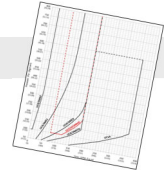


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- Isolation Coupling
- TDF (Tank Discharge Filter)
- Adapters (Thread to Grooved, 2" to 3/4" )
- Quick Disconnect (Two Way Shut Off)
- MaxGlide (Oil Additive)



Certifications  
Maxton is ISO 9001:2015 certified and all main line products are CSAB44 and/or UL Listed.



**FORWARD:** The products and information contained herein have been developed by **MAXTON MANUFACTURING COMPANY**. They are subject to change. The information is intended for use by professionals trained in the manufacture, installation and maintenance of hydraulic elevator systems. While the information is deemed reliable, **MAXTON** disclaims any liability arising from misinterpretation.

**LIMITED WARRANTY:** All control and safety valves sold by **MAXTON** are warranted only to purchasers for resale or for use in business or original equipment manufacture, against defects in workmanship or materials, under normal use, for two (2) years from date of purchase. Any part, which is determined by **MAXTON** to be defective in material or workmanship and returned to **MAXTON**, shipping costs prepaid, as exclusive remedy, will be repaired or replaced at **MAXTON'S** option. This warranty cannot be transferred or assigned to third parties. All warranties are considered null and void upon transfer unless the intent to transfer to a third party is expressly indicated in a purchase order or the customer is a known OEM and a user of **MAXTON'S** products. Any alteration or removal of designated serial numbers will cause the warranty to be immediately null and void.

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**RETURN/REPAIR INQUIRIES:** All in and out-of-warranty repair inquiries are to be directed to the **MAXTON** Sales Department. Before returning a product, contact the Sales Department to obtain a return authorization number (RA #). The designated RA # should then be marked on the outside of the package. To avoid processing delays, be sure to include the following: Purchase order number and RA #, returnee's name, address and phone number, the model number and serial number, repair instructions and description of problem. All pipes, coils and covers must be removed prior to shipping. **MAXTON** will not be responsible for lost or damaged pipes, coils or covers. Pipes requiring removal by **MAXTON** are subject to additional charges. A valve returned with missing components, including flanges, is subject to replacement charges. All products must be returned freight prepaid. Brokerage fees, taxes and duties, when applicable, must be paid by returnee. New product returned for credit is subject to a 15% restocking fee, plus the original freight charge.

**MODIFICATION AND/OR UNAUTHORIZED REPAIRS:** In the event of modification and/or repair of a **MAXTON** product by an unauthorized repair facility, you will indemnify us and hold us harmless from any liability or damage whatsoever arising out of the subsequent use of the product. Use of an unauthorized repair facility voids all warranty claims.

**PRODUCT PRICING:** Product prices are subject to change without notice.

**In order to properly size and quote a valve(s) for your job, please complete all REQUIRED fields:**

### \*Required fields

\* Is this for an order? ☐

\* Is this for pricing only? ☐

- \* 1) Piston diameter(s): \_\_\_\_\_ Single \_\_\_\_\_ Dual \_\_\_\_\_ Telescopic 2 or 3 stage
- \* 2) Speed of the car (F.P.M.): \_\_\_\_\_ \* Capacity of the car: \_\_\_\_\_
- \* 3) No load pressure; "B" port reading static: (no load) \_\_\_\_\_ \* **or** empty car weight: \_\_\_\_\_
- \* 4) Is elevator roped 1:2: ☐ **Yes** ☐ **No** \* Does this job require down speed regulation: \_\_\_\_\_
- \* 5) Do you require an OSV (pipe rupture or seismic safety valve) for this installation? \_\_\_\_\_
- \* 6) Quantity of valves required for job: \_\_\_\_\_ If more than 1 is this for ☐ Separate Elevators.  
☐ Tandem/Dual Pump Units.
- \* 7) If replacing a Maxton valve the serial number is: \_\_\_\_\_

\* **Coil voltage on valve:** ☐ 115VAC (RED) ☐ 230VAC (GREEN) ☐ 115VDC (BLACK)

**\* COMPLETE FOR UC4/ UC4M /UC4MR:**  
 - Facing the adjustments, jack is to the:

☐ Left ☐ Right

- Type of flanges: Pump Jack Tank

2" NPT (Thd) ☐ ☐ ☐

2" Grooved ☐ ☐ ☐

Low Pressure Switch Yes No (CIRCLE ONE)

Quick Disconnect Coupling (1/8" NPT) Yes No

Quick Disconnect Nipples (1/8" NPT) Yes No

**\* COMPLETE FOR UC1/UC1A/UC2/UC2A:**

-The bottom port is the (circle one): PUMP / TANK Flanges:

Flanges:	2"	2.5"	3"	2"	2.5"
	Grooved	Grooved	Grooved	NPT	NPT

Pump: ☐ ☐ + ☐ ☐ ☐

Jack: ☐ ☐ ☐ ☐ ☐

Tank: ☐ ☐ ++ ☐ ☐ ☐

Low Pressure Switch Yes No (CIRCLE ONE)

Quick Disconnect Coupling (1/8" NPT) Yes No

Quick Disconnect Nipples (1/8" NPT) Yes No

+ Not recommended on UC2A  
 ++ Not recommended on UC2

### We Also Carry:

MAXGLIDE OIL ADDITIVE (Eliminates stick slip / chatter)

ISOLATION COUPLINGS (2", 2.5", 3" Grooved, 2" NPT)

TDF (Tank discharge filtration system)

SHUT OFF BALL VALVES (2", 2.5" Grooved or NPT, 3" Grooved)

### SAFETACH2 ELEVATOR PERFORMANCE METER



*Call for more information*

**Remember: You can order on-line or size valves on our website @ [www.maxtonvalve.com](http://www.maxtonvalve.com)  
 24 hrs. a day, 7 days a week! For assistance contact Sales at (775) 782-1700**

Name: \_\_\_\_\_ Phone #: \_\_\_\_\_

Company Name: \_\_\_\_\_ Fax #: \_\_\_\_\_

Bill To City Address: \_\_\_\_\_

Shipping Address: \_\_\_\_\_

PO# or Credit Card # \_\_\_\_\_ Name on Credit Card: \_\_\_\_\_

Shipping Instructions: \_\_\_\_\_ Credit Card Expiration Date \_\_\_\_\_

(UPS ground service can take up to 6 business days depending on your location)

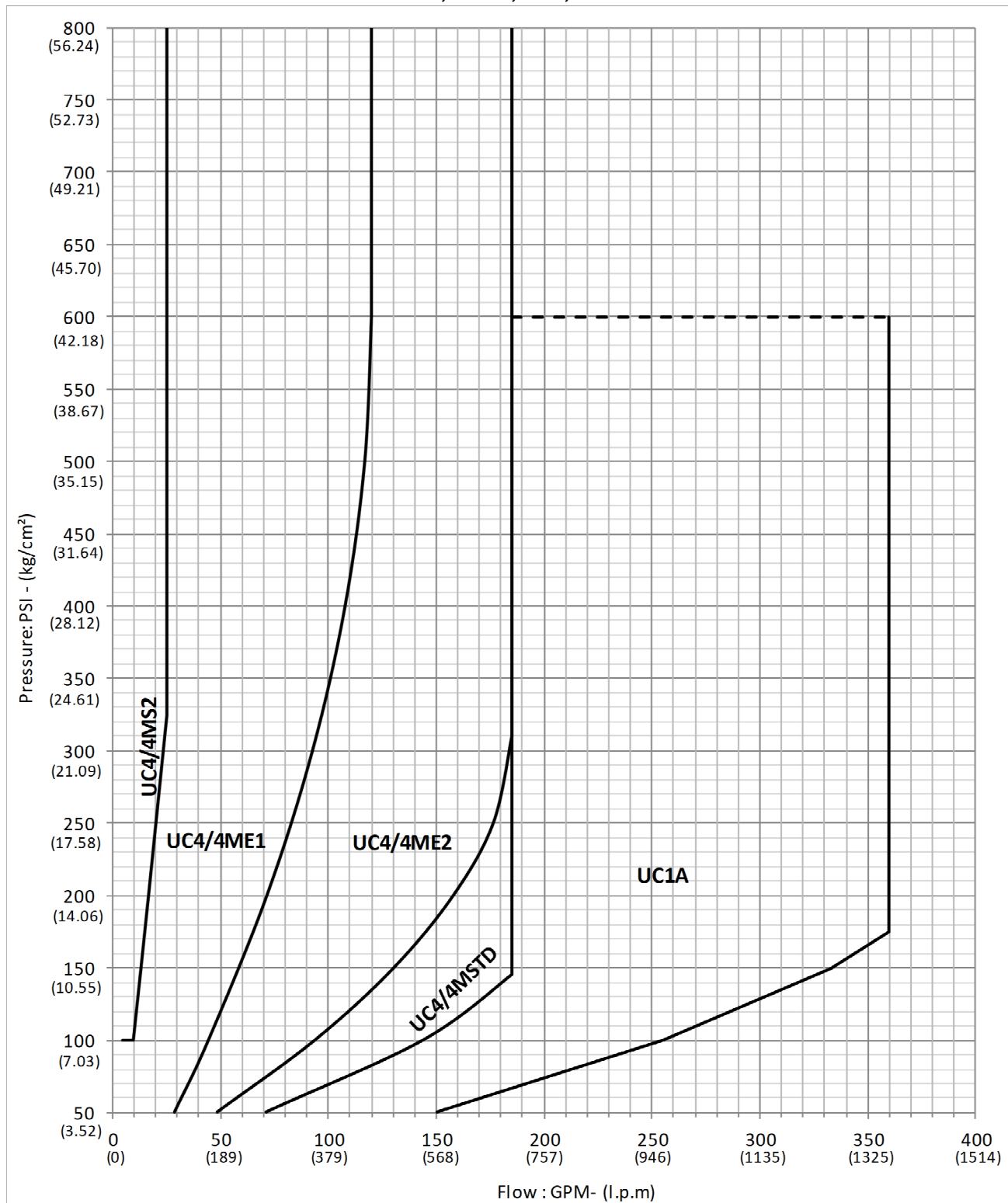
Certifications  
 Maxton is ISO 9001:2015 certified and  
 all main line products are CSAB44 and/or UL Listed.



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## UC4, UC4M, UC1, UC1AB44

**HOW TO SELECT A VALVE:**

1. APPLY MINIMUM P.S.I. AND G.P.M. (OR kg/cm² AND L.P.M.) TO CHART.
2. DETERMINE POINT OF INTERSECTION.

**NOTE:**

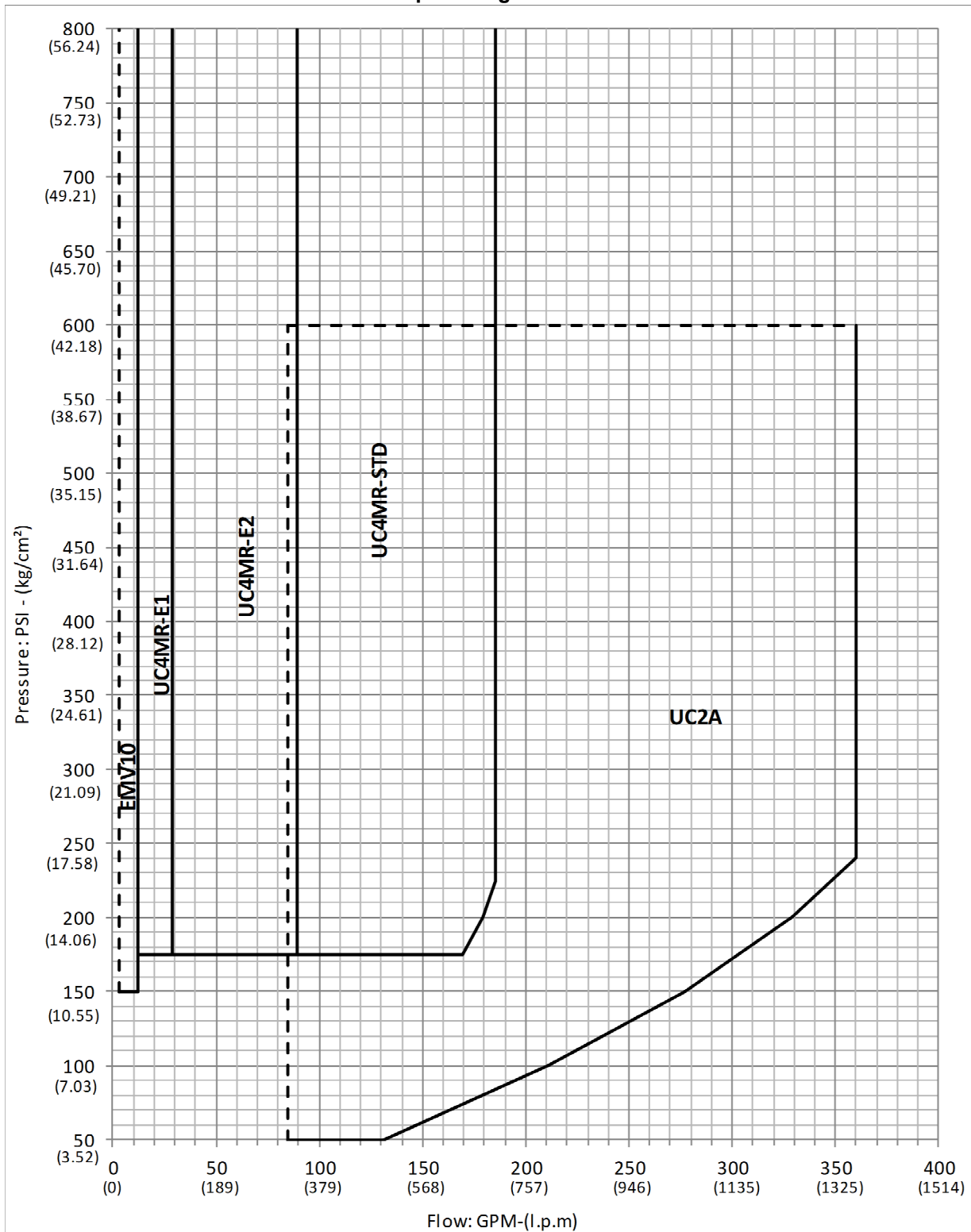
THIS CHART ASSUMES THE UP AND DOWN CONTRACT SPEEDS ARE THE **SAME**.  
(CONTRACT SPEED = FULL DOWN SPEED WITH RATED LOAD)

**MAXIMUM OPERATING PRESSURES**

UC1 / 1A SERIES VALVES: 600 P.S.I.

UC4 / UC4M SERIES VALVES: 800 P.S.I.

## Down Speed Regulated Valves

**HOW TO SELECT A VALVE:**

1. APPLY MINIMUM P.S.I. AND G.P.M. (OR kg/cm² AND L.P.M.) TO CHART.
2. DETERMINE POINT OF INTERSECTION.

**NOTE:**

THIS CHART ASSUMES THE UP AND DOWN  
CONTRACT SPEEDS ARE THE **SAME**.

(CONTRACT SPEED = FULL DOWN SPEED WITH RATED LOAD)

**MAXIMUM OPERATING PRESSURES**

UC4MR SERIES VALVES: 800 P.S.I.

UC2/UC2A SERIES VALVES: 600 P.S.I.

EMV10 SERIES VALVE: 1000 P.S.I.

## STATIC PRESSURE TABLE

POUNDS PER SQUARE INCH BASED ON NET LOAD (POUNDS)  
DIRECT ACTING APPLICATIONS

### NET JACK PISTON DIAMETER (INCHES)

	2	2 1/2	2 3/4	3	3 1/2	4	4 3/8	4 1/2	5	5 7/16	5 1/2	6	6 1/2	7	7 1/2	8	8 1/2	9 1/2	10 5/8	12 5/8
<b>1000</b>	318	204	168	141	104	80	67	63	51	43	42	35	30	26	23	20	18	14	11	8
<b>1500</b>	477	306	253	212	156	119	100	94	76	65	63	53	45	39	34	30	26	21	17	12
<b>2000</b>	637	407	337	283	208	159	133	126	102	86	84	71	60	52	45	40	35	28	23	16
<b>2500</b>	796	509	421	354	260	199	166	157	127	108	105	88	75	65	57	50	44	35	28	20
<b>3000</b>	955	611	505	424	312	239	200	189	153	129	126	106	90	78	68	60	53	42	34	24
<b>3500</b>		713	589	495	364	279	233	220	178	151	147	124	105	91	79	70	62	49	39	28
<b>4000</b>		815	673	566	416	318	266	252	204	172	168	141	121	104	91	80	70	56	45	32
<b>4500</b>		917	758	637	468	358	299	283	229	194	189	159	136	117	102	90	79	63	51	36
<b>5000</b>			842	707	520	398	333	314	255	215	210	177	151	130	113	99	88	71	56	40
<b>5500</b>			926	778	572	438	366	346	280	237	231	195	166	143	124	109	97	78	62	44
<b>6000</b>				849	624	477	399	377	306	258	253	212	181	156	136	119	106	85	68	48
<b>6500</b>				920	676	517	432	409	331	280	274	230	196	169	147	129	115	92	73	52
<b>7000</b>				990	728	557	466	440	357	301	295	248	211	182	158	139	123	99	79	56
<b>7500</b>					780	597	499	472	382	323	316	265	226	195	170	149	132	106	85	60
<b>8000</b>					832	637	532	503	407	345	337	283	241	208	181	159	141	113	90	64
<b>8500</b>					883	676	565	534	433	366	358	301	256	221	192	169	150	120	96	68
<b>9000</b>					935	716	599	566	458	388	379	318	271	234	204	179	159	127	102	72
<b>9500</b>					987	756	632	597	484	409	400	336	286	247	215	189	167	134	107	76
<b>10000</b>						796	665	629	509	431	421	354	301	260	226	199	176	141	113	80
<b>12000</b>						955	798	755	611	517	505	424	362	312	272	239	211	169	135	96
<b>14000</b>							931	880	713	603	589	495	422	364	317	279	247	198	158	112
<b>16000</b>									815	689	673	566	482	416	362	318	282	226	180	128
<b>18000</b>									917	775	758	637	542	468	407	358	317	254	203	144
<b>20000</b>										861	842	707	603	520	453	398	352	282	226	160
<b>25000</b>												884	753	650	566	497	441	353	282	200
<b>30000</b>													904	780	679	597	529	423	338	240
<b>ADD PER 100 lbs.</b>	31.8	20.4	16.8	14.1	10.4	7.96	6.65	6.29	5.09	4.31	4.21	3.54	3.01	2.60	2.26	1.99	1.76	1.41	1.13	0.80

STATIC PRESSURE (P.S.I.)

**RATED FLOW TABLE**

GALLONS PER MINUTE BASED ON CAR SPEED (FEET PER MINUTE)  
DIRECT ACTING APPLICATIONS

**JACK PISTON DIAMETER (INCHES)**

	2	2 1/2	2 3/4	3	3 1/2	4	4 3/8	4 1/2	5	5 7/16	5 1/2	6	6 1/2	7	7 1/2	8	8 1/2	9 1/2	10 5/8	12 5/8
<b>1</b>	0.16	0.26	0.31	0.37	0.50	0.65	0.78	0.83	1.02	1.21	1.23	1.47	1.72	2.00	2.30	2.61	2.95	3.68	4.61	6.50
<b>5</b>	0.82	1.28	1.54	1.84	2.50	3.26	3.90	4.13	5.10	6.03	6.17	7.34	8.62	10	11	13	15	18	23	33
<b>10</b>	1.63	2.55	3.09	3.67	5.00	6.53	7.81	8.26	10	12	12	15	17	20	23	26	29	37	46	65
<b>20</b>	3.26	5.10	6.17	7.34	10	13	16	17	20	24	25	29	34	40	46	52	59	74	92	130
<b>30</b>	4.90	7.65	9.26	11	15	20	23	25	31	36	37	44	52	60	69	78	88	110	138	195
<b>40</b>	6.53	10	12	15	20	26	31	33	41	48	49	59	69	80	92	104	118	147	184	260
<b>50</b>	8.16	13	15	18	25	33	39	41	51	60	62	73	86	100	115	131	147	184	230	325
<b>60</b>	9.79	15	19	22	30	39	47	50	61	72	74	88	103	120	138	157	177	221	276	390
<b>70</b>	11	18	22	26	35	46	55	58	71	84	86	103	121	140	161	183	206	258	322	455
<b>80</b>	13	20	25	29	40	52	62	66	82	97	99	118	138	160	184	209	236	295	368	520
<b>90</b>	15	23	28	33	45	59	70	74	92	109	111	132	155	180	207	235	265	331	415	585
<b>100</b>	16	26	31	37	50	65	78	83	102	121	123	147	172	200	230	261	295	368	461	650
<b>110</b>	18	28	34	40	55	72	86	91	112	133	136	162	190	220	252	287	324	405	507	715
<b>120</b>	20	31	37	44	60	78	94	99	122	145	148	176	207	240	275	313	354	442	553	780
<b>125</b>	20	32	39	46	62	82	98	103	128	151	154	184	215	250	287	326	368	460	576	813
<b>130</b>	21	33	40	48	65	85	102	107	133	157	160	191	224	260	298	339	383	479	599	845
<b>140</b>	23	36	43	51	70	91	109	116	143	169	173	206	241	280	321	366	413	516	645	910
<b>150</b>	24	38	46	55	75	98	117	124	153	181	185	220	259	300	344	392	442	552	691	975
<b>160</b>	26	41	49	59	80	104	125	132	163	193	197	235	276	320	367	418	472	589	737	1,040
<b>170</b>	28	43	52	62	85	111	133	140	173	205	210	250	293	340	390	444	501	626	783	1,106
<b>180</b>	29	46	56	66	90	118	141	149	184	217	222	264	310	360	413	470	531	663	829	1,171
<b>190</b>	31	48	59	70	95	124	148	157	194	229	234	279	328	380	436	496	560	700	875	1,236
<b>200</b>	33	51	62	73	100	131	156	165	204	241	247	294	345	400	459	522	590	736	921	1,301

**Flow (GPM)**

## STATIC PRESSURE TABLE

PRESSURE IN BARS BASED ON NET LOAD (KILOGRAMS)  
DIRECT ACTING APPLICATIONS

NET JACK PISTON DIAMETER (mm)

	60	70	80	90	100	110	120	125	140	150	160	180	200	210
<b>100</b>	3.48													
<b>200</b>	6.97	5.12	3.92											
<b>300</b>	10.45	7.68	5.88	4.65	3.76									
<b>400</b>	13.94	10.24	7.84	6.19	5.02	4.15	3.48							
<b>500</b>	17.42	12.80	9.80	7.74	6.27	5.18	4.36	4.01						
<b>1000</b>	34.85	25.60	19.60	15.49	12.54	10.37	8.71	8.03	6.40	5.58	4.90	3.87		
<b>1500</b>		38.40	29.40	23.23	18.82	15.55	13.07	12.04	9.60	8.36	7.35	5.81	4.70	4.27
<b>2000</b>			39.20	30.97	25.09	20.73	17.42	16.06	12.80	11.15	9.80	7.74	6.27	5.69
<b>2500</b>				38.72	31.36	25.92	21.78	20.07	16.00	13.94	12.25	9.68	7.84	7.11
<b>3000</b>				46.46	37.63	31.10	26.13	24.08	19.20	16.73	14.70	11.62	9.41	8.53
<b>3500</b>					43.90	36.29	30.49	28.10	22.40	19.51	17.15	13.55	10.98	9.96
<b>4000</b>						41.47	34.85	32.11	25.60	22.30	19.60	15.49	12.54	11.38
<b>4500</b>						46.65	39.20	36.13	28.80	25.09	22.05	17.42	14.11	12.80
<b>5000</b>							43.56	40.14	32.00	27.88	24.50	19.36	15.68	14.22
<b>5500</b>							47.91	44.16	35.20	30.66	26.95	21.29	17.25	15.64
<b>6000</b>								48.17	38.40	33.45	29.40	23.23	18.82	17.07
<b>6500</b>									41.60	36.24	31.85	25.17	20.38	18.49
<b>7000</b>									44.80	39.03	34.30	27.10	21.95	19.90
<b>7500</b>									48.00	41.81	36.75	29.04	23.52	21.33
<b>8000</b>										44.60	39.20	30.97	25.09	22.76
<b>8500</b>										47.39	41.65	32.91	26.66	24.18
<b>9000</b>											44.10	34.85	28.22	25.60
<b>9500</b>											46.55	36.78	29.79	27.02
<b>10000</b>												38.72	31.36	28.45
<b>15000</b>													47.04	42.67

STATIC PRESSURE (bars)

**RATED FLOW TABLE ( METRIC )**

LITERS PER MINUTE BASED ON CAR SPEED (METERS PER MINUTE)  
DIRECT ACTING APPLICATIONS

**JACK PISTON DIAMETER (mm)**

		60	70	80	90	100	110	120	125	140	150	160	180	200	210
<b>C A R S P E E D  METERS PER MINUTE</b>	<b>1</b>	2.83	3.85	5.03	6.36	7.85	9.50	11.3	12.3	15.4	17.7	20.1	25.4	31.4	34.6
	<b>2</b>	5.65	7.70	10.1	12.7	15.7	19.0	22.6	24.5	30.8	35.3	40.2	50.9	62.8	69.3
	<b>3</b>	8.48	11.5	15.1	19.1	23.6	28.5	33.9	36.8	46.2	53.0	60.3	76.3	94.2	104
	<b>4</b>	11.3	15.4	20.1	25.4	31.4	38.0	45.2	49.1	61.6	70.7	80.4	102	126	139
	<b>5</b>	14.1	19.2	25.1	31.8	39.3	47.5	56.5	61.4	77.0	88.4	101	127	157	173
	<b>10</b>	28.3	38.5	50.3	63.6	78.5	95.0	113	123	154	177	201	254	314	346
	<b>15</b>	42.4	57.7	75.4	95.4	118	143	170	184	231	265	302	382	471	520
	<b>20</b>	56.5	77.0	101	127	157	190	226	245	308	353	402	509	628	693
	<b>25</b>	70.7	96.2	126	159	196	238	283	307	385	442	503	636	785	866
	<b>30</b>	84.8	115	151	191	236	285	339	368	462	530	603	763	942	1039
	<b>35</b>	99.0	135	176	223	275	333	396	430	539	619	704	891	1100	1212
	<b>40</b>	113	154	201	254	314	380	452	491	616	707	804	1018	1257	
	<b>45</b>	127	173	226	286	353	428	509	552	693	795	905	1145		
	<b>50</b>	141	192	251	318	393	475	565	614	770	884	1005	1272		
	<b>55</b>	156	212	276	350	432	523	622	675	847	972	1106			
	<b>60</b>	170	231	302	382	471	570	679	736	924	1060	1206			

**FLOW (LITERS PER MINUTE)**

## SINGLE ACTION CYLINDER DISPLACEMENT

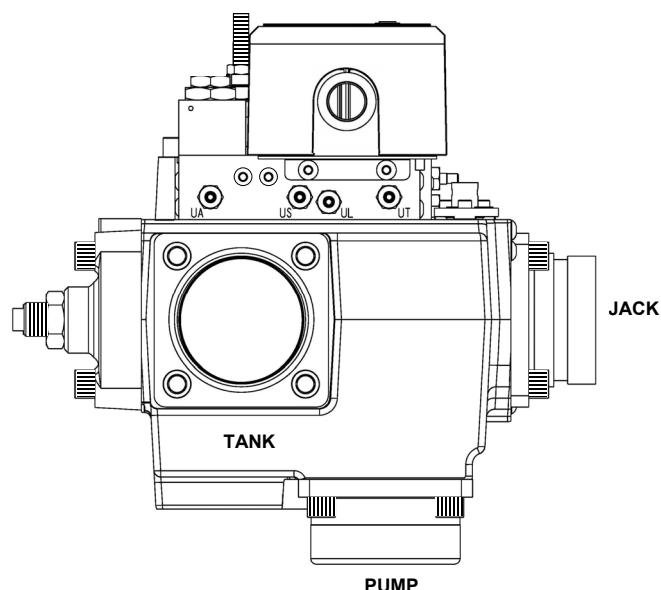
PISTON DIAMETER		PISTON AREA		DISPLACEMENT	
Inches	Millimeters	in <sup>2</sup>	cm <sup>2</sup>	Gallons per foot	Liters per meter
2	50.80	3.142	20.268	0.163	2.024
2-1/4	57.15	3.976	25.652	0.206	2.558
2-1/2	63.50	4.909	31.669	0.255	3.167
2-3/4	69.85	5.940	38.320	0.309	3.837
3	76.20	7.069	45.604	0.367	4.558
3-1/4	82.55	8.296	53.521	0.431	5.353
3-1/2	88.90	9.621	62.072	0.499	6.197
3-3/4	92.25	11.045	66.838	0.574	7.129
3-7/8	98.43	11.793	76.093	0.613	7.613
4	101.60	12.566	81.073	0.653	8.110
4-1/4	107.95	14.186	91.524	0.737	9.153
4-3/8	111.13	15.033	96.996	0.781	9.699
4-1/2	114.30	15.904	102.608	0.826	10.258
4-3/4	120.65	17.721	114.326	0.920	11.425
5	127.00	19.635	126.677	1.020	12.667
5-1/4	133.35	21.648	139.661	1.124	13.959
5-7/16	138.11	23.221	149.810	1.206	14.977
5-1/2	139.70	23.758	153.279	1.234	15.325
5-3/4	146.05	25.967	167.530	1.349	16.753
6	152.40	28.274	182.415	1.469	18.244
6-1/4	158.75	30.590	197.933	1.593	19.783
6-1/2	165.10	33.183	214.084	1.796	22.305
6-3/4	171.45	35.785	230.869	1.858	23.075
7	177.80	38.485	248.287	1.999	24.826
7-1/2	190.50	44.179	285.023	2.295	28.502
7-3/4	196.85	47.173	304.341	2.450	30.427
8	203.20	50.266	324.293	2.611	32.426
8-1/2	215.90	56.745	366.096	2.947	36.599
8-3/4	222.25	60.132	387.948	3.123	38.785
9	228.60	63.617	410.433	3.305	41.045
9-1/2	241.30	70.882	457.304	3.681	45.714
9-3/4	247.65	74.652	481.689	3.878	48.161
10	254.00	78.540	506.707	4.090	50.794
10-1/4	260.35	82.516	532.360	4.296	53.352
10-1/2	266.70	86.590	558.645	4.500	55.886
10-5/8	269.88	88.664	572.046	4.605	57.190
10-3/4	273.05	90.782	585.564	4.716	58.568
11	279.40	95.033	613.116	4.937	61.313
11-1/4	285.75	99.402	641.302	5.160	64.082
11-1/2	292.10	103.869	670.121	5.395	67.001
11-3/4	298.45	108.434	699.573	5.636	69.993
12	304.80	113.098	729.659	5.875	72.962
12-1/4	311.15	117.859	760.378	6.108	75.855
12-1/2	317.50	122.718	791.730	6.372	79.134
12-5/8	320.68	125.185	807.669	6.503	80.761

**Note:** Gallons per minute = displacement (gpf) X car speed (fpm).  
 Liters per minute = displacement (lpm) X car speed (mpm).

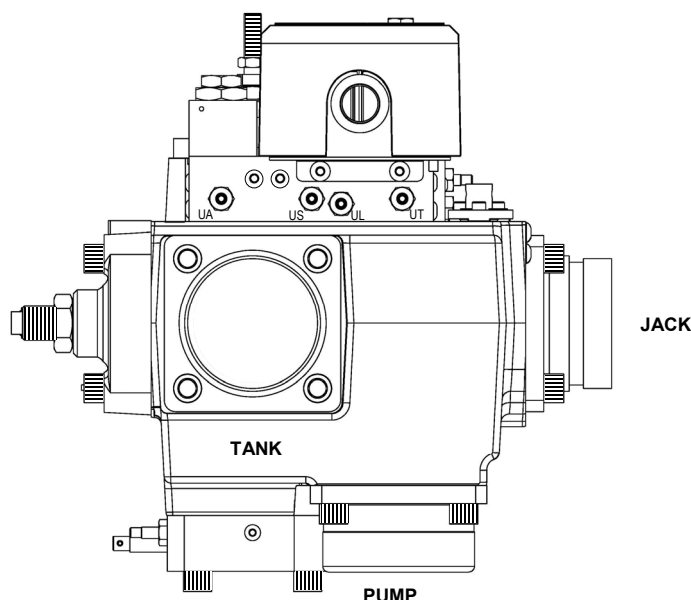


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## Front View



UC1A B44



UC2A B44

**Specifications**

<b>*Maximum Flow**</b>	360 gpm (1363 l/min)
<b>Operating Pressure</b>	
Minimum	50 psi (3.4 bar)
Maximum	600 psi (41.5 bar)

**Note:**

**Consult factory when applications exceed pressure ratio over 2.5 to 1, example (Max. / Min. :280 / 100 )**

**Line Connections**

Jack Port (flange)	2, 2 1/2" NPT or Grooved
Tank Port (flange)	2, 2 1/2" NPT or Grooved
Pump Port (flange)	2, 2 1/2" NPT or Grooved

**Gauge Ports**

Pump Pressure: "A" Port (1/8" NPT)  
 System pressure: "B" Port (1/8" NPT)  
 Pressure Switch: "S" Port (1/8" NPT)  
 80° – 150° F (26° – 65° C)  
 Hyd. ISO VG 32  
 150 SUS @ 100° F (38° C)

**Operating Temperature  
Oil Type****Solenoid Coils**

Encapsulated CSA / UL Listed

**Overall Dimensions**

Width 13 inches (330mm)	Height 12 3/8 inches (314mm)
Depth 11 1/4 inches (286mm)	Weight UC1A 47 lbs, UC2A 50 lbs.

**Standard Features**

- Unit body construction.
- Steel sleeve inserts in valve body.
- Grooved or threaded line connections.
- Feedback control for stall free operation.
- Individualized adjustments.
- Integrated relief valve.
- High efficiency solenoids.
- 115 VAC / 24 VDC solenoid coils.
- Factory tested prior to shipping.
- 2 year limited warranty.

**Additional Standard Features  
UC2AB44**

- Regulated Down Speed Control.

