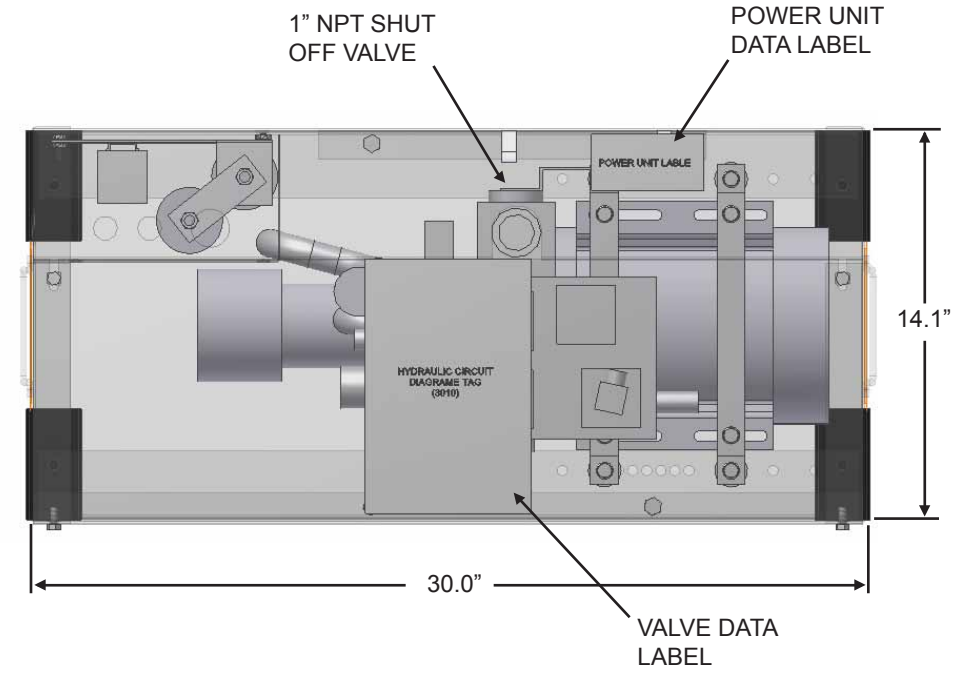
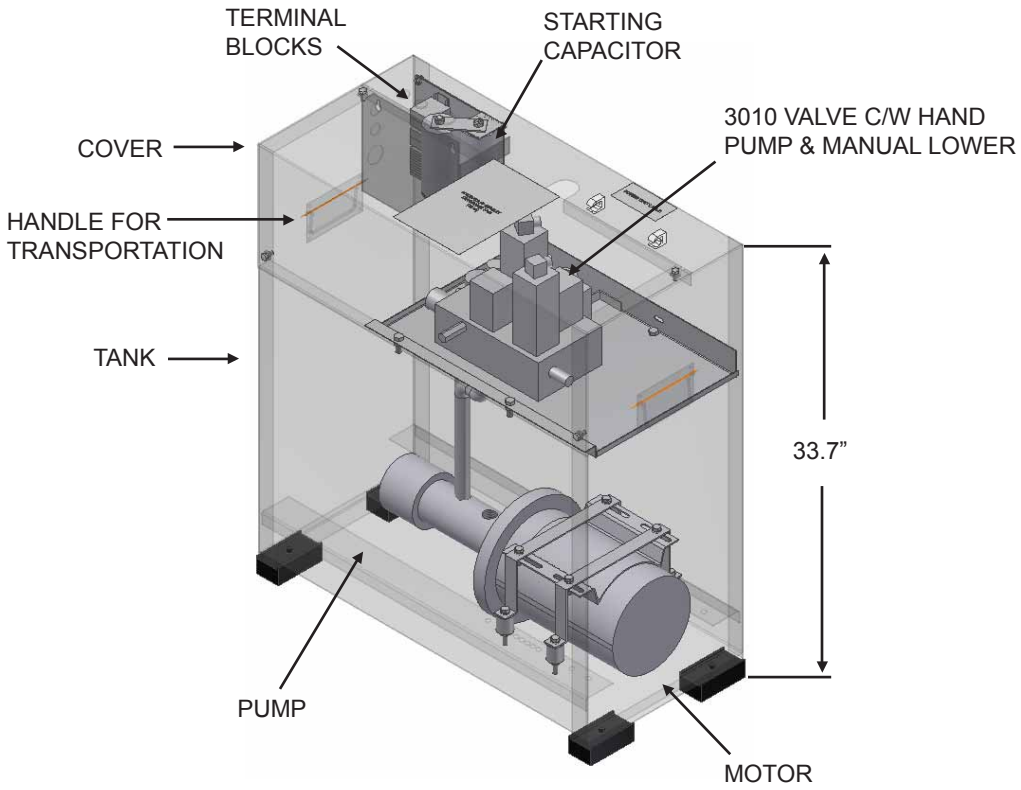
3.1 3010EN TOP VIEW

