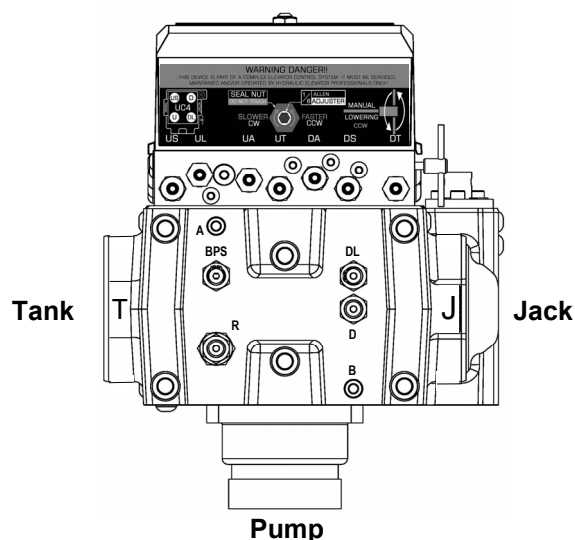


UC4M B44



UC4 B44

Specifications

*Maximum Flow**	185 gpm (700 l/min)
Operating Pressure	
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.
- 120 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
- 240 VAC Coils
- 115 VDC Coils
- 185 VAC Coils



UC4M
SHOWN

CENTER LINE OF PUMP

9 3/16" (233mm)

6 5/8" (168mm)

5 1/16" (129mm)

maxton

1 1/2" (38mm)

PUMP

ADJUSTER MAX LENGTH

10 1/2" (267mm)

4 1/4" (108mm)

2 3/16" (55mm)

3 13/16" (97mm)

4 5/8" (117mm)

8 7/16" (214mm)

3 13/16" (97mm)

WARNING DANGER!!
THIS DEVICE IS PART OF A COMPLEX ELEVATOR CONTROL SYSTEM. IT MUST BE SERVICED BY
TRAINING AND/OR CERTIFIED BY PERSONNEL SUPERIOR TO THAT

SEAL NUT

MANUAL
LOWERING
DT

DS

DA

UT

UA

UL

US

BLOWER
CW

PUMP
CCW

UC4M

UC4M

DL

D

B

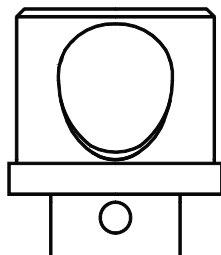
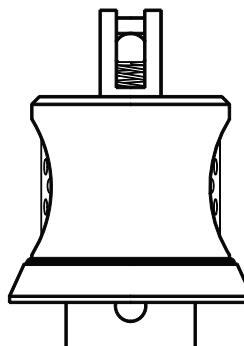
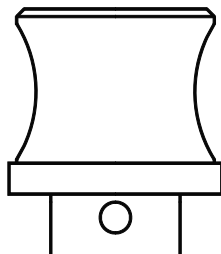
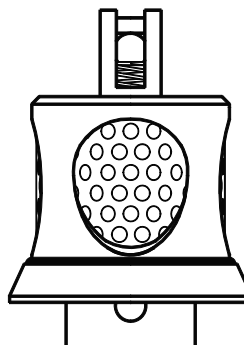
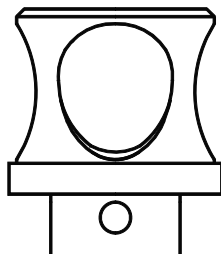
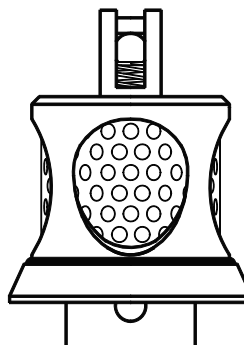
A

BPS

R

J

T

E1
BPS GUIDEE2
DN / CHK GUIDE**E1 GUIDE CONFIGURATION**E2
BPS GUIDEE3
DN / CHK GUIDE**E2 GUIDE CONFIGURATION**E4
BPS GUIDEE4
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:

Min. / Max. Pressure: 50-800 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

- 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

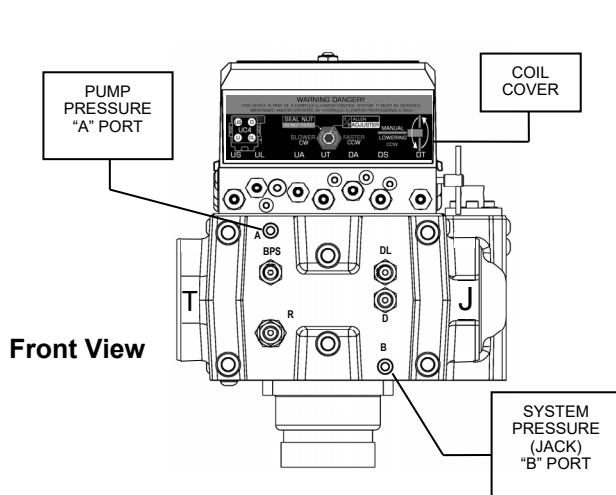
If valve is received from Maxton, only minor adjustments may be required.