**Optional Features**

- Explosion Proof Coil Cover
- 3" Grooved Flanges
- Low Pressure Switch
- 1/8" or 1/4" Ball Valves
- Quick Disconnect Coupling or Nipple Kit

**Solenoid Coils**

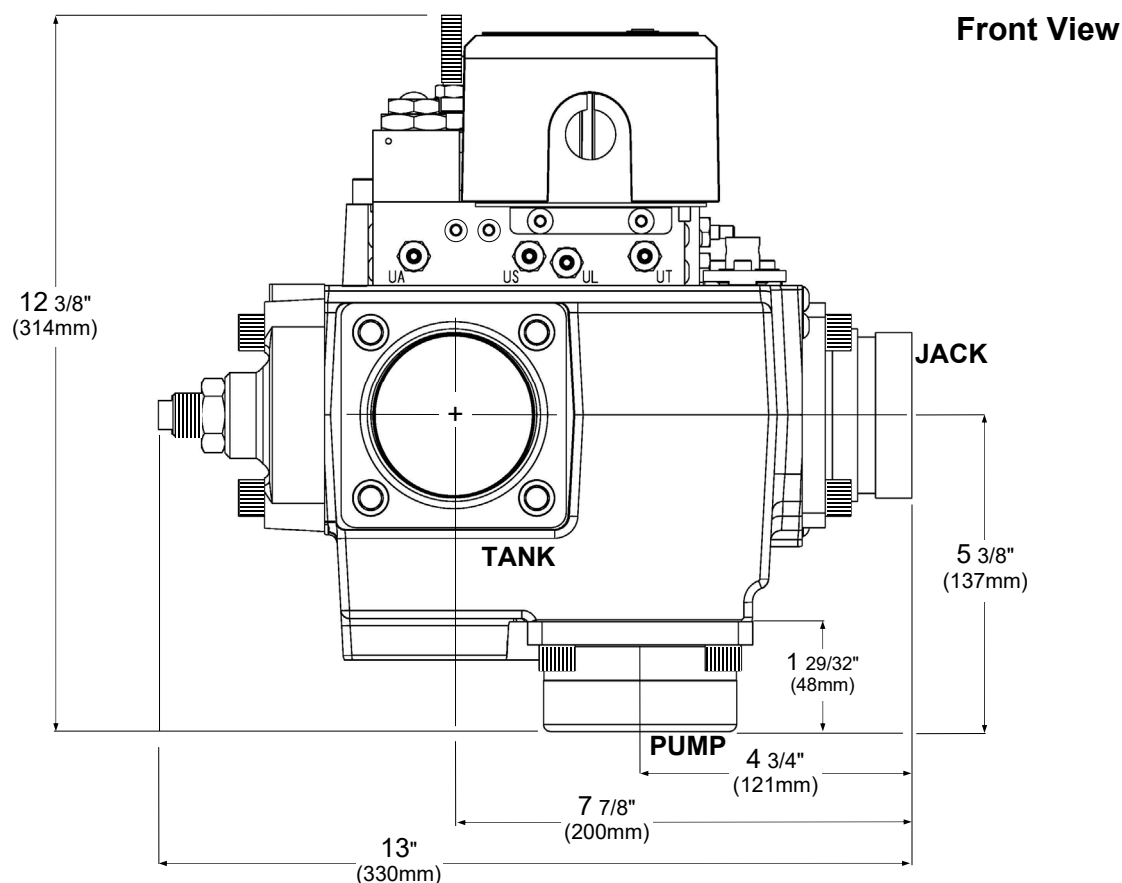
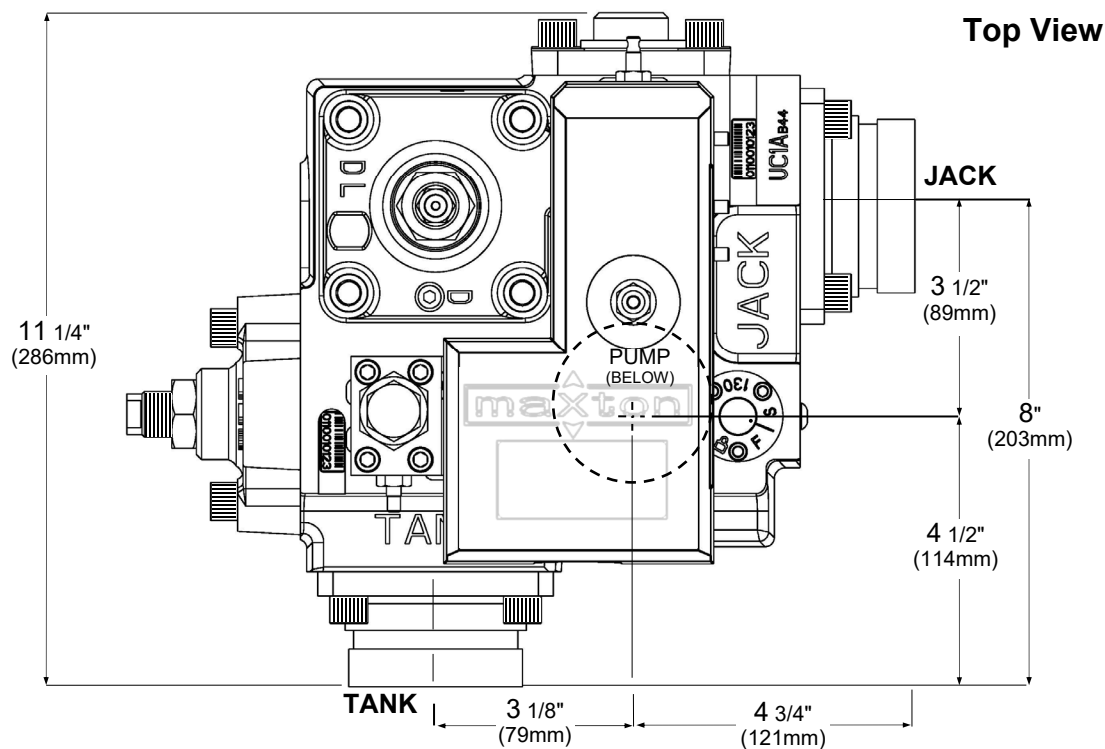
- 12 VDC – 120 VAC Dual Voltage Coils
- 12 VDC Coils
- 230 VAC Coils
- 115 VDC Coils
- 185 VAC Coils

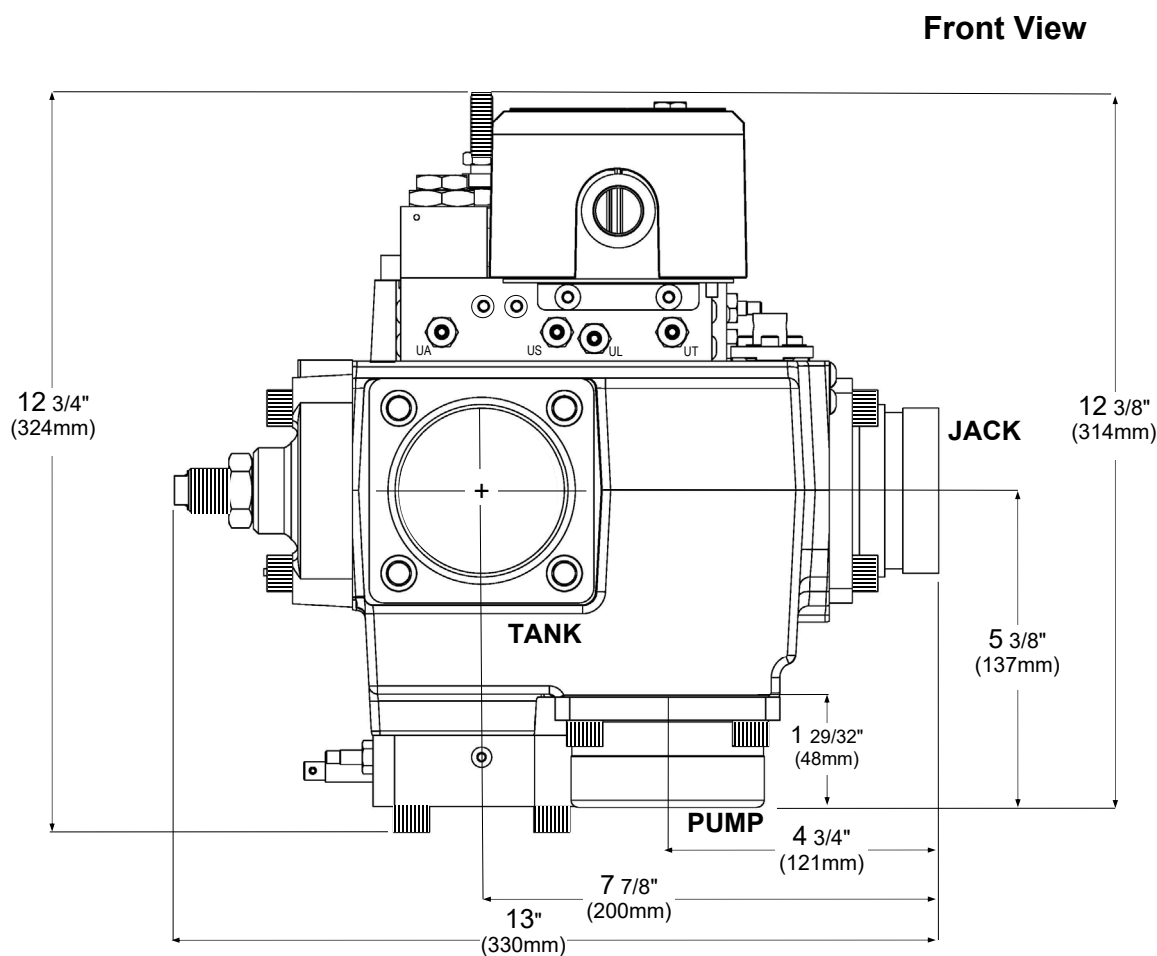
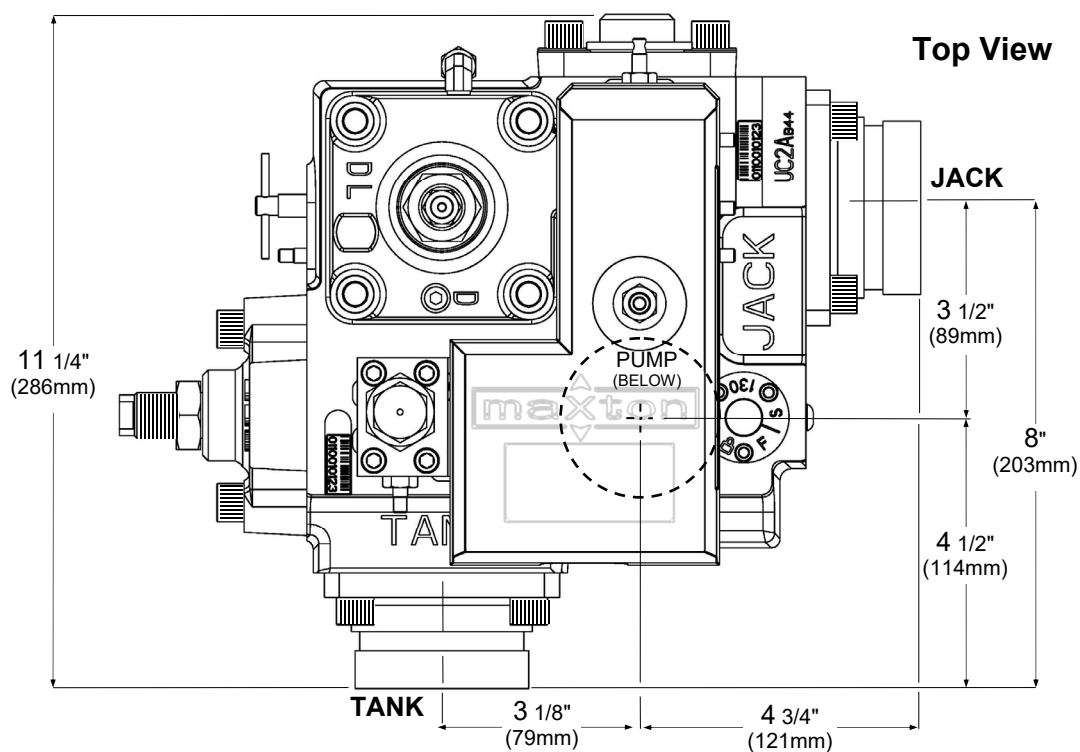


\*Refer to flow Charts (pg.5 & 6)

\*\* To insure proper valve selection please return a completed copy of our Job Specification Sheet (pg. 3) to Maxton.

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## THE INFORMATION PRESENTED HEREIN IS FOR USE BY SKILLED HYDRAULIC ELEVATOR PROFESSIONALS

### SPECIAL CONSIDERATIONS:

Make all adjustments at minimum pressure (no load on elevator) except where noted. "IN" is ALWAYS (CW) clockwise. "OUT" is ALWAYS (CCW) counterclockwise. **THE CONTROL BLOCK ADJUSTERS HAVE SEAL NUTS. NOT LOCK NUTS.** Adjust nut only to set seal friction (friction will maintain adjustment). When adjustment procedure calls for coils to be disconnected, disconnect them electrically. Do not remove them physically. Make adjustments with a minimum oil temperature of 80° F, not to exceed 100° F maximum. Maxton recommends the use of a 5-micron filtration system. With the presence of at least some adverse conditions in most installations, serious consideration should be given to overhaul or replacement of a control valve on a five year cycle.

### GAUGE PORTS:

Gauge ports - 1/8" NPT provided at points A, B and S.  
**A** Port: Pump pressure (RELIEF, WORKING PRESSURE).  
**B** Port: Jack pressure (STATIC, DOWN RUNNING).  
**S** Port: Low pressure switch port.

**Note: The minimum operating pressure at port B should be at least 50 psi (3.4 bar) as car is moving down full speed with no load. See flow chart.**


### OPERATIONAL DATA:

**Min. / Max. Pressure:** 50-600 psi (3.4-41.5 bar)  
**Max. Rated Flow:** 360 gpm (1363 l / min.)  
**Operating Temperature:** 80°-150° F (26°-65° C)  
**Optimal Temp. Range:** 100°-130° F (38°-54° C)  
**Oil Type:** Hyd. ISO VG 32  
 150 SUS @ 100° F (38° C)

\* **SAFETACH2** performance meter validates valve adjustment by providing direct speed and acceleration (g-force) readouts.

**Questions:** Call Tech Support (775) 782-1700 (7am-4pm PST), use Maxtonvalve.com or download Maxton Mobile Mechanic from your APP Store

### UP SECTION ADJUSTMENTS (Start with car at lower landing)

- 1 BPS** Disconnect the **US** coil, turn **UA** IN (CW), register an up call and turn **BPS** IN (CW) until the car just moves. Next, turn the **BPS** adjuster OUT (CCW) until it stops the movement of the car, then OUT 1/2 turn more. Snug lock nut on **BPS** adjuster and stop pump. Reconnect the **US** coil.
- 2 UA** Register an up call (pump running, **U** & **US** coils energized, car should not move), slowly turn **UA** OUT (CCW) to attain full up speed within 24 to 36 inches. \* **(Accel 0.04g-0.09g)**.
- 3 UL** Disconnect the **U** coil. Turn **UL** adjuster IN (CW) to stop and register an up call to verify that the **LS** adjustment is set to 3 to 5 fpm. (If not, readjust **LS**\*). Turn **UL** adjuster OUT (CCW) to attain 9 to 12 fpm leveling speed. Reconnect the **U** coil and lower the car to lowest landing. \* **(Read leveling speed)**.
- 4 UT** Register an up call and turn **UT** IN (CW) so that the car slows to provide 4 to 6 inches of stabilized up leveling. Repeat steps 3 and 4 as necessary. \* **(Decel 0.04g-0.09g)**.
- 5 US** With **US** adjuster fully OUT (CCW), car should stop 1/4" to 3/8" below floor. After a normal up run, turn **US** IN (CW) as needed to bring car to floor level. The pump must be timed to run 1/2 second after the car has reached the floor.
- 6** With empty car at bottom floor, disconnect **U** & **US** coils and register a call. The car must not move. If movement occurs, check **BPS** and **US**.
- LS\*** Dot on the **LS** adjuster should be referenced to the line between F / S. When necessary, disconnect the **U** coil and turn the **UL** adjuster IN (CW) to stop. Unlock the **LS** adjuster by loosening the screw next to the  symbol 1 turn. Move the **LS** adjuster slightly toward S for slower or F for faster leveling speeds. Set adjustment from 3 to 5 fpm with the **LS** adjuster, tighten locking screw down, verify **LS** speed after tightening screw, then repeat step 3. \* **(Level Speed Test 3 to 5 fpm)**.

### ADDITIONAL ADJUSTMENT INFORMATION FOR THE UC2 / UC2A ON THE BACK SIDE

DEFAULT SETTINGS					
If valve is received from Maxton, only minor adjustments may be required.					
CONTROL BLOCK					
US	UP STOP	OUT	(CCW)	to stop.	(faster rate).
UL	UP LEVEL	IN	(CW)	to stop.	(slower speed).
UA	UP ACCELERATION	IN	(CW)	to stop.	(slower rate).
UT	UP TRANSITION	OUT	(CCW)	to stop.	(faster rate).
R	RELIEF (factory set)	APPROX 450 psi (CW increases pressure)			
VALVE BODY					
BPS	BY-PASS SIZING	OUT	(CCW)	to stop	(delays up start)
LS*	LEVEL SPEED (factory set)	DOT ON LINE			(set 3-5 fpm)

### DOWN SECTION ADJUSTMENTS (Start with car at upper landing)

- 7 D** Register a down call to set proper down speed with down speed adjuster **D** as required. Send car to upper landing. \* **(Read high speed)**.
  - 8 DA** Start by turning **DA** adjuster IN (CW) to stop. Register a down call and turn the **DA** adjuster slowly OUT (CCW) until the car accelerates smoothly. Send car to upper landing. \* **(Accel 0.04g-0.09g)**.
  - 9 DT** Register a down call and turn **DT** IN (CW) so that the car slows to provide 4 to 6 inches of stabilized down leveling. Send car to upper landing. \* **(Decel 0.04g-0.09g)**.
  - 10 DL** Disconnect **D** coil. Register a down call, hold **D** adjuster in place and set down level speed at 6 to 9 fpm with the **DL** adjuster. Tighten both **D** & **DL** lock nuts (snug tight). Reconnect **D** coil. \* **(leveling speed 6 to 9 fpm)**.
  - 11 DS** Turn **DS** IN (CW), when necessary, for a softer stop.
- 
- ML** **MANUAL LOWERING:** Turn **ML** screw OUT (CCW) to lower car downward at leveling speed when necessary.
- 
- R** **RELIEF:**
- a. Land car in pit and install pressure gauge in **A** port.
  - b. Register an up call with a fully loaded car, making note of Maximum operating pressure.
  - c. Turn **UA** adjuster OUT (CCW) to stop. Turn **RELIEF** adjuster OUT (CCW) two turns.
  - d. Close the manual shut off valve to the jack.
  - e. Register an up call, observe pressure gauge and turn **RELIEF** IN (CW) to increase pressure. Final setting should be in accordance with local code requirement not to exceed 150% of maximum operating pressure.
  - f. Tighten the lock nut (snug tight).
  - g. Restart to check the pressure relief setting. Seal as required.
  - h. Open the manual shut off valve to the jack.
  - i. Readjust **UA** for proper Up acceleration. \* **(Accel 0.04g-0.09g)**.

DEFAULT SETTINGS				
If valve is received from Maxton, only minor adjustments may be required.				
<b>CONTROL BLOCK</b>				
DT	DOWN TRANSITION	OUT	(CCW)	to stop. (faster rate)
DA	DOWN ACCELERATION	OUT	(CCW)	to stop. (faster rate)
DS	DOWN STOP	OUT	(CCW)	to stop. (faster rate)
ML	MANUAL LOWERING	IN	(CW)	to stop.
<b>VALVE BODY</b>				
D	DOWN SPEED	Turn OUT (CCW)	4 threads above lock nut.	(faster speed)
DL	DOWN LEVEL	Turn OUT (CCW)	2 threads above lock nut.	(faster speed)

THE INFORMATION PRESENTED HEREIN IS FOR THE USE BY SKILLED HYDRAULIC ELEVATOR PROFESSIONALS

## UC2 – UC2A CONTROLLERS ONLY

The UC2 – UC2A is down speed regulated to provide a constant rate of speed in the down direction, regardless of varying loads. Speed will not vary more than five percent. To adjust UC2 – UC2A follow the same procedure used in adjusting the UC1 / UC1A with the following exceptions.

The Balance Adjuster (BA) located on the side of the bottom closure is **factory** set.

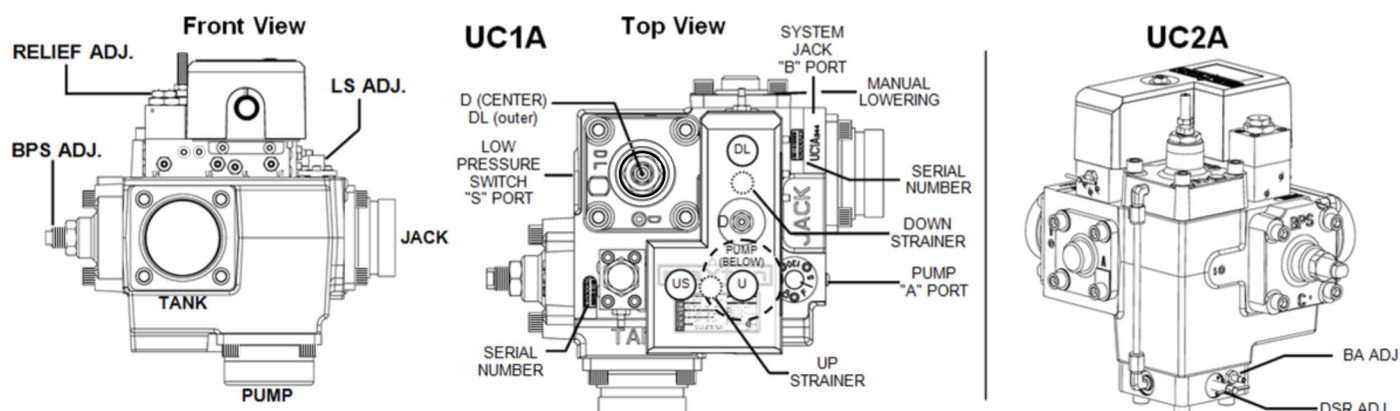
### Systems with operating pressure LESS than 175 psi when The car is traveling down empty.

The DOWN SPEED REGULATOR (DSR) adjuster is located on the side of the bottom closure next to the BA adjuster.

- (1) Turn DSR in (CW) to stop at the start of the down section the adjustment. Set the down speed 10% higher than normal, with no load on the elevator, then adjust the down direction in the normal manner.
- (2) After the down section has been adjusted completely, and the unloaded car is operating 10% above its rated or normal speed, turn the DSR adjuster OUT (CCW) to slow the car to its normal operating speed.

### Systems with operating pressure MORE than 175 psi when car is traveling down empty.

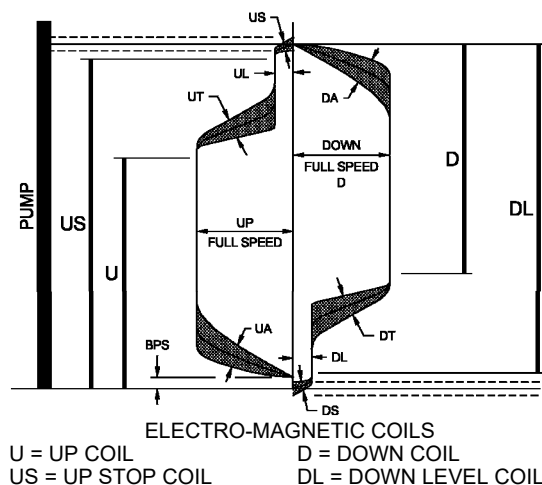
- (1) Turn DOWN SPEED REGULATOR (DSR) adjuster IN (CW) to stop then back out (CCW) two full turns.
- (2) Following the **Regulator** adjustment procedure, adjust down section as instructed.



**ATTENTION:** All Maxton Valves **MUST** be installed with the solenoids in the upright (vertical position). Prior to 2012 the sleeve and baseplate were an integral part of coil operation. 2012 to current the C-Frame is an integral part of coil operation.

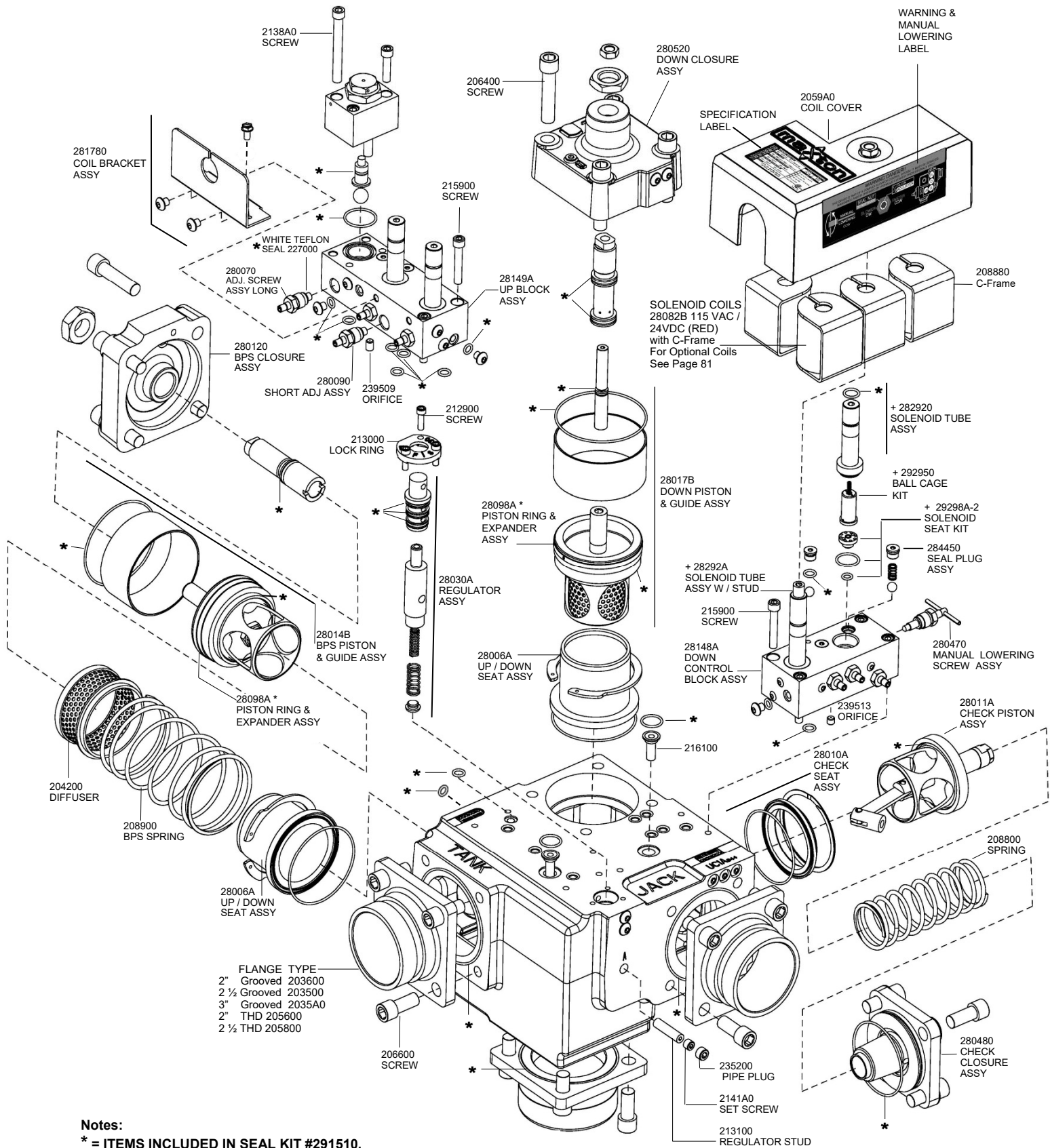
## COIL OPERATING SEQUENCE

- US** For up travel, energize when pump starts and de-energize to stop. With US energized and pump running, car will move up at leveling speed. For "soft stop", pump should run ½ second after US de-energizes.
- U** Energize with US coil to run up at contract speed. De-energize at slowdown distance from floor. Slowdown distance = 2 inches for each 10 fpm of car speed NOT to exceed 6 inches for every 25 fpm of car speed.  
**If necessary increase slowdown distance to achieve 4-6 inches of stabilized up leveling.**
- DL** Energize to move car at leveling speed. De-energize to stop.
- D** Energize with DL coil to run down at contract speed. De-energize at slowdown distance from floor. Slowdown distance = 2 inches for each 10 fpm of car speed NOT to exceed 6 inches for every 25 fpm of car speed.  
**If necessary increase slowdown distance to achieve 4-6 inches of stabilized down leveling.**



**CAUTION:** On Wye - Delta Up Start do not energize U and US Coils until motor is running on Delta.  
With soft starter, energized US coil with motor up to speed signal.



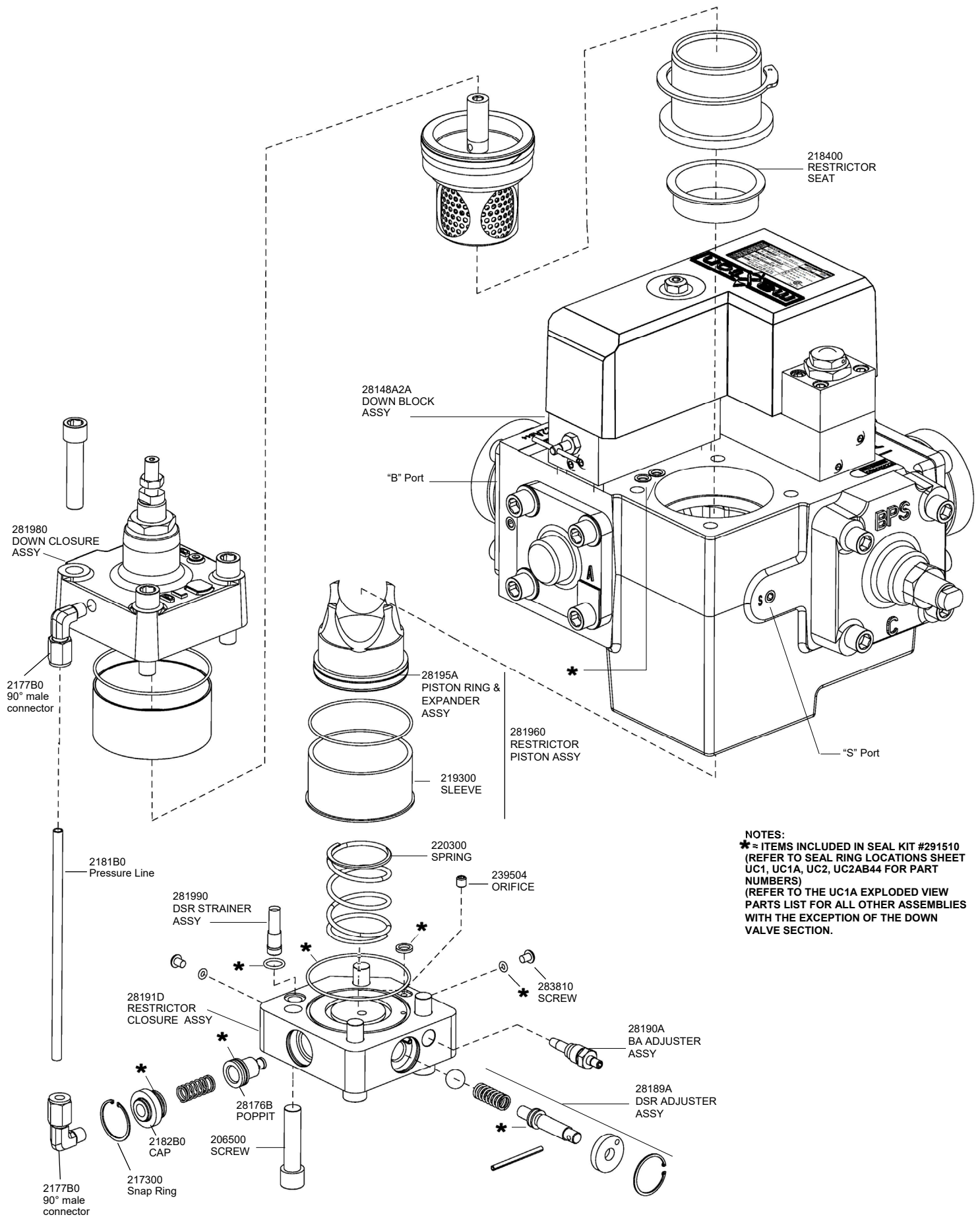
**Notes:**

\* = ITEMS INCLUDED IN SEAL KIT #291510,  
(REFER TO SEAL RING LOCATIONS SHEET UC1, UC1A, UC2, UC2AB44 FOR PART NUMBER)  
+ = ITEMS INCLUDED IN SOLENOID KIT #29292A,  
(UC1A SHOWN) (REFER TO THE UC2A EXPLODED VIEW FOR THE UC2A DOWN VALVE SECTION)

**Notes: -** REFER TO THE UC2A EXPLODED VIEW PARTS LIST FOR THE UC2A DOWN VALVE SECTION.

**\* = PARTS INCLUDED IN SEAL KIT # 291510**

**+ = PARTS INCLUDED IN SOLENOID KIT # 29292A**



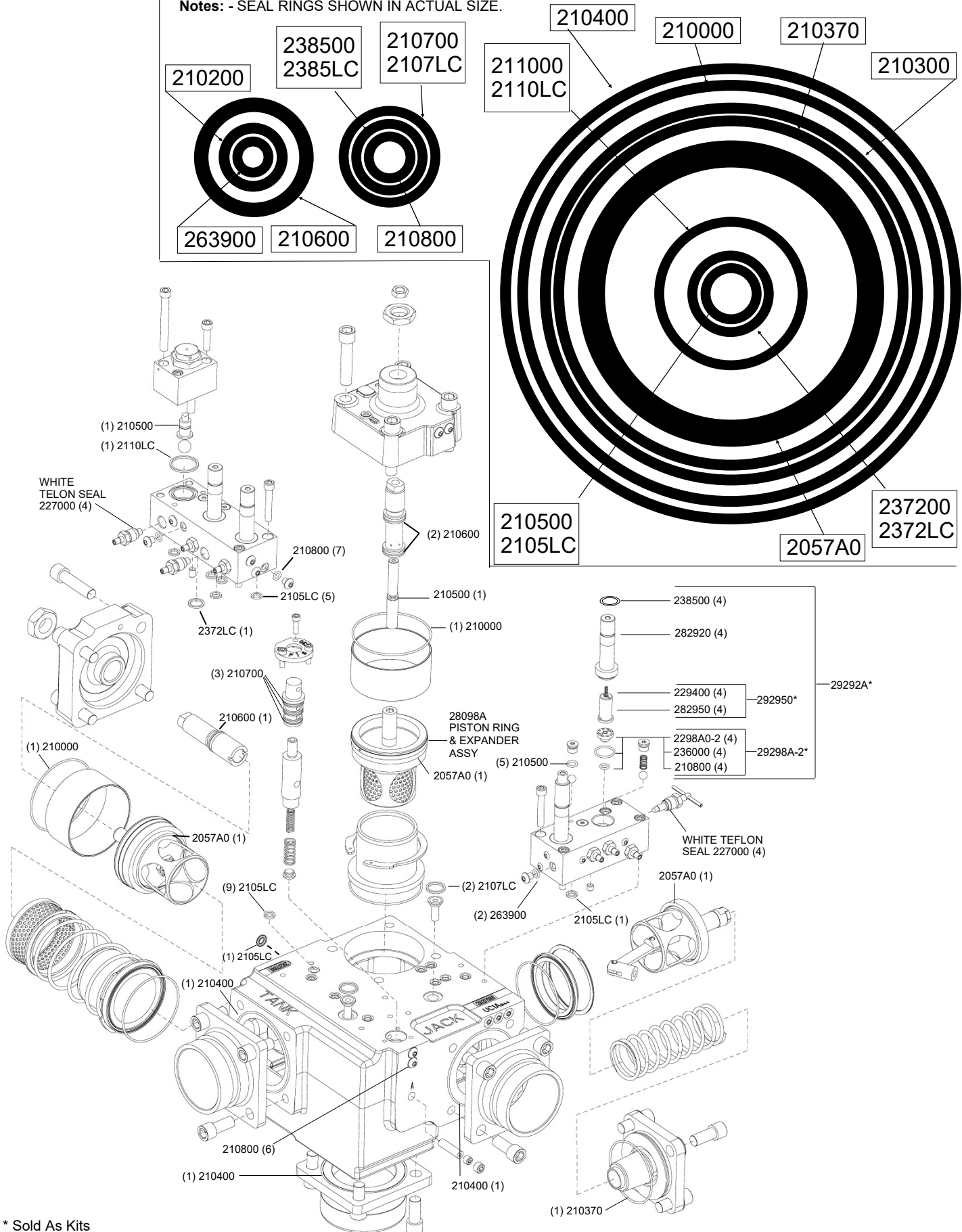
## NOTES:

\* = ITEMS INCLUDED IN SEAL KIT #291510  
(REFER TO SEAL RING LOCATIONS SHEET  
UC1, UC1A, UC2, UC2AB44 FOR PART  
NUMBERS)  
(REFER TO THE UC1A EXPLODED VIEW  
PARTS LIST FOR ALL OTHER ASSEMBLIES  
WITH THE EXCEPTION OF THE DOWN  
VALVE SECTION.

PART#	DESCRIPTION	PART#	DESCRIPTION	PART#	DESCRIPTION
<b>28148A-2A</b>	<b>DOWN CONTROL BLOCK ASSY</b>		<b>DOWN SECTION</b>		<b>RESTRICTOR SECTION</b>
<b>280070</b>	<b>Adjuster screw Assy (long)</b>	<b>281980</b>	<b>Down closure assembly</b>	<b>28191D</b>	<b>Restrictor closure Assy</b>
203400	Seal nut	205100	Lock nut	2191D0	Restrictor closure
227000	* Teflon seal	206700	Lock nut	2105LC	* Seal ring
200700	Adjuster screw	205200	Down closure	210300	* Seal ring
<b>280470</b>	Manual lowering screw Assy	210000	* Seal ring	220400	Spring
203400	Seal nut	204000	Sleeve	220300	Restrictor spring
227000	* Teflon seal	203700	Down speed adjuster	2181B0	Pressure line
204700	Manual lowering screw	210600	* Seal ring	217300	Snap ring
230000	Roll pin	202900	Down leveling speed adjuster	2182B0	Cap (pressure line)
	<b>Down control block miscellaneous</b>	2177B0	90 deg. male connector	28176B	Poppit
282920	+ Solenoid tube	210500	* Seal ring	210700	* Seal ring
28292A	+ Solenoid tube w / stud	<b>28017B</b>	<b>Down piston &amp; guide Assy (std.)</b>	218300	Roll pin
29298A-2	+ Solenoid seat kit	2038A0	Down piston rod	2177B0	90 deg. male connector
292950	+ Ball cage kit	210500	* Seal ring	212400	Ball
210800	* Seal ring	2023A0	Piston	212200	Spring
244500	Seal plug	28098A	* Piston ring & expander Assy	239504	Orifice
263900	* Seal ring	2057A0	* Seal ring	210200	* Seal ring
2105LC	* Seal ring	2017E4	Down piston guide (std.)	<b>28190A</b>	<b>Balance adjuster Assy</b>
208700	Spring	2118A0	Lock nut	203400	Seal nut
238000	Ball	<b>281840</b>	<b>Down / Restrictor seat Assy</b>	227000	* Teflon seal
238100	Screw (10/32 button head)	209300	Snap ring	2190A0	BA adjuster screw
2379A0	Screw (1/4-28 button head)	2006A0	Down seat	<b>28189A</b>	<b>DSR adjuster Assy</b>
239513	Orifice (max DS)	219200	Seal ring	2189A0	Regulator adjuster
		218400	Restrictor seat	210200	* Seal ring
		<b>Notes: * = PARTS INCLUDED IN SEAL KIT #291510</b>  <b>+ = PARTS INCLUDED IN SOLENOID KIT #29292A</b>  <b>REFER TO THE UC1A EXPLODED VIEW PARTS LIST FOR ALL OTHER ASSEMBLIES WITH THE EXCEPTION OF THE DOWN VALVE SECTION.</b>		217900	Regulator cap
				230000	Roll pin
				233000	Lock nut
				<b>281960</b>	<b>Restrictor piston Assy</b>
				219600	Restrictor piston
				28195A	Piston ring & expander Assy
				219300	Sleeve
				210300	* Seal ring
					<b>Miscellaneous</b>
				281990	DSR strainer
				206500	Screw



Notes: - SEAL RINGS SHOWN IN ACTUAL SIZE.