The ULTIMA power unit is made up of the following components:



3.1 3010EN SIDE VIEW

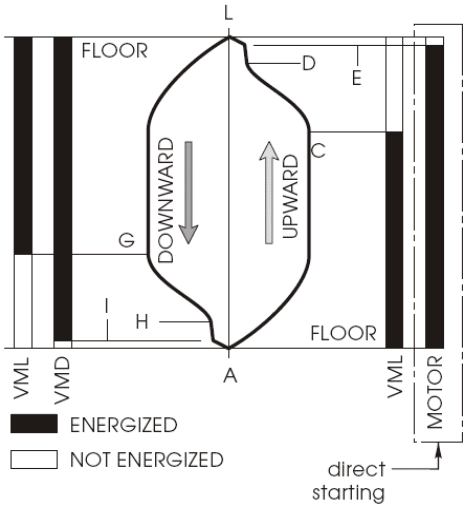


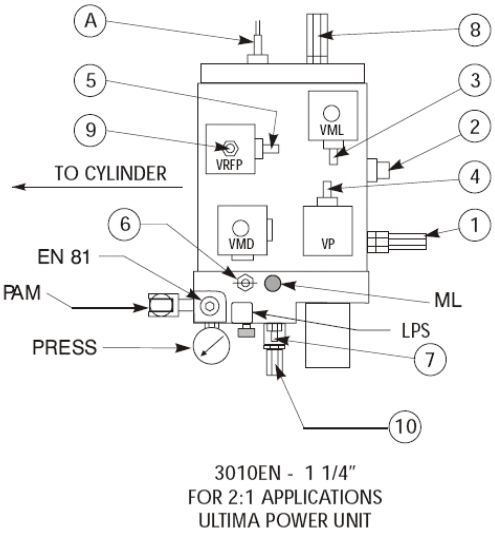
3.2 3010EN ELECTRICAL CONNECTION

NOTES

GROUND		⏚
GROUND		⏚
MOTOR		T1
MOTOR		T2
MOTOR		T3
SM110 POWER		14
SM110 POWER		13
THERMAL CUT-OUT		12
THERMAL CUT-OUT		11
OIL HEATER		10
OIL HEATER		9
LPS		8
LPS		7
	COM	6
VML(COM)	VMLE	5
VML	VML	4
	COM	3
VMD(COM)	VMDE	2
VMD	VMD	1
SINGLE V	DUAL V	TERMINAL
CONTROLLER CONECTION		

3.3 3010EN: SEQUENCE OF A 2 COIL VALVE.



