

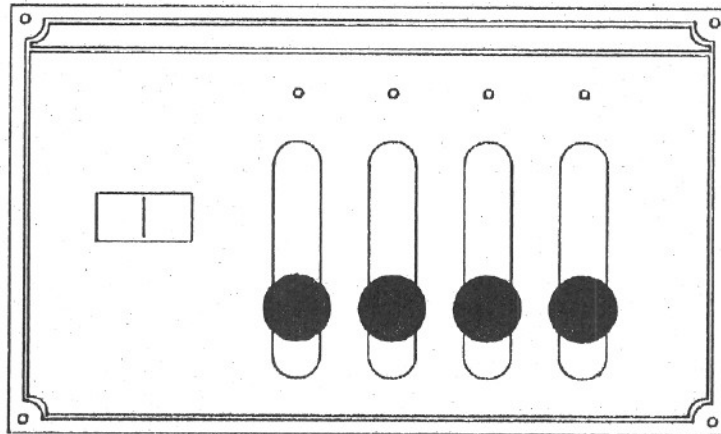
OPERATOR MANUAL

HWH LEVER CONTROLLED LEVELING SYSTEM

FOR BLUEBIRD MOTOR COACHES

FEATUREING;

FOUR LEVER MANUAL CONTROL
HYDRAULIC LEVELING
STATIONARY LEVELING JACKS



OPERATOR MANUAL FOR LEVER CONTROLLER HYDRAULIC LEVELING SYSTEM

READ AND UNDERSTAND ENTIRE OPERATORS MANUAL BEFORE OPERATING.

CAUTION!

BLOCK FRAME AND TIRES SECURELY BEFORE CHANGING TIRES OR CRAWLING UNDER VEHICLE.

DO NOT USE LEVELING JACKS OR AIR SUSPENSION TO SUPPORT VEHICLE WHILE UNDER VEHICLE OR CHANGING TIRES.

VEHICLE MAY DROP OR RAISE AND/OR MOVE FORWARD OR BACKWARD WITHOUT WARNING CAUSING INJURY OR DEATH.

KEEP ALL PEOPLE CLEAR OF VEHICLE WHILE LEVELING SYSTEM IS IN USE.

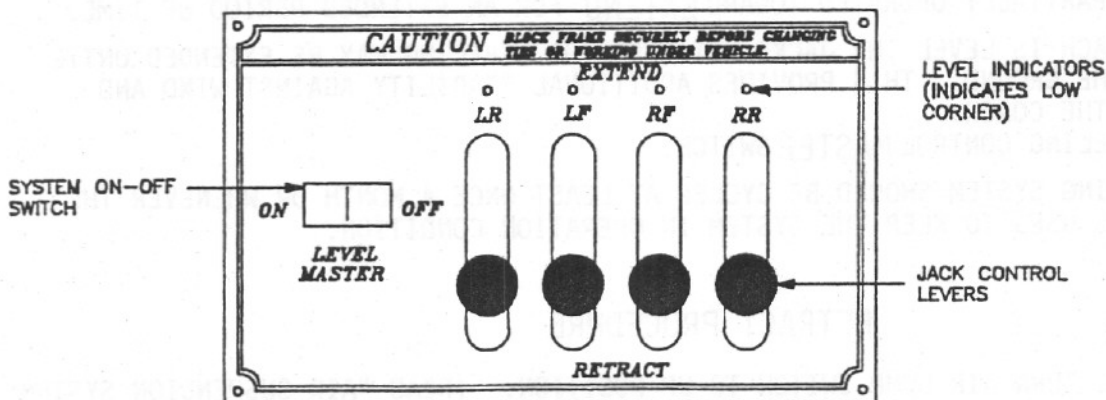
LIFTING WHEELS OFF THE GROUND MAY ALLOW THE VEHICLE TO BECOME UNSTABLE.

THE VEHICLE MAY MOVE RIGHT, LEFT, FORWARD OR BACKWARDS CAUSING INJURY OR DEATH BY BEING CRUSHED BY THE VEHICLE.

NEVER PLACE HANDS OR OTHER PARTS OF BODY NEAR HYDRAULIC LEAKS.

OIL MAY CUT AND PENETRATE THE SKIN CAUSING INJURY OR DEATH.

NOTE: KEEP FOUR LEVERS IN THE RETRACT POSITION WHEN JACKS ARE NOT IN USE.



CONTROL FUNCTIONS

ROCKER SWITCH:

THIS ROCKER SWITCH PROVIDES CONTROL POWER TO OPERATE THE ELECTRICAL SOLENOID ON THE PUMP AND POWER FOR THE LEVELING LIGHTS. IT DOES NOT CONTROL POWER TO THE RED WARNING LIGHT.

