVE
28	/S40-021	NUT RING
29	S30-260	NUT, DEMAND HOUSING
30	S30-250	SPACER
31	017	O-RING
32	010	O-RING
33	S30-040	ORIFICE
34	S30-280	DEMAND SPRING GUIDE
35	S30-073	DEMAND LEVER
36	S30-110	GRAND RETAINER
37	S40-060	DEMAND SPRING
38	S30-171	GRAND NUT
39	S30-120	PISTON SPRING FOLLOWER
40	S30-130	ADJ. SCREW
41	107	O-RING
42	S30-150	RETAINING SCREW
43	S30-180	CLICK RING
44	S30-160	SCREW,KNOB
45	LPU118(L=760)	L.P. HOSE ASSY

SPECIFICATIONS					
DIMENSIONS:	Height:	2.91	IN.	65	MM
	Length:	4.76	IN.	121	MM
	Width:	4.09	IN.	104	MM
WEIGHT: (incl. Hose)		0.97	LBS.	418	GRAM
HOSE:	Length:	30	IN.	76	CM

S-90 SECOND STAGE



S-90 SECOND STAGE

ITEM NO.	PART NO.	DESCRIPTION
1	/S90-010	PROTECTIVE SLEEVE
2	/010-EP	O-RING
3	/S90-020	L.P. HOSE cm.75
4	/S90-030	SLEEVE HOSE
5	/S90-040	NUT. JAM UNIF.
6	/014-EP85	O-RING
7	/S90-050	CASE
8	/S90-060	PIN. CASE
9	/S90-070	DECAL V.I.V.A.
10	/S60-080	EXHAUST VALVE
11	/S60-090	COVER EXHAUST
12	/S60-100	PIN
13	/S60-110	MOUTHPIECE
14	TR0-108-BK	CLIP LIGHT
15	/008-EP85	O-RING
16	/S90-080	FLOW VANE
17	/S60-190	DIAPHRAGM ASSY
18	/S90-090	WASHER. ANTIFRICTION
19	/S60-370	RING
20	/S90-100	PURGE COVER
21	/S90-110	RING
22	/S60-050	ORIFICE
23	/016	O-RING
24	/S90-120	HOUSING
25	/S90-130	LEVER
26	/S90-140	RETAINING CLIP KNOB
27	/S90-150	SEAT
28	/S90-160	POPPET
29	/101-EP	O-RING
30	/S90-170	POPPET ASSY
31	/S90-180	BALANCE CHAMBER
32	/S60-270	SPRING
33	/S90-190	PLUG
34	/S90-200	PLUG

SPECIFICATIONS					
DIMENSIONS:	Height:	2.91	N.	74	MM
	Length:	4.76	IN.	121	MM
	Width:	4.09	IN.	104	MM
WEIGHT: (incl. Hose)		0.33	LBS.	150	GRAM
HOSE:	Length:	29	IN.	74	CM

FOREWORD

CONGRATULATIONS!
You are now the owner of one of the many fine TUSA diving products. Your new regulator is built to exacting standards, using only the highest quality materials. For several years TUSA has been developing regulators at our R&D facility in Japan under the ISO9001 International Quality Assurance System.

You have purchased the newest and most advanced regulator for the Sport Scuba Market available today. TUSA regulators are constructed of technologically advanced materials and the performance provides exceptional aspiration flow and allows fully adjustable performance to accommodate beginner and professional divers.

Before you use your new regulator, please read this manual carefully. The following warnings, cautions, and notes were written to make it possible for you to enjoy your diving experience with maximum safety. TUSA wants you to have many years of dependable service from your new equipment and have many memorable and safe dives. Thank you for purchasing one of our high quality products.

WARNING:
THIS PRODUCT IS A SCUBA DIVING DEVICE AND REQUIRES PROPER TRAINING BEFORE USE.

CE Certified combinations of TUSA Regulators are listed below:

Name of Regulator	1st Stage Model #	2nd Stage Model #	2nd Stage Cover
RS-340	R-300 (Yoke-DIN)	S-40	BLACK
RS-350	R-300 (Yoke-DIN)	S-50	SILVER
RS-460II	R-400II (Yoke -DIN)	S-60	BLACK
RS-520	R-500 (Yoke-DIN)	S-20	BLACK
RS-530	R-500 (Yoke-DIN)	S-30	BLACK
RS-670	R-600 (Yoke-DIN)	S-70	SILVER
RS-680	R-600 (Yoke-DIN)	S-80	BLACK
RS-790	R-700 (Yoke-DIN)	S-90	BLACK

Safe 2nd Stage Model No.	Cover
SS-20	YELLOW

Notice: "The PPE (Personal Protective Equipment) mentioned in this User's Manual was submitted to tests for validation of the design and certified according to Art. 10 of Directive 89/686/EEC by RINA - Via Corsica, 12-16128 Genova ITALY, Notified body n 0474. This device is in compliance with EN 250:2000.