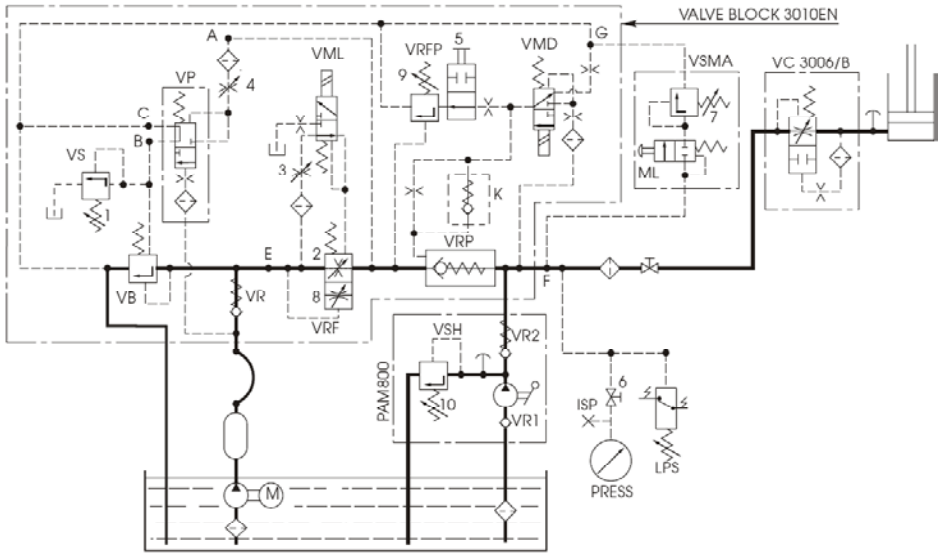


3010EN - 1 1/4"
FOR 2:1 APPLICATIONS
ULTIMA POWER UNIT

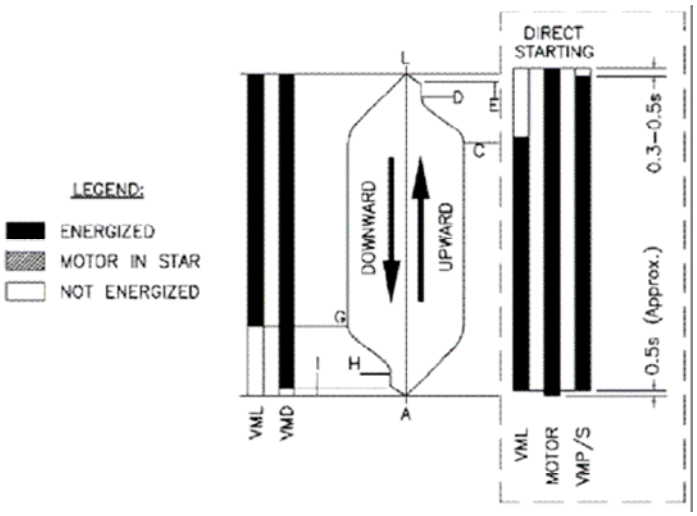
OPERATING SEQUENCE UP DIRECTION
A.1 - Motor energized, VB opens
2 -VML energized, VRF opens
3 - VP closes, VB closes slowly (acceleration), full up running speed
C - VML de-energized, VRF slowly closes (deceleration)
D - VRF closed, up leveling speed
E - Motor de-energized
L - Elevator stopped at floor level

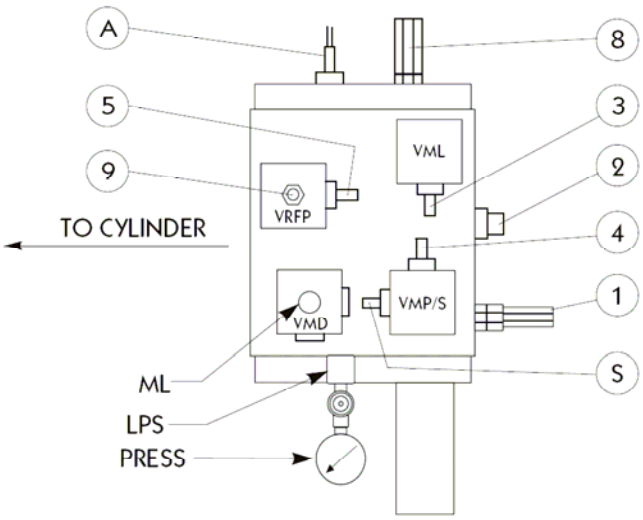
OPERATING SEQUENCE DOWN DIRECTION
L.1 - VML and VMD energized, VRP opens slowly subject to the load compensation provided by valve VRFP (acceleration)
2 - VRP, VRF, VB open, full speed down
G - VML de-energized, VRF closes slowly (deceleration)
H - VRF closed, down leveling speed
I - VMD de-energized, VRP closes slowly
A - Car stops level at landing