CONTROL PLATE

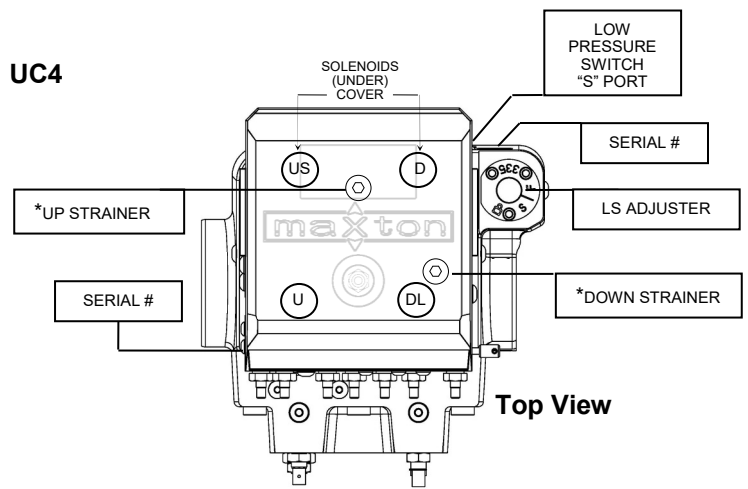
DT	DOWN TRANSITION	OUT	(CCW)	to stop	(faster rate)
DA	DOWN ACCELERATION	OUT	(CCW)	to stop	(faster rate)
DS	DOWN STOP	OUT	(CCW)	to stop	(faster rate)
ML	MANUAL LOWERING	IN	(CW)	to stop	

VALVE BODY

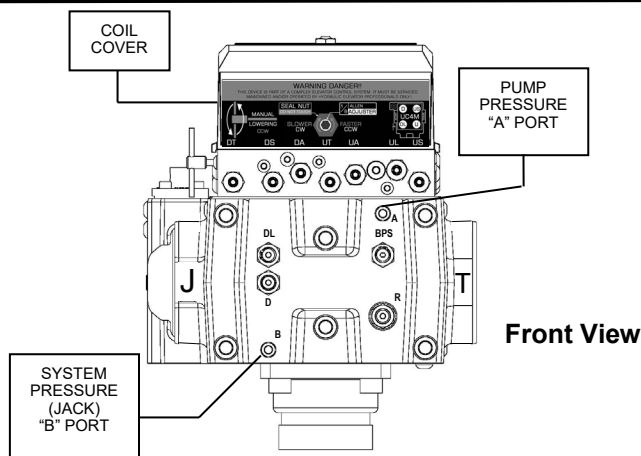
D	DOWN SPEED	Turn OUT (CCW)	5 threads above lock nut.	(faster speed)
DL	DOWN LEVEL	Turn OUT (CCW)	2 threads above lock nut.	(faster speed)