The CE marking means the compliance of the device to the Basic Health and Safety Requirements of Annex II of Directive 89/686/EEC. The number 0474 near the CE identifies the Notified Body RINA, entitled for the EC quality control system for the final product according to Art. 11.A of Directive 89/686/EEC."

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SECTIONS

SECTION I

WARNING READ CAREFULLY
Unless otherwise specified TUSA regulators should be used only with open circuit compressed air breathing equipment. Use with oxygen-enriched air is not authorized and is dangerous. The compressed air must be in compliance with the standard EN12021.

Before any attempt is made to use this regulator underwater, you MUST have received training and CERTIFICATION in the technique of sport diving from a recognized certification agency. Use of this equipment by a person who is not certified by a recognized agency shall render all warranties, express or implied, null and void. Use of regulators by uncertified or untrained persons is dangerous and can result in severe injury or death. This regulator is not intended for commercial use with surface supplied air.

Before each use, the regulator must be given a thorough visual inspection and functional test. NEVER dive with a regulator which shows signs of damage or provides substandard performance. Always use regulator as designated combination of first stage and second stage. As inappropriate combination of first and second stages may result deterioration of performance, do not connect other second stages to first stages or vice versa.

Repair, servicing, or addition of accessories (e.g. pressure gauge) to this regulator is to be performed ONLY by a qualified TUSA Service Facility. The HP and LP outlets of the first stage have intentionally been fitted with different threads to prevent the possibility of incorrect fitting of accessories.

Always apply pressure to the regulator gradually by opening the cylinder valve SLOWLY, NEVER lubricate any part of the regulator (especially the rubber o-ring seal between the cylinder valve and regulator) with a hydrocarbon based lubricant.

Notice:
Model RS-340, 350, 460, 520, 530, 670, 680 and 790 are intended to be used up to a 50 meter (164 feet) maximum water depth only.
Model RS-520, 530, 670 and 680 are restricted to be used above the water temperature 10°C.
Model RS-340, 350, 460 and 790 can be used in any underwater temperature.

TUSA first stage regulators are available with either a Yoke/INT or DIN connection:
Yoke/INT: Consists of a yoke and screw knob for use in systems up to 230 bar (3300psi) and complies with ISO 12209-1.
DIN: Consists of a knurled and threaded retaining wheel for use in systems of 230 and 300 bar (3300psi and 4350psi) and complies with ISO 12209-2.

SECTION II
DESCRIPTION AND OPERATION

2.0 GENERAL
TUSA regulators are BALANCED PISTON and BALANCED DIAPHRAGM type SINGLE HOSE REGULATORS. The regulator reduces high pressure air from the scuba cylinder to ambient pressure suitable for breathing, through the operation of first and second stage regulators. The first stage regulator reduces incoming high pressure air, to an intermediate pressure of approximately 135psi (9.5bar). The second stage regulator, using a diaphragm operated demand valve, further reduces air from intermediate pressure to ambient pressure permitting normal breathing. The first and second stages of the regulator are connected by a low pressure hose. A swivel yoke (TYPE INT) on the first stage body secures the regulator to the cylinder valve, while an o-ring surrounding the outlet orifice on the cylinder valve ensures an airtight connection to the first stage.

2.1 FIRST STAGES

R-300 First Stage
In order to achieve natural breathing, a dynamic flow hose with a large inner diameter increases the airflow. The R-300 always supplies the diver with stable air at any tank pressure or depth, delivering maximum breathing ease and comfort.

R-400 First Stage
The R-400 offers a first stage with the balanced diaphragm design. This design features minimum variation in intermediate pressure in response to changes in residual cylinder pressure and depth. It also offers two high flow LP ports (HFP) that are close to the diaphragm to increase air flow by approximately 15%. The R-400 meets the European Standards EN250:2000 requirements for cold water conditions.

R-500 First Stage
The R-500 is a balanced piston type first stage offering superior reliability for stable air supply regardless of depth or residual pressure.

R-600 First Stage
The R-600 offers a compact design weight of just 630g during actual use. This allows the R-670 to only be a total weight of just 1050g for the first and second stages. The balanced diaphragm first stage features minimum variation in intermediate pressure in response to changes in residual cylinder pressure and depth.
The ports are in left-right symmetry (H.P.x2, L.P.x4) for easier attachment to tanks.