\* Sold As Kits

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## **CAR AT REST—SOLENOID COILS DE-ENERGIZED**

The car at rest is held by a hydraulic fluid system locked in place by a check valve, solenoid pilot valves and a manual-lowering valve.

## **UP DIRECTION**

When an up call is registered and the pump starts, the up solenoid (U) and the up stop solenoid (US) are simultaneously energized closing the ball checks US and UT. The pump output flows through the up valve and back to the reservoir.

Hydraulic fluid from the pump travels through the up strainer, to the up acceleration adjustment (UA), then the control side of the up piston. The control side of the up piston is larger in area than the area of the up piston exposed to the pump pressure; therefore, the up piston begins to move towards the up valve restricting the opening in the up valve, raising the pump pressure. As the pump pressure increases above that on the jack side of the check valve, the check valve is opened allowing fluid to flow to the jack cylinder causing the jack to move in the up direction. The elevator then accelerates to full speed as the up piston closes the up valve.

Upon reaching a predetermined distance below the floor to which the car is traveling (2 inches for each 10 fpm of car speed NOT to exceed 6 inches for every 25 fpm of car speed), the up solenoid (U) is de-energized, allowing fluid from the control side of the up piston to flow through the up transition adjustment (UT), then to the up leveling speed regulator (LS) orifice which is held open by a mechanical linkage attached to the check valve. The control fluid then returns to the reservoir and the up piston moves toward the open position. As the up piston moves, opening the up valve, hydraulic fluid begins flowing to the reservoir, reducing the pump pressure. As the pump pressure is reduced, the check valve begins closing, also, partially closing the (LS) orifice in the up leveling speed regulator.

When the flow through the (LS) orifice equals in quantity, the flow through the up acceleration adjustment (UA) and the up leveling adjustment (UL), the car will be in leveling speed. Upon reaching a point slightly before the floor (usually  $\frac{3}{8}$  of an inch to  $\frac{1}{4}$  of an inch), the up stop solenoid (US) is de-energized. This allows fluid to flow through the up stop adjustment (US), causing the up piston to fully open, permitting the total pump output to flow to the reservoir, causing the car to stop. After the car comes to a complete stop, the pump motor is electrically timed out and stops. If, during up movement, the car has been overloaded or hits an obstruction, the fluid on the control side of the piston is evacuated to the reservoir through the relief valve, causing the up piston to cycle open and by-pass the entire pump output.



## **CAR AT REST – SOLENOID COILS DE-ENERGIZED**

The car at rest is held by a hydraulic fluid system locked in place by a check valve, solenoid pilot valves and a manual-lowering valve.

## **DOWN DIRECTION**

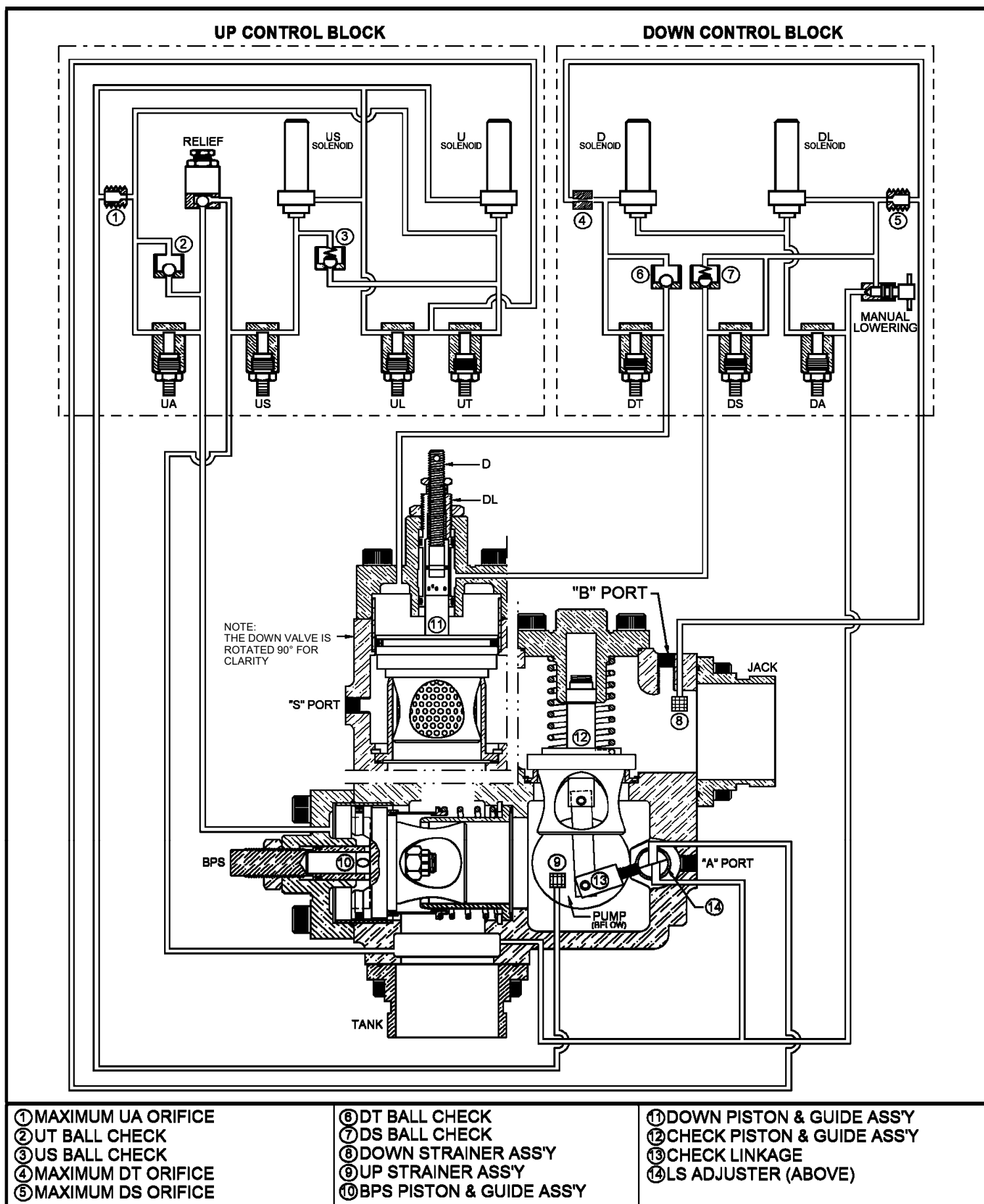
When a down call is registered, the down leveling solenoid (DL) and the down valve solenoid (D) are simultaneously energized, allowing fluid from the control side of the piston and fluid from the down control adjustments, down stop (DS) and down transition (DT), to flow through the down acceleration adjustment (DA) and back to the reservoir. This reduces the pressure on the control side of the down piston. The pressure acting on the area of the down piston exposed to the jack pressure causes the down piston to open the down valve. The down valve will remain in the open position as long as the flow of control fluid passing through the down acceleration adjustment (DA) exceeds the flow through the down transition (DT) and the down stop adjustment (DS). The maximum down speed is controlled by a mechanical stop limiting the down piston travel (adjustment D).

Upon reaching a predetermined distance above the floor to which the car is traveling (6 inches for each 25 feet per minute of car speed) the down solenoid (D) is de-energized. The fluid input to the control side of the down piston from the jack continues, as the control side of the piston is larger in area than the area exposed to jack pressure. This causes the down piston to start closing. A control rod follows the movement of the piston, uncovering control porting and allowing fluid to flow through the down level adjustment (DL), which when equal in quantity to the flow through the down transition adjustment (DT), stops the motion of the piston, placing the down valve in the leveling position. The rate of movement of the down piston from the open position to the leveling position is controlled by the down transition adjustment (DT). Upon reaching a point slightly before floor level, (usually 3/8 of an inch to 1/4 of an inch), the down leveling solenoid (DL) is de-energized, causing the fluid coming through the down stop (DS) adjusters to be diverted to the control side of the down piston, moving the down piston to the fully closed position of the down valve.

The final closing rate of the down valve is controlled by the down stop adjustment (DS). Opening the down stop adjustment (DS) will cause the car to stop more firmly, as control fluid is sent to the control side of the down piston at a more rapid rate.

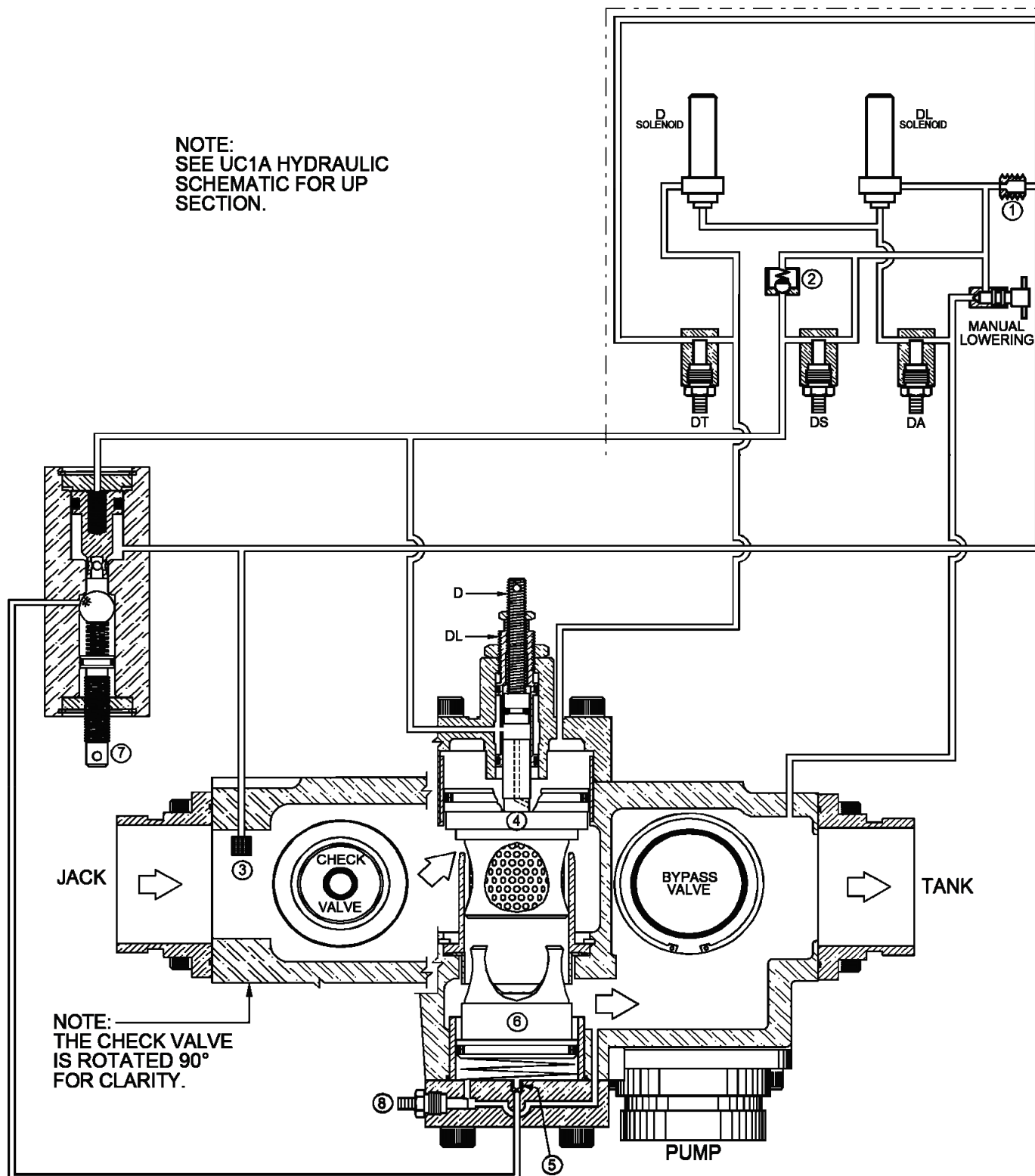
## **DOWN DIRECTION UC2 & UC2A**

Constant down speed is controlled by the down speed regulator adjustment (DSR), which regulates the movement of the down piston and down valve in the event of increased jack pressure. This continuous regulation causes a constant rate of flow in the down direction from the jack through the down valve and back to the reservoir regardless of varying loads on the elevator. With the above exception, the UC2 and UC2A valves operate in general as the UC1 and UC1A valves.



## DOWN CONTROL BLOCK

NOTE:  
SEE UC1A HYDRAULIC  
SCHEMATIC FOR UP  
SECTION.



- ① MAXIMUM DS ORIFICE
- ② DS BALL CHECK
- ③ DOWN STRAINER ASS'Y
- ④ DOWN PISTON & GUIDE ASS'Y
- ⑤ RESTRICTOR ORIFICE

- ⑥ RESTRICTOR PISTON ASS'Y
- ⑦ DOWN SPEED REGULATOR ADJUSTER (DSR)
- ⑧ BALANCE ADJUSTER (BA)

**CAUTION:**

- The information contained herein is for use by skilled hydraulic elevator professionals.
- Before disassembly of the valve, make sure the power is off by turning the main disconnect switch off and that the elevator is resting on the buffers (zero system pressure).

The possible problems and causes are listed in likelihood and ease of checking.

The first section of the guide deals with the UP SECTION, while the second deals with the DOWN SECTION.

It is important to use the following reference materials in conjunction with the trouble shooting procedures.

- UC1, UC1A, UC2, UC2AB44 Operating Sequence
- UC1, UC1A, UC2, UC2AB44 Adjustment Procedure
- UC1A, UC2AB44 Schematic

**CAUTION:**

- The information herein is for use by skilled hydraulic elevator professionals.
- Before disassembly of the valve, make sure the power is off by turning the main disconnect switch off and that the elevator is resting on the buffers (zero system pressure).

**UP SECTION****PUMP RUNS, CAR DOES NOT MOVE**

- Check valve for proper sizing in accordance with adjustment instruction.
- Make sure gate valves are open in system as required.
- If car is resting on buffers, make sure main down piston is not open by manually closing it with the D (Down Speed adjuster). Turn D (Down Speed) adjuster in clockwise (CW) to stop, then back out counterclockwise (CCW) to it's normal position (count number of turns in and out to avoid lengthy adjustment).
- Turn US (Up Stop) adjuster in (CW) fully.
  1. If car moves, check for proper voltage to coils.
  2. If voltage is correct, remove US solenoid assembly. Visually inspect parts for foreign material and / or damage. Ball cage must operate freely within the solenoid tube.
  3. If car does not move, repeat procedure with UT (Up Transition) adjuster and U solenoid assembly.
  4. Check up control fluid strainer underneath the up control block for lint. If clogged, remove debris (in this case oil in the system must be filtered).
- Remove BPS closure and piston. Examine piston ring for debris and / or damage, it must expand after it has been manually compressed. Clean or free if necessary. Check piston ring for ring groove wear. Make sure the large recycle spring grips the shoulder of the piston tightly.

**SLOW UP ACCELERATION**

- Turn UA (Up Acceleration) adjuster out (CCW).
- Check belts and pulleys on pump and motor to make sure they are not slipping.
- Check relief valve for proper setting. Refer to Adjustment Procedures.
- Check motor for proper HP rating and line voltage for excessive voltage drop.
- Remove control block and check up control fluid strainer for lint. If clogged, remove debris (in this case oil in the system must be filtered).

**UP ACCELERATION ROUGH**

- Check jack packing and guide shoes for excessive tightness.
- Check valve for proper sizing.

**UP SPEED SLOW**

- Check belts and pulleys on pump and motor to make sure they are not slipping.
- Check relief valve for proper setting.
- Check motor for proper HP rating and line voltage for excessive voltage drop.
- Turn UT (Up Transition) adjuster in (CW). If this corrects the problem:
  1. Check for proper coil voltage on up coils.
  2. Check both U and US solenoid assemblies for damage to seats, debris and free movement of ball cages.

**CAUTION:**

- The information herein is for use by skilled hydraulic elevator professionals.
- Before disassembly of the valve, make sure the power is off by turning the main disconnect switch off and that the elevator is resting on the buffers (zero system pressure).

**UP SECTION (CONTINUED)****CAR OVERSHOOTS FLOOR**

- Turn the UT (Up Transition) adjuster out (CCW) more.
- Check UL speed, 9-12 FPM
- Disconnect U and US coils, place call. Car should not move.
  1. If car moves turn US adjuster out (CCW) more.
  2. Reset BPS adjuster.
- Check hatch slow down switch and stopping circuit to make sure there is no delay (one second lost means a three foot delay at 180 feet per minute).
- Remove the US solenoid assembly and check for foreign material and / or damage. Ball Cage must operate freely within solenoid tube.

**CAR STALLS OR LEVELING SPEED VARIES IN LEVELING ZONE**

- Make sure the US (Up Stop) and U (Up) coils are connected in proper operating sequence. Refer to Adjustment Procedure.
- Make sure the LS (Leveling Speed) adjuster dot is referenced to the line between F and S.
- Check Relief for proper setting.
- If car will not adjust using LS (Leveling Speed) adjuster, turn US (Up Stop) adjuster in (CW). Be sure to count the number of turns for later readjustment. **If the car moves, then:**
  1. Check for proper coil voltage.
  2. Remove the US solenoid assembly and check for foreign material and / or damage. Ball Cage must operate freely within solenoid tube.
  3. Replace solenoid seat.
  4. Readjust US back to original position.
- Remove BPS closure and piston. Examine piston ring for debris and / or damage, it must expand after it has been manually compressed. Clean or free if necessary. Check piston ring for ring groove wear. Make sure the large recycle spring grips the shoulder of the piston tightly.

**HARSH UP STOP**

- Turn US (Up Stop) adjuster in (CW) for smoother stop.
- Check that the pump continues to run after car has stopped for ½ second. As a check to determine adequate pump time, turn US (Up Stop) adjuster (CW) all the way. Car should then level and stop above the floor. If not, there is not enough pump time.
- Check jack and guide shoes for excessive tightness. If jack packing and guide shoes are in good condition, a soft stop will be accomplished by following the standard Adjustment Procedure.

**CAUTION:**

- The information herein is for use by skilled hydraulic elevator professionals.
- Before disassembly of the valve, make sure the power is off by turning the main disconnect switch off and that the elevator is resting on the buffers (zero system pressure).

**DOWN SECTION****CAR WILL NOT LOWER**

- Check coil voltage.
- Check line shut off valve and tank shut off valve.
- Turn DS (Down Stop) adjuster in clockwise (CW) to stop.
- Turn DA (Down Acceleration) out counterclockwise (CCW) more.
- Turn DT (Down Transition) adjuster in (CW) slowly. If car will not lower, turn ML (Manual Lowering) screw out (CCW) all the way. If car lowers with ML screw open, first check for proper coil voltage. If voltage is correct, then check both D and DL solenoid assemblies for debris and / or damage. Ball Cage must operate freely within solenoid tube.
- Replace solenoid seat.
- Remove Down closure and piston. Examine piston ring for debris and / or damage, it must expand after it has been manually compressed. Clean or free if necessary. Check piston ring for ring groove wear.
- Check piston guide and seat for freedom of movement.

**SLOW DOWN START**

- Turn DA (Down Acceleration) adjuster out (CCW).
- Turn DS (Down Stop) adjuster in (CW).
- Check jack packing and guide shoes for any binding.
- Remove D solenoid assembly. Check for debris and / or damage. Ball Cage must operate freely within solenoid tube.
- Replace solenoid seats.

**HARSH OR BOUNCY START**

- Bleed air from jack.
- Check for tight packing or guide shoe friction.

**FAST DOWN START**

- Turn DA (Down Acceleration) adjuster in (CW).

**CAR COMES DOWN IN LEVELING SPEED ONLY**

- Check coil voltage to D (Down Valve) solenoid.
- Land car and remove D solenoid assembly. Check for debris and / or damage. Ball Cage must operate freely within solenoid tube.
- Replace solenoid seats.

**MAIN DOWN SPEED TOO SLOW**

- Make sure gate valves are open between valve and jack and between valve and tank.
- Turn D (Down Speed) adjuster out (CCW).
- Replace solenoid seats.
- Check flow capacities of pipe between valve and jack and between valve and tank (must not exceed 20 feet per second).
- Remove down closure and piston. Check piston ring on Down piston for debris and / or damage, it must expand after it has been manually compressed. Check piston ring for groove wear. Install pressure gauge at "B" port. Check pressure during full down speed, no load and compare to flow chart. If there is any abnormal pressure drop, check for restriction in piping from valve to jack and from valve to tank.



**CAUTION:**

- The information herein is for use by skilled hydraulic elevator professionals.
- Before disassembly of the valve, make sure the power is off by turning the main disconnect switch off and that the elevator is resting on the buffers (zero system pressure).

**DOWN SECTION (CONTINUED)****DOWN TRANSITION TOO SLOW**

- Turn DT (Down Transition) out (CCW). This will necessitate readjusting the DA (Down Acceleration) adjustment.
- Check slow down switch and relays for possible delay.
- Remove D solenoid assembly and check for debris and / or damage. Ball Cage must operate freely within solenoid tube.
- Replace solenoid seat.
- Check down control fluid strainer (under control block) assembly for lint. If clogged, remove debris (in this case oil in the system should be filtered).

**NO DOWN LEVELING SPEED**

- Turn DA (Down Acceleration) adjuster out (CCW).
- Turn ML (Manual Lowering) screw out (CCW).
- If car lowers:
  1. Check voltage to DL solenoid coil.
  2. Remove DL solenoid assembly and check for debris and / or damage. Ball Cage must operate freely within solenoid tube.
  3. Replace solenoid seat.
- If car does not lower, turn DT in (CW) until normal leveling speed is attained.

**DOWN STOP TOO SMOOTH OR INACCURATE**

- Turn DS (Down Stop) adjuster out (CCW). This will necessitate readjusting the DA (Down Acceleration) adjustment.
- Check slow down switch and relays for possible delay.
- Remove DL solenoid assembly and check for debris and / or damage. Ball Cage must operate freely within solenoid tube.
- Check down control fluid strainer (under control block) assembly for lint. If clogged, remove debris (in this case oil in the system should be filtered).

**DOWN STOP TOO ROUGH**

- Turn DS (Down Stop) adjuster in (CW).
- Check for tight jack packing or guide shoes.

**CAR WILL NOT STOP IN DOWN DIRECTION**

- Make sure coils are not energized.
- Turn DT (Down Transition) adjuster out (CCW) fully.
- Remove D solenoid assembly and check for debris and / or damage. Ball Cage must operate freely within solenoid tube.
- Replace solenoid ball cage.
- Replace solenoid seat.
- Check down control fluid strainer (under control block) assembly for lint. If clogged, remove debris (in this case oil in the system should be filtered).
- Remove "B" down closure and verify the down piston operates freely within its seat.

**CAUTION:**

- The information herein is for use by skilled hydraulic elevator professionals.
- Before disassembly of the valve, make sure the power is off by turning the main disconnect switch off and that the elevator is resting on the buffers (zero system pressure).

**DOWN SECTION (CONTINUED)****CAR DRIFTS DOWN SLOWLY**

- Send car to upper floor. Open main power disconnect switch.
- Close pit valve. If car still drifts, the leak is in the jack assembly.
- Back out seal nut on ML (Manual Lowering) screw one half turn. Turn ML screw in (CW) fully and re-tighten seal nut to ensure a good seat.
- Turn DA (Down Acceleration) adjuster in clockwise (CW) fully. If leak stops, this indicates a leak at the down solenoids. Replace D and DL solenoid seats. Refer to solenoid kit# 29292A.
- If leak is present, replace with valve exchange, new valve, or contact Maxton technical support.

**ADDITIONAL PROCEDURE FOR UC2A (UC2)****FULL DOWN SPEED TOO SLOW**

- In examining flow charts, the down flow capacity of the UC2A (UC2) valve is 10 percent less than the UC1A (UC1) valve.

**CAR DRIFTS DOWN SLOW**

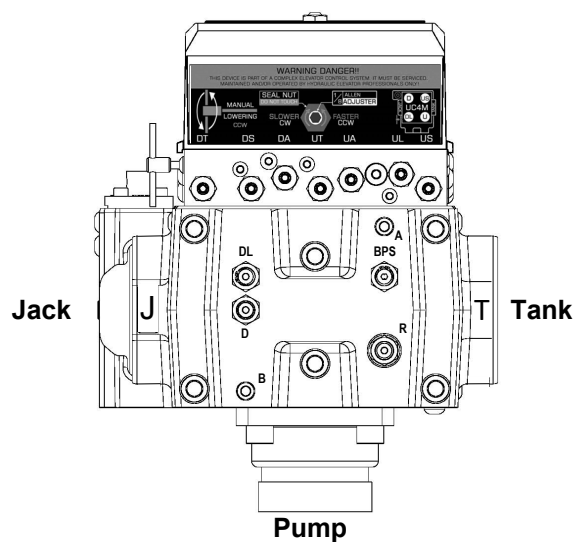
- Before dismantling the down section except when the problem is pinpointed to the control block, turn DSR (Down Speed Regulator) in (CW) fully. If this stops the leak, examine the Regulator Poppit for debris and / or damage.

**DOWN SPEED VARIES**

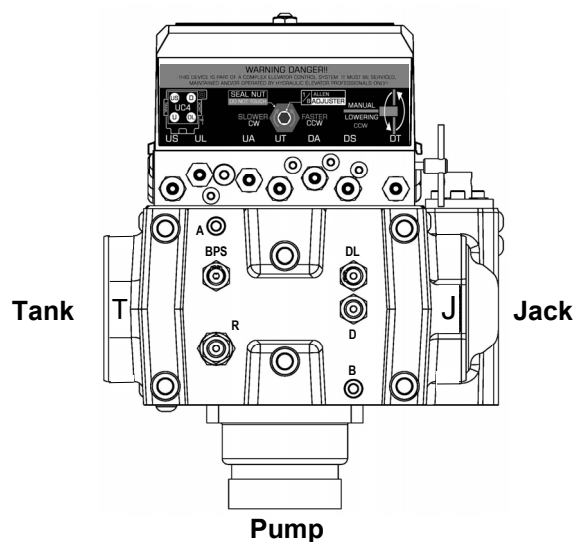
- Adjusting with BA (Balance Adjustment) adjuster, turn in (CW) for slower and out (CCW) for faster. This adjustment must be made with a full load.

**BA ADJUSTER NOT AT FACTORY SETTING**

- Call Maxton Technical Support with valve serial number.



UC4M B44



UC4 B44

### Specifications

<b>*Maximum Flow**</b>	185 gpm (700 l/min)
<b>Operating Pressure</b>	
Minimum	50 psi (3.4 bar)
Maximum	800 psi (55 bar)

#### Note:

**Consult factory when applications exceed pressure ratio over 2.5 to 1, example (Max. / Min. :280 / 100 )**

#### Line Connections

Jack, Tank Port	2" NPT
Pump Port (flange)	2" NPT or Grooved

#### Gauge Ports

Pump Pressure: "A" Port (1/8" NPT)  
System pressure: "B" Port (1/8" NPT)  
Pressure Switch: "S" Port (1/8" NPT)

#### Operating Temperature Oil Type

80°– 150° F (26°– 65° C)  
Hyd. ISO VG 32  
150 SUS @ 100° F (38° C)

#### Solenoid Coils

Encapsulated CSA / UL Listed

#### Overall Dimensions

Width 8 7/16 inches (214mm)	Height 10 1/2 inches (268mm)
Depth 9 3/16 inches (233mm)	Weight 27 lbs. (12.2kg)

\*Refer to flow Charts (pg.5)

\*\* To insure proper valve selection please return a completed copy of our Job Specification Sheet (pg. 3) to Maxton.

### Standard Features

- Unit body construction.
- Steel sleeve inserts in valve body.
- Feedback control for stall free operation.
- Individualized adjustments.
- Integrated relief valve.
- High efficiency solenoids.
- 115 VAC / 24 VDC solenoid coils.
- Factory tested prior to shipping.
- 2 year limited warranty.

### Optional Features

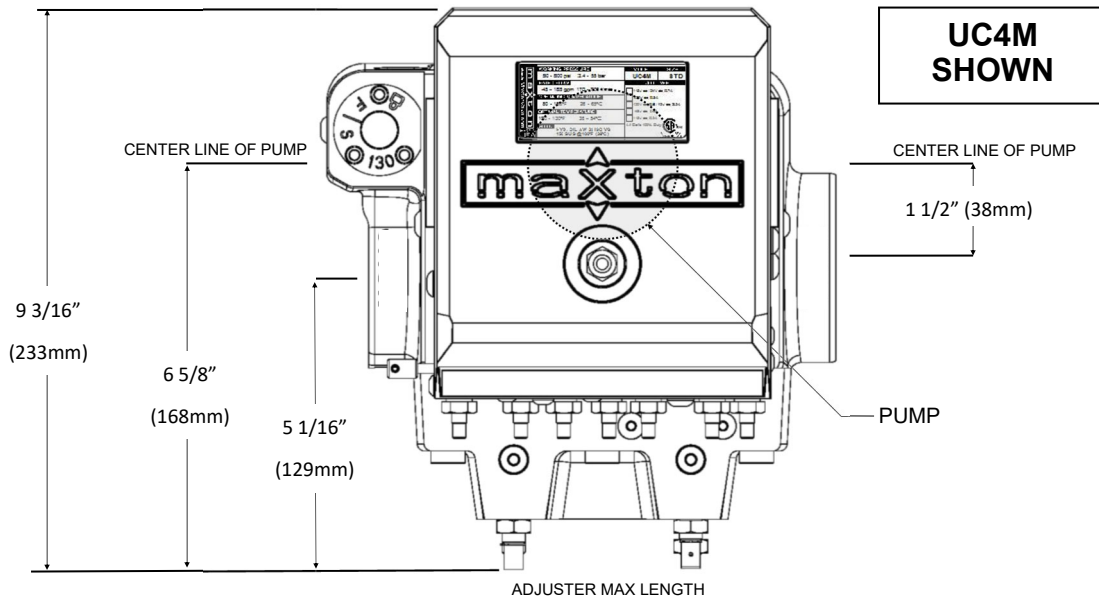
- Explosion Proof Coil Cover
- Thread to Grooved Adapters (2")
- Low Pressure Switch
- Tank Discharge Filter
- 1/8" or 1/4" Ball Valves
- Quick Disconnect Coupling or Nipple Kit

#### Solenoid Coils

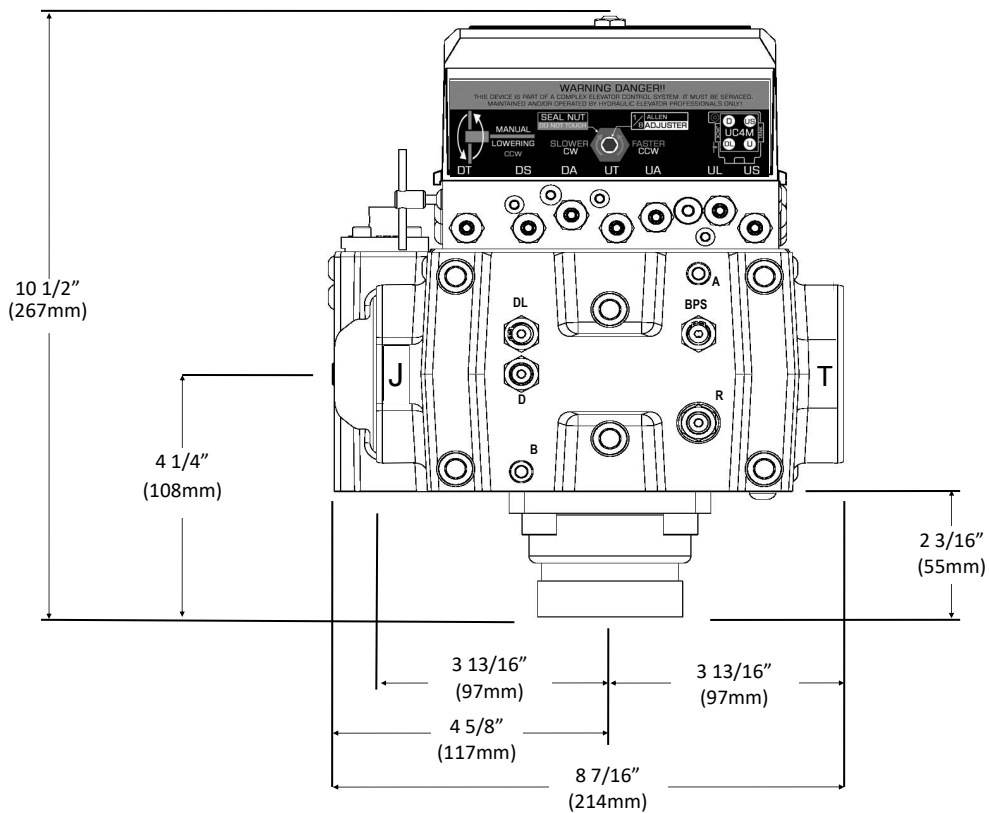
- 12 VDC – 120 VAC Dual Voltage Coils
- 12 VDC Coils
- 230 VAC Coils
- 115 VDC Coils
- 185 VAC Coils



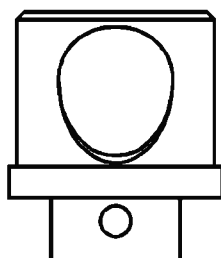
## Top View



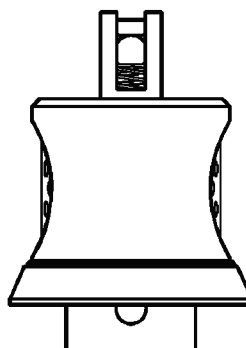
## Front View



E1  
BPS GUIDE



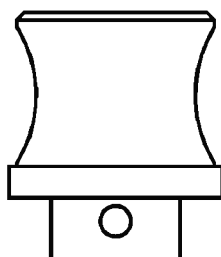
E2  
DN / CHK GUIDE



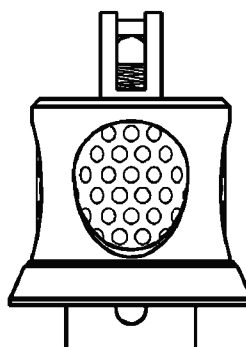
### ***E1 GUIDE CONFIGURATION***

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E2  
BPS GUIDE



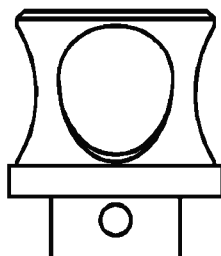
E3  
DN / CHK GUIDE



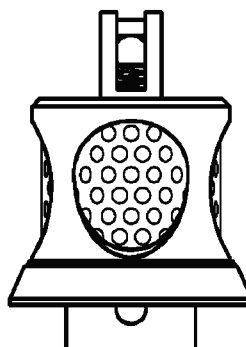
### ***E2 GUIDE CONFIGURATION***

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E4  
BPS GUIDE



E4  
DN / CHK GUIDE



### ***STD GUIDE CONFIGURATION***

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## THE INFORMATION PRESENTED HEREIN IS FOR USE BY SKILLED HYDRAULIC ELEVATOR PROFESSIONALS

### SPECIAL CONSIDERATIONS:

Make all adjustments at minimum pressure (no load on elevator) except where noted. "IN" is ALWAYS (CW) clockwise. "OUT" is ALWAYS (CCW) counterclockwise. **THE CONTROL PLATE ADJUSTERS HAVE SEAL NUTS, NOT LOCK NUTS.** Adjust nut only to set seal friction (friction will maintain adjustment). When adjustment procedure calls for coils to be disconnected, disconnect them electrically. Do not remove them physically. Make adjustments with a minimum oil temperature of 80° F, not to exceed 100° F maximum. Maxton recommends the use of a 5 micron filtration system. With the presence of at least some adverse conditions in most installations, serious consideration should be given to overhaul or replacement of a control valve on a five year cycle.

### GAUGE PORTS:

Gauge ports - 1/8" NPT provided at points A, B and S.

**A** Port: Pump pressure (RELIEF, WORKING PRESSURE).

**B** Port: Jack pressure (STATIC, DOWN RUNNING).

**S** Port: Low pressure switch port.


**Note:** *The minimum operating pressure at port B should be at least 50 psi (3.4 bar) as car is moving down full speed with no load. See flow chart.*

\* **SAFETACH2** performance meter validates valve adjustment by providing direct speed and acceleration (g-force) readouts.