3.4 3010EN: 2 COIL VALVE HYDRAULIC CIRCUIT DIAGRAM



3.5 3010/S: SEQUENCE OF 3 COIL VALVE OPERATION



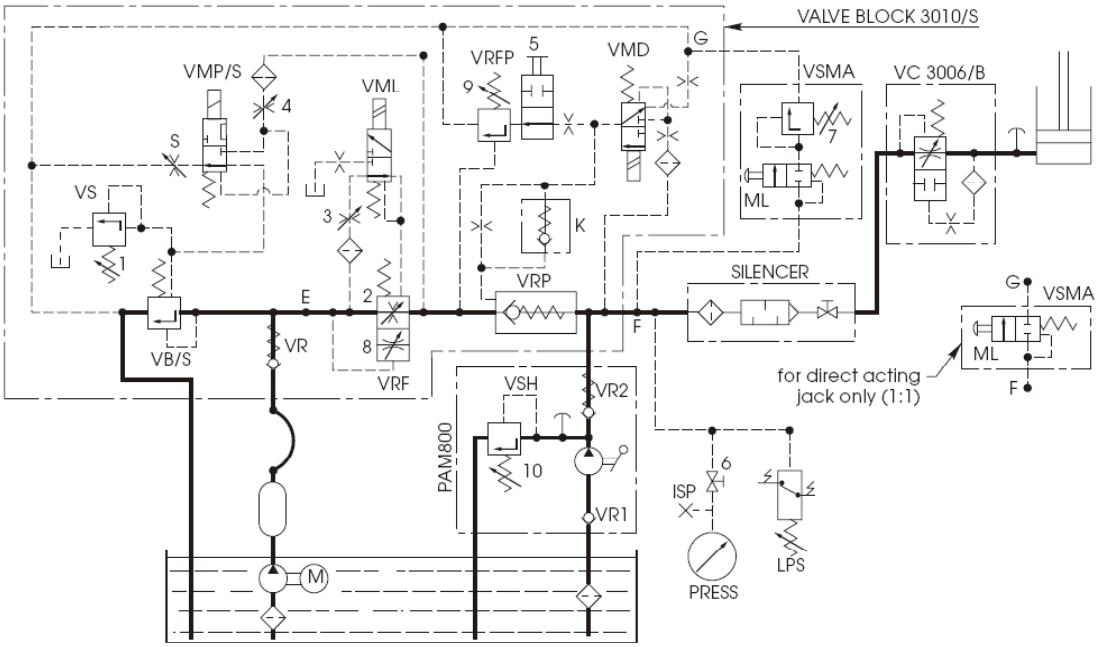


OPERATING SEQUENCE UP DIRECTION
A.1 - Motor energized, VB opens
2 - VML energized, VRF opens
3 - VP closes, VB closes slowly (acceleration), full up running speed
C - VML de-energized, VRF slowly closes (deceleration)
D - VRF closed, up leveling speed
E - Motor de-energized
L - Elevator stopped at floor level