R-700 First Stage
The R-700 is a balanced diaphragm first stage with key design and performance characteristics:
1) Four intermediate pressure ports and two high pressure ports, 2) Balanced first stage, with a built-in antifreeze system, 3) Replaceable HP seat and HP poppet for durability and servicing, 4) Two special high flow LP ports (HFP) close to the diaphragm offer approximately 15% greater air flow, 5) Dry balance chamber prevents water contact with the diaphragm and the spring for superior cold water performance. The R-700 meets the European Standards EN250:2000 requirements for cold water conditions.

2.2 SECOND STAGES

Demand System
The demand system is designed to significantly reduce rubbing resistance of moving parts and air resistance. The result is smoother and more natural valve opening /closing.

Lightweight Housing
The second stage main unit is smaller and lighter to reduce water resistance during diving, thus reducing the load on the face and jaw during use. The main body materials are super-tough nylon (heat pliable polyamide resin) reinforced with glass fiber for outstanding hardness and shock resistance. The materials also offer superior tensile strength, dimensional stability, heat resistance, weather resistance and chemical resistance.

Intake Resistance
The second stage includes a director to forcibly guide air from the demand valve. That prevents free flow while significantly lessening intake resistance. The result is one of the lightest intake resistance values in the industry compared with products from other companies.

High Density Silicone Mouthpiece (S-60, S-90)
The high density silicone mouthpiece provides added comfort and reduced jaw fatigue.

Ortho-Conscious Mouthpiece (S-20, 30, 40, 50, 70, 80)
The ortho-consciously designed mouthpiece further enhances the comfort of bite, fit, and stability. Even with a light bite, a high level of stability is achieved, so there is no fatigue from long periods of usage.

Venturi Adjustment Lever (S-80)
The addition of a venturi adjustment lever on the S-80 allows the regulator to power assist the diver when underwater utilizing the natural venturi effect. The diver can also adjust the lever to prevent free flow such as on a surface swim.

Dive/Surface Control (S-60, S-90)
The S-60 and S-90 second stages feature a control to increase or decrease the sensitivity of the air flow. Turn the adjustment to "SURFACE" before the dive or when using the second stage as an octopus. Turn the adjustment to "DIVE" to maximize sensitvity and increase performance during the dive.

Adjustment Knob (RS-340, 670, 680)
The adjustment knob also introduces a TUSA innovation, an "easy touch" adjustment of the breathing resistance at the twist of a knob. Ten full turns provides smooth, accurate adjustment for effortless breathing.

Swivel Joint (RS-340, 350, 670, 680)
For optimum performance and comfort, a swivel joint is fitted between the second stage and the joint section of the low pressure hose. The swivel joint allows flexibility of the hose to eliminate hose tension at the mouthpiece for a more natural and comfortable experience.

"Air Refresher" Filter (RS-350)
There are two types of high tech filters built into the second stage. An active carbon filter cleans the air and absorbs smells, while a metal fiber filter eliminates particles as small as 100 microns. This makes sure that the cleanest and
safest air is supplied to the diver.

S.E.A. - Sequential Exhaust Assist [PAT.P.] (RS-680)
The Sequential Exhaust Assist (S.E.A.) is an auxiliary exhaust valve, located on top of the S-80 elliptical case that reduces primary exhaust resistance and significantly decreases workload, thus allowing the diver to be more air efficient.

SECTION III
PRE-DIVE PROCEDURES

WARNING
Do not attempt to connect low pressure hoses to the high pressure ports with the use of an adapter. Improper connection will cause damage to the equipment and could result in serious personal injury. Low pressure components are not intended to withstand pressures greater than 28 bar (400 psi). When installing your accessory hoses, avoid damaging the o-ring. Tighten gently, but firmly into the first stage housing.

SCUBA complying with EN 250 are not intended for more than one user to breathe from at the same time. If SCUBA are configured and used by more than one diver at the same time, then the cold water and breathing performances may not fulfill the requirements of EN 250.

PRE-DIVE OPERATING INSTRUCTIONS

1. Position the tank valve so the outlet points toward the diver.

2. Remove the dust cap from the first stage inlet and place the yoke (or DIN adaptor) in the center of the cylinder valve connection.

3. Position the first stage body so that the second stage hose goes over the right shoulder of the diver.

4. Hand-tighten the yoke screw or DIN adapter screw.

5. Check all hose connections to the first and second stages. If they can be loosened by hand, they should be tightened with a wrench prior to pressurizing the system.