### OPERATIONAL DATA:

<b>Min. / Max. Pressure:</b>	50-800 psi (3.4-55 bar)
<b>Max. Rated Flow:</b>	185 gpm (700 l / min.)
<b>Operating Temperature:</b>	80°-150° F (26°- 65° C)
<b>Optimal Temp. Range:</b>	100°-130° F (38°- 54° C)
<b>Oil Type:</b>	Hyd. ISO VG 32
	150 SUS @ 100° F (38° C)

**Questions:** Call Tech Support (775) 782-1700 (7am-4pm PST), use

- 1 **BPS** Disconnect the **US** coil, turn **UA** IN (CW) register an up call and turn **BPS** IN (CW) until the car just moves. Next, turn the **BPS** adjuster OUT (CCW) until it stops the movement of the car, then OUT 1/2 turn more. Snug lock nut on **BPS** adjuster and stop pump. NOTE: If car does not move with **BPS** fully IN (CW), the valve may be oversized for the job (consult factory for proper valve sizing). Reconnect the **US** coil.
- 2 **UA** Register an up call (pump running, **U** & **US** coils energized, car should not move), slowly turn **UA** OUT (CCW) to attain full up speed within 24 to 36 inches. \* (**Accel 0.04g-0.09g**).
- 3 **UL** Disconnect the **U** coil. Turn **UL** adjuster IN (CW) to stop and register an up call. Leveling speed should be 3 to 5 fpm. (If not, readjust **LS**\*). Turn **UL** adjuster OUT (CCW) to attain 9 to 12 fpm leveling speed. Reconnect the **U** coil and lower the car to lowest landing. \* (**Read leveling speed**).
- 4 **UT** Register an up call and turn **UT** IN (CW) so that the car slows to provide 4 to 6 inches of stabilized up leveling. Repeat steps 3 and 4 as necessary. \* (**Decel 0.04g-0.09g**).
- 5 **US** With **US** adjuster fully OUT (CCW), car should stop 1/4" to 3/8" below floor. After a normal up run, turn **US** IN (CW) as needed to bring car to floor level. The pump must be timed to run 1/2 second after the car has reached the floor.
- 6 With empty car at bottom floor, disconnect **U** & **US** coils and register a call. The car must not move. If movement occurs, check **BPS** and **US**.
- LS\*** Dot on the **LS** adjuster should be referenced to the line between F / S. When necessary, disconnect the **U** coil and turn the **UL** adjuster IN (CW) to stop. Unlock the **LS** adjuster by loosening the screw next to the  symbol 1 turn. Move the **LS** adjuster slightly toward S for slower or F for faster leveling speeds. Set adjustment from 3 to 5 fpm with the **LS** adjuster, tighten locking screw down, verify **LS** speed after tightening screw, then repeat step 3.  
\* (**Level Speed Test 3 to 5 fpm**).

- 7 **D** Register a down call to set proper down speed with down speed adjuster **D** as required. Tighten the lock nut (snug) & send car to upper landing. \* (**Read high speed**).
- 8 **DA** Start by turning **DA** adjusters IN (CW) to stop. Register a down call and, turn the **DA** adjuster slowly OUT (CCW) until the car accelerates smoothly. Send car to upper landing. \* (**Accel. 0.04g-0.09g**).
- 9 **DT** Register a down call and turn **DT** IN (CW) so that the car slows to provide 4 to 6 inches of stabilized down leveling. \* (**Decel 0.04g-0.09g**).
- 10 **DL** Disconnect **D** coil. Register a down call and set down leveling speed at 6 to 9 fpm with the **DL** adjuster. Tighten the lock nut (snug). Reconnect **D** coil.  
\* (**leveling speed 6 to 9 fpm**).
- 11 **DS** Turn **DS** IN (CW), when necessary, for a softer stop.

**ML** MANUAL LOWERING: Turn **ML** screw OUT (CCW) to lower car downward at leveling speed when necessary.

### R RELIEF:

- A. Land car in pit and install pressure gauge in **A** port.
- B. Register an up call with a fully loaded car, making note of Maximum operating pressure.
- C. Turn **UA** and **RELIEF** adjuster OUT (CCW) to stop.
- D. Close the manual shut off valve to the jack.
- E. Register an up call, observe pressure gauge and turn **RELIEF** IN (CW) to increase pressure. Final setting should be in accordance with local code requirement not to exceed 150% of maximum operating pressure.
- F. Tighten the lock nut (snug).
- G. Restart to check the pressure relief setting. Seal as required.
- H. Open the manual shut off valve to the jack.
- I. Readjust **UA** for proper Up Acceleration.  
\* (**Accel 0.04g-0.09g**).

#### DEFAULT SETTINGS

If valve is received from Maxton, only minor adjustments may be required.

#### CONTROL PLATE

US	UP STOP	OUT	(CCW)	to stop	(faster rate)
UL	UP LEVEL	IN	(CW)	to stop	(slower rate)
UA	UP ACCELERATION	IN	(CW)	to stop	(slower rate)
UT	UP TRANSITION	OUT	(CCW)	to stop	(faster rate)

#### VALVE BODY

BPS	BY-PASS SIZING	OUT	(CCW)	to stop	(delays up start)
LS	LEVEL SPEED (factory set)	DOT ON LINE			(set 3-5 fpm)
R	RELIEF	APPROX 450 psi	(CW increases pressure)		

#### DEFAULT SETTINGS

If valve is received from Maxton, only minor adjustments may be required.

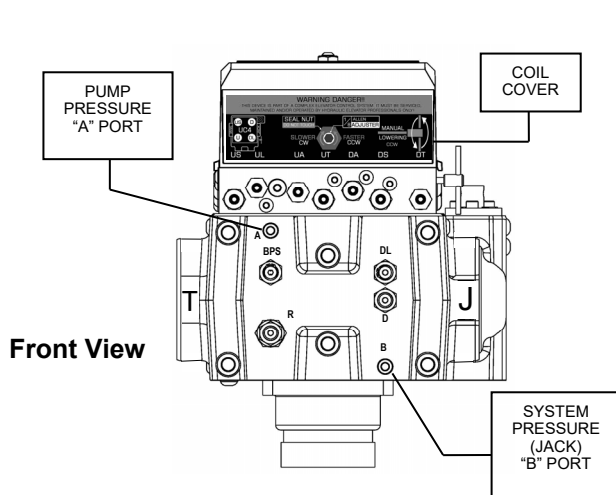
#### CONTROL PLATE

DT	DOWN TRANSITION	OUT	(CCW)	to stop	(faster rate)
DA	DOWN ACCELERATION	OUT	(CCW)	to stop	(faster rate)
DS	DOWN STOP	OUT	(CCW)	to stop	(faster rate)
ML	MANUAL LOWERING	IN	(CW)	to stop	

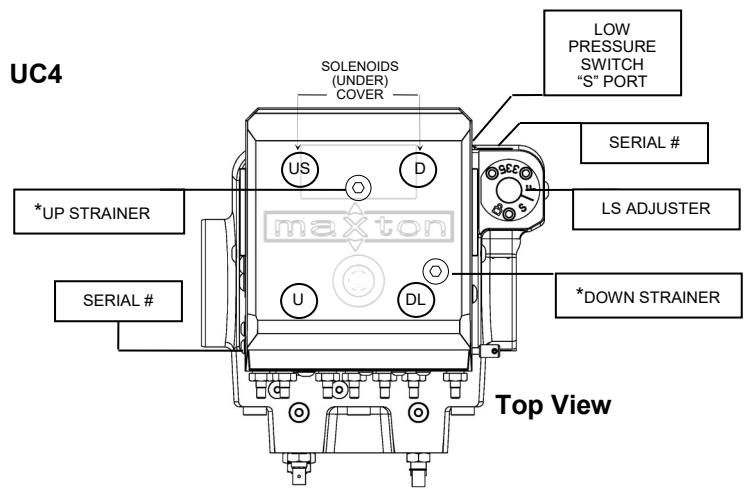
#### VALVE BODY

D	DOWN SPEED	Turn OUT (CCW)	5 threads above lock nut.	(faster speed)
DL	DOWN LEVEL	Turn OUT (CCW)	2 threads above lock nut.	(faster speed)

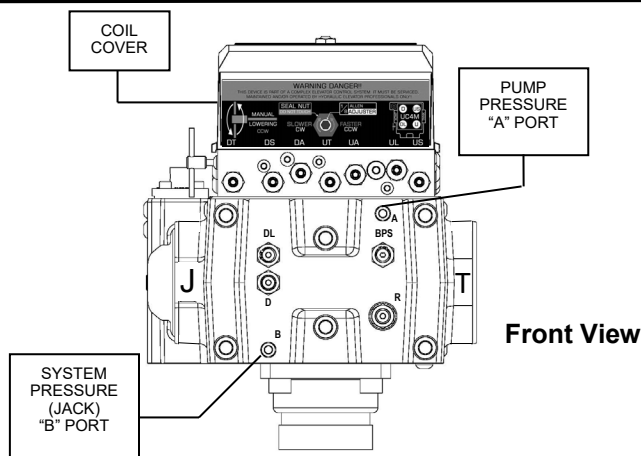




UC4

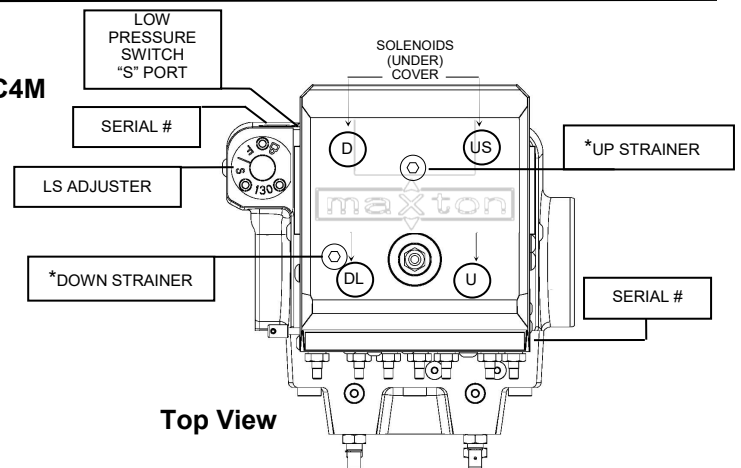


Top View



Front View

UC4M

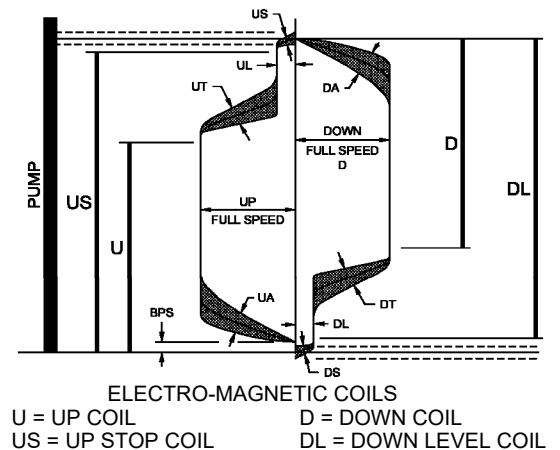


Top View

**ATTENTION:** All Maxton Valves **MUST** be installed with the solenoids in the upright (vertical) position. When replacing a Maxton UC3 / UC3AM or UC4 / UC4M series valve, the pump flange assembly must also be replaced. It is subject to the same wear and tear as the valve.  
 \*Strainer access is provided from the top of the control plate.  
 Prior to 2012 the sleeve and baseplate were an integral part of coil operation.  
 2012 to current the C-Frame is an integral part of coil operation.

### COIL OPERATING SEQUENCE

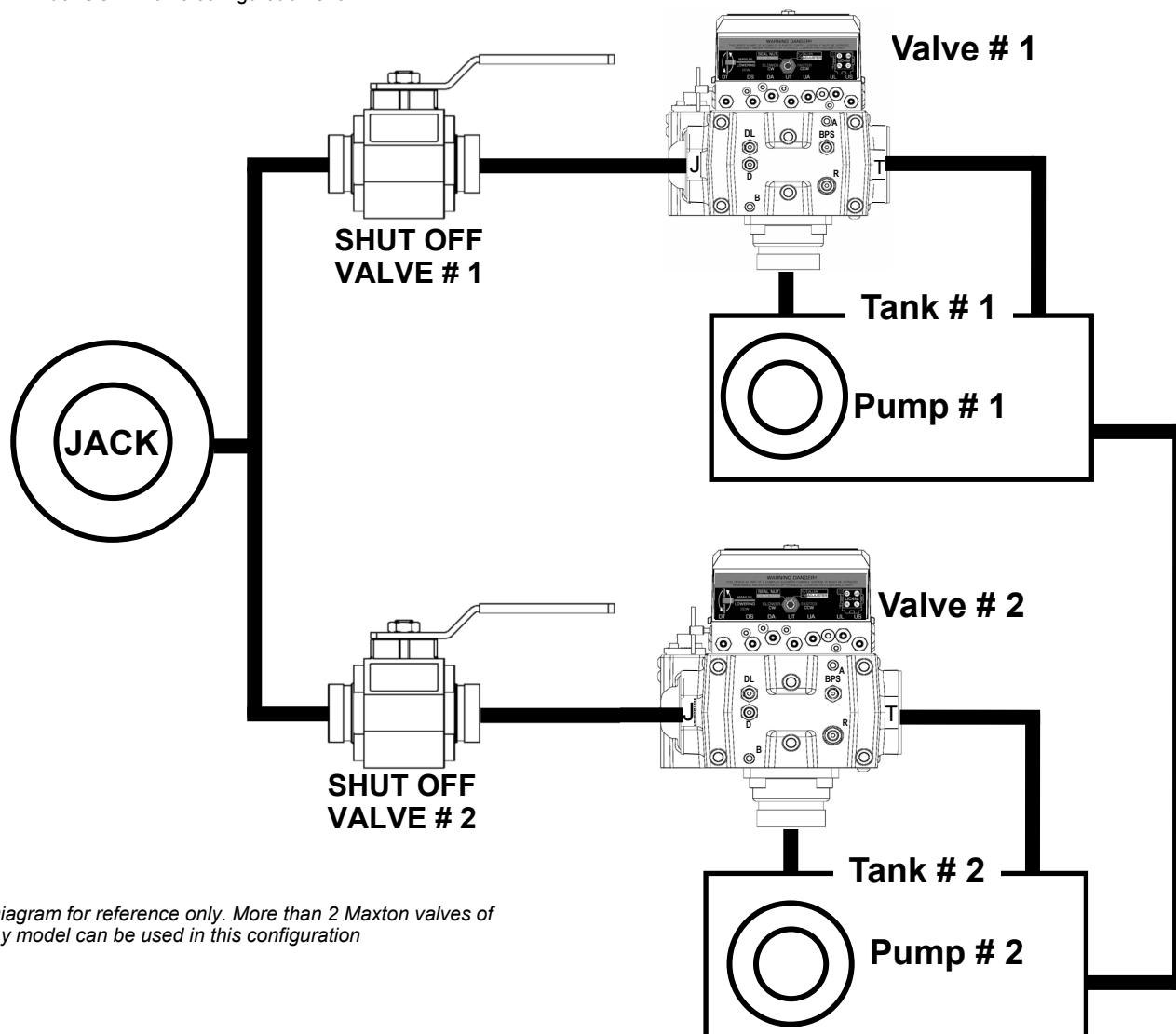
- US** For up travel, energize when pump starts and de-energize to stop. With US energized and pump running, car will move up at leveling speed. For "soft stop", pump should run ½ second after US de-energizes.
- U** Energize with US coil to run up at contract speed. De-energize at slowdown distance from floor. Slowdown distance = 2 inches for each 10 fpm of car speed NOT to exceed 6 inches for every 25 fpm of car speed.  
**If necessary increase slowdown distance to achieve 4-6 inches of stabilized up leveling.**
- DL** Energize to move car at leveling speed. De-energize to stop.
- D** Energize with DL coil to run down at contract speed. De-energize at slowdown distance from floor. Slowdown distance = 2 inches for each 10 fpm NOT to exceed 6 inches for every 25 fpm of car speed.  
**If necessary increase slowdown distance to achieve 4-6 inches of stabilized down leveling.**



**CAUTION:** On Wye - Delta Up Start do not energize U and US Coils until motor is running on Delta.  
 With soft starter, energize US coil with motor up to speed signal.

## MULTIPLE CONTROL VALVE SETUP AND ADJUSTMENT PROCEDURE

*\*Dual UC4M valve configuration show*



*\*Diagram for reference only. More than 2 Maxton valves of any model can be used in this configuration*

### ADJUSTMENT ( Valve # 1 )

(If necessary see adjustment procedure in Maxton product guide for more Maxton valve adjusting information.)

**UP Section Adjustment** - Isolate valve # 1 by electrically disconnecting pump # 2 and closing shut off valve # 2. This will allow independent adjustment between each valve.

1. Set BPS - Disconnect the US Coil, start the pump for the valve to be adjusted. Turn the BPS adjuster in (CW) until the car moves up, then back the adjuster out (CCW) until the car stalls, then back out the adjuster ½ turn more. Snug the adjuster lock nut. No further adjustment is needed.

2. Set UA - Re-connect the US Coil, make an up call. The car should come up to speed in 24 - 36 inches of car motion. Open UA adjuster more (CCW) if the acceleration is sluggish, and turn in UA (CW) if the acceleration is too fast.

**(Note: When the idle pump and valve unit(s) are later added, the combined acceleration may need to be softened. Soften UA with equal incremental adjustments of UA on each control valve.)**

3. Set UT - Turn the up transition adjuster slightly, in or out, to bring the car to stabilized leveling speed at a distance 4" - 6" below the floor level.
4. Set UL - Disconnect the U Coil, turn the UL adjuster in (CW) to a stop. Place call, the car should move upwards about 3-5 feet per minute. (If not, set the LS adjuster.) Set the elevator to 5 – 6 feet per minute by turning UL OUT (CCW). Later, with valve units combined the elevator should reach a leveling speed of 10 - 12 feet per minute.
5. Set US - Turn the US (Up Stop) adjuster to the full out (CCW) position. The elevator should stop about 1/8" to 3/8" below floor level at each floor with all US adjusters in the full out position. Turn in the US adjuster on one designated valve to bring the car up to the exact floor level. (Each pump motor should be timed to run 1/2 second after the car has come to a stop at the floor level.)
6. Set Relief - Land car in pit and install pressure gauge in A port. Then register an up call with a fully loaded car, making note of Maximum operating pressure. Turn UA and RELIEF adjuster OUT (CCW) to stop. Close the manual shut off valve to the jack. Register an up call, observe pressure gauge and turn RELIEF IN (CW) to increase pressure. Final setting should be in accordance with local code requirement not to exceed 150% of maximum operating pressure. Tighten the lock nut (snug). Restart to check the pressure relief setting. Seal as required. Open the manual shut off valve to the jack. Readjust UA for proper Up Acceleration.

**DOWN Section Adjustment** - Start and adjust each valve unit separately. Later, combine the valve units and make final adjustments as indicated.

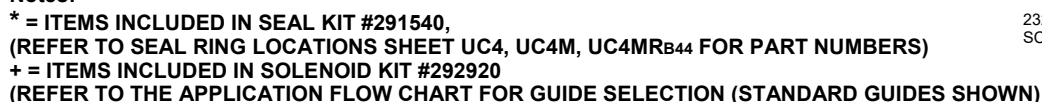
1. Set the Down Speed (D) - The down speed for an individual unit is obtained by dividing the contract speed by the number of down valves used. Add 10 % for UC-2 and UC-2A valve down speed setting.
2. Set Down Leveling Speed (DL) - Set DL to 3-5 foot per minute on each valve, or set DL on one designated valve for a down leveling speed of 6 - 10 feet per minute.
3. Set Down Transition (DT) so that the car slows to stabilized leveling speed about 4 - 6 inches above the floor.
4. Set the down acceleration (DA) so that the car comes up to speed within 24 - 36 inches of down motion. When the valve units are combined the combined acceleration may need to be softened. If so, adjust each valve DA setting incrementally the same amount.
5. Down Stop (DS) - If a more solid down stop is required, open DS as required. When valves are combined, if adjustment is needed, adjust DS incrementally in or out the same on each valve.

## Adjustment ( Valve # 2 )

Reconnect pump # 2 and open shut off valve # 2. Electrically disconnect pump # 1 and close shut off valve # 1

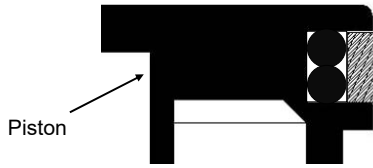
1. Perform all previous steps on valve # 2.

Some fine adjustment maybe needed once both systems are reconnected and the independent adjustments are complete. After adjustments of valve # 1 and # 2 are finished, combine the pump and valve units and make final adjustments as indicated.



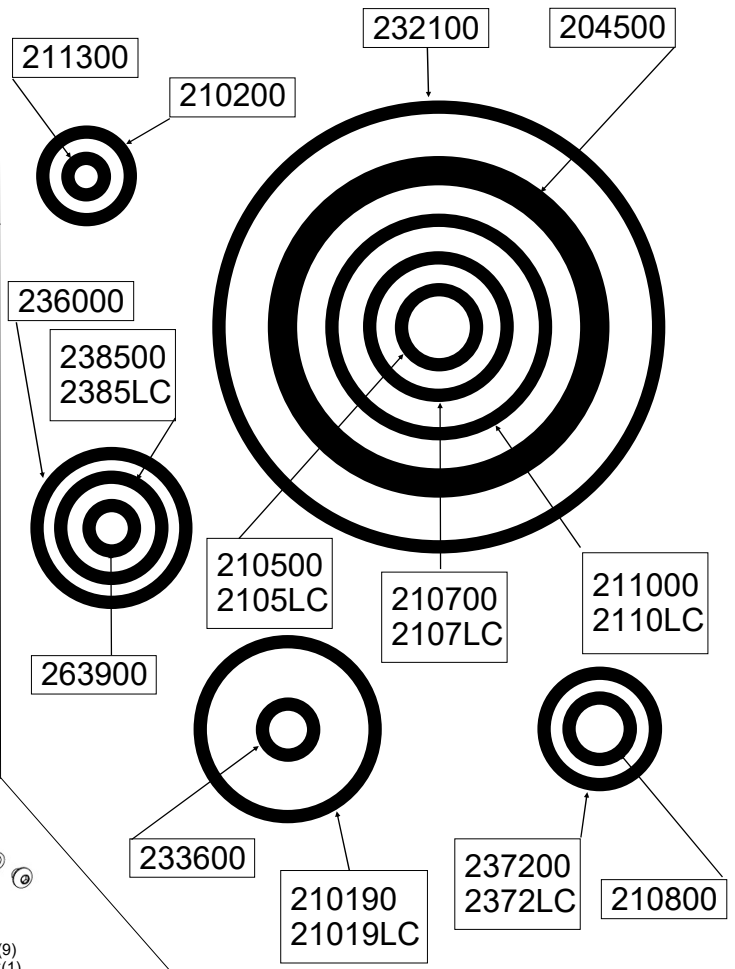
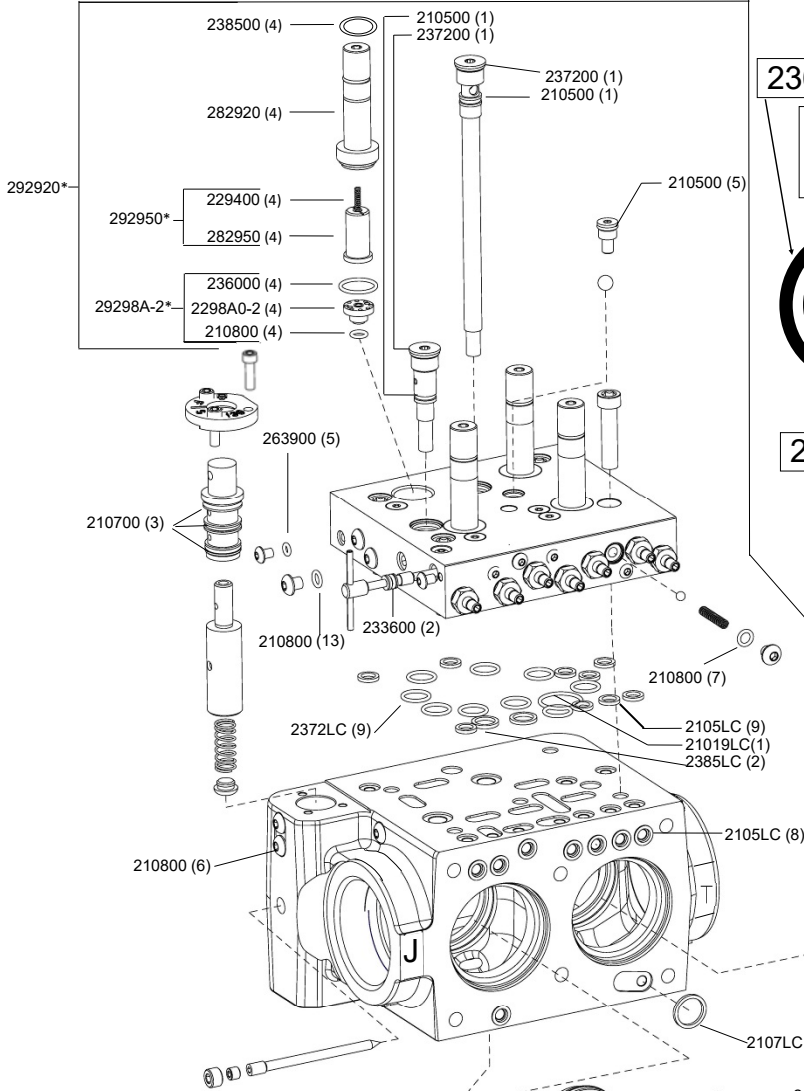
PART #	DESCRIPTION	PART #	DESCRIPTION	PART #	DESCRIPTION	
28346MW	CONTROL PLATE ASSEMBLY (UC4M)		VALVE CLOSURE ASSY (Continued)		VALVE BODY (Continued)	
28346W	CONTROL PLATE ASSEMBLY (UC4)		BPS adjuster assy (continued)	28338E4	BPS Piston & guide assy (std.)	
280070	Adjuster screw assembly	224600	Spring guide	233800	BPS piston	
203400	Seal nut	2323C0	Spring	28371E	* Piston ring & expander assy	
227000	* Teflon seal	235100	Poppit	2320A0	BPS piston sleeve (w / pin)	
200700	Adjuster screw	233600	Seal ring	232100	* Seal ring	
282990	Manual lowering assembly	2353C0	Seal retainer	231600	Snap ring	
229900	Manual lowering screw	283240	Down leveling adjuster assembly	233900	Spring	
233600	* Seal ring	233100	Snap ring	2340E4	BPS guide (standard)	
230000	Handle (roll pin)	233000	Lock nut	283430	Pump flange assy, 2" Grooved	
28170D	Up strainer assembly	232400	Down leveling adjuster screw	232100	* Seal ring	
2170D0	Up strainer cap	210500	* Seal ring	2362B0	Snap ring	
2363A0	Transfer line with screen	210200	* Seal ring	236100	Check return	
210500	* Seal ring	224600	Spring guide	234300	Flange, 2" Grooved	
237200	* Seal ring	232300	Spring	235700	Spring	
28170B	Down strainer assembly	232200	Sleeve	235600	Return check rod	
2170C0	Down strainer cap	283250	Down speed adjuster assembly	283580	Pump flange assy, 2" Threaded	
2170B0	Down strainer base with screen	233000	Lock nut	232100	* Seal ring	
210500	* Seal ring	232500	Down speed adjuster screw	2362B0	Snap ring	
236900	Ball, 1/4"	210200	* Seal ring	236100	Check return	
237200	* Seal ring	237000	Spring	235800	Flange, 2" Threaded	
283860	Coils bracket assembly	237300	Spring guide	235700	Spring	
238600	Coil Bracket	283010	Relief adjuster assembly	235600	Return check rod	
207700	Grommet	Note: Available in complete closure assy only.			28347W	Regulator assembly
207900	Ground screw	233000	Lock nut	2053W0	Up leveling speed adjuster	
247300	Washer	230400	Relief cartridge	210700	* Seal ring	
	UT Regulator	237200	* Seal ring	2347W0	Regulator	
2379S0	Screw (1/4-28 button head)	230100	Relief adjuster screw	212200	Spring	
210800	Seal Ring	210500	* Seal ring	214200	Spring boss	
234400	Spring	230200	Spring boss			
213400	Ball 3/16"	230300	Spring	28350B	Regulator rod assembly	
	Control plate assy miscellaneous	230500	Ball retainer	235200	Pipe plug	
282920	+ Solenoid tube assembly	236900	Ball	214100	Set screw	
29298A2	+ Solenoid seat kit		Valve closure assy miscellaneous	2350B0	Regulator rod	
292950	+ Solenoid ball cage kit	235200	Pipe plug (A & B ports)			
2385LC	* Seal ring	2379A0	Screw (1/4 -28 button head)			
2372LC	* Seal ring	2107LC	* Seal ring			
21019LC	* Seal ring	238000	Ball	213000	MISCELLANEOUS	
238100	Screw (# 10-32)	244500	Seal plug	233500	Lock ring (UC4M)	
210800	* Seal ring	2105LC	* Seal ring	212900	Lock ring (UC4)	
244500	Seal plug	208700	Spring	2139B0	Screw (regulator cap)	
244600	Seal plug			2139B0	Screw (control plate)	
2105LC	* Seal ring	2394MW	VALVE BODY (UC4M)	2319B0	Diffuser	
208700	Spring	2394W0	VALVE BODY (UC4)	232900	Screw (valve closure)	
238000	Ball, 5/16"	283070	Down / Check seat assembly	234200	Screw (pump flange)	
2379A0	Screw (1/4-28 button head)	230900	Snap ring	2354B0	Coil cover stud	
2379S0	Screw (UT/DT 1/4-28 button head)	230700	Down / Check seat	2375B0	Coil cover	
238100	Screw (# 10-32 button head)	231200	Spacer	2376A0	Jam nut (coil cover)	
263900	* Seal ring	230600	Seal ring	237700	Washer (coil cover)	
239503	Orifice (max UA / US) (Blue)	28317E4	Down / Check piston & guide assy	2379A0	Screw (bracket)	
239504	Orifice (max UT) (Steel)	232100	* Seal ring	235200	Pipe Plug	
239513	Orifice (max DT) (Steel)	232000	Down piston sleeve	28082B	Solenoid coil Assembly	
239515	Orifice (UT Reg.) (Black)	2317A0	Down piston	Solenoid coil 115 VAC / 24 VDC		
		28371E	* Piston ring & expander assy	(Red)		
		231600	Snap ring	C-Frame		
		231500	Spring			
28328MW	VALVE CLOSURE ASSEMBLY (UC4M)	2314E4	Down / Check guide assy (std.)			
28328W	VALVE CLOSURE ASSEMBLY (UC4)	204500	* Seal ring			
283330	* BPS adjuster assembly	230800	Seal retainer ring			
233100	Snap ring	204600	Snap ring			
233000	Lock nut	283410	Up seat assembly			
233300	BPS adjuster screw	230900	Snap ring			
210200	* Seal ring	234100	BPS seat			
210500	* Seal ring	230600	Seal ring			
				Notes: -	REFER TO APPLICATION FLOW CHART FOR GUIDE SELECTION.	
				E1: 28338E1 (BPS piston assembly)		
				28317E2 (Down piston assembly)		
				E2: 28338E2 (BPS piston assembly)		
				28317E3 (Down piston assembly)		
				* = PARTS INCLUDED IN SEAL KIT # 291540		
				+ = PARTS INCLUDED IN SOLENOID KIT # 292920		



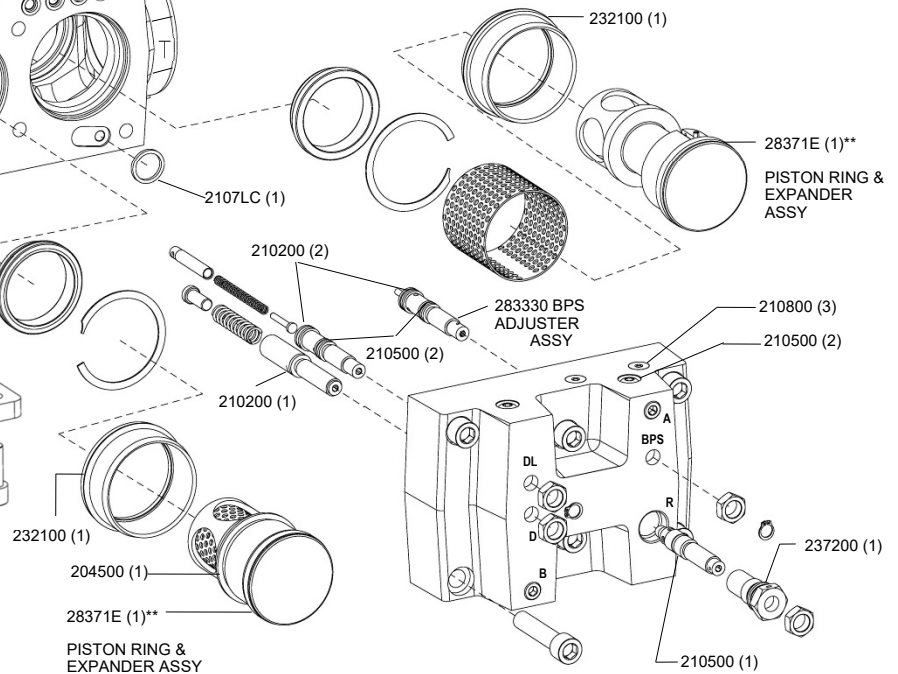
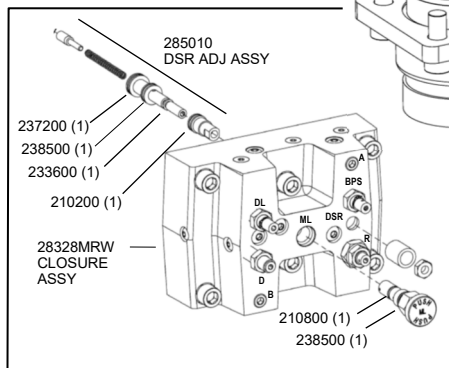


Piston Ring  
Orientation  
(28371E)

\*\* Detail A



## UC4MR



(UC4M SHOWN)  
\* Sold As Kits  
\*\* See Detail A

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## CAR AT REST–SOLENOID COILS DE–ENERGIZED

The car at rest is held by a hydraulic fluid system locked in place by a check valve, solenoid pilot valves and a manual-lowering valve.

### UP DIRECTION

When an up call is registered and the pump starts, the up solenoid (U) and the up stop solenoid (US) are simultaneously energized; closing ball checks US and UT, the pump output flows through the up valve and back to the reservoir.

Hydraulic fluid from the pump travels through the up control fluid strainer to the by-pass sizing adjustment, then the control side of the up piston. The control side of the up piston is larger in area than the area of the up piston exposed to the pump pressure; therefore, the up piston begins to move rapidly towards the up valve, restricting the opening in the up valve, raising the pump pressure. When the pump pressure reaches a point slightly below the pressure on the jack side of the check valve, the fluid coming through the by-pass sizing adjustment is shut off. Then, the fluid from the up acceleration adjustment (UA), which also comes from the control fluid strainer, causes a continuing movement of the up valve. Fluid begins flowing from the up control fluid strainer through a ball check to the down piston holding it firmly in position. This allows the guide end of the down check assembly to act independently as a check valve. As the pump pressure increases above that on the jack side of the check valve, the check valve is opened, allowing fluid to flow to the jack cylinder, causing the jack to move in the up direction. The elevator then accelerates to full speed as the up piston closes the up valve.

Upon reaching a predetermined distance below the floor to which the car is traveling (2 inches for each 10 fpm of car speed NOT to exceed 6 inches for every 25 fpm of car speed), the up solenoid (U) is de-energized, allowing fluid from the control side of the up piston to flow through the up transition adjustment (UT), then to the up leveling speed regulator (LS) orifice which is held open by a mechanical linkage attached to the check valve. The control fluid then returns to the reservoir and the up piston moves toward the open position. As the up piston moves, opening the up valve, hydraulic fluid begins flowing to the reservoir, reducing the pump pressure. As the pump pressure is reduced, the check valve begins closing, also, partially closing the (LS) orifice in the up leveling speed regulator.

When the flow through the (LS) orifice equals in quantity, the flow through the maximum up acceleration adjustment (UA) and the up leveling adjustment (UL), the car will be in leveling speed. Upon reaching a point slightly before the floor (usually 3/8 of an inch to 1/4 of an inch), the up stop solenoid (US) is de-energized. This allows fluid to flow through the up stop adjustment (US), causing the up piston to fully open, permitting the total pump output to flow to the reservoir, causing the car to stop. After the car comes to a complete stop, the pump motor is then electrically timed out and stops. If, during up movement, the car has been overloaded or hits an obstruction, the fluid on the control side of the up piston is evacuated to the reservoir through the relief valve, causing the up piston to cycle open and by-pass the entire pump output.

## **CAR AT REST – SOLENOID COILS DE-ENERGIZED**

The car at rest is held by a hydraulic fluid system locked in place by a check valve, solenoid pilot valves and a manual-lowering valve.