UC4

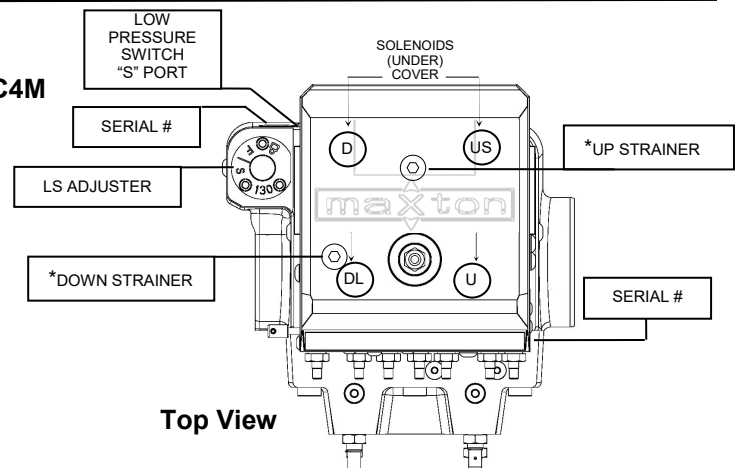


Top View



Front View

UC4M

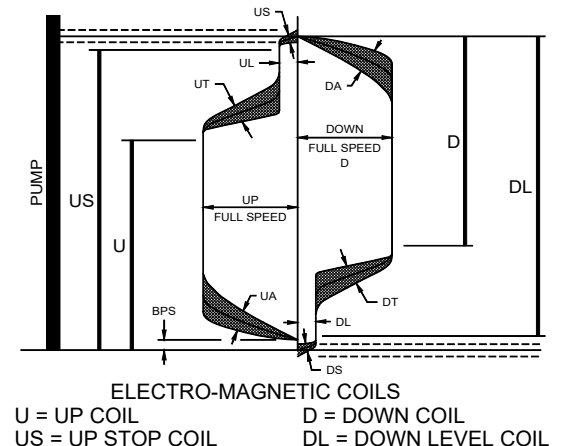


Top View

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

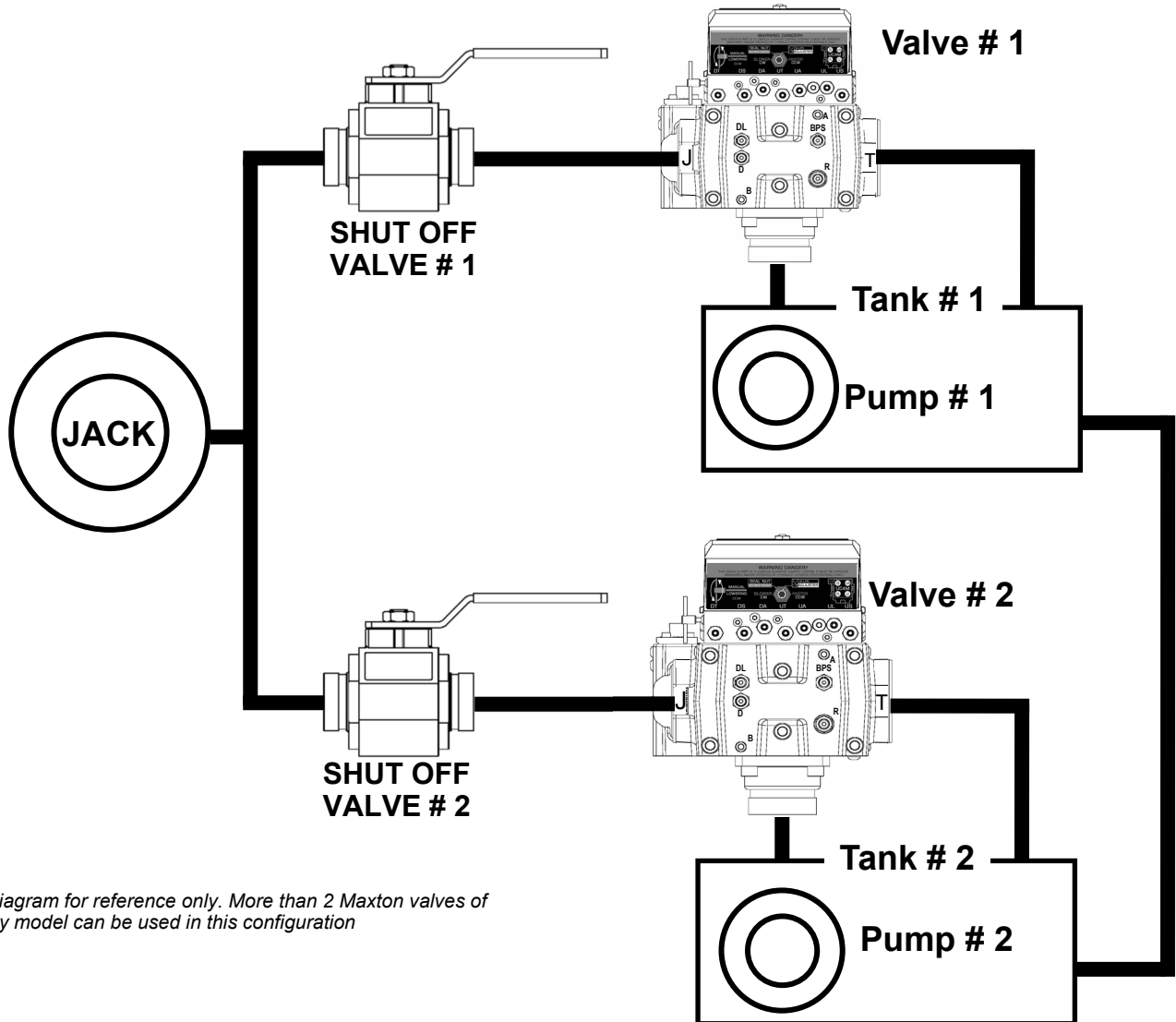
- US** For up travel, energize when pump starts and de-energize to stop. With US energized and pump running, car will move up at leveling speed. For "soft stop", pump should run ½ second after US de-energizes.
- U** Energize with US coil to run up at contract speed. De-energize at slowdown distance from 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.

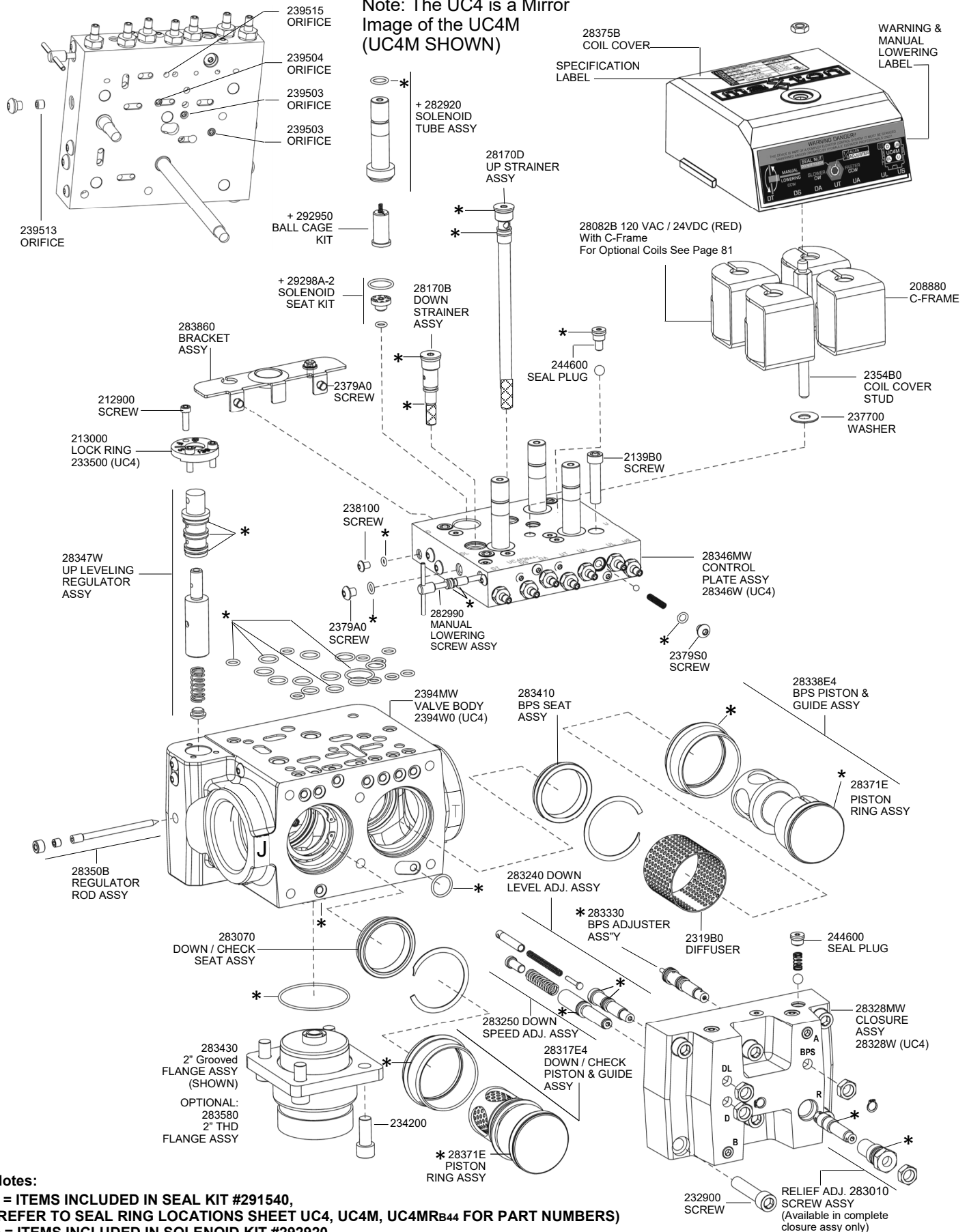
Adjustment (Valve # 2)

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.