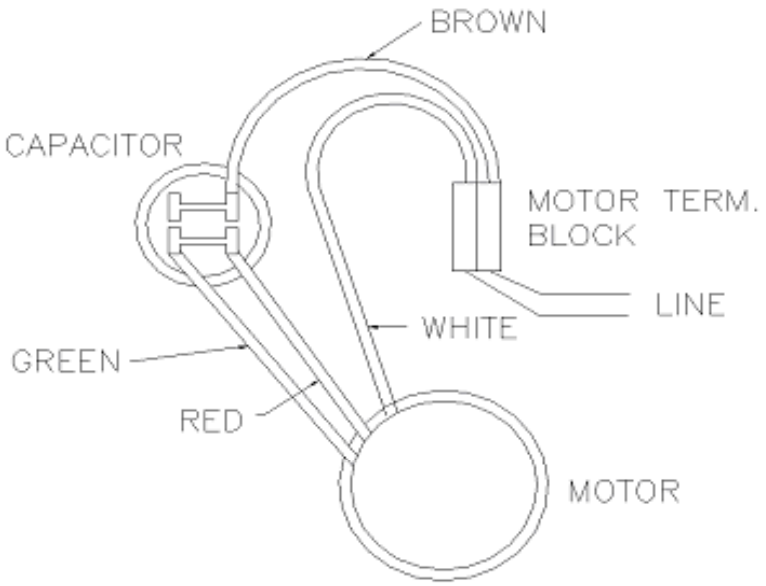
OPERATING SEQUENCE DOWN DIRECTION
L.1- VML and VMD energized, VRP opens slowly subject to the load compensation provided by valve VRFP (acceleration)
2- VRP, VRF, VB open, full speed down
G- VML de-energized, VRF closes slowly (deceleration)
H- VRF closed, down leveling speed
I- VMD de-energized, VRP closes slowly
A- Car stops level at landing

1. For star delta starting, VP is replaced by VMP
2. VS is the maximum pressure valve
3. VSMA is used for hand (manual) movement of the elevator on 2:1 installations.

3.6 3010/S: 3 COIL VALVE HYDRAULIC CIRCUIT DIAGRAM



3.7 MOTOR CONNECTION



NOTES

4.1 DESCRIPTION OF THE GMV HYDRAULIC ELEVATOR SYSTEM

1. To move the elevator up, the motor drives the pump to force the hydraulic fluid from the tank to the cylinder.
2. To move the elevator down, hydraulic fluid flows from the cylinder to the tank due to the weight of the suspended car, piston and load in the car.
3. The use of a constant displacement screw pump ensures that upwards velocity is constant (ie. Independent of changes in head pressure).
4. Synchronous motor (squirrel cage alternating current) is used to drive the pump. This allows the elevator to quickly reach and maintain a constant running speed.
5. If the speed is greater than 0.1 meters/sec. (20fpm), injury to passengers or damage to freight may result if the elevator starts and stops abruptly. For this reason, it is necessary to have a controlled acceleration and deceleration.

4.2 CONTROL OF ACCELERATION & DECELERATION

When the motor is energized and the pump starts turning, a by-pass valve initially sends all of the fluid back to the reservoir tank. This valve is gradually closed decreasing the flow back to the tank and thus starting the flow to the cylinder. In this way, the elevator accelerates in the up direction and, when the by-pass valve is completely closed, runs at its full contract speed in the up direction.

During deceleration, as the elevator approaches the floor, the pump continues to run, but the hydraulic fluid is again diverted into the tank by the gradual opening of the by-pass valve, thus allowing a decreasing amount to reach the cylinder. This results in a gradual drop in speed until the elevator is running at a low speed. The elevator comes into floor level at this low leveling speed with almost all the output of the pump by-passed to the tank. At floor level the pump motor is then switched off and the elevator comes to a cushioned stop because of the inertia of the motor and pump.

In the down direction, the elevator acceleration, running speed and deceleration is obtained by allowing a controlled amount of hydraulic fluid to return from the cylinder to the tank through the down solenoid valves. Starting down, the flow is gradually increased from zero to the required full flow for the down running speed and then gradually decreased to give the desired down leveling speed until finally at floor level, the valves close and the elevator stops.

4.3 OPERATING SEQUENCE: UP DIRECTION

A.1 – Motor energized, VB opens
2 -VML energized, VRF opens
3 – VP closes, VB closes slowly (acceleration), full up running speed
C – VML de-energized, VRF slowly closes (deceleration)
D – VRF closed, up leveling speed

E – Motor de-energized
L – Elevator stopped at floor level

NOTES

4.4 OPERATING SEQUENCE: DOWN DIRECTION

L.1 - VML and VMD energized, VRP opens slowly subject to the load compensation provided by valve VRFP (acceleration)
2 - VRP, VRF, VB open, full speed down
G - VML de-energized, VRF closes slowly (deceleration)
H - VRF closed, down leveling speed
I - VMD de-energized, VRP closes slowly
A - Car stops level at landing

1. For star delta starting, VP is replaced by VMP
2. VS is the maximum pressure valve
3. VSMA is used for hand (manual) movement of the elevator on 2:1 installations.