## **DOWN DIRECTION**

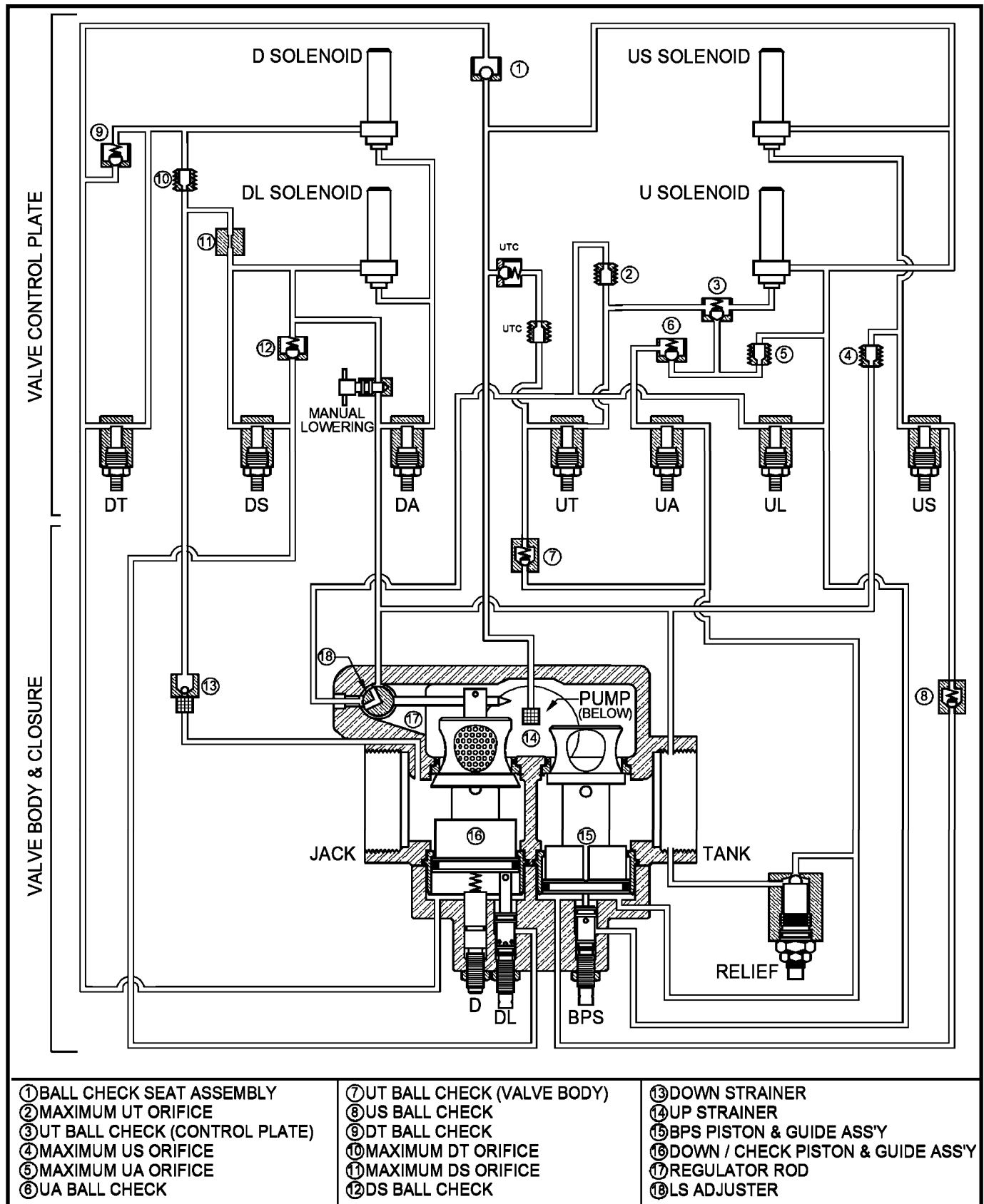
When a down call is registered, the down leveling solenoid (DL) and the down valve solenoid (D) are simultaneously energized, allowing fluid from the control side of the down piston and fluid from the down control adjustments, down stop (DS) and down transition (DT), to flow through the down acceleration adjustment (DA) and back to the reservoir. This reduces the pressure on the control side of the down piston. The pressure acting on the area of the down piston exposed to the jack pressure causes the down piston to open the down valve. The down valve will remain in the open position as long as the flow of control fluid passing through the down acceleration adjustment (DA) exceeds the flow through the down transition (DT) and the down stop (DS) adjustments. The maximum down speed is controlled by a mechanical stop limiting the down piston travel (Down Adjustment (D)).

Upon reaching a predetermined distance above the floor to which the car is traveling (6 inches for each 25 feet per minute of car speed) the down solenoid (D) is de-energized. The fluid input to the control side of the down piston from the jack continues, as the control side of the piston is larger in area than the area exposed to jack pressure. This causes the down piston to start closing. A control rod follows the movement of the piston, uncovering control porting and allowing fluid to flow through the down level adjustment (DL), which when equal in quantity to the flow through the down transition adjustment (DT), stops the motion of the piston, placing the down valve in the leveling position. The rate of movement of the down piston from the open position to the leveling position is controlled by the down transition adjustment (DT). Upon reaching a point slightly before floor level, (usually 3/8 of an inch to 1/4 of an inch), the down leveling solenoid (DL) is de-energized, causing the fluid coming through the down stop (DS) adjusters to be diverted to the control side of the down piston, moving the down piston to the fully closed position of the down valve.

The final closing rate of the down valve is controlled by the down stop adjustment (DS). Opening the down stop adjustment (DS) will cause the car to stop more firmly, as control fluid is sent to the control side of the down piston at a more rapid rate.

## **DOWN DIRECTION UC4MR**

Constant down speed is controlled by the down speed regulator adjustment (DSR) which regulates the movement of the down piston and down valve in the event of increased jack pressure. This continuous regulation causes a constant rate of flow in the down direction from the jack through the down valve and back to the reservoir regardless of varying loads on the elevator. The UC4MR valve does not require the down stop adjustment (DS) as does the UC4 and UC4M valves. With the above exception, the UC4MR valve operates in general as the UC4 and UC4M valves.

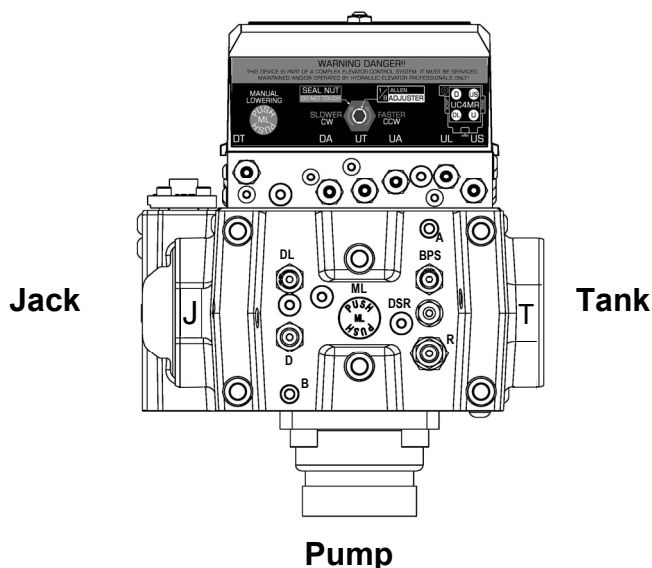


NOTE: UC4 IS A MIRROR IMAGE OF THE UC4M

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## Introduction

The UC4MR hydraulic controller was designed to meet changing application trends. The greater variation in temperature and pressure seen in today's market demand much more from the valve design. The first steps of improvement are to regulate the area of greatest variation (down high speed). The UC4MR valve will allow the user to have direct adjustment control of loaded and unloaded down main speeds without applying a load.



## Specifications

<b>Maximum Flow</b>	185 gpm (700 l/min)
<b>Operating Pressure</b>	
Minimum	175 psi (12 bar)
Maximum	800 psi (55 bar)

### Note:

**Consult factory when applications exceed pressure ratio over 2.5 to 1, example (Max. / Min. :280 / 100 )**

### Line Connections

Jack, Tank Port	2" NPT
Pump Port (flange)	2" NPT or Grooved

### Gauge Ports

Pump Pressure: "A" Port (1/8" NPT)  
System pressure: "B" Port (1/8" NPT)  
Pressure Switch: "S" Port (1/8" NPT)

### Operating Temperature Oil Type

80°– 150° F (26°– 65° C)  
Hyd. ISO VG 32  
150 SUS @ 100° F (38° C)

### Solenoid Coils

Encapsulated CSA / UL Listed

### Overall Dimensions

Width 8 7/16 inches (214mm)	Height 10 1/2 inches (268mm)
Depth 9 3/16 inches (233mm)	Weight 27 lbs. (12.2kg)

\*Refer to flow Charts (pg.6)

\*\* To insure proper valve selection please return a completed copy of our Job Specification Sheet (pg. 3) to Maxton.

## Standard Features

- Unit body construction.
- Steel sleeve inserts in valve body.
- Feed back control for stall free operation.
- Individualized adjustments.
- Regulated down speed control.
- Integrated relief valve.
- Push button manual lowering.
- Low pressure cutoff manual lowering.
- High efficiency solenoids.
- 115 VAC / 24 VDC solenoid coils.
- Factory tested prior to shipping.
- 2 year limited warranty.

## Optional Features

- Explosion Proof Coil Cover
- Thread to Grooved Adapters (2")
- Low Pressure Switch
- Tank Discharge Filter
- 1/8" or 1/4" Ball Valves
- Quick Disconnect Coupling or Nipple Kit

### Solenoid Coils

- 12 VDC – 120 VAC Dual Voltage Coils
- 12 VDC Coils
- 230 VAC Coils
- 115 VDC Coils
- 185 VAC Coils



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## THE INFORMATION PRESENTED HEREIN IS FOR USE BY SKILLED HYDRAULIC ELEVATOR PROFESSIONALS

### SPECIAL CONSIDERATIONS:

Make all adjustments at minimum pressure (no load on elevator) except where noted. "IN" is ALWAYS (CW) clockwise. "OUT" is ALWAYS (CCW) counterclockwise. **THE CONTROL PLATE ADJUSTERS HAVE SEAL NUTS, NOT LOCK NUTS.** Adjust nut only to set seal friction (friction will maintain adjustment). When adjustment procedure calls for coils to be disconnected, disconnect them electrically. Do not remove them physically. Make adjustments with a minimum oil temperature of 80° F, not to exceed 100° F maximum. Maxton recommends the use of a 5 micron filtration system. With the presence of at least some adverse conditions in most installations, serious consideration should be given to overhaul or replacement of a control valve on a five year cycle.

### GAUGE PORTS:

Gauge ports - 1/8" NPT provided at points A, B and S.

**A** Port: Pump pressure (RELIEF, WORKING PRESSURE).

**B** Port: Jack pressure (STATIC, DOWN RUNNING).

**S** Port: Low pressure switch port.

**Note:** *The minimum operating pressure at port B should be at least 175 psi (12 bar) as car is moving down full speed with no load. See flow chart.*

\* **SAFETACH2** performance meter validates valve adjustment by providing direct speed and acceleration (g-force) readouts.

### OPERATIONAL DATA:

**Min. / Max. Pressure:** 175-800 psi (3.4-55 bar)

**Max. Rated Flow:** 185 gpm (700 l / min.)


**Operating Temperature:** 80°-150° F (26°- 65° C)

**Optimal Temp. Range:** 100°-130° F (38°- 54° C)

**Oil Type:** Hyd. ISO VG 32

150 SUS @ 100° F (38° C)

**Questions:** Call Tech Support (775) 782-1700 (7am-4pm PST), use Maxtonvalve.com or download Maxton Mobile Mechanic from your APP Store

- 1 **BPS** Disconnect the **US** coil, turn **UA** IN (CW) register an up call and turn **BPS** IN (CW) until the car just moves. Next, turn the **BPS** adjuster OUT (CCW) until it stops the movement of the car, then OUT 1/2 turn more. Snug lock nut on **BPS** adjuster and stop pump. NOTE: If car does not move with **BPS** fully IN (CW), the valve may be oversized for the job (consult factory for proper valve sizing). Reconnect the **US** coil.
- 2 **UA** Register an up call (pump running, **U** & **US** coils energized, car should not move), slowly turn **UA** OUT (CCW) to attain full up speed within 24 to 36 inches. \* (**Accel 0.04g-0.09g**).
- 3 **UL** Disconnect the **U** coil. Turn **UL** adjuster IN (CW) to stop and register an up call. Leveling speed should be 3 to 5 fpm. (If not, readjust **LS**\*). Turn **UL** adjuster OUT (CCW) to attain 9 to 12 fpm leveling speed. Reconnect the **U** coil and lower the car to lowest landing. \* (**Read leveling speed**).
- 4 **UT** Register an up call and turn **UT** IN (CW) so that the car slows to provide 4 to 6 inches of stabilized up leveling. Repeat steps 3 and 4 as necessary. \* (**Decel 0.04g-0.09g**).
- 5 **US** With **US** adjuster fully OUT (CCW), car should stop 1/4" to 3/8" below floor. After a normal up run, turn **US** IN (CW) as needed to bring car to floor level. The pump must be timed to run 1/2 second after the car has reached the floor.
- 6 With empty car at bottom floor, disconnect **U** & **US** coils and register a call. The car must not move. If movement occurs, check **BPS** and **US**.
- LS\*** Dot on the **LS** adjuster should be referenced to the line between F / S. When necessary, disconnect the **U** coil and turn the **UL** adjuster IN (CW) to stop. Unlock the **LS** adjuster by loosening the screw next to the  symbol 1 turn. Move the **LS** adjuster slightly toward S for slower or F for faster leveling speeds. Set adjustment from 3 to 5 fpm with the **LS** adjuster, tighten locking screw down, verify **LS** speed after tightening screw, then repeat step 3.  
\* (**Level Speed Test 3 to 5 fpm**).

#### DEFAULT SETTINGS

If valve is received from Maxton, only minor adjustments may be required.

#### CONTROL PLATE

US	UP STOP	OUT	(CCW)	to stop	(faster rate)
UL	UP LEVEL	IN	(CW)	to stop	(slower rate)
UA	UP ACCELERATION	IN	(CW)	to stop	(slower rate)
UT	UP TRANSITION	OUT	(CCW)	to stop	(faster rate)

#### VALVE BODY

BPS	BY-PASS SIZING	OUT	(CCW)	to stop	(delays up start)
LS	LEVEL SPEED (factory set)	DOT ON LINE			(set 3-5 fpm)
R	RELIEF	APPROX 450 psi	(CW increases pressure)		

- 7 **DSR** Register a down call and turn **DSR** OUT (CCW) until the car reaches approx. 5% above contract speed. NOTE: You may need to turn **DT** IN (CW) until the car begins down acceleration. In order to achieve desired speed, **D** may need to be turn OUT (CCW).
- 8 **D** Register a down call to set your actual contract speed with **D** adjuster (CW slower). Tighten the lock nut (snug) & send car to upper landing. \* (**Read high speed**).
- 9 **DL** Disconnect **D** coil. Register a down call and set down leveling speed at 6 to 9 fpm with the **DL** adjuster. Tighten the lock nut (snug tight). Reconnect **D** coil. \* (**leveling speed 6 to 9 fpm**).
- 10 **DT** Register a down call and turn **DT** IN (CW) so that the car slows to provide 4 to 6 inches of stabilized down leveling. NOTE: A minor re-adjustment of **DL** may be necessary. Send car to upper landing. \* (**Decel 0.04g-0.09g**).
- 11 **DA** Turn **DA** IN (CW) until desired rate of acceleration is achieved. Full down speed should be attained within 24 to 36 inches. \* (**Accel 0.04-0.09g**).

**ML** **MANUAL LOWERING:** Push **ML** button to lower car downward at leveling speed when necessary

### R RELIEF:

- A. Land car in pit and install pressure gauge in **A** port.
- B. Register an up call with a fully loaded car, making note of Maximum operating pressure.
- C. Turn **UA** and **RELIEF** adjuster OUT (CCW) to stop.
- D. Close the manual shut off valve to the jack.
- E. Register an up call, observe pressure gauge and turn **RELIEF** IN (CW) to increase pressure. Final setting should be in accordance with local code requirement not to exceed 150% of maximum operating pressure.
- F. Tighten the lock nut (snug).
- G. Restart to check the pressure relief setting. Seal as required.
- H. Open the manual shut off valve to the jack.
- I. Readjust **UA** for proper Up Acceleration.  
\* (**Accel 0.04g-0.09g**).

#### DEFAULT SETTINGS

If valve is received from Maxton, only minor adjustments may be required.

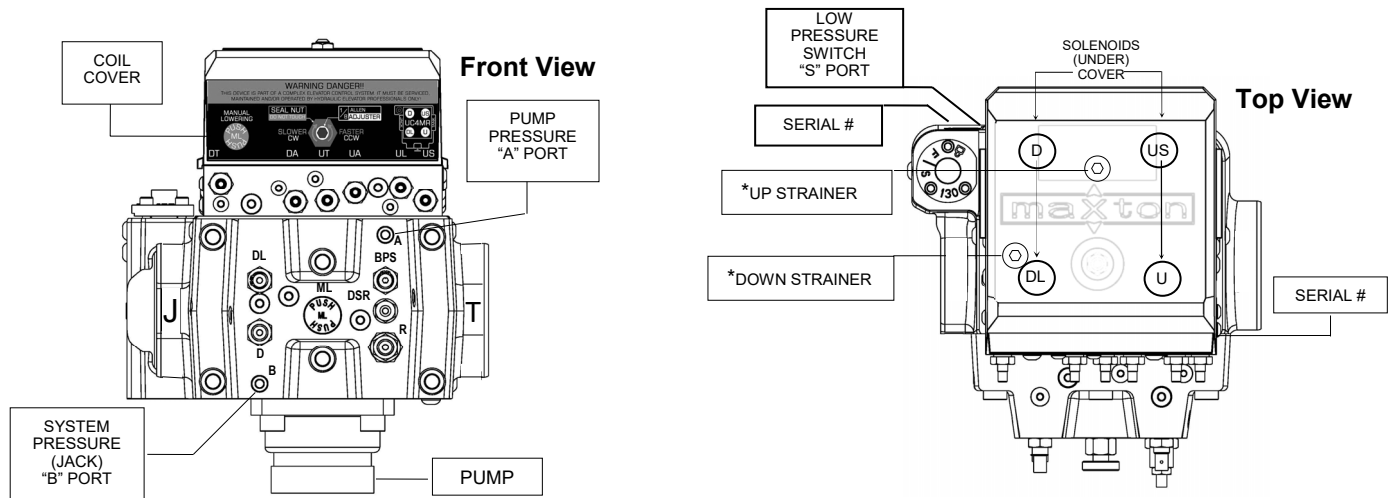
#### CONTROL PLATE

DT	DOWN TRANSITION	OUT	(CCW)	to stop	(faster rate)
DA	DOWN ACCELERATION	OUT	(CCW)	to stop	(faster rate)
ML	MANUAL LOWERING			Push Button	

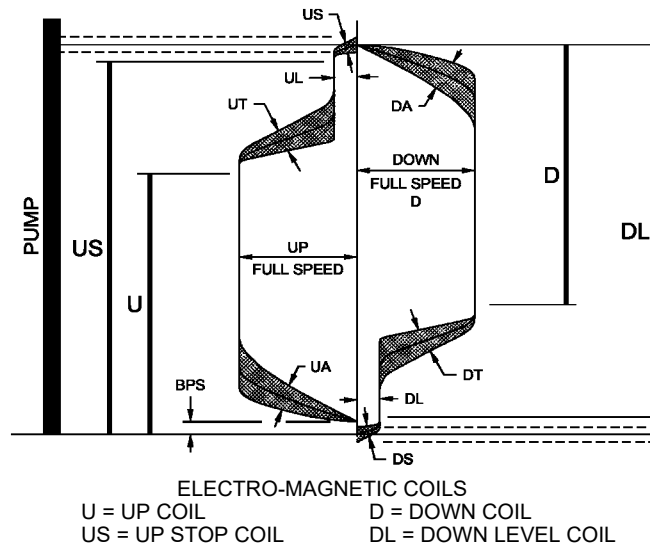
#### VALVE BODY

D	DOWN SPEED	Turn OUT (CCW)	9 threads above lock nut.	(faster speed)
DL	DOWN LEVEL	Turn OUT (CCW)	2 threads above lock nut.	(faster speed)
DSR	DOWN SPEED REGULATOR	Turn IN (CW)	1 thread above jam nut	





\* Strainer access is provided from the top of the control plate.  
Prior to 2012 the sleeve and baseplate were an integral part of coil operation.  
2012 to current the C-Frame is an integral part of coil operation.



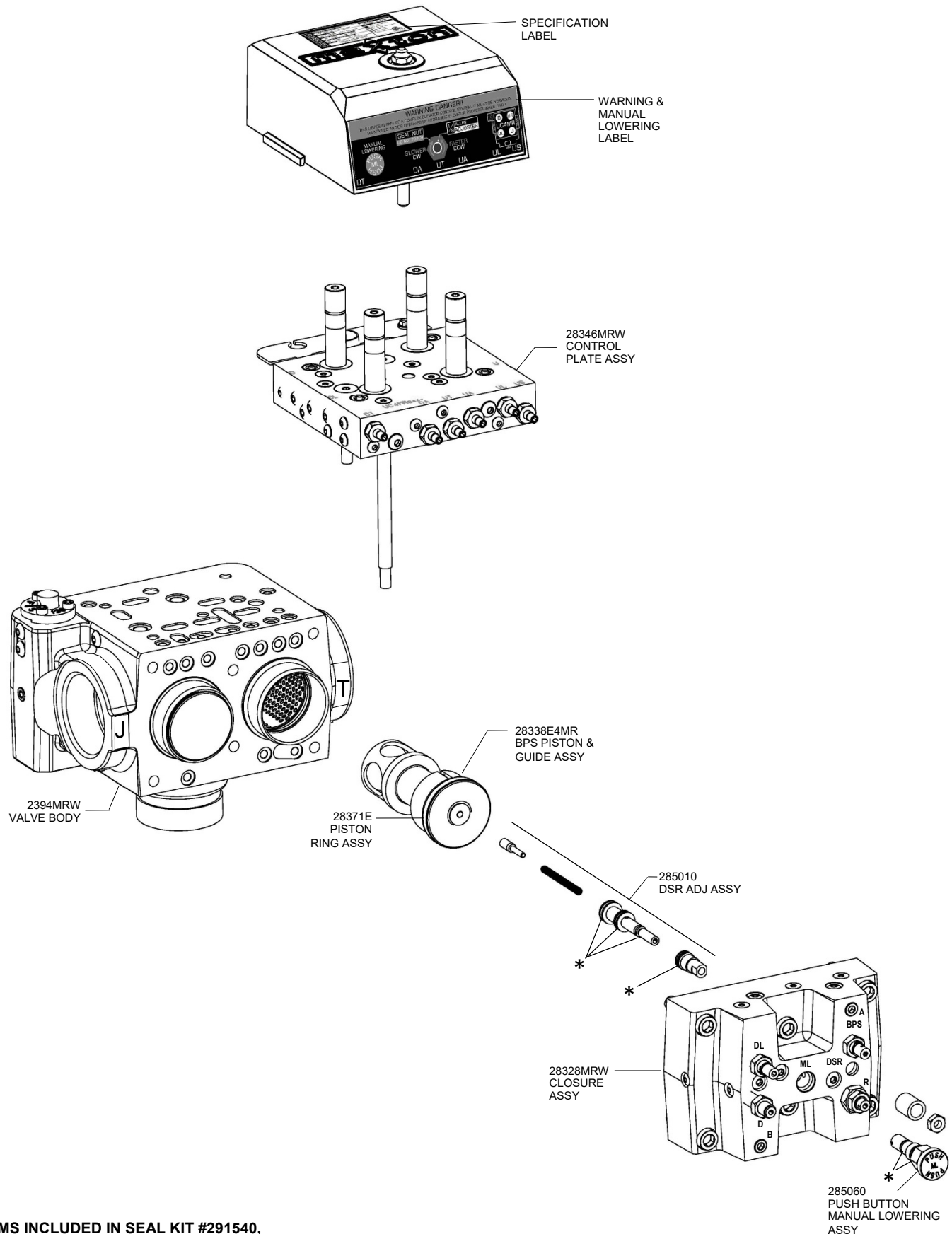
**ATTENTION:** All Maxton Valves **MUST** be installed with the solenoids in the upright (vertical) position.  
When replacing a Maxton UC3 / UC3AM or UC4 / UC4M series valve, pump flange assembly must also be replaced. It is subject to the same wear and tear as the valve.

### COIL OPERATING SEQUENCE

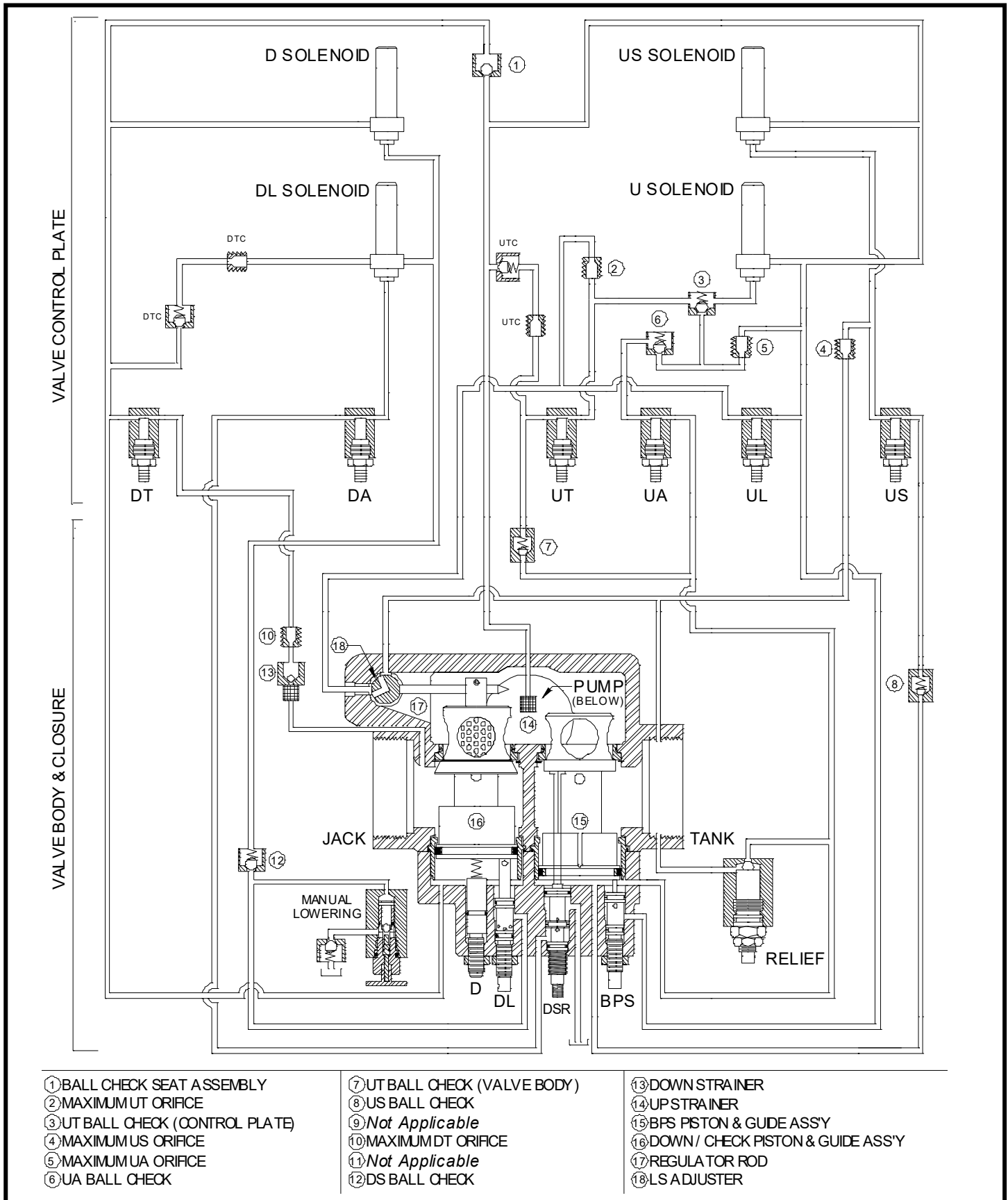
- US For up travel, energize when pump starts and de-energize to stop. With US energized and pump running, car will move up at leveling speed. For "soft stop", pump should run 1/2 second after US de-energizes.
- U Energize with US coil to run up at contract speed. De-energize at slowdown distance from floor. Slowdown distance = 2 inches for each 10 fpm of car speed NOT to exceed 6 inches for every 25 fpm of car speed. **If necessary increase slowdown distance to achieve 4-6 inches of stabilized up leveling.**
- DL Energize to move car at leveling speed. De-energize to stop.
- D Energize with DL coil to run down at contract speed. De-energize at slowdown distance from floor. Slowdown distance = 2 inches for each 10 fpm NOT to exceed 6 inches for every 25 fpm of car speed. **If necessary increase slowdown distance to achieve 4-6 inches of stabilized down leveling.**

**CAUTION:** On Wye - Delta Up Start do not energize U and US Coils until motor is running on Delta.

With soft starter, energize US coil with motor up to speed signal.



PART #	DESCRIPTION	PART #	DESCRIPTION	PART #	DESCRIPTION
<b>28346MW</b>	<b>CONTROL PLATE ASSEMBLY</b>		<b>VALVE CLOSURE ASSY (Cont.)</b>		<b>VALVE BODY (Cont.)</b>
<b>280070</b>	<b>Adjuster screw assembly</b>	<b>283240</b>	<b>Down leveling adjuster assembly</b>		<b>Up seat assembly (cont.)</b>
203400	Seal nut	233100	Snap ring	230600	Seal ring
227000	Teflon seal	233000	Lock nut	<b>2833E4MR</b>	<b>BPS piston &amp; guide assy (std.)</b>
200700	Adjuster screw	232400	Down leveling adjuster screw	232100	* Seal ring
<b>28170D</b>	<b>Up strainer assembly</b>	210500	* Seal ring	2320A0	BPS piston sleeve (w/pin)
2170D0	Up strainer cap	210200	* Seal ring	28371E	* Piston ring & expander assy
2363A0	Transfer line with screen	224600	Spring guide	2338MR	BPS piston
210500	* Seal ring	232300	Spring	231600	Snap ring
237200	* Seal ring	232200	Sleeve	251500	Control rod
		<b>283250</b>	<b>Down speed adjuster assembly</b>	233100	Snap ring
<b>28170B</b>	<b>Down strainer assembly</b>	233000	Lock nut	251400	Control tube
2170C0	Down strainer cap	232500	Down speed adjuster screw	2339B0	Spring
2170B0	Down strainer base with screen	210200	* Seal ring	233600	Seal ring
210500	* Seal ring	237000	Spring	2340E4MR	BPS guide (standard)
236900	Ball, 1/4"	237300	Spring guide		
237200	* Seal ring	<b>285010</b>	<b>DSR adjuster assembly</b>	<b>283430</b>	<b>Pump flange assy, 2" Grooved</b>
<b>283860</b>	<b>Coils bracket assembly</b>	250200	DSR adjuster screw	232100	* Seal ring
238600	Coils bracket	250100	DSR cartridge	2362B0	Snap ring
207700	Grommet	2504A0	Sleeve	236100	Check return
207900	Ground screw	2323MR	Spring	234300	Flange, 2" Grooved
247300	Washer	251700	Roll pin	235700	Spring
	<b>UT Regulator</b>	251800	Spacer	235600	Return check rod
2379S0	Screw (1/4-28 button head)	250500	Lock nut	<b>283580</b>	<b>Pump flange assy, 2" Threaded</b>
210800	Seal ring	210200	* Seal ring	232100	* Seal ring
234400	Spring	233600	* Seal ring	2362B0	Snap ring
213400	Ball 3/16"	237200	* Seal ring	236100	Check return
	<b>DT Regulator</b>	238500	* Seal ring	235800	Flange, 2" Threaded
2379A0	Screw (1/4-28 button head)	<b>283010</b>	<b>Relief adjuster assembly</b>	235700	Spring
210800	Seal ring		Note: Available in complete closure assy only.	235600	Return check rod
234400	Spring	233000	Lock nut	<b>28347W</b>	<b>Regulator assembly</b>
213400	Ball 3/16"	230400	Relief cartridge	2053W0	Up leveling speed adjuster
	<b>Control plate assy miscellaneous</b>	237200	* Seal ring	210700	* Seal ring
282920	+ Solenoid tube assembly	230100	Relief adjuster screw	2347W0	Regulator
29298A2	+ Solenoid seat kit	210500	* Seal ring	212200	Spring
292950	+ Solenoid ball cage kit	230200	Spring boss	214200	Spring boss
2385LC	* Seal ring	230300	Spring		
2372LC	* Seal ring	230500	Ball retainer	<b>28350B</b>	<b>Regulator rod assembly</b>
21019LC	* Seal ring	236900	Ball	235200	Pipe plug
238100	Screw (#10-32)		<b>Valve closure assy miscellaneous</b>	214100	Set screw
210800	* Seal ring	235200	Pipe plug (A & B ports)	2350B0	Regulator rod
244500	Seal plug	2379A0	Screw (1/4-28 button head)		
244600	Seal plug	2107LC	* Seal ring		<b>MISCELLANEOUS</b>
210500	* Seal ring	244500	Seal plug	208880	C-Frame
208700	Spring	2105LC	* Seal ring	208000	Solenoid coil 230 VAC (Green)
238000	Ball, 5/16"	208700	Spring	208100	Solenoid coil 115 VDC (Black)
2379A0	Screw 1/4-28 button head)	238000	Ball, 5/16"	2082B0	Solenoid coil 115 VAC/24 VDC (Red)
238100	Screw (#10-32 button head)	236900	Ball, 1/4"	213000	Lock ring
263900	* Seal ring	251000	Spring	212900	Screw (regulator cap)
239503	Orifice (max UA, US) (Blue)	<b>2394MRW</b>	<b>VALVE BODY</b>	2139B0	Screw (control plate)
239504	Orifice (max UT) (Steel)	283070	<b>Down / Check seat assembly</b>	2319B0	Diffuser
239513	Orifice (max DT) (Steel)	230900	Snap ring	232900	Screw (valve closure)
239515	Orifice (UT Reg.) (Black)	230700	Down / Check seat	234200	Screw (pump flange)
		231200	Spacer	2354B0	Coil cover stud
<b>28328MRW</b>	<b>VALVE CLOSURE ASSEMBLY</b>	230600	Seal ring	2375B0	Coil cover
<b>285060</b>	<b>Manual lower push button assy</b>	<b>28317E4</b>	* <b>Down / Check piston &amp; guide assy</b>	2376A0	Jam nut (coil cover)
238500	* Seal ring	232100	* Seal ring	237700	Washer (coil cover)
210800	* Seal ring	232000	Down piston sleeve	2379A0	Screw (bracket)
<b>283330</b>	* <b>BPS adjuster assembly</b>	2317A0	Down piston	235200	Pipe plug
233100	Snap ring	28371E	Piston ring & expander assy		
233000	Lock nut	231600	Snap ring		
233300	BPS adjuster screw	231500	Spring		
210200	* Seal ring	204600	Snap ring		
210500	* Seal ring	2314E4	Down / Check guide assy (std.)		
224600	Spring guide	204500	* Seal ring		
2323C0	Spring	230800	Seal retainer ring		
235100	Poppit	<b>283410</b>	<b>Up seat assembly</b>		
233600	Seal ring	230900	Snap ring		
2353C0	Seal retainer	234100	BPS seat		
				Notes: -	REFER TO APPLICATION FLOW CHART FOR GUIDE SELECTION.
					E1: 28338E1MR (BPS piston assembly)
					28317E2MR (Down piston assembly)
					E2: 28338E2MR (BPS piston assembly)
					28317E3MR (Down piston assembly)
					* = PARTS INCLUDED IN SEAL KIT #291540
					+ = PARTS INCLUDED IN SOLENOID KIT #292920



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**CAUTION:**

- The information contained herein is for use by skilled hydraulic elevator professionals.
- Before disassembly of the valve, make sure the power is off by turning the main disconnect switch off and that the elevator is resting on the buffers (zero system pressure).

The possible problems and causes are listed in order of likelihood and ease of checking.

The first section of the guide deals with the UP SECTION, while the second deals with the DOWN SECTION.

It is important to use the following reference materials in conjunction with the trouble shooting procedures:

- UC4, UC4MB44 Operating Sequence
- UC4, UC4MB44 Adjustment Procedure
- UC4, UC4MB44 Schematic

**CAUTION:**

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- Before disassembly of the valve, make sure the power is off by turning the main disconnect switch off and that the elevator is resting on the buffers (zero system pressure).