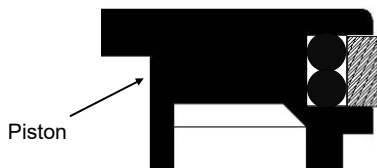
Note: The UC4 is a Mirror Image of the UC4M (UC4M SHOWN)



Notes:

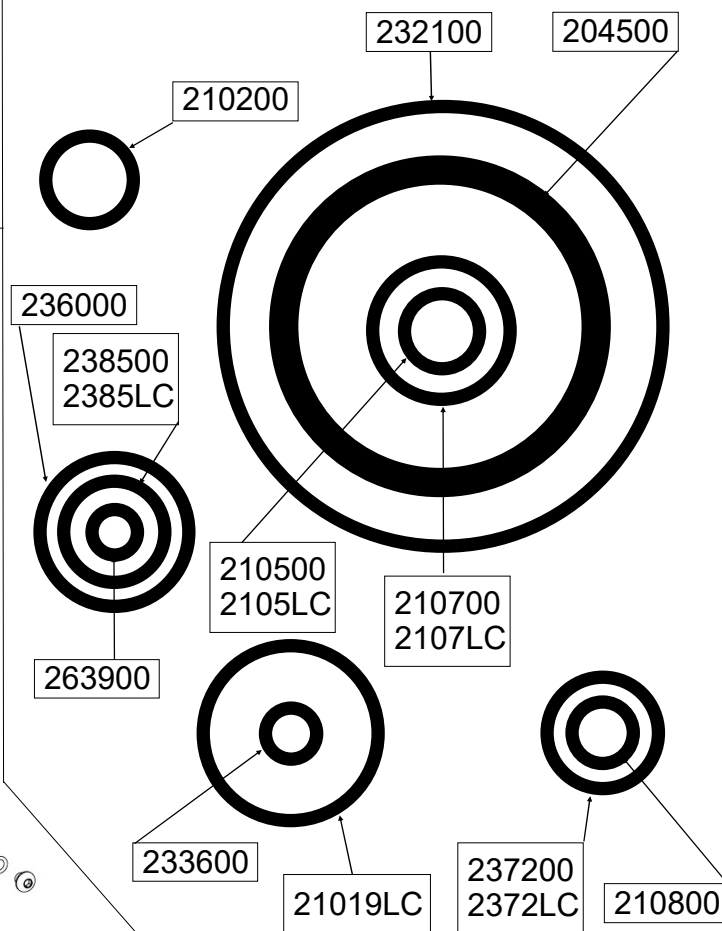
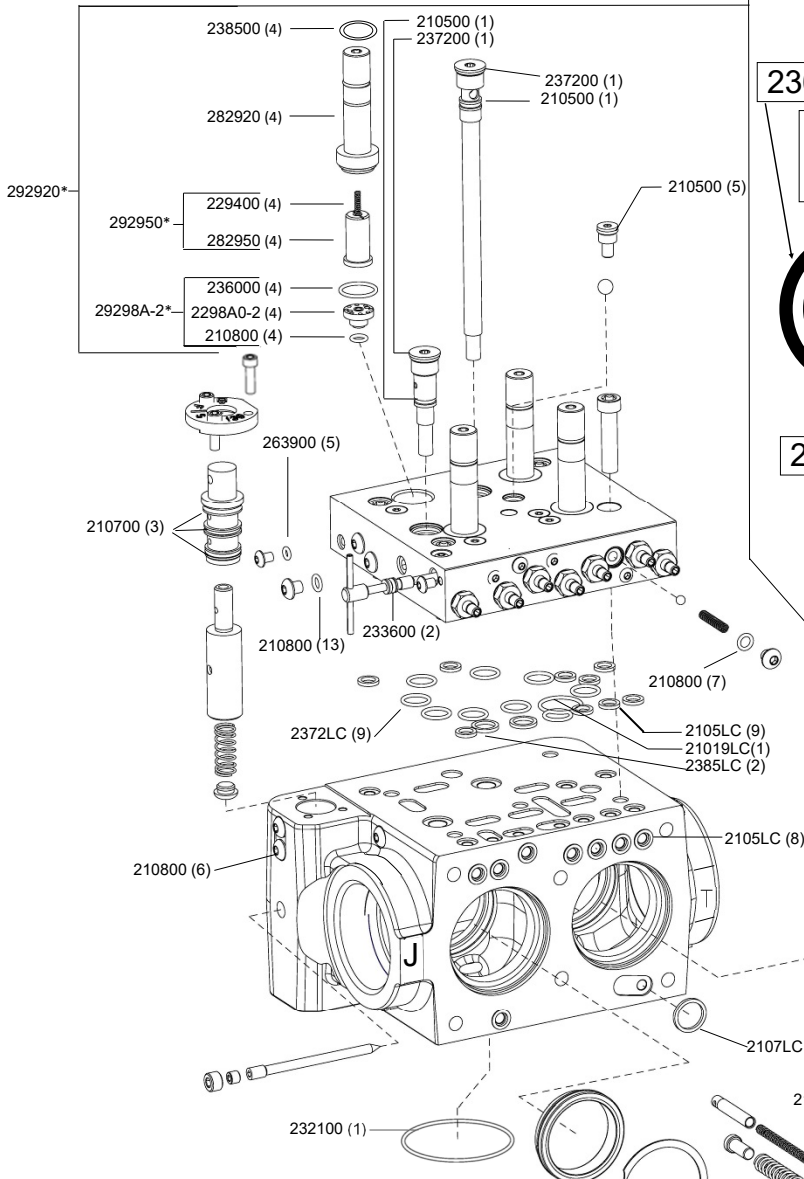
- * = ITEMS INCLUDED IN SEAL KIT #291540, (REFER TO SEAL RING LOCATIONS SHEET UC4, UC4M, UC4MRB44 FOR PART NUMBERS)
- + = ITEMS INCLUDED IN SOLENOID KIT #292920 (REFER TO THE APPLICATION FLOW CHART FOR GUIDE SELECTION (STANDARD GUIDES SHOWN))