6. Check the submersible pressure gauge/instrument to make sure it indicates zero pressure.

7. Open the tank valve slowly to gradually allow air into the regulator.
   NOTE: During this operation, depress the second stage purge button to reduce shock to the valve mechanism. Do not perform this operation in a cold environment below 10°C (50°F). Performing this in a cold environment may cause "freeze-up" of the regulator which can render it inoperable. If this occurs, you should contact a TUSA authorized service center.

8. Check the submersible pressure gauge/instrument to ensure that it indicates the proper tank pressure.

9. Check the tank/regulator connection for leakage. If leakage exists, it may be caused by incorrect mounting of the regulator on the tank valve, or by a damaged o-ring in the tank valve.

10. To confirm that the regulator delivers air properly, first exhale through the mouthpiece to blow any foreign matter out of the second stage, then inhale. A few of these breathing cycles should immediately indicate proper function.

11. If you are using the second stage as an Octopus regulator, it is strongly recommended to utilize an Octopus plug to prevent any foreign matter from entering the second stage through the mouthpiece.

12. When the second stage is not in your mouth, uncontrolled air delivery can take place. This can be stopped by turning the second stage upside down and allowing it to fill with water. Should the air delivery continue, abort the dive and have the regulator inspected by a TUSA Authorized Service Center.

SECTION IV
AFTER DIVE PROCEDURES

Providing the best possible preventative and routine maintenance before, after, and between dives will help to ensure the maximum life of your TUSA Regulator. To achieve this goal, there are a number of simple, yet important, routine maintenance procedures that should be followed by the diver after each use of the equipment. The following procedures should be diligently followed in order to obtain the maximum life and serviceability from your regulator.

1. After each day of diving, the regulator must be cleaned, inspected, and prepared for the next use, or for storage. As soon as the regulator is removed from the air cylinder, reinstall the dust cap over the regulator inlet port. This cap is normally attached to the first stage and therefore has been underwater. Be sure to dry all the water out of this cap before securing it over the inlet port. Ensure that the o-ring, if fitted, is in place inside the dust cap.

2. As soon as possible after diving, the regulator should be soaked in warm, not over 50°C (122°F) water to remove salt and mineral deposits. The preferred method is to attach the regulator to a charged air cylinder, open the cylinder valve, and thoroughly soak both the first and second stage regulators. Pay particular attetion to directing water into the mainspring cavity of the first stage regulator, the second stage mouthpiece, and the holes in the second stage cover. Depress the purge button several times while the regulator is submerged in water. Dry the regulator by pressing on the purge button with the mouthpiece pointing down. Place the dust cap in position in the yoke, or over the DIN screw. Soaking regulator parts in warm water will remove more salt and mineral deposits than will conventional rinsing. It will loosen deposits on interior components that rinsing will not (if no charged air cylinder is available, follow the above procedure but be very careful NOT to depress the purge button, or leave dust cap off, when the regulator is submerged in water. Failure to do this will allow water to enter both regulator stages and may result in internal corrosion). Simply soak the exterior of the first stage thoroughly, and proceed as above when cleaning the second stage.

3. Store in a clean equipment box, or as an alternative, seal inside a plastic bag. Store in a clean dry place.

4. Lightly lubricate the yoke screw with silicone grease.

5. Never store the regulator while it is still connected to the diving cylinder.

6. Do not use any type of solvent to clean any part of the regulator. Do not expose any part of the regulator to silicone spray, as some aerosol propellants attack or degrade rubber and plastic material.

7. Do not carry the diving cylinder by the regulator as such abuse will eventually damage the regulator or the cylinder valve. Do not expose the regulator to unnecessary shocks or impact.

SECTION V
CONTAMINATED WATER DIVING

Sophisticated diving gear designed for use in contaminated water provides constant positive pressure inside the regulator case and utilizes redundant exhaust valve passages. TUSA regulators are not designed to provide this requirement and therefore are not recommended for use in contaminated water diving.

SECTION VI
RS-340/350/460/680/790 USE IN COLD WATER DIVING

This is important information. Be sure to read it.

WARNING:
RS-340/350/460/680/790 regulators for the European market have passed the cold water performance testing (water temperature: 4°C) specified by EN250. When using these regulators in cold water at temperatures of 10°C or below, be sure to observe the following notices.

General Caution Items

- Before you use the regulator, be sure to receive specialized instruction on cold water diving from a diving instruction authority so that you learn the necessary skills and knowledge.
- Be sure to receive orientation for the diving environment.
- Be sure to obey the instructions of your instructors and guides.

Equipment Handling Caution Items

The conditions for freezing up of the regulator change in accordance with the breathing conditions of its user (breathing volume, breathing speed, number of breaths) and the environment conditions before and during use.