**UP SECTION****PUMP RUNS, CAR DOES NOT MOVE**

- Check valve for proper sizing in accord with adjustment procedures.
- Make sure gate valves are open in system as required.
- Turn US (Up Stop) adjuster in clockwise (CW) until it stops.
  1. If car moves, check for proper voltage to coils.
  2. If voltage is correct, remove US solenoid assembly. Visually inspect parts for foreign material and / or damage. Ball Cage must operate freely within the solenoid tube.
  3. Replace solenoid seat.
  4. Remove transfer line. Check up control fluid strainer on the end of the transfer line for lint. If clogged remove debris (in this case oil in the system must be filtered).
- If car does not move, remove valve closure. Examine bypass piston ring for damage.

**SLOW UP ACCELERATION**

- Turn UA (Up Acceleration) adjuster out counterclockwise (CCW).
- Check relief valve for proper setting. Refer to adjustment procedures.
- Check belts and pulleys on pump and motor to make sure they are not slipping.
- Check motor for proper HP rating and line voltage for excessive voltage drop.
- Remove transfer line. Check up control fluid strainer on the end of the transfer line for lint. If clogged remove debris (in this case oil in the system must be filtered).
- Remove valve closure. Examine bypass piston ring for damage.
- Turn UT (Up Transition) and US (Up Stop) adjusters in (CW) fully. If car then accelerates properly, check both U and US solenoid assemblies for damage to seats, debris and free movement of Ball Cage.

**UP ACCELERATION ROUGH**

- Check jack packing and guide shoes for excessive tightness.
- Check valve for proper sizing.
- Turn US (Up Stop) and UT (Up Transition) adjusters in (CW) fully (count the number of turns to avoid lengthy readjustment).
  1. Register an up call; if problem continues replace BPS adjuster.
  2. If car accelerates properly, or stalls in BPS sizing operation, either the US or UT ball check assembly must be replaced. Turn either US or UT adjuster out (CCW) one at a time and register an up call. When valve does not respond properly, replace respective ball check assembly or consult MAXTON regarding replacement.



**CAUTION:**

- The information contained herein is for use by skilled hydraulic elevator professionals.
- Before disassembly of the valve, make sure the power is off by turning the main disconnect switch off and that the elevator is resting on the buffers (zero system pressure).

**UP SECTION (CONTINUED)****UP SPEED SLOW**

- Check belts and pulleys on pump and motor to make sure they are not slipping.
- Check relief valve for proper setting.
- Check for proper voltage on up coils
- Check motor for proper HP rating and line voltage for excessive voltage drop.
- Check both U and US solenoid for damage to seats, debris and free movement of Ball Cage.

**CAR OVERSHOOTS FLOOR**

- Turn the UT (Up Transition) adjuster out (CCW) more.
- Check UL speed, 9-12 FPM
- Disconnect U and US coils, place call. Car should not move.
  1. If car moves turn US adjuster out (CCW) more.
  2. Reset BPS adjuster.
- Check hatch slow down switch and stopping circuit to make sure there is no delay (one second lost means a three foot delay at 180 feet per minute).
- Remove the US solenoid assembly and check for foreign material and / or damage. Ball Cage must operate freely within solenoid tube.
- Replace the BPS adjuster.

**CAR STALLS OR LEVELING SPEED VARIES IN LEVELING ZONE**

- Make sure the US (Up Stop) and U (Up) coils are connected in proper operating sequence. Refer to Adjustment Procedure.
- Make sure LS (Leveling Speed) adjuster dot is referenced to the line between F and S.
- Check relief valve for proper setting.
- If car will not adjust using LS (Leveling Speed) adjuster, turn US (Up Stop) adjuster in (CW), then if car moves;
  1. Check for proper coil voltage.
  2. Remove US (Up Stop) solenoid assembly and check for debris and / or damage. Ball Cage must operate freely within the solenoid tube.
  3. Replace the solenoid seat.
- Remove the valve closure, examine bypass piston for damage.

**HARSH UP STOP**

- Turn US (Up Stop) adjuster in (CW) for smoother stop.
- Check that the pump continues to run after car has stopped for ½ second.
- As a check to determine adequate pump time, turn US (Up Stop) adjuster in (CW) fully. Car should then level and stop above the floor. If not, there is not enough pump time.
- Check for tight packing or guide shoes. If jack packing and guide shoes are in good condition, a soft stop will be accomplished by following the standard Adjustment Procedures.

**CAUTION:**

- The information herein is for use by skilled hydraulic elevator professionals.
- Before disassembly of the valve, make sure the power is off by turning the main disconnect switch off and that the elevator is resting on the buffers (zero system pressure).

**DOWN SECTION****CAR WILL NOT LOWER**

- Check coil voltage.
- Check line shut off valve and tank shut off valve.
- Turn DS (Down Stop) adjuster in clockwise (CW) to stop.
- Turn DA (Down Acceleration) adjuster out counterclockwise (CCW) more.
- Turn DT (Down Transition) adjuster in (CW) slowly. If car will not lower, turn ML (Manual Lowering) screw out (CCW) all the way. If car lowers with ML screw open, first check for proper coil voltage. If voltage is correct, then check both D and DL solenoid assemblies for debris and / or damage. Ball Cage must operate freely within the solenoid tube.
- Replace the solenoid seat.
- Check down piston ring for damage
- Check piston guide and seat for freedom of movement.

**SLOW DOWN START**

- Turn DA (Down Acceleration) adjuster out (CCW).
- Turn DS (Down Stop) adjuster in (CW).
- Check jack packing and guide shoes for any binding.
- Remove D solenoid assembly. Check for debris and / or damage. Ball Cage must operate freely within solenoid tube.
- Replace solenoid seats.

**HARSH OR BOUNCY START**

- Bleed air from jack.
- Check for packing or guide shoe friction.

**FAST DOWN START**

- Turn DA (Down Acceleration) adjuster in (CW).

**CAR COMES DOWN IN LEVELING SPEED ONLY**

- Check coil voltage to D (Down Valve) solenoid.
- Land car and remove D solenoid assembly. Check for debris and /or damage. Ball Cage must operate freely within solenoid tube.
- Replace solenoid seats.

**MAIN DOWN SPEED TOO SLOW**

- Make sure gate valves are open between valve and jack and between valve and tank.
- Turn D (Down Speed) adjuster out (CCW).
- Install pressure gauge at "B" port. Check pressure during full down speed and compare to flow chart. If there is any abnormal pressure drop, check for restriction in piping from valve to jack and from valve to tank.
- Check flow capacities of pipe between valve and jack and between valve and tank.
- Replace solenoid seats.
- Check down piston for damage.

**CAUTION:**

- The information herein is for use by skilled hydraulic elevator professionals.
- Before disassembly of the valve, make sure the power is off by turning the main disconnect switch off and that the elevator is resting on the buffers (zero system pressure).

**DOWN SECTION (CONTINUED)****DOWN TRANSITION TOO SLOW**

- Turn DT (Down Transition) adjuster out (CCW).
- Check slow down switch and relays for possible delay
- Remove D solenoid assembly and check for debris and / or damage. Ball Cage must operate freely within solenoid tube.
- Replace solenoid seat.
- Check down control fluid strainer assembly for lint. If clogged remove debris (in this case oil in the system should be filtered).

**NO DOWN LEVELING SPEED**

- Turn DA (Down Acceleration) adjuster out (CCW).
- Turn ML (Manual Lowering) screw out (CCW).
- If car lowers:
  1. Check voltage to DL solenoid coil.
  2. Remove DL solenoid assembly and check for debris and / or damage. Ball Cage must operate freely within solenoid tube.
  3. Replace solenoid seat.
- If car does not lower, remove valve closure, check down leveling spool and spring to make sure it is not sticking (or broken) and is assembled in proper order.

**DOWN STOP TOO SMOOTH OR INACCURATE**

- Turn DS (Down Stop) adjuster out (CCW). This will necessitate readjusting the DA (Down Acceleration) adjustment.
- Check hatch switches and relays for possible delay.
- Remove DL solenoid assembly and check for debris and / or damage. Ball Cage must operate freely within solenoid tube.
- Check down control fluid strainer assembly for lint. If clogged remove debris (in this case oil in the system should be filtered).

**DOWN STOP TOO ROUGH**

- Turn DS (Down Stop) adjuster in (CW).
- Check for tight jack packing or guide shoes.

**CAUTION:**

- The information herein is for use by skilled hydraulic elevator professionals.
- Before disassembly of the valve, make sure the power is off by turning the main disconnect switch off and that the elevator is resting on the buffers (zero system pressure).

**DOWN SECTION (CONTINUED)****CAR WILL NOT STOP IN DOWN DIRECTION**

- Make sure coils are not energized.
- Turn DT (Down Transition) adjuster out (CCW) fully.
- Remove D solenoid assembly and check for debris and / or damage. Ball Cage must operate freely within solenoid tube.
- Replace solenoid Ball Cage.
- Replace solenoid seat.
- Remove valve closure and check piston guides to make sure they operate freely within their respective seats.
- Check down control fluid strainer assembly for lint. If clogged remove debris (in this case oil in the system should be filtered).

**CAR DRIFTS SLOWLY DOWN**

- Send car to upper floor. Open main power disconnect switch.
- Close pit valve. If car still drifts the leak is in the jack assembly.
- Turn ML (Manual Lowering) screw out (CCW) and then turn in (CW) fully to insure a good seat.
- Turn DA (Down Acceleration) adjuster in clockwise (CW) fully. If leak stops, this indicates a leak at the down solenoids. Replace D and DL solenoid seats. Refer to Solenoid Kit #292920.
- If leak does not stop, this indicates a leak at the down guide seal. Remove Down / Check guide and examine seal on guide for damage and / or debris. Examine Down / Check seat. It must be free from nicks or scratches on the small internal radius.

**CAUTION:** If the down piston is removed from the valve then regulator rod must be reconnected to the back side of the down piston between the roll pin and ball bearing. Call Maxton for reassembly instruction



EMV10T SHOWN

## IMPORTANT SAFEGUARDS

**Read Instructions:** All Safety, installation, and setup instructions should be read before installing or operating the EMV10 Electronic Motor Valve. Failure to follow the installation and setup instruction may result in unsatisfactory performance, equipment damage, or physical injury.

1. **Service:** There are no user serviceable parts contained herein. Refer all service to qualified service personnel only.
2. **Risk of Electrical Shock:** Do not remove the valve cover except when making adjustments or servicing the valve. Always turn off all electrical power sources before servicing any mechanical part or assembly. Do not place metal objects in contact with the energized Electronic Control Board at any time.
3. **EMV10 Power Sources:** The EMV10 Electronic Motor Valve uses multiple electrical power sources. Hazardous voltages may be present even if one source to the EMV10 is secured. Verify all voltage sources to the EMV10 are secured before making repairs.
4. **Wiring:** All wiring should be routed in such a way that it is not likely to be pulled, pinched, stepped on, have objects placed on it, or damaged in any way.
5. **Retain User Manual:** The user manual should be retained for future reference.

## INTRODUCTION AND FEATURES

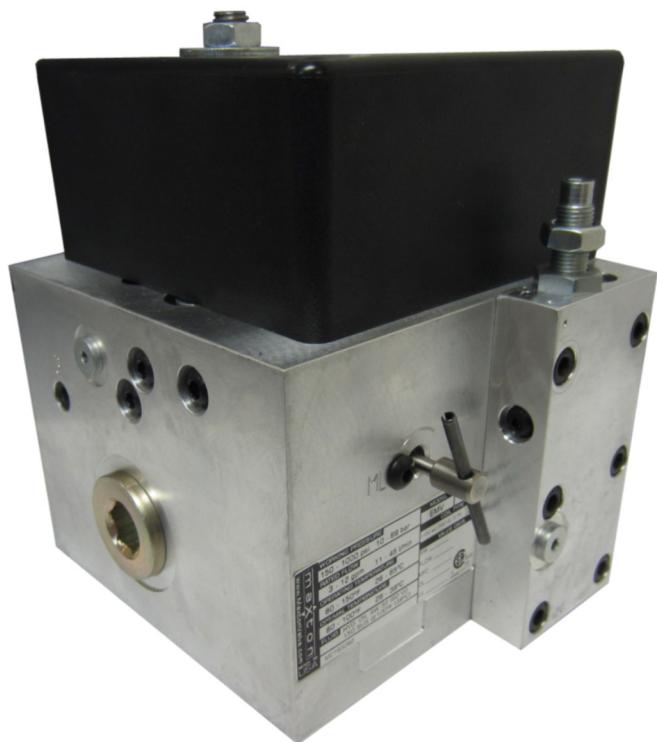
The Maxton **EMV10** Electronic Motor Valve was designed to meet a growing demand for low use limited access (LULA), handicapped and residential hydraulic elevator applications. The EMV10 combines hydraulic and electronic control to provide excellent ride quality. The EMV10 has all the features found in a commercial hydraulic control valves plus electronic safety control and adjustments allowing quick set up and easy problem analysis.

## FEATURES

- Quick set up and less field adjustments required.
- Built in pressure and viscosity compensation.
- Ride performance is maintained from empty to fully loaded condition.
- Acceleration and deceleration are independent of load and oil viscosity.
- Regulated contract down speed, up leveling speed and down leveling speed.
- Stabilized leveling speed is achieved in a very short distance.



# EMV10

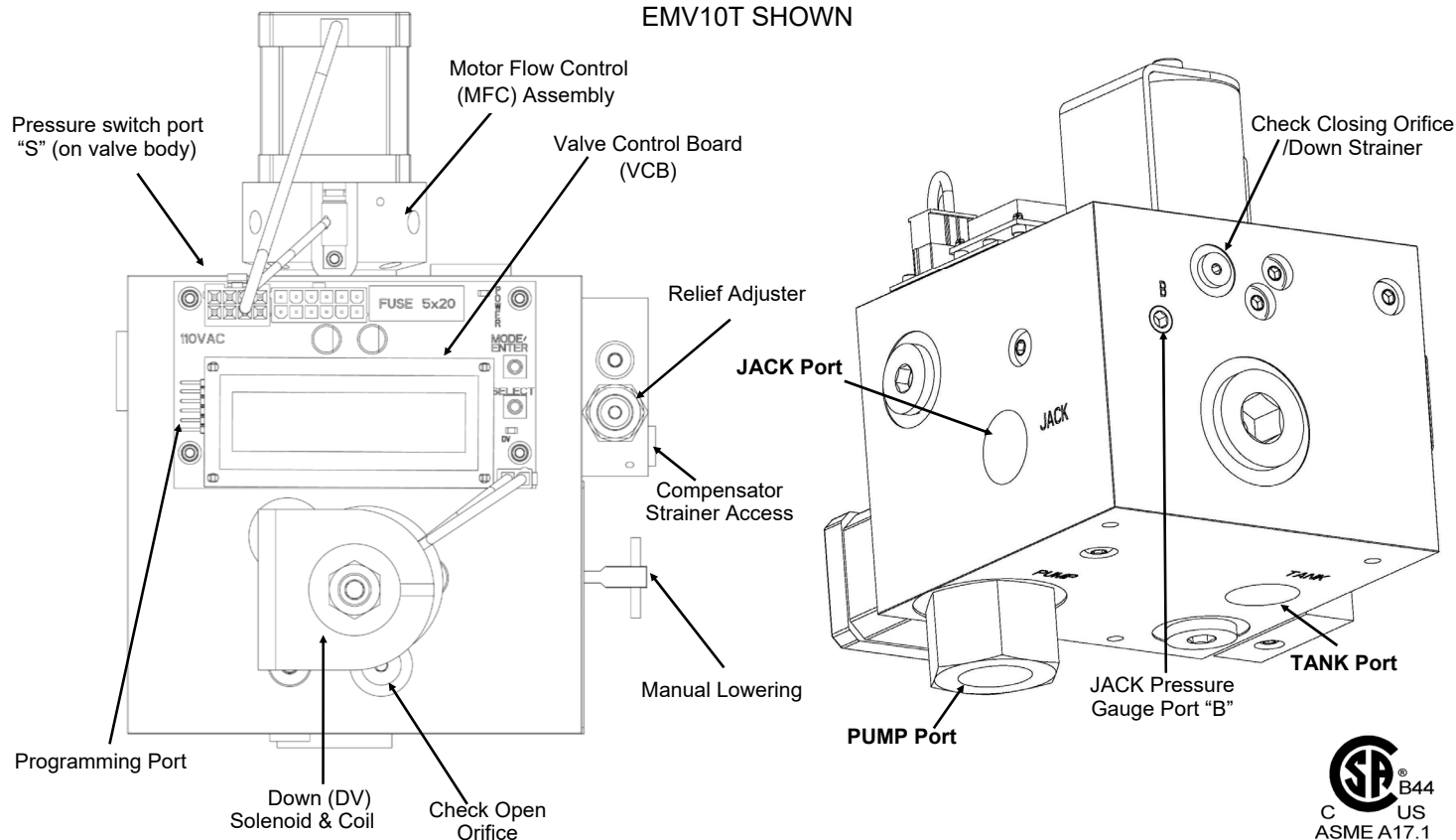


## SPECIFICATIONS

	USA	METRIC
Flow Range	3 - 12 gpm	11 - 45 lpm
Operating Pressure		
Min	150 psi	10 bar
Max	1000 psi	69 bar
Line Ports	3/4" NPT	
Gauge Ports "B"	1/8" NPT	
Pressure Port "S"	1/8" NPT	
Operating Temperature	80 - 150°F	26 - 65°C
Oil Type	Hydraulic ISO VG 32 150 SUS @ 100°F or equivalent biodegradable oil	
Electrical Input Provided by Elevator Contractor		
Valve Controller Power Supply	+24 VDC 3.2A (Regulated)	
Pump Disable Circuit	+110 VAC	
Coil Input Signals	+110 VAC	
Overall Dimensions:		
Width:	5-7/8"	149.2 mm
Height:	8"	203.2 mm
Depth:	8"	203.2 mm
Weight:	14 lbs.	6.4 kg.

## MAJOR COMPONENTS & PORT LOCATIONS

EMV10T SHOWN



If you're stuck replacing an old CemcoLift RV100 control valve this is your solution. Maxton has fabricated a simple drop in replacement without the headache. The Maxton RV100 Conversion Kit not only makes for a simple control valve modernization, but decreases set up time and improves elevator ride performance with an upgrade to Maxton's electronic residential/LULA control valve the EMV10.



RV100 Conversion Kit includes:

- Simple drop in solution
- EMV10 valve *preset for your job specs*
- Low pressure switch (PSNO-2)
- Power Supply
- Complete set of plumbing connections
- Complete set of electronic hook ups

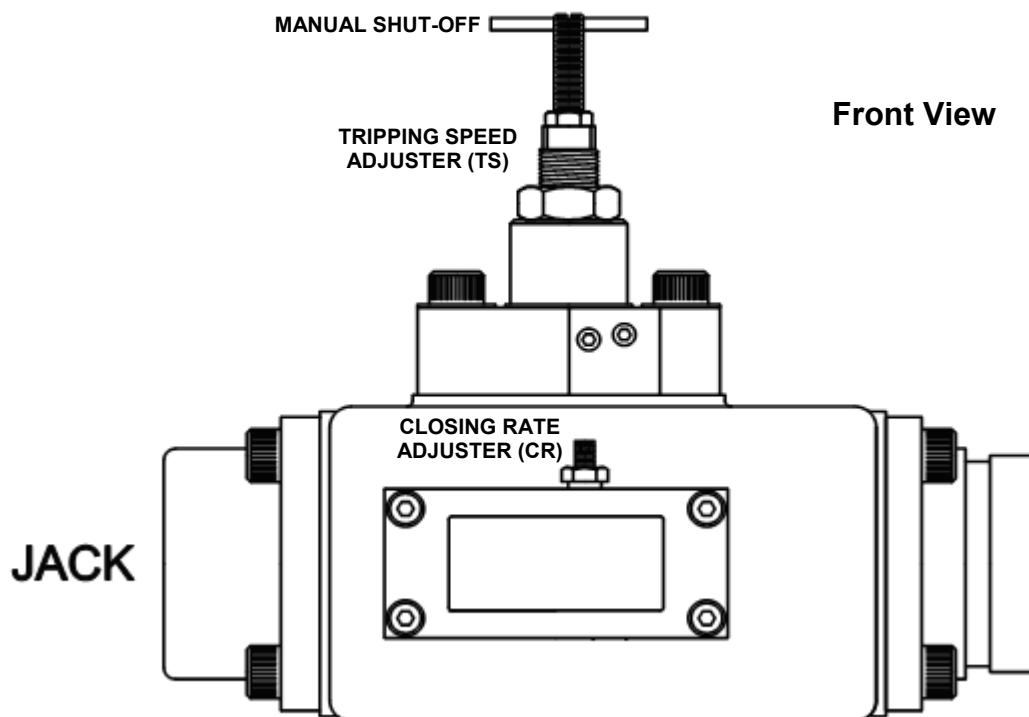
Contact Maxton for pricing and consult on your Cemco RV100 modernization project. You and your customer will be glad you did.



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## Introduction

The Maxton Overspeed Valve (Pipe Rupture / Shut Off Valve) is designed to provide protection against supply line failure or over speed in the down direction. The OSV can be adjusted to stop the elevator in the event of an over speed condition caused by a broken supply line or an abnormally high rate of flow between the OSV and the power unit. The OSV should be mounted as close the Jack as possible. The OSV complies with UFGS 14 24 00 - 2.4.2.2 and ASME A17.1 / CSA B44.



## Specifications

### Standard Rated Contract Flow

OSV E1	30 - 100 gpm (114 - 379 l/min)
OSV STD	100 - 300 gpm (379 - 1136 l/min)

### Operating Pressure

Minimum	50 psi (3.4 bar)
Maximum	800 psi (55 bar)

### Line Connections

Jack Port (Flange)	2, 2 1/2" NPT or Grooved
Tank Port (Flange)	2, 2 1/2" NPT or Grooved

### Operating Temperature

Oil Type	Hyd. ISO VG 32
	150 SUS @ 100° F (38° C)

### Overall Dimensions

Width	11 1/4 inches (286mm)	Height	10 1/8 inches (257mm)
Depth	6 9/16 inches (167mm)	Weight	28 lbs. (12.7kg)

## Standard Features

- Works on pressure drop, no electricity is required.
- Incorporates a manual shut off for use as a pit shut off valve.
- Adjustable closing rate.
- Unit body construction.
- Steel sleeve inserts in valve body.
- Grooved or threaded line connections.
- Individualized adjustments.
- Factory tested prior to shipping.
- 2 year limited warranty.

## Optional Features

- 3" Grooved flanges

**THE INFORMATION CONTAINED HEREIN IS FOR USE BY SKILLED HYDRAULIC ELEVATOR PROFESSIONALS**
**CAUTION**

Never adjust the OSV while the car is in motion. (Stay out of the pit when the car is running.)

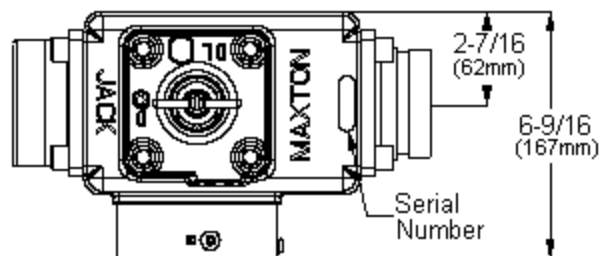
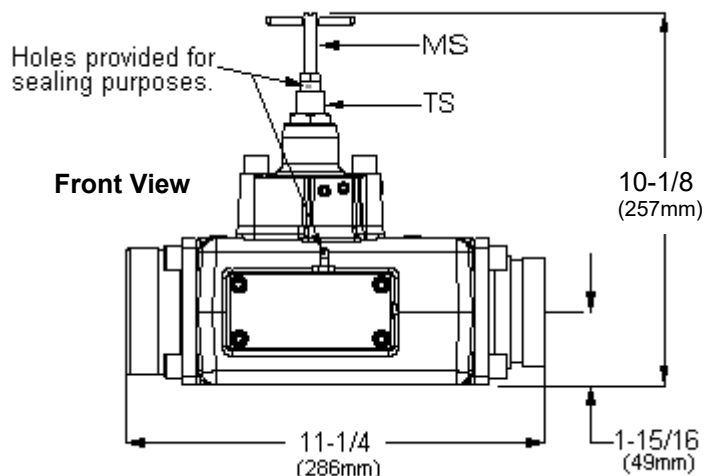
Manual shut off (MS) must be fully open (CCW) during normal operation.

When utilizing the OSV as a pit valve, turn Manual Shut Off in (CW) to stop.

Once tripped or after opening the Manual Shut Off, the OSV must be reset to a normal open position by making an up run.

Maxton recommends the OSV have a threaded connection to the jack.

INITIAL SETTINGS			
TS	TRIPPING SPEED	OUT	(CCW) to stop.
CR	CLOSING RATE	OUT	(CCW) to stop.
MS	MANUAL SHUT OFF	OUT	(CCW) to stop.

**Top View**

**Front View**


**NOTE:** To achieve accurate settings, OSV adjustments should be conducted with a fully loaded car. Whenever possible, run car to an intermediate floor during adjustments and tests. **It may be advisable to adjust for a slightly faster down transition to insure floor stop.**

**ADJUSTMENT PROCEDURES**

- Set car speed by opening the Down Valve (main control valve) or increase the load to achieve contract down speed +25% (contract speed = full down speed with rated load).
- Return car to the upper floor; Verify tripping flow on the PRECALCULATED TRIPPING FLOW TABLE. Turn **TS** in (CW) the number of turns indicated on the TRIPPING SPEED PRESET GRAPH. Exit the pit and register a down call. Minor Adjustment may be needed for final tripping speed. Lock jam nut.  
**If piston diameter is unknown**, turn **TS** in (CW) one turn. Exit the pit and register a down call. Repeat this procedure until the valve actuates. Lock jam nut.
- Return the car to the upper floor, turn **CR** in (CW) three turns initially. Exit the pit and register a down call. Repeat this procedure using one-turn increments to obtain a comfortable, firm stop.
- Seal adjustments **TS** and **CR** as required by local code.
- Adjust the down valve and down transition back to normal settings (contract speed = full down speed with rated load).

(SEE NOTE ABOVE)

**FULL LOAD TEST PROCEDURE**

- Load car to rated capacity.
- Increase down speed in accordance with Main Control Valve's manufacturer's instructions until rupture valve sets.
- Verify rupture valve set within range permitted by local code.
- Verify adjustments are sealed on rupture valve.
- Return Main control valve to operational settings.

# PRECALCULATED OSV TRIPPING FLOW TABLE

DIRECT ACTING APPLICATIONS

JACK PISTON DIAMETER (INCHES)

		2	2 1/2	2 3/4	3	3 1/2	4	4 3/8	4 1/2	5	5 7/16	5 1/2	6	6 1/2	7	7 1/2	8	8 1/2	9 1/2	10 5/8	12 5/8
LOADING DISENGAGE CARRYOVER PRESSURE M	1	0.20	0.33	0.39	0.46	0.63	0.81	0.98	1.04	1.28	1.51	1.54	1.84	2.15	2.50	2.88	3.26	3.69	4.60	5.76	8.13
	5	1.03	1.60	1.93	2.30	3.13	4.08	4.88	5.16	6.38	7.54	7.71	9.18	11	13	14	16	19	23	29	41
	10	2.04	3.19	3.86	4.59	6.25	8.16	10	10	13	15	15	19	21	25	29	33	36	46	58	81
	20	4.08	6.38	7.71	9.18	13	16	20	21	25	30	31	36	43	50	58	65	74	93	115	163
	30	6.13	10	12	14	19	25	29	31	39	45	46	55	65	75	86	98	110	138	173	244
	40	8.16	13	15	19	25	33	39	41	51	60	61	74	86	100	115	130	148	184	230	325
	50	10	16	19	23	31	41	49	51	64	75	78	91	108	125	144	164	184	230	288	406
	60	12	19	24	28	38	49	59	63	76	90	93	110	129	150	173	196	221	276	345	488
	70	14	23	28	33	44	58	69	73	89	105	108	129	151	175	201	229	258	323	403	569
	80	16	25	31	36	50	65	78	83	103	121	124	148	173	200	230	261	295	369	460	650
	90	19	29	35	41	56	74	88	93	115	136	139	165	194	225	259	294	331	414	519	731
	100	20	33	39	46	63	81	98	104	128	151	154	184	215	250	288	326	369	460	576	813
	110	23	35	43	50	69	90	108	114	140	166	170	203	238	275	315	359	405	506	634	894
	120	25	39	46	55	75	98	118	124	153	181	185	220	259	300	344	391	443	553	691	975
	125	25	40	49	58	78	103	123	129	160	189	193	230	269	313	359	408	460	575	720	1016
	130	26	41	50	60	81	106	128	134	166	196	200	239	280	325	373	424	479	599	749	1056
	140	29	45	54	64	88	114	136	145	179	211	216	258	301	350	401	458	516	645	806	1138
	150	30	48	58	69	94	123	146	155	191	226	231	275	324	375	430	490	553	690	864	1219
	160	33	51	61	74	100	130	156	165	204	241	246	294	345	400	459	523	590	736	921	1300
	170	35	54	65	78	106	139	166	175	216	256	263	313	366	425	488	555	626	783	979	1383
	180	36	58	70	83	113	148	176	186	230	271	278	330	388	450	516	588	664	829	1036	1464
	190	39	60	74	88	119	155	185	196	243	286	293	349	410	475	545	620	700	875	1094	1545
	200	41	64	78	91	125	164	195	206	255	301	309	368	431	500	574	653	738	920	1151	1626

## Tripping Flow (GPM)

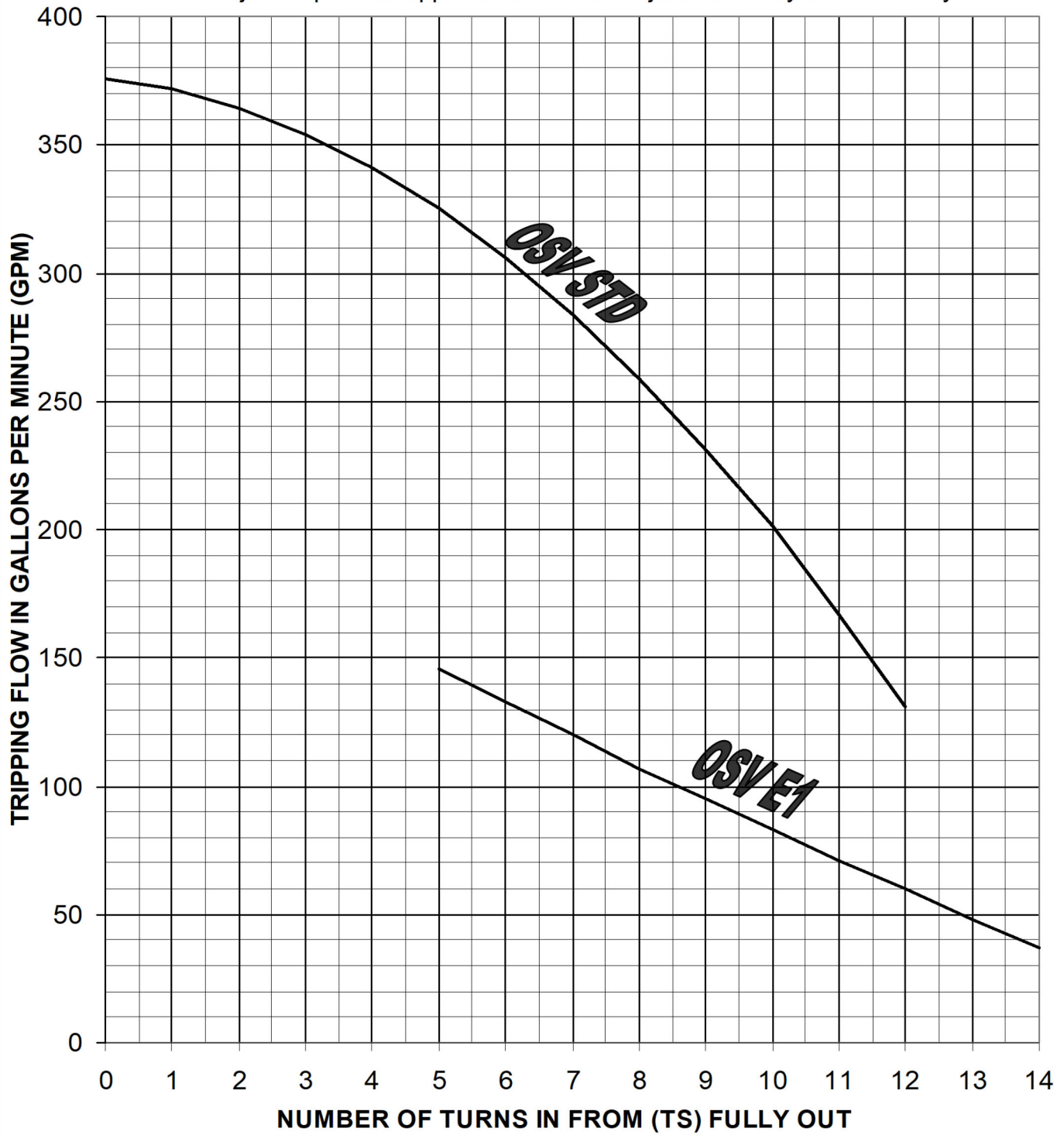
**NOTICE:** DO NOT USE THIS TABLE FOR CALCULATING PUMP OUTPUT.  
TABLE REPRESENTS OSV TRIPPING FLOW ONLY. RATED FLOW X 125%

Table Instructions:

1. Intersect loaded down speed with the piston diameter.
2. Intersection = Tripping Flow.
3. Apply tripping flow to the chart on the following page to determine the number turns needed in on the TS adjuster.

### TRIPPING SPEED ADJUSTER (TS) PRESETS\*

\* Adjusted position approximate - Final adjustment may be necessary

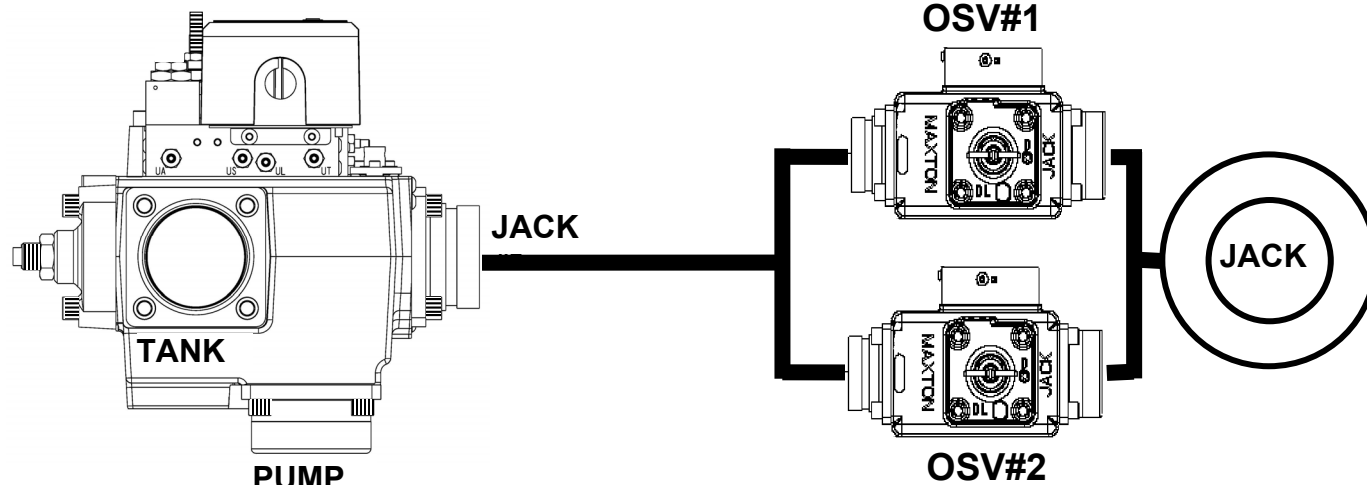


Tripping flow 125% = piston dia. X piston dia. X .051 X Contract Speed (max. down speed with rated load)

THE INFORMATION CONTAINED HEREIN IS FOR USE BY SKILLED HYDRAULIC ELEVATOR PROFESSIONALS

## DUAL OSV ADJUSTMENT PROCEDURES

### MAIN CONTROL VALVE



### ADJUSTMENT (OSV#1):

**IMPORTANT: NOTE THE NUMBER OF TURNS IN ON THE TS AND CR ADJUSTERS.**

1. Set car speed by adjusting the down valve (Main control valve) to **HALF** of the desired tripping speed.
2. Return car to the upper floor; Turn MS (Manual Shut Off) adjuster IN (CW) to stop on the OSV#2.
3. OSV#1: Turn TS Adjuster IN (CW) one turn. Exit the pit and register a down call. Repeat this procedure until the valve actuates. **NOTE THE NUMBER OF TURNS IN ON THE TS ADJUSTER.**
4. Return car to the upper floor. Lock TS jam nut. Turn CR IN (CW) three turns. Exit the pit and register a down call. Repeat this procedure using one-turn increments to obtain a comfortable, firm stop. **NOTE THE NUMBER OF TURNS IN ON THE CR ADJUSTER.**

### ADJUSTMENT (OSV#2):

5. OSV#2: Turn MS and TS adjusters OUT (CCW) to stop.
6. Turn TS adjuster IN (CW) the same number of turns as TS on OSV#1 from initial setting.
7. Turn CR adjuster IN (CW) the same number of turns as CR on OSV#1 from initial setting.
8. Send car down. OSV#1 should trip. Send car to upper floor.