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			2319B0	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 (¼-28 button head)	230900	Snap ring	2354B0	Coil cover stud
2379S0	Screw (UT/DT ¼-28 button head)	230700	Down / Check seat	28375B	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	2082B0	Solenoid coil 120 VAC / 24 VDC (Red)
		28371E	* Piston ring & expander assy	208880	C-Frame
		231600	Snap ring		
28328MW	VALVE CLOSURE ASSEMBLY (UC4M)	231500	Spring		
28328W	VALVE CLOSURE ASSEMBLY (UC4)	2314E4	Down / Check guide assy (std.)		
283330	* BPS adjuster assembly	204500	* Seal ring		
233100	Snap ring	230800	Seal retainer ring		
233000	Lock nut	204600	Snap ring		
233300	BPS adjuster screw	283410	Up seat assembly		
210200	* Seal ring	230900	Snap ring		
210500	* Seal ring	234100	BPS seat		
		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)
					28317E

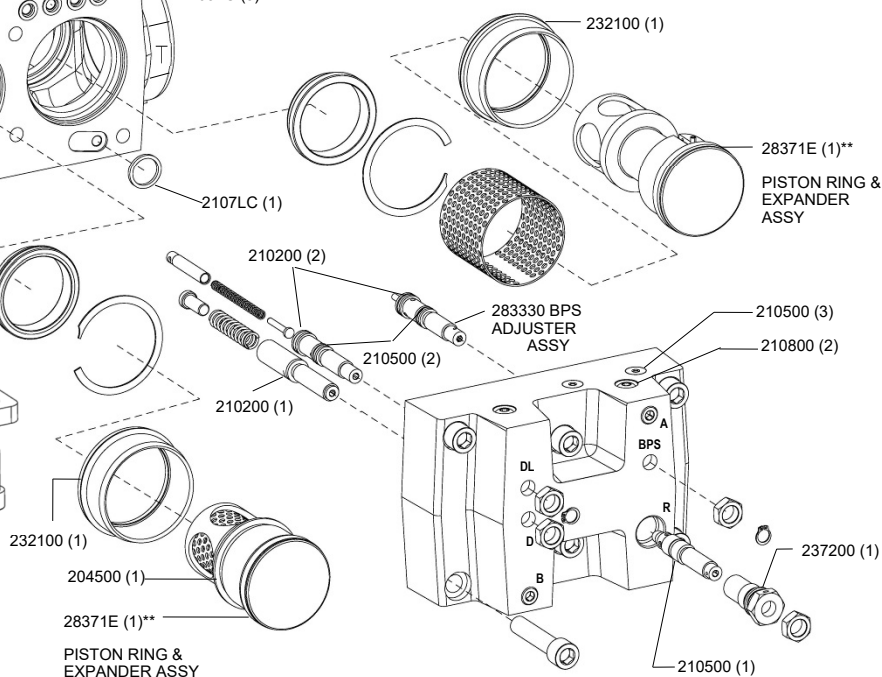
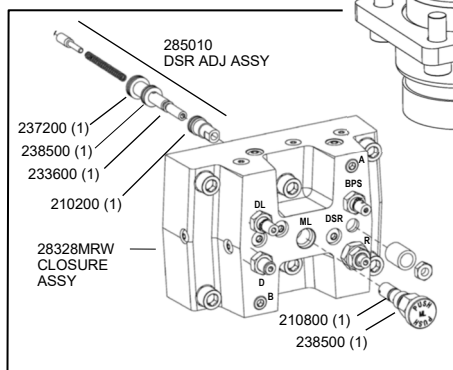


Piston Ring
Orientation
(28371E)

** 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

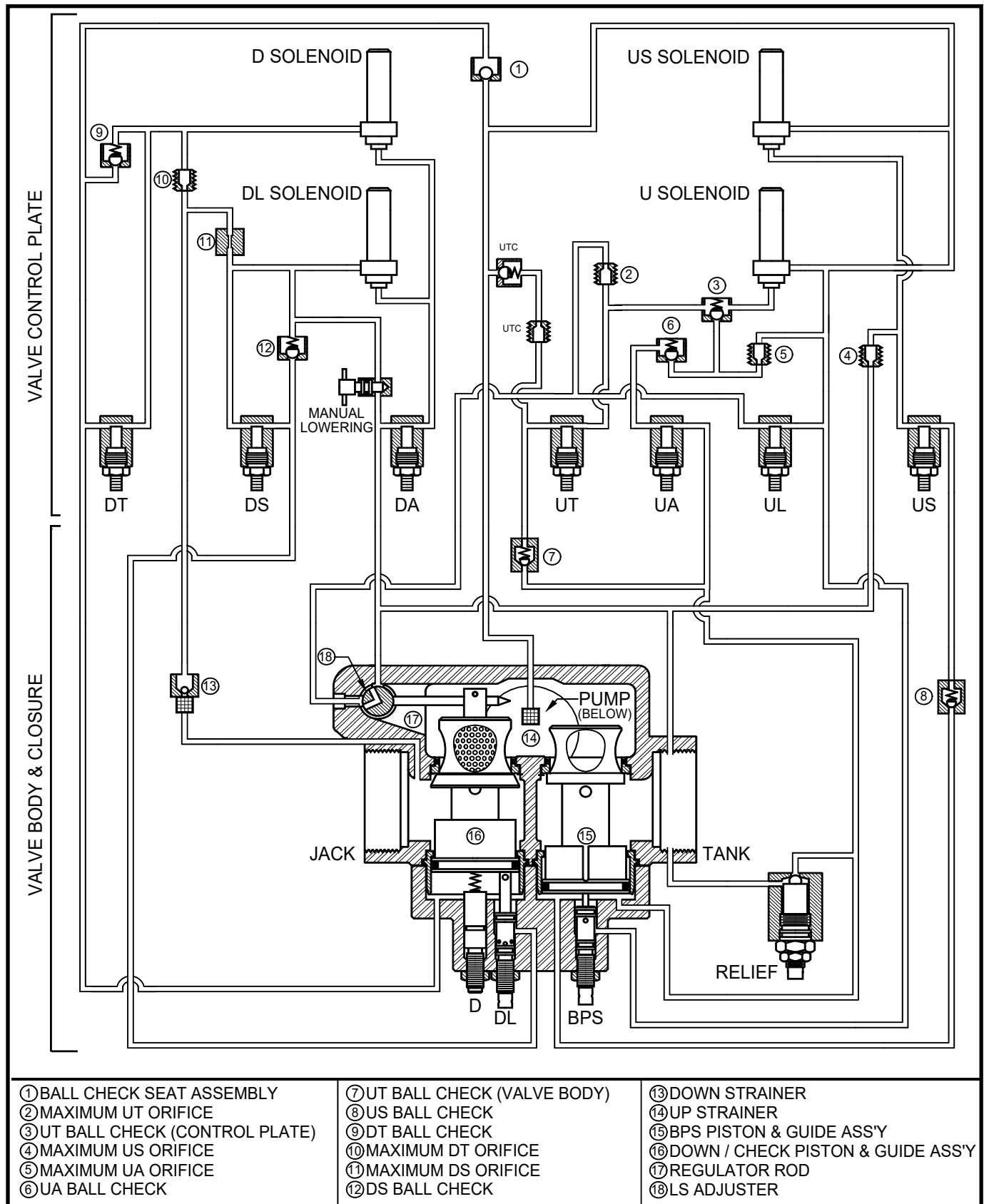
When a down call is registered, the down leveling solenoid (DL) and the down valve solenoid (D) are simultaneously energized, allowing fluid from the control side of the down piston and fluid from the down control adjustments, down stop (DS) and down transition (DT), to flow through the down acceleration 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.