- Do not take shallow, fast breaths. It makes freezing occur more easily.
- To avoid free flow condition due to freezing NEVER push the purge button while the regulator is outside of the water.
- Store the regulator at room temperature. When diving, store your regulator in its bag to keep it warm until just before use.
- When waiting between dives, always keep your regulator warm. Do not leave it out in a cold environment.
- Your regulator may freeze depending on the conditions. If your regulator freezes, it may free flow. If it does, use breathing technique for free flow conditions.
- When diving in water temperatures of 10°C or below, always swim at a safe depth from which you can perform an emergency swimming ascent.

SECTION VII
SCHEDULED MAINTENANCE

1. Do not assume that a regulator is in good working order because of storage or infrequent use. Remember that either prolonged or improper storage can still result in internal corrosion and/or deterioration of o-ring seals.

2. Have your regulator cleaned and adjusted frequently. The frequency will depend upon the amount of use given the regulator and the conditions of use. However, TUSA strongly recommends inspection, overhaul and scheduled parts replacement at least once a year in order to ensure the optimum functioning of the regulator. Certain parts require replacement at specific intervals. This work must be carried out by a competent service facility. Use as rental equipment and/or in salt, chlorinated (swimming pool), or polluted fresh water might require cleaning and overhaul of the regulator every three to six months. Remember that chlorinated water is an especially bad environment for regulators as the chlorine chemically deteriorates the neoprene rubber components.

3. Regularly inspect the sintered filter in the inlet port of the first-stage. If it is discolored or corroded, replacement by trained personnel is required. Also, at this point, the entire regulator may need a general overhaul with replacement of all soft seals and non-reusable components. Rust or aluminium oxide (grey powder) deposits on the sintered filter are usually an indication that salt water has entered the air cylinder and caused internal corrosion. At this time you air cylinder(s) should be internally inspected by a qualified and competent service control and then cleaned, or hydrostatically tested as required.

4. Do not disassemble your regulator. There are no adjustments which can or need to be carried out by the user. Take the regulator to a qualified TUSA dealer or service facility for service. Ensure that only original parts are used to service your regulator.

SECTION VIII
"AIR REFRESHER" FILTER REPLACEMENT
(RS-350)

1. The timing for replacing the filter is the same as for the equipment overhaul. TUSA strongly recommends that you have your filter replaced every 100 dives, or a year after purchase or the last overhaul (or filter replacement) regardless of the conditions of use. The TUSA repair facility will replace the filter during the overhaul, so be sure to have your equipment overhauled at the specified interval. If you have already had your equipment overhauled and only wish to replace the filter, you must also have this work carried out at a TUSA repair facility.

2. Never try to overhaul the equipment or replace the "Air Refresher" filter yourself, as it could cause a serious accident.

SECTION IX
Enriched Air Nitrox Policy (EAN)

TUSA regulators are built with a high level of care using quality components and lubricants. The following TUSA regulators in standard condition have passed required testing for Enriched Air Nitrox (EAN) use by the ASTM (American Society for Testing and Materials) G-175 test protocols.

Regulator Models: R-700, R-600, R-500, R-400, R-300

It has been confirmed as the results of fire tests for these Standard regulators that fire will not affect the internal components of the products and that the products will not cause fire to spread.

This means that these standard regulators can be used with EAN having an oxygen mixture ratio equal or less than 40% and standard compressed air alternately.

EAN mixtures equal or less than 40% oxygen will not affect the internal components of the products and consequently the products have a reduced combustion risk.

The major premise, however, of this statement is that clean compressed air must be used in this case. If compressed air without this guarantee is used, the product must be overhauled prior to any subsequent use of the product with EAN having an oxygen mixture ratio equal or less than 40%.

WARNING:

- Due to a high possibility of combustion never use EAN having an oxygen mixture ratio higher than 41% under any circumstances.
- If it is the intent of the owner to use the regulator with standard compressed air and with Enriched Air Nitrox (EAN) clean oxygen-compatible compressed air must be used at all times.
- Non oxygen-compatible compressed air may contain hydrocarbons that contaminate the regulator components. This contamination can cause combustion when combined with EAN mixtures.
- If unclean compressed air (usually occurring when the infilling compressor oil component becomes mixed into the air) is used in the regulator and subsequently, EAN (with an oxygen mixture ratio lower than 40%) is used, the remaining contamination inside the regulator greatly increases the possibility of ignition.

CAUTION:

- Regulator models not listed above have not been properly tested for use with Enriched Air Nitrox (EAN). Therefore, use with EAN should be avoided at all times.

FINAL NOTE

Service your regulator often, your personal safety and the mechanical integrity of your regulator depend on it.

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