### TESTING OSV's:

9. Increase the car speed by opening the down valve (Main control valve) to verify that tripping speed is within Local Code requirements.
10. Seal **TS** and **CR** adjusters on both OSV's as required by local code.
11. Adjust the main down valve and down transition back to normal settings.  
(Contract Speed = Full down speed with rated load).

### ALTERNATE METHOD (TABLE AND CHART)

Verify tripping flow on the PRECALCULATED TRIPPING FLOW TABLE. Divide TRIPPING FLOW by two (TRIPPING FLOW / 2). Turn **TS** in (CW) on both valves as indicated on the TRIPPING SPEED PRESET GRAPH. Exit the pit and register a down call. Minor adjustment may be needed for final tripping speed. Adjust valves equally.

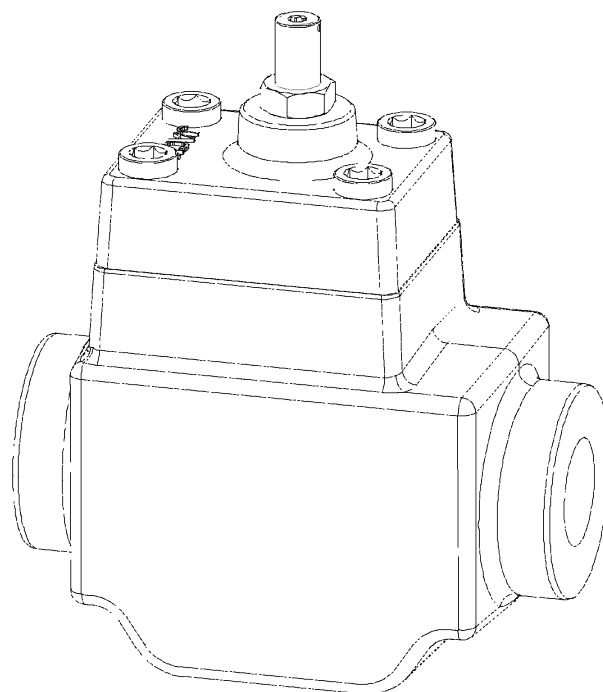
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## Introduction

The Maxton OSV25 Overspeed Valve (Pipe Rupture) is designed to provide protection against supply line failure or over speed in the down direction. The OSV25 can be adjusted to stop the elevator in the event of an over speed condition caused by a broken supply line or an abnormally high rate of flow between the OSV25 and the power unit. The OSV25 complies with ASME A17.1 / CSA B44.

**JACK**



## Standard Features

- Works on pressure drop, no electricity is required.
- Unit body construction.
- Factory tested prior to shipping.
- 2 year limited warranty.

<b>Working Flow</b> OSV25	(80% of Tripping Flow) 3 – 24 gpm (11.4 – 90.8 l/min.)	<b>Oil Type</b>	Hydraulic ISO VG 32 150 SUS @ 100°F (38°C)
<b>Operating Pressure</b> Minimum Maximum	150 psi (10.3 bars) 1000 psi (68.9 bars)	<b>Operating Temperature</b>	80° - 150°F (26 - 65°C)
<b>Line Connections</b> OSV25	¾" NPT Jack & Tank	<b>Overall Dimensions</b> Width Height Depth	4-5/8 inches (118 mm) 5-1/2 inches (140 mm) 2-3/8 inches (60 mm)
		<b>Weight</b>	2.9 lbs. (1.32 kg.)

**THE INFORMATION CONTAINED HEREIN IS FOR USE BY SKILLED HYDRAULIC ELEVATOR PROFESSIONALS**

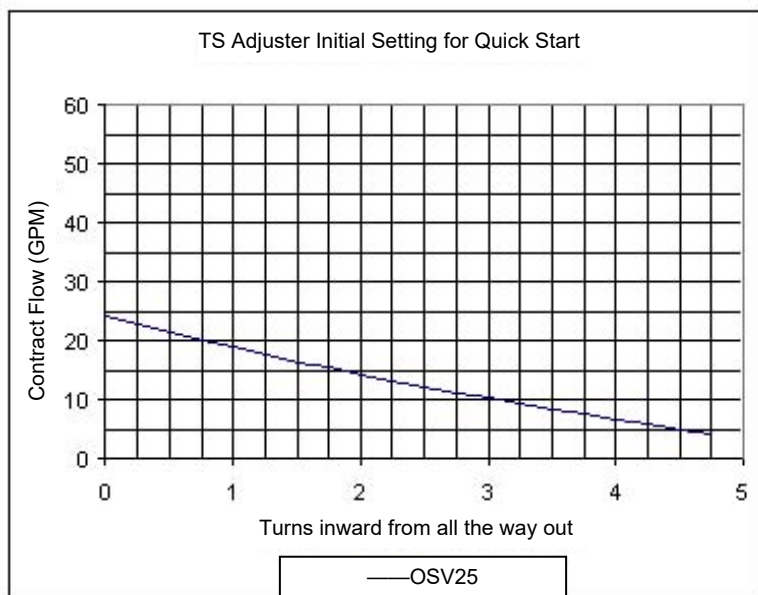
### CAUTION

Stay out of the pit when the car is in motion.

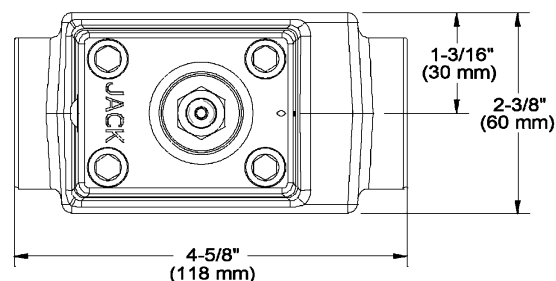
Once tripped, the OSV25 must be reset to a normal open position by making an up run.

### INITIAL SETTING:

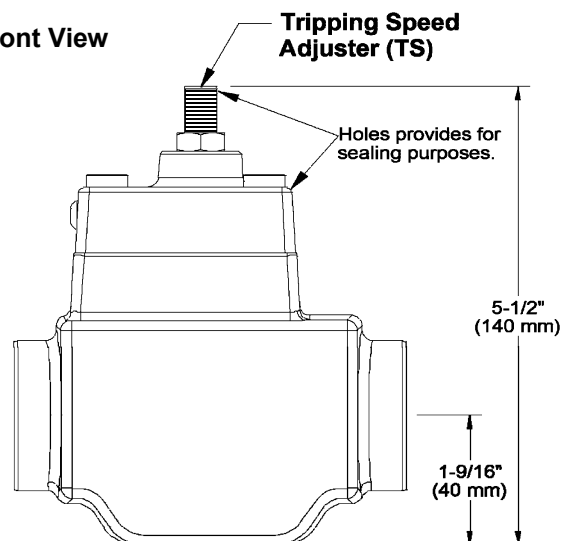
Turn Tripping Speed Adjuster (TS) OUT (CCW) to stop.



### Top View



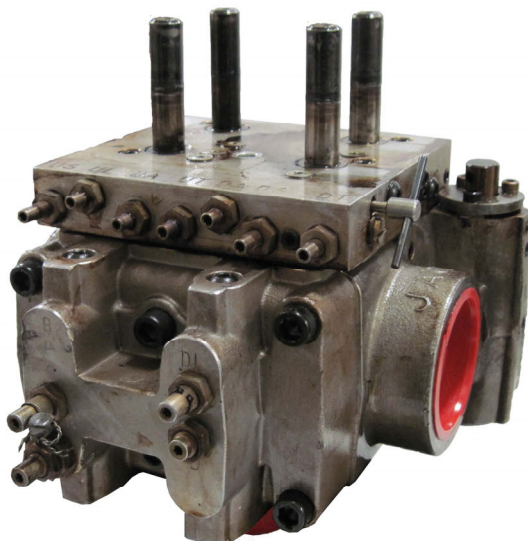
### Front View



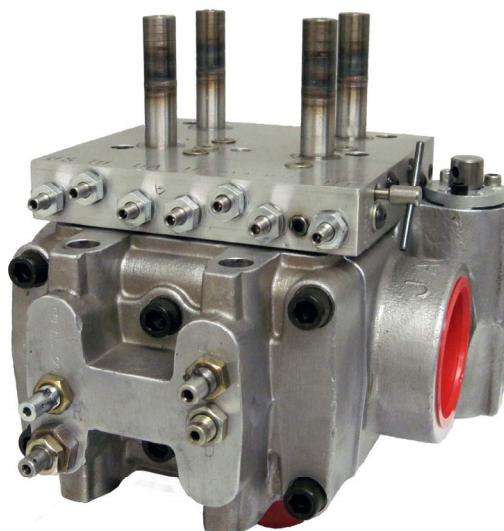
## ADJUSTMENT PROCEDURES

**NOTE:** OSV25 adjustments should be conducted with a fully loaded car. Whenever possible, run car to an intermediate floor during adjustments and tests. It may be advisable to adjust for a slightly faster down transition to insure floor stop.

1. Set car speed to contract down speed +25% (contract speed = full down speed with rated load).
2. Return car to the upper floor; turn TS in (CW) one quarter turn. Exit the pit and register a down call. Repeat this procedure until the valve actuates. Tighten jam nut to lock setting in place.
3. Apply seal to TS adjuster as required by state and local code.
4. Adjust the down valve back to normal settings.



1980 VALVE



RESTORED



FACTORY RECONDITIONED VALVES NOW IN STOCK  
(MOST MODELS AVAILABLE FOR IMMEDIATE DELIVERY)

Now you can offer your customers faster service:

- *Economically priced*
- *Minimize down time*
- *Save on field labor costs*
- *Utilize labor time to increase production and profitability*
- *Limited Two-year warranty*

**CONTACT OUR SALES DEPARTMENT FOR ADDITIONAL INFORMATION**

Maxton Valve Exchange Program Won Buildings Magazine's 2011 Money Savings Product Award



The Valve Exchange Program has been developed to provide our customers with an alternative to sending valves in for repair and return; subsequently experiencing unnecessary down time on the job. This program offers a fast, economical replacement valve that includes our 2 year limited warranty. The program works as follows:

Our customer orders a "reconditioned" valve through the VEP program, and as part of the exchange, they return the valve that needs rebuilding to Maxton within 90 days. The valve that is returned to Maxton becomes the property of Maxton as part of the exchange, and is placed in our stock after evaluation and general overhaul.

Prior to calling in a VEP order, customers should have the serial number for the valve the VEP will be replacing, as well as the size and type of flange(s) required on the valve. (Please note that it is company policy that all valves shipped from Maxton go out with flanges attached). Upon placing the order, the serial number is used to confirm the valve model - we only exchange "like for like" - this means that the valve model returned to Maxton must be the same as the model ordered for it's replacement. Upon confirmation of the serial number, the Customer Service Representative will continue with your order and obtain the usual information including PO number, ship to address, how to ship, as well as the flange information. Please note that VEPs do not come with coil assemblies - if you need coils included with your order they are available for an additional charge, just advise your Customer Service Rep.

The customer is provided with a "Return Authorization Number" - it is important that this number be noted on the outside of the box, as well as included on any documentation inside with the valve. The valve must be returned to Maxton within 90 days to receive credit for the core charge. To avoid any additional charges be sure to return your valve with the appropriate flanges.

In addition, we also offer a Repair and Return Program. Customers who wish to have their present valve repaired and returned should contact the Sales Department for a Return Authorization Number. Once the valve is received in our shop it generally takes 2 weeks for the evaluation, repair, and testing of the valve. If turnaround time is important, it is advisable to consider the VEP program as an alternative.

Please note that UC3/3A/3AM valves are no longer manufactured and cannot be accepted as part of a valve exchange or as a repair and return order. For replacement of a UC3/3A/3AM valve, please call the Sales Department with your job specs to assist us in recommending a suitable replacement valve for you.

(UC4M shown)

**CAUTION:**

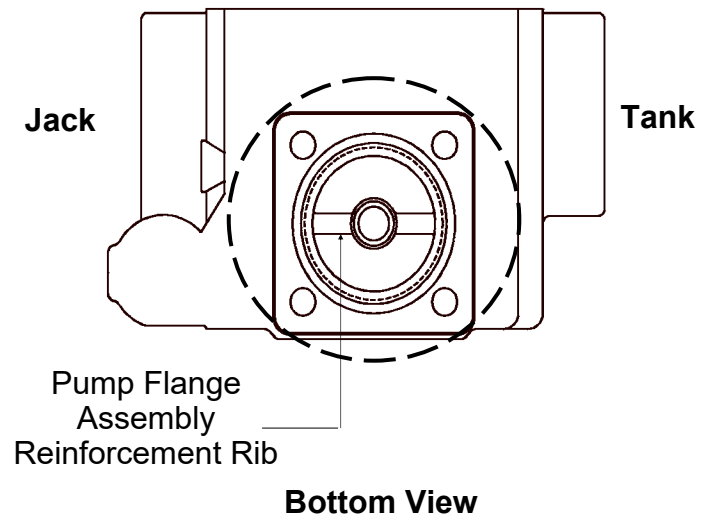
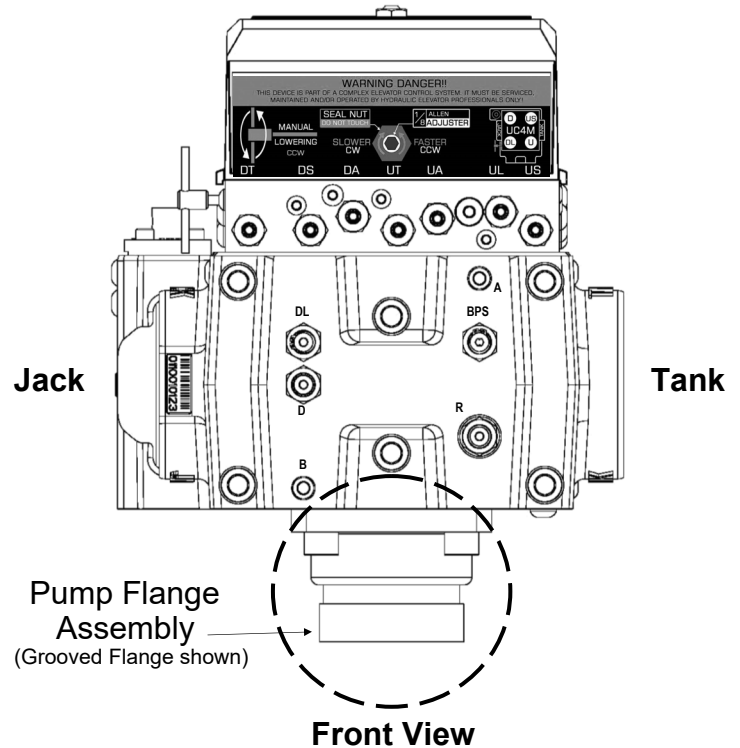
All Maxton valves **MUST** be installed with the solenoids in the upright (vertical) position.

**Pump Flange Replacement:**

***When replacing a Maxton UC3A / UC3AM or UC4 / UC4M / UC4MR series valve, the Pump Flange Assembly must also be replaced.***

It is subject to the same wear and tear as the valve. It is important that when installing the flange, the Reinforcement Rib inside the flange be installed in line with the Jack and Tank ports on the valve body.

Maxton has not manufactured the UC3 since 1977 and the UC3A/UC3AM since 1983. We no longer support the UC3/3A/3AM in the form of parts, kits or repairs. The UC4 series valve is the direct piping replacement for the UC3/3A/3AM. To determine which of the UC4 valves is best suited for your job, please contact our sales department with your job specs (piston diameter, car speed, capacity, no-load PSI or empty car weight).



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Part No.	Coil Color	Lead Wires		Coil Wire Size (AWG)	Voltage	OHMS ± 10%	Current (AMPS) ± 10%	
		Length (inches) +2", -0"				DC Resistance At 25° C With Leads	DC	AC
2082B0 (Dual Use)	Red	96		26	115 VAC	24.5	--	.66
					24 VDC		.9	-
288980 (Dual Use)	Black	5		26	115 VAC	24.5	--	.66
					24 VDC		.9	-
208000	Green	96		29	230 VAC	116	--	.230
208100	Black	96		32	115 VDC	512	.22	--
208300	Black	96		22	12 VDC	5.20	2.19	--
2080A0	Blue	96		28	185 VAC	78.2	--	.220
2082A0 (Dual Voltage)	Red	96	Yellow	23	12 VDC	4.4	2.59	--
			Red	27	120 VAC	24.2	--	.650
			Black	N/A	Common	--	--	--

Current (AMPS) measured when coil is tested on a fully assembled control plate with C-Frame installed.

**Set of 4 # 29082B\***  
115 VAC/24 VDC  
Ea. # 2082B0




**Set of 4 # 290800\***  
230 VAC  
Ea. # 208000







288980  
24 VDC  
Use with EMV10  
Series Valves Only



208100  
115 VDC



208300  
12 VDC



2080A0  
185 VAC

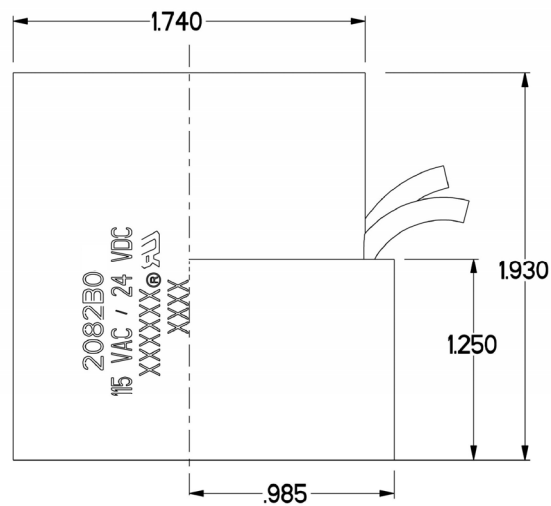
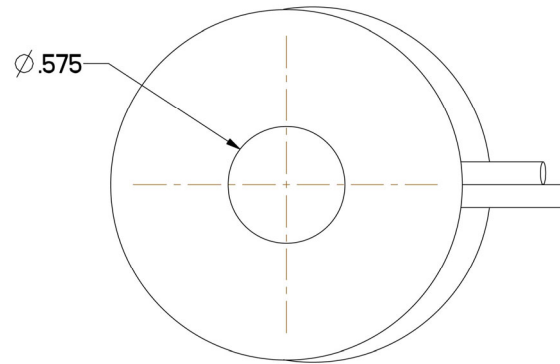


2082A0\*\*  
12 VDC/120 VAC

\* Part # 29082B AND # 290800 COME IN SETS OF 4 WITH MULTI-COLORED LEAD WIRES. COLORS ARE RED, YELLOW, ORANGE AND BLUE. ALL OTHERS ARE BLACK UNLESS OTHERWISE NOTED

\*\* DESIGNED FOR USE WITH THE DOWN LEVELING SOLENOID FOR EMERGENCY (BATTERY BACKUP) LOWERING. 3-WIRE COLOR CODED





The normal mechanical life of a Maxton valve is in excess of two million cycles. Valve operating life can be affected by many variables, i.e. the operating temperature, the usage frequency, the pressure ratio, and the presence of contaminants in the oil, their size, type and amount, etc. With the presence of at least some adverse conditions in most installations, serious consideration should be given to overhaul or replacement of a control valve on a five year cycle.

Rebuild of a control valve requires proper tools, detailed knowledge of critical areas in the valve, and full testing of the completed assembly. Machining and component replacement may be necessary to meet current design specifications. Few facilities have the knowledge and capability. For this reason, Maxton no longer offers a valve service kit. Valve seal kits, seat kits, and solenoid kits are available, but are neither designed nor intended for field rebuild of a valve unit.

A more cost effective and lower liability option to repairing control valves in the field is the Maxton Valve Exchange Program. The exchange program provides you with a fully reconditioned, tested replacement valve and includes a 2 year limited warranty, the same as our new valves.

Seat kits, seal kits, and solenoid kits are intended for use by professionals trained in the manufacture, installation and maintenance of hydraulic elevator systems. Before disassembly or replacement of a control valve, the main line power switch should be disconnected and locked out and the car landed on the buffers (zero system pressure).

Manual lowering is used to lower a car for service, and to depressurize the oil system. This control should be fully closed after use. If a car is stuck in the hoist way, manual lowering must be shut to ensure the car remains supported by a column of oil.

There are neither parts nor kits available for the UC3/3A/3AM or Minimax control valves. These valve models are no longer manufactured nor supported in the form of kits, parts, and repairs. For replacement of a UC3 or MiniMax valve, contact our sales department with the job specifications to determine the correct valve for replacement. Job specifications needed would include car speed, jack piston diameter, capacity, no-load system pressure or empty car weight, the coil voltage and the pump flange type.

It is recommended that solenoid seats and ball cage assemblies be replaced every 2,000,000 cycles. For a valve that was manufactured or last repaired before May 1995, the solenoid seat and solenoid tube assembly must be changed together (use the appropriate solenoid kit).

Seal kit # 291510 (for UC1/1A/2/2A valves) contains field replaceable seals and piston rings for these model valves. The check piston, and the piston seat assemblies are not considered removable, and seal parts for these assemblies are not provided.

Seal kit # 291540 (for UC4/4M/4MR valves) contains field replaceable seals as well as a BPS adjuster (#283330). Due to the presence of an internal seal, and the nature of the problems should the seal fail, it is recommended that the BPS adjuster be replaced during periodic maintenance (3-5 years), and whenever valve seals must otherwise be replaced. Seals for the piston seat assemblies in these valves are not provided as the seats vary between valve years, are not easily removed and can be improperly re-installed in the field.

Seal kit # 291500 is used to replace the seals in the OSV (seismic safety or pipe rupture) valve.

UC1/UC1A/UC2/UC2A valves manufactured prior to 1980 have solenoid stems that are held in place with a snap ring. There are no longer parts, seats or seals available for this style solenoid assembly. The valve can be returned to Maxton for repair and return including an upgrade to the current style blocks (re-porting of the valve body) or may be replaced through the purchase of a new valve or valve exchange program

Solenoid kit # 29292A (UC1/1A/2/2A valves) Each kit contains matched solenoid seats, ball cages and solenoid tube assemblies sufficient for one valve.

Solenoid kit # 292920 (UC4/4M/4MR valves) Each kit contains matched solenoid seats, ball cages and solenoid tube assemblies sufficient for one valve.

For valves manufactured since May 1995, Seat kit # 29298A-2 (UC1/1A/2/2A/UC4/4M/4MR valves) is used to replace the solenoid seats only.

When replacing a UC3/3A/3AM or UC4 series valve, the pump flange assembly must also be replaced. This pump flange assembly has moving parts with a service life.

To provide trouble free startup and operation, the oil system should be purged and the oil filtered or replaced when a valve replacement takes place.

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## **FACTORY RECONDITIONED VALVES ARE AVAILABLE ON AN EXCHANGE BASIS**

**V. E. P.**

**Valve Exchange Program**

**2-YEAR Limited factory warranty – most models available for immediate shipment  
CONTACT MAXTON SALES DEPARTMENT FOR ADDITIONAL INFORMATION**

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Disconnect power and land car on the buffers (zero system pressure) before installation. Do not save and reuse parts.

### 291510 KIT FOR UC1 / UC1A / UC2 / UC2A VALVES

Quantity	Part No.	Description	Quantity	Part No.	Description
3	2057A0	Seal Ring (BPS / Down / Check piston)	3	210600	Seal Ring (Adjuster; down leveling, BPS)
2	210000	Seal Ring (BPS / Down closure sleeve)	29	210800	Seal Ring (1/4-28 Button head screw)
1	2372LC	Square C.S. Seal Ring (Face Seal)	1	210900	Seal Cup (Down adjuster)
5	210200	Seal Ring (BPS / Down / Check piston rod)	1	2110LC	Square C.S. Seal Ring (Relief block bore)
1	210300	Seal Ring (Restrictor closure)	9	227000	Adjuster Seal (Teflon ring)
1	210370	Seal Ring (Check Closure with groove)	2	28098A	Piston Ring & Expander (BPS / Down)
3	210400	Seal Ring (Flanges, Pump, Tank & Jack)	2	2107LC	Square C.S. Seal Ring (Face Seal)
17	2105LC	Square C.S. Seal Ring (Face Seal)	3	210700	Seal Ring (LS adjuster, Up/Dn strainer)
6	210500	Seal Ring (Seal plug, Relief push rod)	8	263900	Seal Ring (10-32 button head screw)
1	2385LC	Square C.S. Seal Ring (Face Seal)			

Disconnect power and land car on the buffers (zero system pressure) before installation. Do not save and reuse parts.

### 291500 KIT FOR OSV VALVE

Quantity	Part No.	Description	Quantity	Part No.	Description
1	2057A0	Seal Ring (Down piston)	1	210900	Seal Cup (Down adjuster)
1	210000	Seal Ring (Closure sleeve)	1	217400	Seal Ring (Lower control block)
2	210200	Seal Ring (Piston rod)	2	227000	Adjuster Seal (Teflon ring)
2	210400	Seal Ring (Flanges, Pump & Jack)	1	28098A	Piston Ring & Expander (Down piston)
7	210500	Seal Ring (Seal plug)	1	238500	Seal Ring (Spring guide)
6	2105LC	Square C.S. Seal Ring (Face Seal)	1	2385LC	Square C.S. Seal Ring (Face Seal)
1	210600	Seal Ring (Tripping speed adjuster)	1	210190	Seal Ring (Spring guide, new style)
1	210700	Seal Ring (Control block, Valve Body)	4	210800	Seal Ring (1/4-28 Button head screw)
1	2107LC	Square C.S. Seal Ring (Face Seal)			

### IMPORTANT NOTICE

In order to ensure the retrofit of the 1/2" diameter piston assembly rod, the above kits **do not contain** parts to replace the main rubber seals on the pistons for valves manufactured prior to January 1992. Additionally, no replacement seals are included for the down speed regulator portion of the UC2/2A. Contact our sales department for replacement parts or reasonably priced factory reconditioned valves on an exchange basis. O-ring# 210300 has been discontinued from the kit below – it is recommended that a new pump flange be installed to replace older flange requiring that seal.

### 291540 KIT FOR UC-4/4M/4MR VALVES

Quantity	Part No.	Description	Quantity	Part No.	Description
1	204500	Seal Ring (Down guide retainer)	2	211300	Seal Ring (Ball check seat)
9	2372LC	Square C.S. Seal Ring (Face Seal)	8	227000	Adjuster Seal (Teflon ring)
6	237200	Seal Ring (Relief cart. up/down strainer, DSR)	3	232100	Seal Ring (Flange, piston sleeves)
2	21019LC	Seal Ring (Face seal, B44)	2	233600	Seal Ring (Manual Lowering / DSR)
4	210200	Seal Ring (Closure adj., transfer line)	1	2107LC	Square C.S. Seal Ring (Face Seal)
17	2105LC	Square C.S. Seal Ring (Face Seal)	12	210700	Seal Ring (LS adjuster)
14	210500	Seal Ring (Closure adj., Seal Plug)	2	2385LC	Square C.S. Seal Ring (Face Seal)
1	283330	BPS Adjuster Assembly	2	238500	Seal Ring
28	210800	Seal Ring (1/4-28 Button head screw)	2	28371E*	Piston Ring & Expander (Up / Down)
2	2110LC	Seal Ring (Face seal)	15	263900	Seal Ring (10-32 Button head screw)

\* Warning: When replacing Teflon Piston Ring (2371C0) the Expander Ring must be replaced as well.

Disconnect power and land car on the buffers (zero system pressure) before installation. Do not save and reuse parts.

292920 SOLENOID KIT FOR UC4 / UC4M / UC4MR					
Quantity	Part No.	Description	Quantity	Part No.	Description
1	29298A-2	Solenoid Seat Kit	4	282920	Solenoid Tube Assembly
1	292950	Ball Cage Kit	4	238500	Seal Ring (Solenoid Tube)

29292A SOLENOID KIT FOR UC1A / UC1 / UC2A / UC2					
Quantity	Part No.	Description	Quantity	Part No.	Description
1	29298A-2	Solenoid Seat Kit	1	28292A	Solenoid Tube Assembly
1	292950	Ball Cage Kit	3	282920	Solenoid Tube Assembly
4	238500	Seal Ring (Solenoid Tube)			

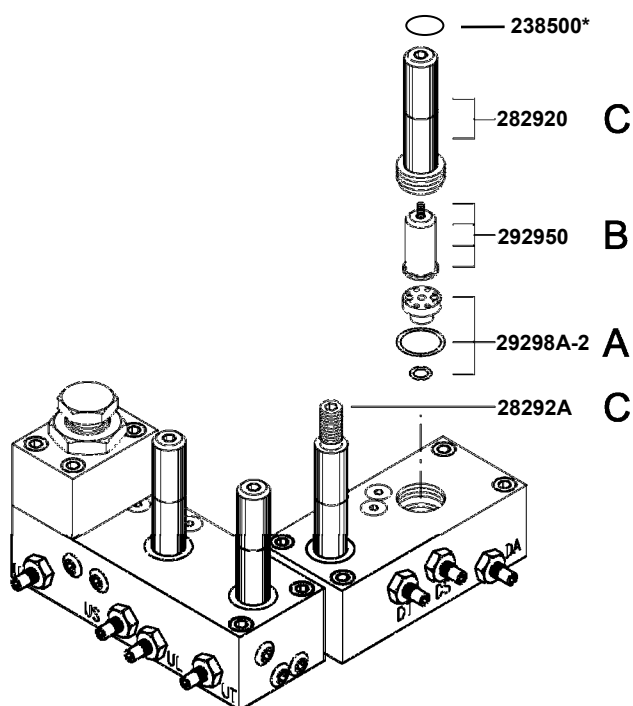
29298A-2 SOLENOID SEAT KIT FOR UC4 / UC4M / UC4MR / UC1A / UC1 / UC2A / UC2					
Quantity	Part No.	Description	Quantity	Part No.	Description
4	2298A0-2	Solenoid Seat	4	236000	Seal Ring
4	210800	Seal Ring			

292950 BALL CAGE KIT UC4 / UC4M / UC4MR / UC1A / UC1 / UC2A / UC2					
Quantity	Part No.	Description	Quantity	Part No.	Description
4	282950	Ball Cage Assembly	4	229400	Spring

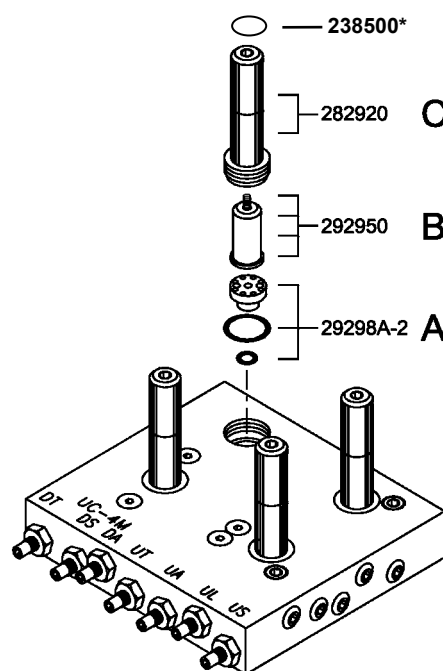
29298EMV SOLENOID SEAT KIT with CHECK SEAT SEAL FOR EMV10 / EMV10T					
Quantity	Part No.	Description	Quantity	Part No.	Description
2	2298EMV	Solenoid Seat	2	236000	Seal Ring
2	210800	Seal Ring	2	208270	Seal Ring

29896EMV SOLENOID KIT FOR EMV10 / EMV10T					
Quantity	Part No.	Description	Quantity	Part No.	Description
1	2298EMV	Solenoid Seat	1	288960	Solenoid Tube Assembly
1	236000	Seal Ring	1	238500	Seal Ring (Solenoid Tube)
1	210800	Seal Ring	1	282950	Ball Cage
1	229400	Spring	1	208270	Seal Ring

SOLENOID KIT PART No.: 29292A UC1A / UC1 / UC2A / UC2				SOLENOID KIT PART No.: 292920 UC4 / UC4M / UC4MR		
QTY.	DESCRIPTION	ASSY NO.	SYMBOL	QTY.	DESCRIPTION	ASSY NO.
1	Solenoid Seat Kit	29298A-2	A	1	Solenoid Seat Kit	29298A-2
1	Ball Cage Kit	292950	B	1	Ball Cage Kit	292950
3	Solenoid Tube Assembly	282920	C	4	Solenoid Tube Assembly	282920
1	Solenoid Tube Assembly	28292A		4	Seal Ring	238500
4	Seal Ring	238500				
Replacement Recommendation			A & B	Replace every 2,000,000 cycles		
			A & C	Retrofit valves produced prior to July 1995.		



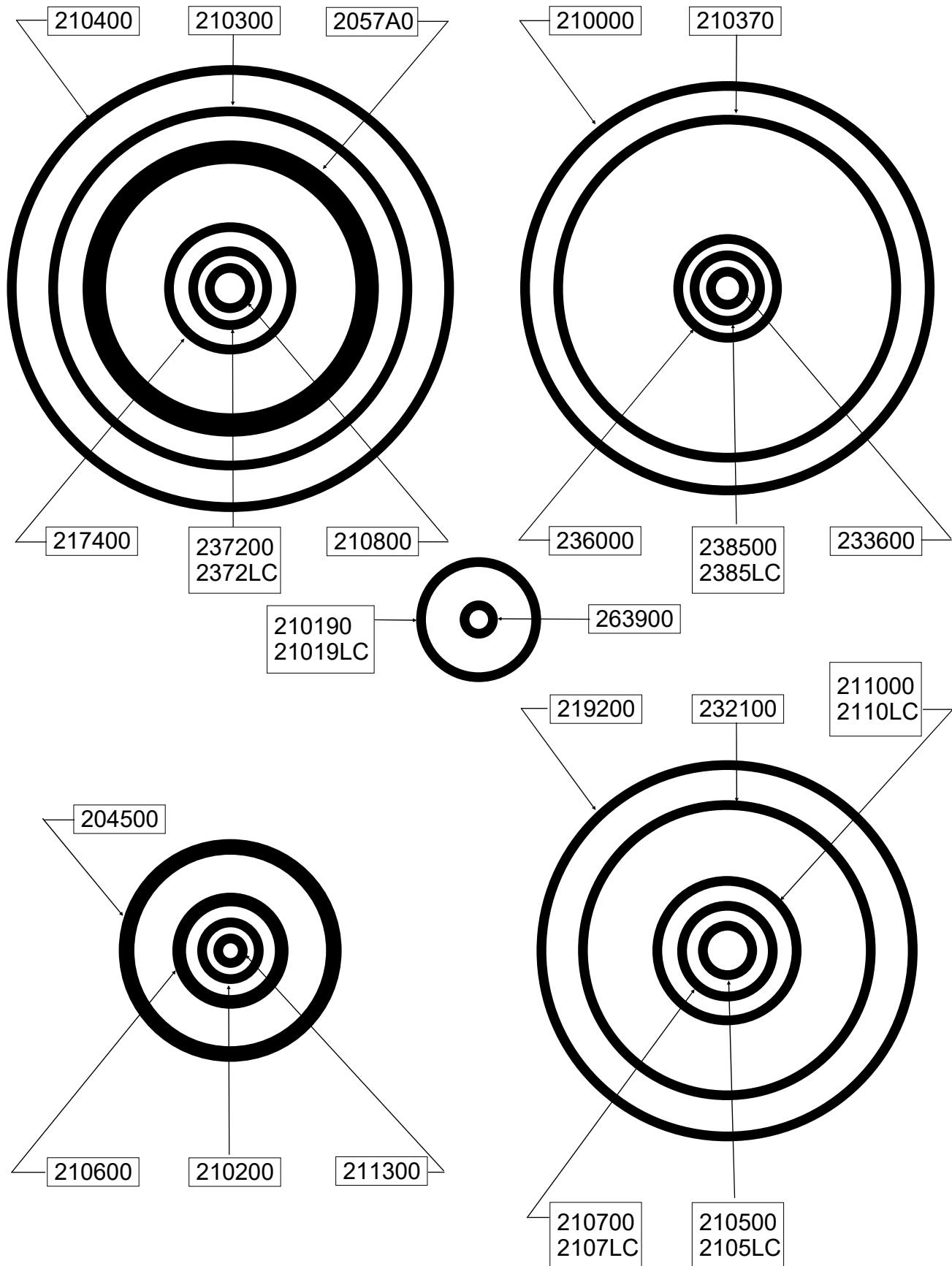
UC1A / UC2A CONTROL BLOCKS SHOWN



UC4M CONTROL PLATE SHOWN

### REPLACEMENT PROCEDURE

1. Turn power off at main disconnect switch.
2. Land car on buffers (zero system pressure).
3. Use caution when handling seats. Tools should be used on the outer holes only to avoid damaging the sealing edge of the center hole.
4. Dip seal rings in oil and install new parts as depicted above. **\*238500 should be installed dry.**
5. Make sure the solenoid seats are centered and all the way down before installing remaining parts.
6. Tighten solenoid tubes to 156 in lbs. (13 ft lbs).  
The solenoid tubes should be checked periodically for proper torque.