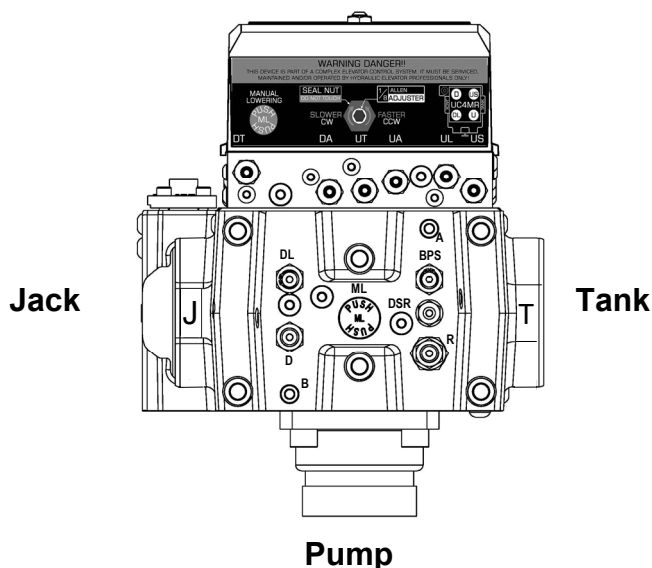


NOTE: UC4 IS A MIRROR IMAGE OF THE UC4M

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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

Maximum Flow	185 gpm (700 l/min)
Operating Pressure	
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)

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.
- 120 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
- 240 VAC Coils
- 115 VDC Coils
- 185 VAC Coils



*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.

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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

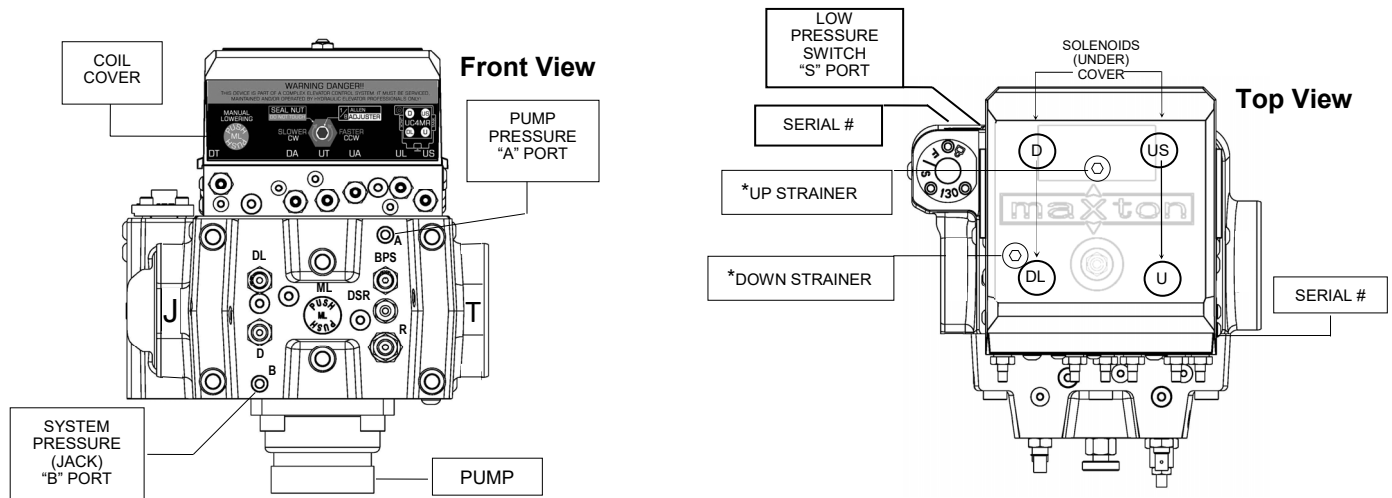
If valve is received from Maxton, only minor adjustments may be required.