TROUBLE SHOOTING

5.1 MOTOR RUNS, BUT LIFT DOES NOT MOVE

1. Pressure relief set too low.
2. Up acceleration closed or plugged.
3. Inadequate oil level in tank.
4. VMP not energized (on 3-coil versions only), or bad coil.
5. Pump running in wrong direction.
6. Rupture valve fully closed on jack (main screw in to stop).
7. Spool in VP control block stuck in open (up) position.
8. VB spool stuck in open position.

5.2 ABRUPT UP START

1. Adjust up acceleration.
2. VMP energized during Y-start.
3. VP stuck in down position, or spring damaged.
4. VB stuck in closed position.

5.3 UP START, BUT SLOW FULL SPEED

1. Pressure relief set too low, or damaged/contaminated.
2. High speed adjustment (#8) set too far in.
3. Faulty pump.
4. Faulty VML block or coil (operating in leveling speed only).
5. VRF stuck by #2 adjusting bolt – rare.

5.4 NO LEVELING SPEED/DELAYED LEVELING SPEED

1. #2 adjusted too far out.
2. #2 adjuster plugged, or set too fine.
3. #3 adjuster closed.
4. #3 adjuster screen contaminated.
5. VRF stuck by #w adjusting bolt – rare.

NOTES

5.5 NO DOWN START

1. VMD coil faulty, or not receiving power.
2. VMD stem damaged.
3. Down acceleration fixed restrictor (facing pressure gauge) plugged.
4. Rupture valve tripped – check pressure gauge.
5. Car hung – check pressure gauge.

5.6 DOWN FULL SPEED TOO LOW

1. Adjuster out too far.
2. Rupture valve (with slow descend option) tripped.
3. VRFP piston jammed.
4. High speed setting too far in.

5.7 DOWN FULL SPEED TOO HIGH

1. Adjuster in too far.
2. Rupture valve test screw #5 is turned in.
3. VRFP piston jammed.
4. High speed setting too far out.

5.8 DOWN ACCELERATION TOO LONG

1. Fixed restriction on VMD plugged.
2. VMD stem damaged.
3. Brass disk behind VML/VRFP cover plate plugged.

5.9 DOWN STOP TOO LONG (DRIFTS TO A STOP WITH VMD OFF)

1. Fixed restrictor on VMD plugged.
2. Check valve in VML/VRFP cover plate plugged.
3. Rupture valve test screw #5 screwed in.

5.10 LIFT LEAKS DOWN AND RE-LEVELS

1. VMD block leaking.
2. VSMA block leaking.
3. VRP seal leaking.
4. Oil contraction due to a large difference between oil and air.
5. Jack seal leaking.

5.11 THE MOTOR RUNS IN THE CORRECT DIRECTION OF ROTATION, BUT THE OIL BY-PASSES INTO THE TANK AND THE CABIN DOES NOT MOVE

1. VMP (if present) is not energized (control panel problem, coil has wired incorrectly, or wrong voltage has been used.).
2. Up acceleration adjuster (screw #4) has been adjusted all the way in.
3. VMP or VP is no longer working.
4. Check relief valve VS (screw #1). Reset if necessary.
5. Pressure relief valve pin is misaligned.
6. Pressure relief valve's spring is broken
7. VB spool is stuck in a fully open position. Open the plate and check VB spool and seat; check plate's alignment with respect to the valve body.

8. Pump flow = 0 when pressure build up is required. Causes may be due to a pump that requires replacing, or the pump may have been rotating in the reverse direction for a long period of time.
9. Motor's rotor slipping onto its shaft, most likely above a certain torque/ pressure (while rotor's squirrel cage/lamination is rotating the shaft/pump is standing).

NOTES