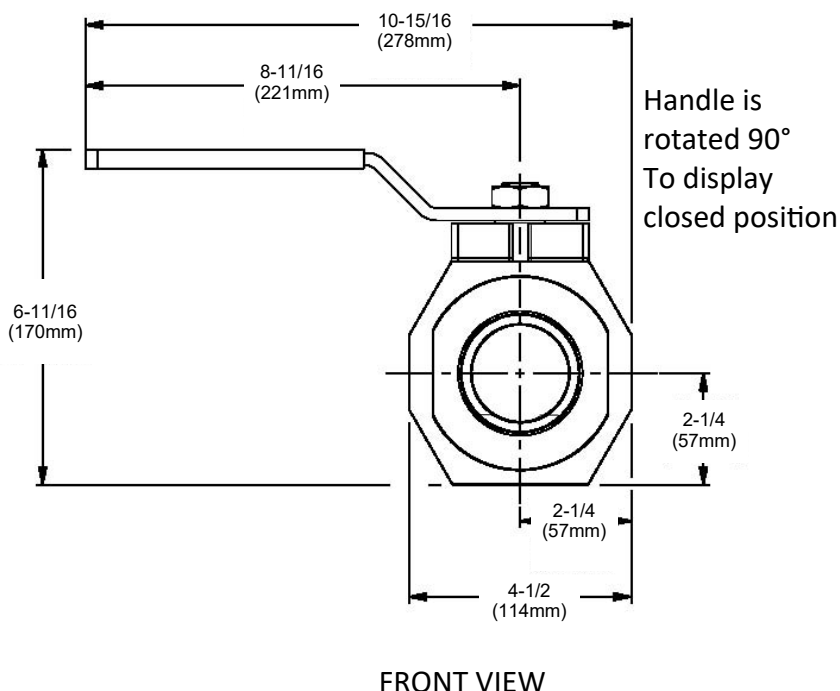
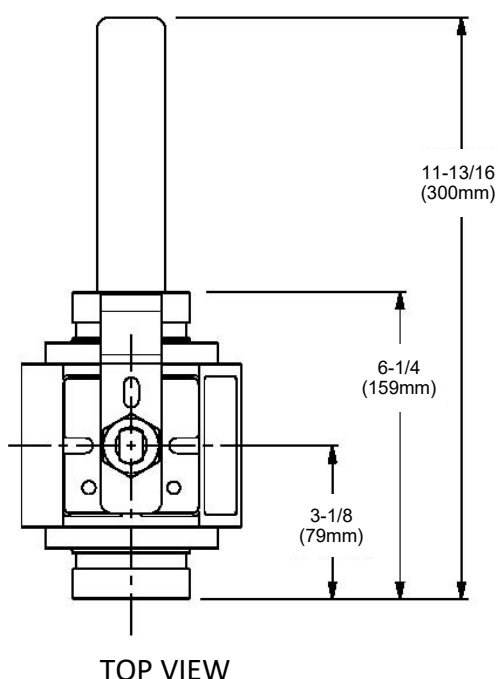


Maxton Elevator Shut Off Valves are specifically built for hydraulic elevators and are labeled and tested to comply with ASME A17.1 / CSA B44 at a 5:1 Safety factor.



BV2G2G  
SHOWN

- Hard chrome plated carbon steel ball
- Blow out proof stem used across the line
- Unique locking handle design preventing accidental fluid loss
- 2 year Maxton valve warranty
- Interchangeable flange sizing of 2" & 2.5" grooved or threaded connections (contact Maxton for combinations not listed below)



## SPECIFICATIONS

Oil Type	Hydraulic Fluid
Max. Operating Temperature	150° F (65° C)
Max. Operating Pressure	1000 psi (69 bar)
Line Connections	2", 2.5", Grooved or NPT 3" Grooved
Valve Type	1/4 Turn, Ball

## VALVE MODEL

## WEIGHT

<b>BV2G2G</b> <b>2" Full Port Grooved</b>	11.30lbs. (5.13 kg)
<b>BV2T2T</b> <b>2" Full Port NPT</b>	13.05 lbs. (5.92 kg)
<b>BV25G25G</b> <b>2.5" Grooved</b>	11.65 lbs. (5.28 kg)
<b>BV25T25T</b> <b>2.5" NPT</b>	11.65 lbs. (5.28 kg)
<b>BV3G3G</b> <b>3" Grooved</b>	13.30 lbs. (6.03 kg)

The Maxton Hydraulic Shut Off Ball Valve has been tested specifically for hydraulic elevator applications and comply with ASME A17.1 / CSA B44.

**BV1-4A****1/4" NPT Female to Male****BV1-8A****1/8" NPT Male to Male****BV3-4****3/4" NPT Female to Female****Specifications****Max Operating Pressure**

1000 psi (55 bar)

**Line Connections**

1/8" NPT, 1/4" NPT or 3/4" NPT

**Max Operating Temperature**

150° F (65° C)

**Oil Type**

Hydraulic Fluid

**Overall Dimensions:**

	Width (inch)	Length (inch)	Height (inch)	Weight (ounce)
<b>BV1-4A</b>	.950	2.050	1.275	4 oz.
<b>BV1-8A</b>	.950	1.900	1.275	3 oz.
<b>BV3-4</b>	1.630	5.875	3.000	16 oz.

**Piping Dimension:**

	Length (inch)
<b>BV3-4</b>	2.640

Maxton Bleed Port's are machined parts with black oxide finish designed to aid in the bleeding of air from the jack during installation, oil replacement, or other repairs where unwanted air might enter the jack. No more oil showers or worn out threads in the jack when typical pipe drain plugs were used. Simply back out the center set screw slightly releasing air while leaving the main body attached to the jack.

**297150****1/4" Bleed Port****297170****1/8" Bleed Port****Specifications****Material**

5/8" Hex, Ledloy

**Max Operating Pressure**

1000 psi (55 bar)

**Line Connections**

1/4" NPT or 1/8" NPT

**Max Operating Temperature**

150° F (65° C)

**Oil Type**

Hydraulic Fluid

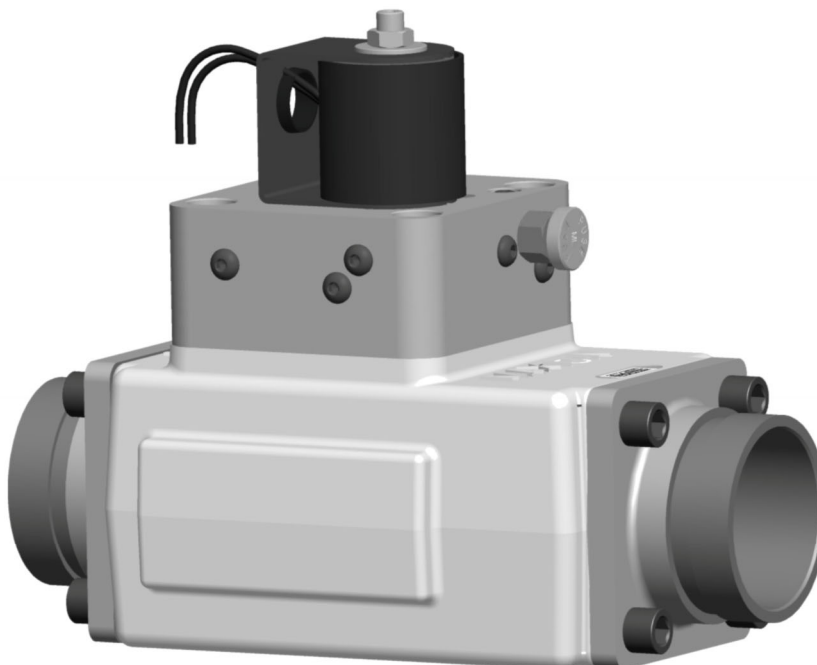
**Overall Dimensions:**

	Width (inch)	Height (inch)	Weight (ounce)
<b>297150</b>	.625	.900	1.0 oz.
<b>297170</b>	.625	.900	0.8 oz.

## Introduction

The Maxton Interlock Hydraulic Valve (ILV) is a solenoid operated, normally closed check valve designed to prevent unintended elevator down movement. The ILV only allows the oil to flow in the down direction when the solenoid coil is energized. Due to its unique design the up flow is unrestricted and does not require power to the solenoid coil. The ILV should be installed adjacent to the main control valve, no adjustments are required. A push button Manual Lowering is provided to lower the hydraulic elevator in case of emergency.

The Maxton ILV complies with ASME A17.1 / CSA B44



## Specifications

<b>RATED FLOW</b>	Maximum 360 gpm (1362 l/min)
<b>Operating Pressure</b>	
Minimum	100 psi (6.9 bar)
Maximum	800 psi (55 bar)
<b>Line Connections</b>	
Jack Port (Flange)	2, 2 1/2" NPT or Grooved
Tank Port (Flange)	2, 2 1/2" NPT or Grooved
<b>Operating Temperature</b>	80°-150° F (26° - 65° C)
<b>Oil Type</b>	Hyd. ISO VG 32 150 SUS @ 100° F (38° C)
<b>Overall Dimensions</b>	
Width 11 1/4 inches (286mm)	Height 8 13/16 inches (224mm)
Depth 5 1/4 inches (133mm)	Weight 28 lbs. (12.7kg)

## Standard Features

- Unit body construction.
- Steel sleeve inserts in valve body
- Grooved or threaded line connections
- 115 VDC solenoid coil
- Factory tested prior to shipping
- 2 year limited warranty

## Optional Features

- 3" Grooved flanges
- 120 VAC / 12 VDC solenoid coil
- 230 VAC solenoid coil
- 115 VAC / 24 VDC solenoid coil

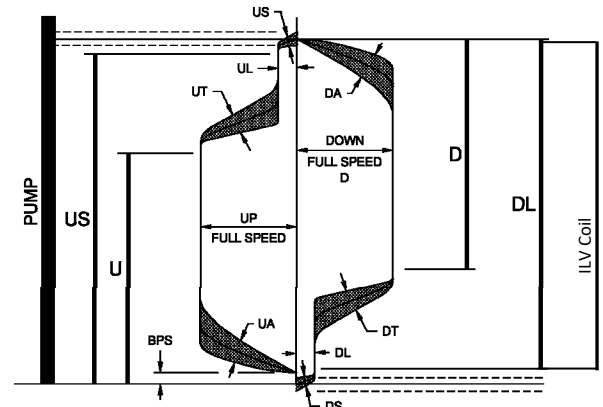
## ILV COIL OPERATING SEQUENCE

### ILV

Energize when a down call is registered along with down solenoid Coils ( D & DL) to allow down flow. De-Energize to stop.

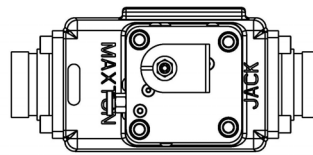
### MANUAL LOWERING

Open main valve manual lowering first. On Interlock Valve, push ML Button to lower car downward at leveling speed when necessary.

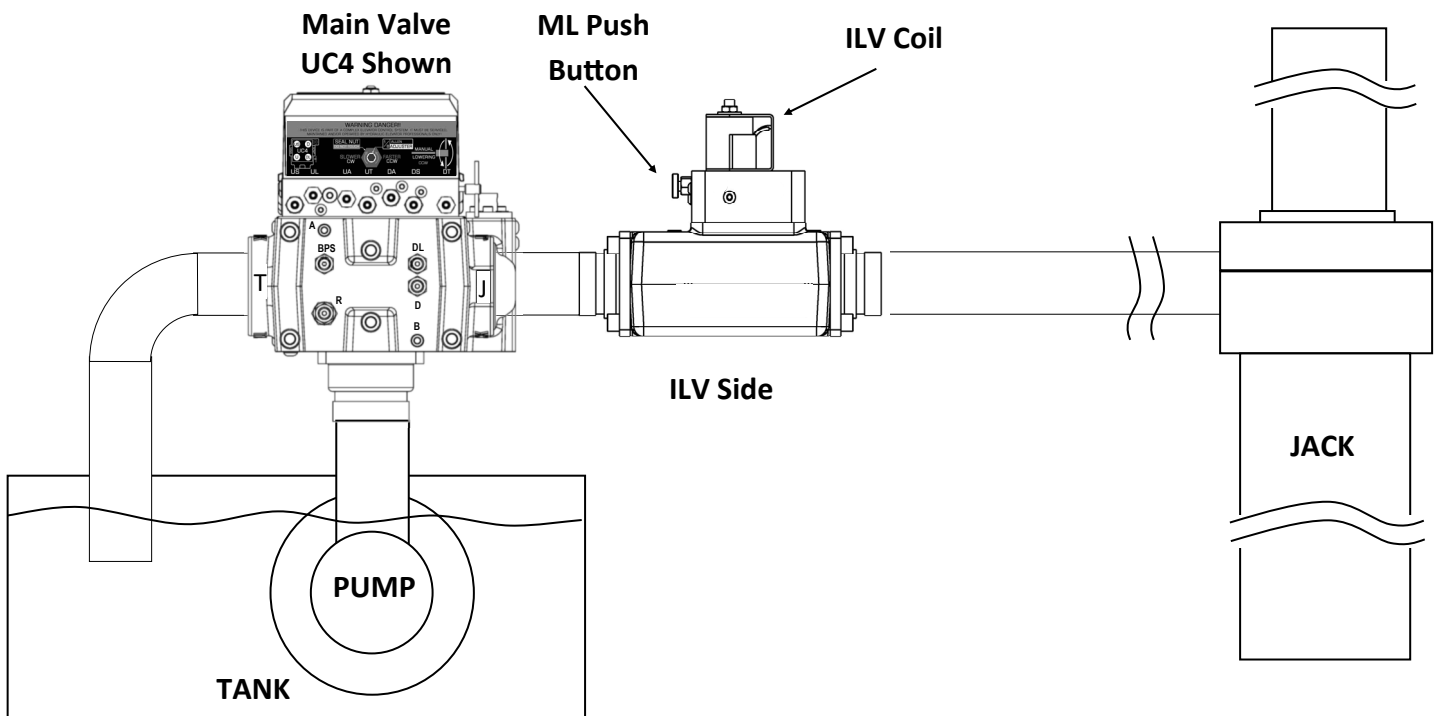


## ILV TYPICAL INSTALLATION

NOTE: Solenoid/Coil Assembly must be mounted in the vertical position



ILV Top



# SafeTach<sup>2</sup>™

The next generation SafeTach2 Elevator Performance Meter (APP/Node combo) from Maxton is the most fiscally responsible tool available for the elevator industry to date. With the cost of labor reaching historic levels maximizing ROI, use of time, and volume of work completed is what really matters to your bottom line. \*\*

*"It's the only tool out there that gives me graphs and speeds for quick accurate adjusting of hydraulic and traction elevators. It's like having another guy," said David Hall, Elevator Mechanic, Koch Elevator.*

SafeTach2 now incorporates an APP with the user's mobile device to provide remote access of accurate hydraulic & traction elevator performance measurements.



#### Resolution:

- Speed +/- 1 fpm
- Acceleration +/- 1 milli-g
- Jerk +/- 1 ft/sec<sup>3</sup>

#### New benefits:

- Bluetooth remote connectivity w/ App on user's mobile device
- Report generation for up to 8 runs (name/time/date) print, email, or send to cloud
- 3 axes (X, Y, Z)
- Graphing (Velocity, Acceleration, Jerk, Sound)
- 24 continuous hours of operation per charge
- Unlimited run data collection

Download APP for a [FREE look!!](#)



\*\*Scan for Case Study ROI example here.



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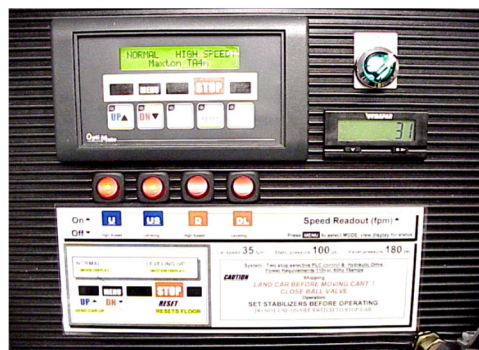


# TA4M

## RENTAL PROGRAM FIELD TRAINING AID

The TA4M is a complete portable Hydraulic Elevator Simulator with automatic controls. It is used for adjustment training for Maxton UC4 and UC4M control valves. With this simulator, installation and service technicians can be easily trained in a class room environment to setup these Maxton control valves utilizing the same control features as a commercial elevator.

*Elevator car motion is simulated by the movement of a piston traveling up to 36 inches at 35 feet per minute. The slowdown signals and stopping points have been set based on cylinder travel and speed.*



### Features:

- Maxton UC4M control valve
- Pressure gauges (A port, B port)
- PLC control operator Interface.
  - ♦ Speed Readout
  - ♦ Easily toggle ON/OFF coils
  - ♦ Digital position feedback
- Direct drive power unit with overload
- Instruction manual
- Clean and quiet, suitable for classroom use



Portable Elevator Simulator

**An instruction manual and built in visual aids for operation of the TA4M, allows comprehensive hands-on experience in operation of MAXTON UC4 and UC4M control valves.**

TA4M System -two stop selective PLC control & hydraulic drive

**Power Requirements:** 115vac 60hz 15amps

System Weight:	520	lbs
Crate	350	lbs
Total	870	lbs each
Shipping	FOB	Minden, NV



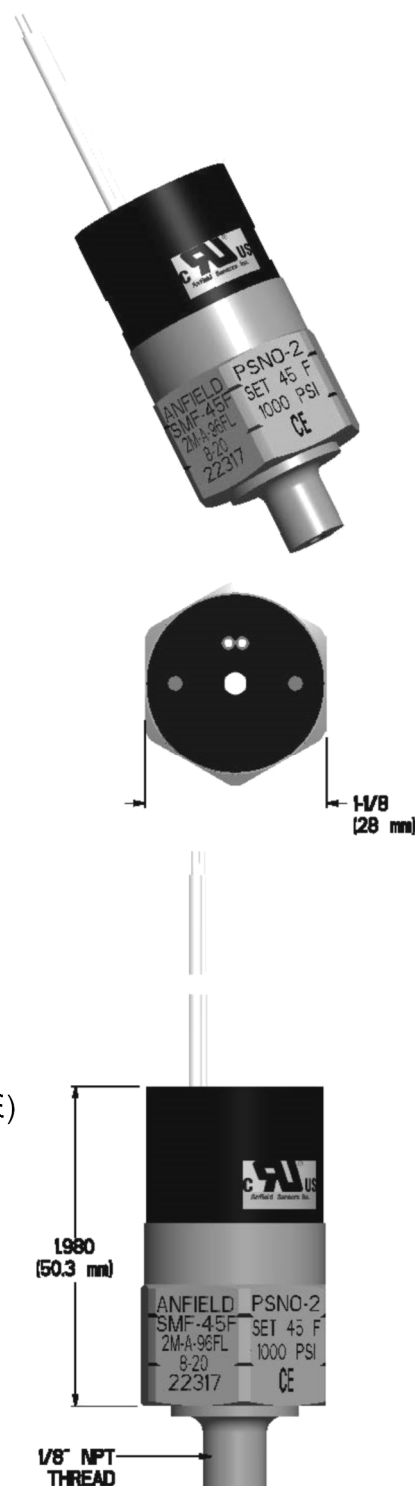
## Pressure Switch Normally Open (PSNO-2) Complies with ASME A17.1 / CSA B44

The Maxton Pressure Switch (PSNO-2) has been tested specifically for hydraulic elevator applications. The switch has been pre-set for a fast and accurate response in a low-pressure activation and can be mounted directly to all Maxton control valves.

ASME A17.1-2010 Rule 3.26.8 - When cylinders are installed with the top of the cylinder above the top of the storage tank, a pressure switch shall be provided in the line between the cylinder and the valve, which shall be activated by the loss of positive pressure at the top of the cylinder. The switch shall prevent automatic door opening and the operation of the lowering valve or valves. The door(s) shall be permitted to open by operation of the in-car door button, when the car is within the unlocking zone.

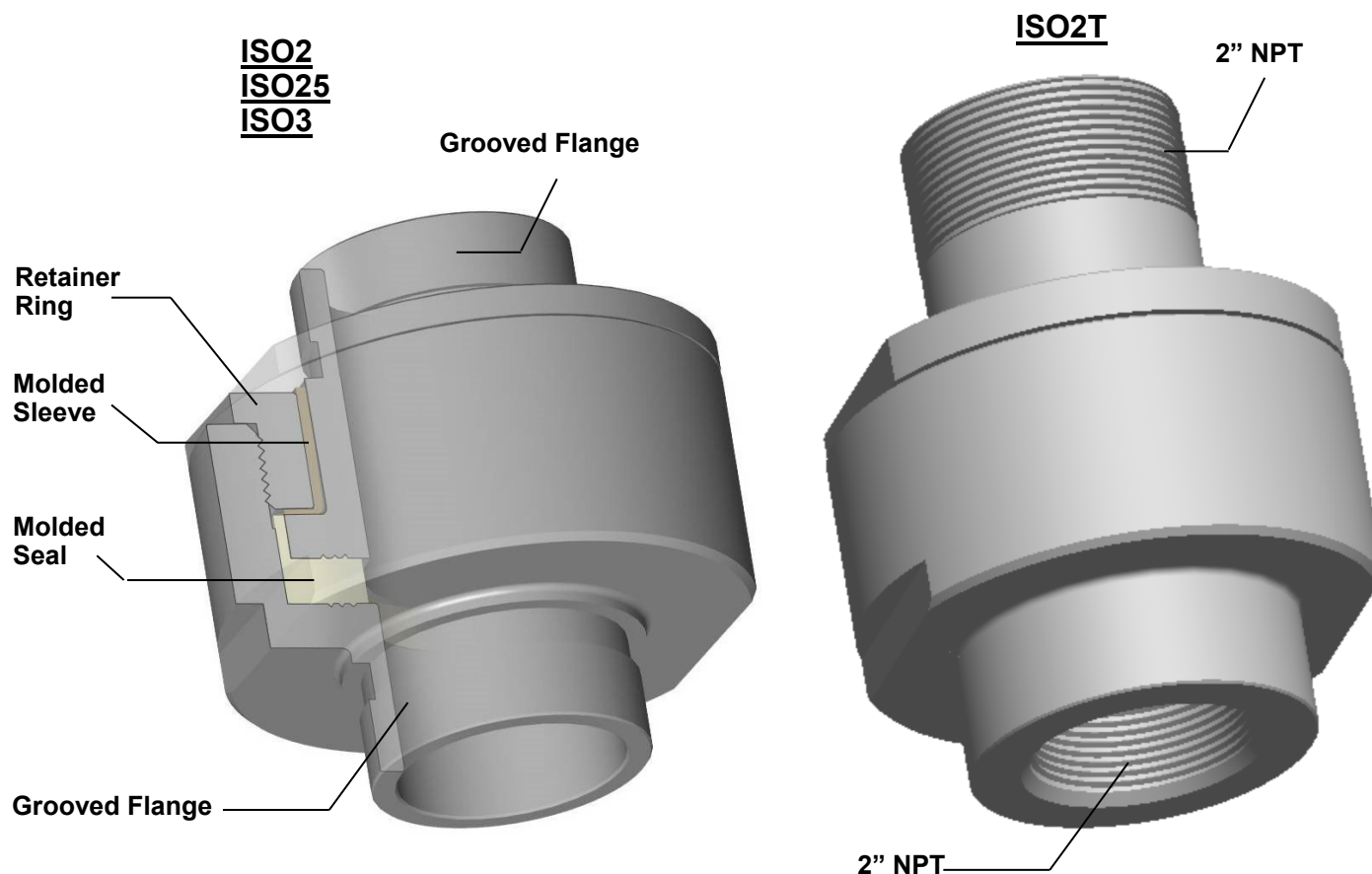
### Specifications

Actuation pressure / rise	65 $\pm$ 10 psi (contacts closed)
Release pressure / fall	45 $\pm$ 5 psi (contacts open)
Nominal system pressure	800 psi
Max. working pressure	1000 psi
Burst pressure	5000 psi
Oil Type	Hydraulic Fluid
Line connection	1/8" NPT (Male)
Overall dimensions	(see drawing)
Oil Temperature range	80° F to 150° F
Electrical rating	10A 125 VAC, 6A 250 VAC (RESISTIVE)
cULus	E327045
Life at 800 psi	2,000,000 cycles
Switch configuration	SPST, at atmospheric pressure: open



Lead Length: 96"  $\pm$  2" (2438mm)  
Wire Spec. 18# AWG-STYLE 3173  
125° C 600V XLPE  
CSA-CL1251  
Wire color: Gray

The Maxton Isolation Coupling's are comprised of two pipe flanges coupled by a threaded retainer ring. This design has increased strength and reduced weight at a lower cost. The threaded ring design provides superior strength because of the consistent sealing torque around the Thermoplastic Seal. Our insulators are created with the highest quality hybrid thermoplastic to provide superior noise / vibration reduction and metallic isolation. Maxton Isolation Couplings comply with ASME A17.1 / CSA B44.



### Specifications

Oil Type	Hydraulic Fluid
Maximum Operating Temperature	150° F (65° C)
Maximum Operating Pressure	1000 psi (69 bar)
Line Connections	2", 2.5", 3" Grooved or 2" NPT

	<b>ISO2</b> 2" Grooved	<b>ISO2T</b> 2" NPT	<b>ISO25</b> 2.5" Grooved	<b>ISO3</b> 3" Grooved
<b>Maximum Flow Range</b>	200 gpm (757 l/min)	200 gpm (757 l/min)	300 gpm (1135 l/min)	400 gpm (1514 l/min)
<b>Overall Dimensions</b>				
Width:	4 ½ in. dia. (115 mm)	4 ½ in. dia. (115 mm)	5 ¼ in. dia. (133 mm)	5 ¼ in. dia. (133 mm)
Length:	4 ½ in. (115 mm)	5 ½ in. (140 mm)	4 ½ in. (115 mm)	4 ½ in. (115 mm)
Weight:	8.15 lbs. (3.65 kg)	8.85 lbs. (4.01 kg)	10.85 lbs. (4.92 kg)	10.05 lbs (4.55 kg)

The Tank Discharge Filter (TDF) is a simple yet effective hydraulic elevator oil filter system that removes contaminants down to 5 microns. The TDF system mounts vertically on the valve/tank discharge line as shown below (image bottom right). The filter bag is designed for easy replacement when dirty to maintain a clean, well performing, hydraulic system (see TDF usage below).

The TDF system can be applied to all Maxton commercial elevator control valves (UC1/1A/2/2A and UC4/4M/ MR) as well as other commercial valves on the market using a 2 inch connection. When an elevator system flow goes beyond 250 gpm multiple filters can be put together, accommodating more flow, using a manifold arrangement. In this case make sure installation allows room for proper filter bag operation (expansion of filter bag) with complete clearance.

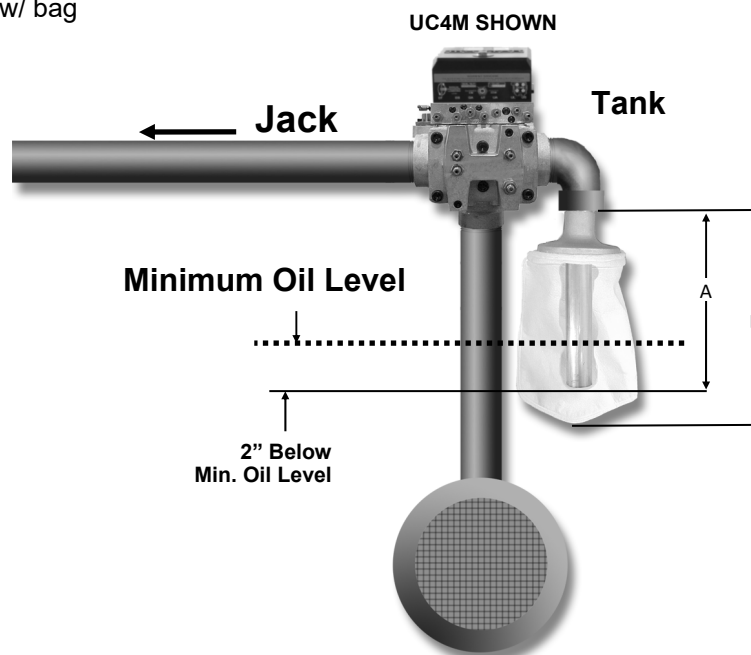
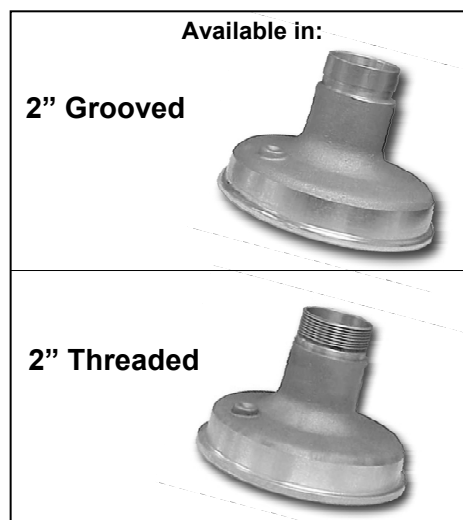
### **TDF usage and maintenance recommendations:**

**Clean System Definition** – This can be described as a completely new hydraulic elevator installation with new oil. Maxton recommends checking the TDF quarterly to maintain optimal elevator performance. Filters need replacing when white bag color turns brown/black to maintain a clean system.

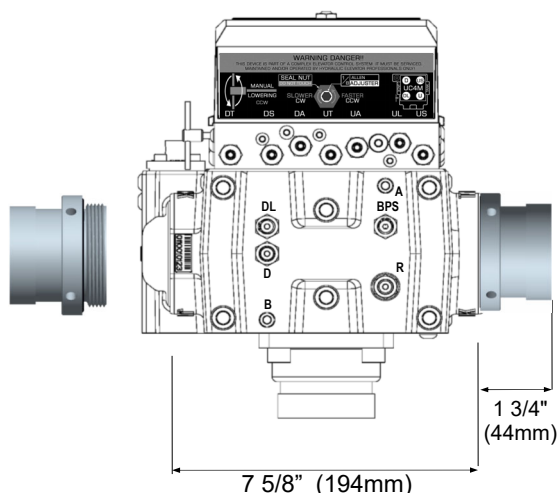
**Non-Clean System Definition** – This is an elevator system in use without an oil filtration device. Maxton recommends installing the TDF and running the pump (no coils energized) for several minutes to filter the oil in the system. **Note:** If the TDF captures a substantial amount of contaminants (white bag turns brown/black in color) during this process then Maxton recommends cleaning the tank, purging or replacing the oil and replacing the TDF bag. Perform quarterly filter checks to maintain clean oil for optimal elevator performance.

### **Specifications**

Max. flow per filter (TDF1 / 1V).....	125 gpm
Weight (TDF1 / 1V).....	5.00 lbs
Max. flow per filter (TDF2 / 2V).....	250 gpm
Weight (TDF2 / 2V).....	5.95 lbs
Max. operating pressure.....	5 psi
Max. operating temperature.....	150° F
Line connection, tank.....	2" NPT or Grooved
Oil type.....	Hydraulic Fluid
Fully expanded bag diameter.....	10 in.
Height (TDF1 / 1V) .....	(A)15" Pipe, (B) 20" w/ bag
Height (TDF2 / 2V) .....	(A) 22" Pipe, (B) 28" w/ bag
Filter bag rating.....	5 Micron



Maxton Thread to Grooved Adapters are another quality Maxton product that allows the UC4, UC4M, and UC4MR valve models to be easily adapted for installation by providing the choice between threaded or Grooved connections on the jack and tank ports. The seal ring design eliminates the need for sealant while providing a liquid and air tight seal.

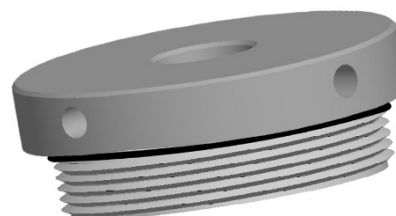
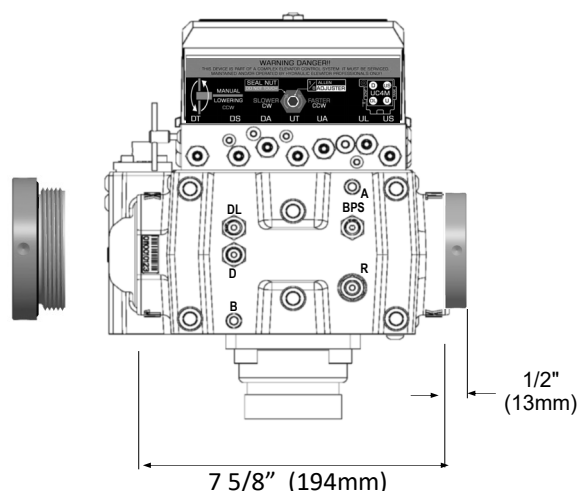


### Specifications

<b>Standard Rated Contract Flow</b>	185 gpm (700 l /min)
<b>Max Operating Pressure</b>	800 psi (55 bar)
<b>Line Connections</b>	2" Grooved
<b>Max Operating Temperature</b>	150° F (65° C)
<b>Oil Type</b>	Hydraulic Fluid
<b>Overall Dimensions</b>	Dia: 3 inches, Height: 2 ¼ inches, Weight: 1.1 lbs.

(UC4M SHOWN)

Maxton 2" to 3/4" Port Adapter Flange was designed for Residential/LULA or low flow hydraulic elevator applications using the UC4, UC4M Series of Maxton Valves. These easy to install flanges use a seal ring design to insure proper sealing of the 2" side against the Maxton valve while the 3/4" NPT side allows for the easy conversion of the valve to fit most Residential/LULA applications.



### Specifications

<b>Standard Rated Contract Flow</b>	24 gpm (90.8 l /min)
<b>Max Operating Pressure</b>	800 psi (55 bar)
<b>Line Connections</b>	3/4" NPT
<b>Max Operating Temperature</b>	150° F (65° C)
<b>Oil Type</b>	Hydraulic Fluid
<b>Overall Dimensions</b>	Dia: 3 inches, Height: 1 inches, Weight: 1.25 lbs.

The Hydraulic Quick Disconnect installed into the "A" port of your Maxton valve provides for fast and easy gauge installation when measuring working pressure and setting the relief valve. Included In kit QDK1-8 is the 1/8" NPT nipple, 1/8" NPT Hex Nipple and a 1/8" NPT 90° fitting to accommodate possible space constraints.

Quick Disconnect Couplings and Nipples are Interchangeable with ISO B 7241 Fittings and can also be installed in the "B" Port for compliance with code ASME A17.1-2010 3.19.4.5.

**QDC1-8****QDK1-8**

## Specifications

**Series "H" Hydraulics**  
**Max Operating Pressure**  
**Line Connections**  
**Max Operating Temperature**  
**Oil Type**

Steel  
 800 psi (55 bar)  
 1/8" NPT - A, B ports  
 150° F (65° C)  
 Hydraulic Fluid

### Overall Dimensions:

	<b>Width (inch)</b>	<b>Height (inch)</b>	<b>Weight (ounce)</b>
Coupling	1	2	2
Nipple	1/2	1-1/4	0.5
Hex Nipple	1/2	1-1/16	0.05
90° Fitting	5/8	1-1/4	0.05



# MAXGLIDE

## HYDRAULIC OIL ADDITIVE

*This product is not new to the field.  
MAXGLIDE is a proven product in the reduction and elimination of  
serious jack piston packing friction (STICK SLIP) problems.*

### Performance Claims:

- **Reduced oil operating temperature**
- **Minimizes packing friction**
- **Increases floor stop accuracy**
- **Stabilizes operating performance**
- **Reduces heat and operating wear on hydraulic system components**
- **Can be used with Petroleum and vegetable based Hydraulic fluids**



### Application:

To determine if **MAXGLIDE** will be effective: Apply 2 to 4 ounces onto piston surface just above packing gland. If STICK-SLIP is eliminated add 1% to 5% by volume to oil contents of reservoir.

**(Minimum 1 gallon to a maximum 5 gallons MAXGLIDE to 100 gallons of oil)**

MAXGLIDE is not a miracle cure, but it has provided remarkable ride improvement under difficult field conditions.

**MAXGLIDE IS SAFE FOR SUBMERSIBLE MOTORS**

## WATER VALVE

Maxton MFG. Co produces all current valve series (UC-1/1A,2/2A,4,4M,4MR) as Water Valves. These valves are designed for use in water glycol systems.

Please contact Maxton Technical Support for further information at [support@maxtonvalve.com](mailto:support@maxtonvalve.com)

UC4/4M/4MR  
WATER VALVE



UC-1/1A,2/2A  
WATER VALVE



## EXPLOSION PROOF COIL COVER

Maxton MFG. Co produces Explosion Proof Coil Covers for "Use in Hazardous Classified Locations" on a special order case-by-case basis.

Class 1, Division 1, Groups A, B, C, D and Class 2, Division 1, Groups E, F, and G

Please contact Maxton Technical Support for further information at [support@maxtonvalve.com](mailto:support@maxtonvalve.com)

UC4/4M/4MR EXPLOSION  
PROOF COIL COVER



UC1/1A,2/2A EXPLOSION  
PROOF COIL COVER