CONTROL PLATE

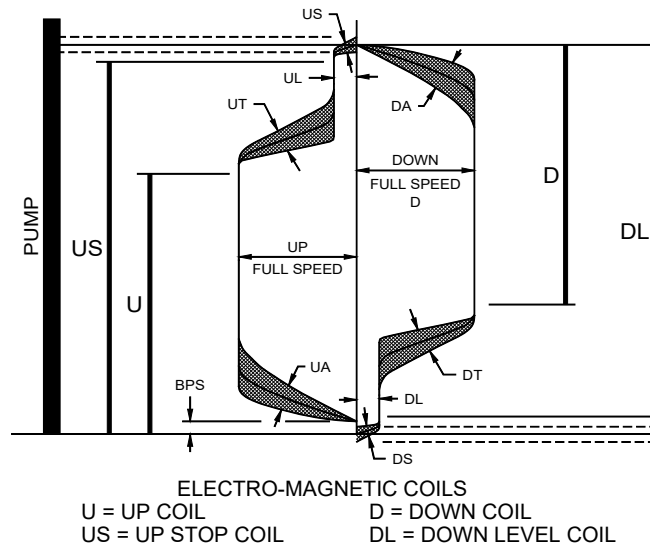
DT	DOWN TRANSITION	OUT	(CCW)	to stop	(faster rate)
DA	DOWN ACCELERATION	OUT	(CCW)	to stop	(faster rate)
ML	MANUAL LOWERING			Push Button	

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.



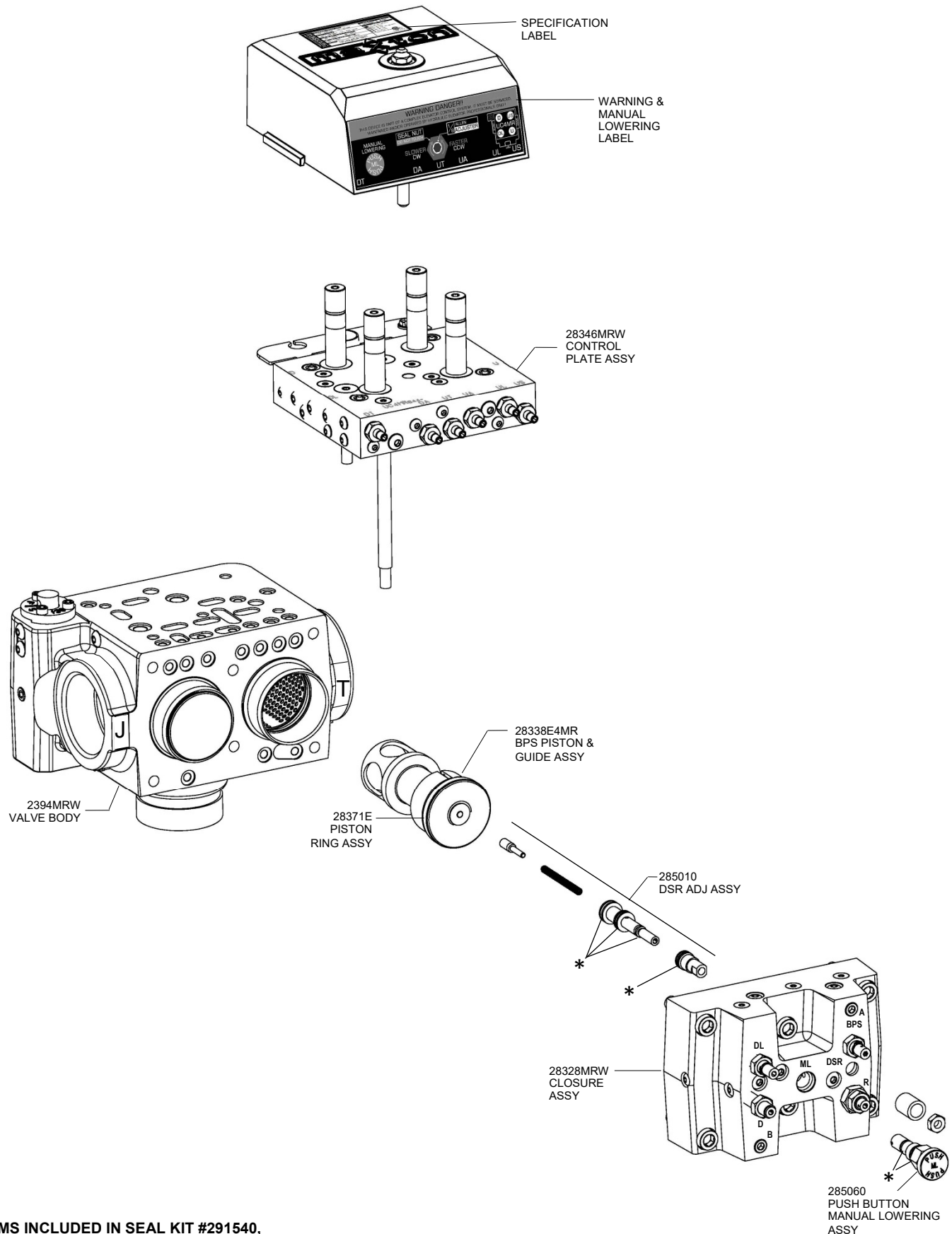
ATTENTION: All Maxton Valves **MUST** be installed with the solenoids in the upright (vertical) position.
When replacing a Maxton UC3 / UC3AM or UC4 / UC4M series valve, pump flange assembly must also be replaced. It is subject to the same wear and tear as the valve.

COIL OPERATING SEQUENCE

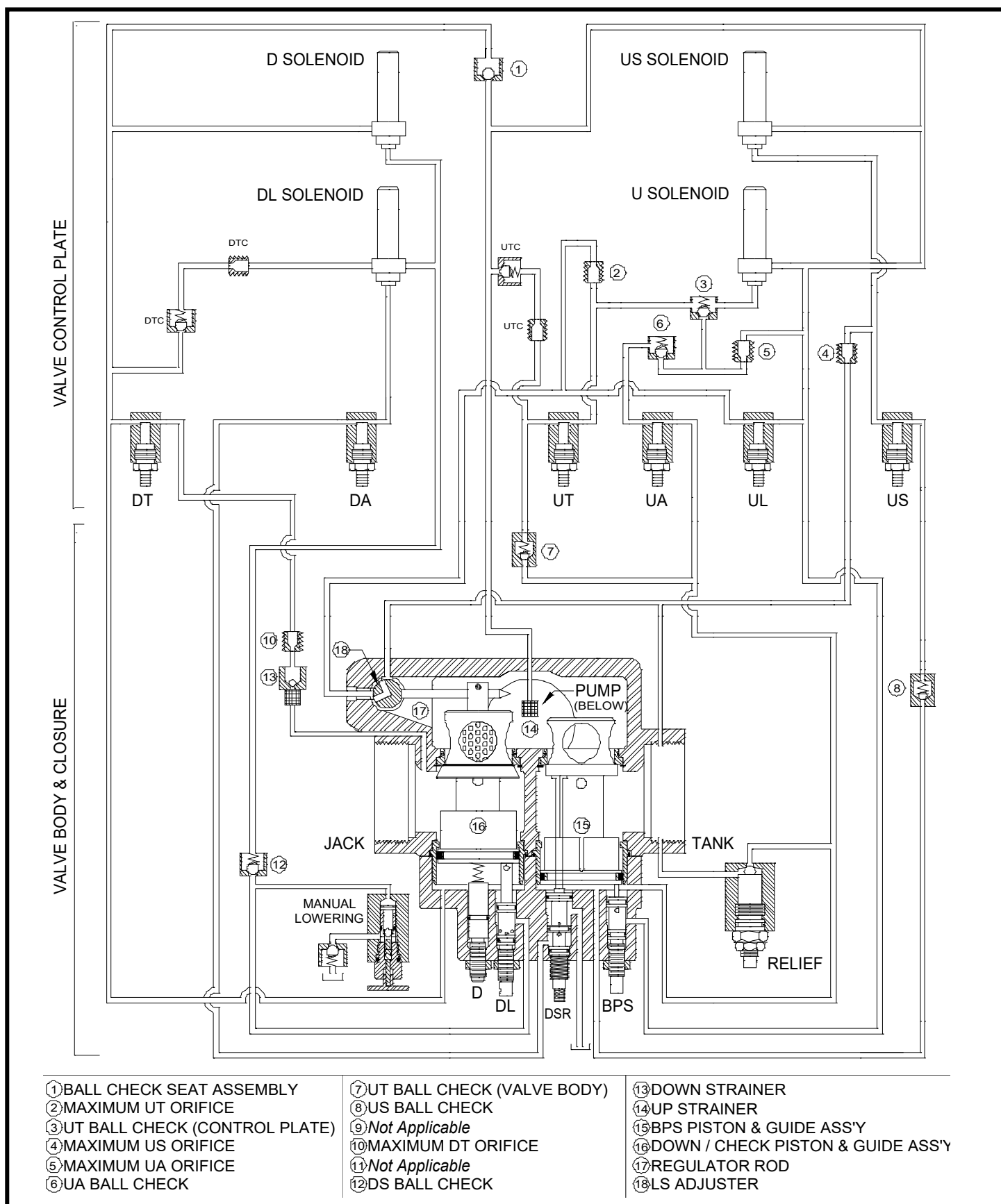
- US For up travel, energize when pump starts and de-energize to stop. With US energized and pump running, car will move up at leveling speed. For "soft stop", pump should run 1/2 second after US de-energizes.
- U Energize with US coil to run up at contract speed. De-energize at slowdown distance from 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
28346MW	CONTROL PLATE ASSEMBLY		VALVE CLOSURE ASSY (Cont.)		VALVE BODY (Cont.)
280070	Adjuster screw assembly	283240	Down leveling adjuster assembly		Up seat assembly (cont.)
203400	Seal nut	233100	Snap ring	230600	Seal ring
227000	Teflon seal	233000	Lock nut	2833E4MR	BPS piston & guide assy (std.)
200700	Adjuster screw	232400	Down leveling adjuster screw	232100	* Seal ring
28170D	Up strainer assembly	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
		283250	Down speed adjuster assembly	233100	Snap ring
28170B	Down strainer assembly	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	285010	DSR adjuster assembly	283430	Pump flange assy, 2" Grooved
283860	Coils bracket assembly	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
	UT Regulator	251800	Spacer	235600	Return check rod
2379S0	Screw (1/4-28 button head)	250500	Lock nut	283580	Pump flange assy, 2" Threaded
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
	DT Regulator	238500	* Seal ring	235800	Flange, 2" Threaded
2379A0	Screw (1/4-28 button head)	283010	Relief adjuster assembly	235700	Spring
210800	Seal ring		Note: Available in complete closure assy only.	235600	Return check rod
234400	Spring	233000	Lock nut	28347W	Regulator assembly
213400	Ball 3/16"	230400	Relief cartridge	2053W0	Up leveling speed adjuster
	Control plate assy miscellaneous	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	28350B	Regulator rod assembly
21019LC	* Seal ring	236900	Ball	235200	Pipe plug
238100	Screw (#10-32)		Valve closure assy miscellaneous	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		MISCELLANEOUS
210500	* Seal ring	244500	Seal plug	208880	C-Frame
208700	Spring	2105LC	* Seal ring	208000	Solenoid coil 240 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 120 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)	2394MRW	VALVE BODY	2139B0	Screw (control plate)
239504	Orifice (max UT) (Steel)	283070	Down / Check seat assembly	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
28328MRW	VALVE CLOSURE ASSEMBLY	230600	Seal ring	28375B	Coil cover
285060	Manual lower push button assy	28317E4	* Down / Check piston & guide assy	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)
283330	* BPS adjuster assembly	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	283410	Up seat assembly		
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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