LEVELING INDICATOR LIGHTS:

IF A YELLOW OR GREEN LEVELING LIGHT IS ON, THAT CORNER OF THE COACH IS LOW, THUS THAT JACK SHOULD BE EXTENDED.

WARNING LIGHT:

THE RED WARNING LIGHT ON THE DASH WILL BE ON WHENEVER A JACK IS EXTENDED MORE THAN 2 INCHES.

SERVICING OF LEVELING SYSTEM

HYDRAULIC OIL

Retract the four leveling jacks before checking oil level. Locate the hydraulic power unit. Clean any dirt away from the breather/filler cap in the oil reservoir. Check that the oil is within (1) inch of the top of the reservoir.

The oil should be checked when the vehicle is first purchased and then once every two years. More often if there is an oil leak in the system.

Use Dexron II transmission fluid in hydraulic reservoir. Fill to within 1" of overflowing.

Never use brake fluid or hydraulic jack fluid.

VISUAL INSPECTION

Periodically inspect the leveling jacks for damaged or missing parts such as pivot bolts, springs, roller bearings or stops. Check the hydraulic lines and wiring for damage or wear. Check that the jacks do not interfere with any part of the vehicle when they are in the horizontal position.

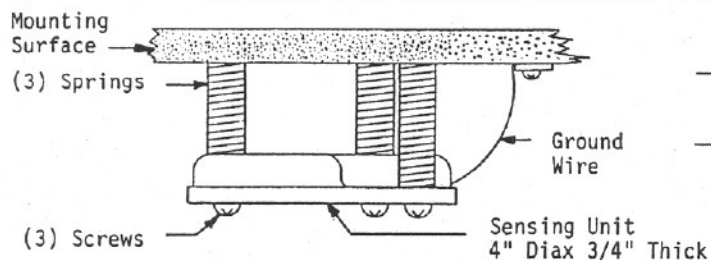
OPERATIONAL CHECK

Review operator manual and confirm that system is operating correctly. Check warning switch operation by extending one jack approximately 4", check that the warning light on the dash came on, retract the jack, then repeat for other three jacks.

NOTE: If any of the above checks or inspections reveal a problem or if there are other problems or questions consult a qualified RV repair center, your vehicle or coach manufacturer, or HWH Corporation for service or repair.

SENSING UNIT FOR FOUR LEVER CONTROL LEVELING SYSTEMS

SENSING UNIT MOUNTING HARDWARE (FOR 4 LEVER OR COMPUTERIZED SYSTEM)

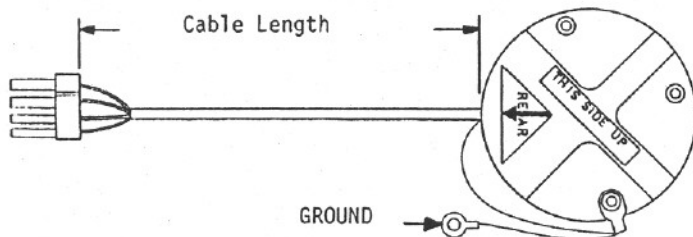


PART NO.	DESCRIPTION
RAP3905	HDWE KIT FOR SENSOR (Consists of 3 springs and 3 screws)

USE WITH

STD UNIT WITH UML

SEE LIGHT PANEL PARTS PAGE FOR TYPE OF SENSING UNIT REQUIRED.



- 1) FOUR LEVER VALVE WITH DASH LEVEZE LIGHT LIGHT PANEL
- *2) FOUR LEVER VALVE WITH BLACK LEVEZE LIGHT BOX

DISTINGUISHING FEATURES:

- 1) Cable is attached to rear of sensing unit
- 2) White four pin UML connector

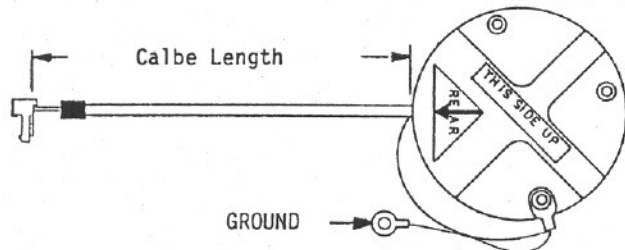
REPLACEMENT SENSING UNITS

PART NO.	CABLE LENGTH	DESCRIPTION
RAP4916	21 FT	SENSING UNIT STD/21/UML
RAP4370	42 FT	SENSING UNIT STD/42/UML

USE WITH

STD UNIT WITH MTA

SEE LIGHT PANEL PARTS PAGE FOR TYPE OF SENSING UNIT REQUIRED.



- 1) FOUR LEVER VALVE WITH INTEGRAL LIGHT PLATE WITH TOGGLE SWITCH

DISTINGUISHING FEATURES:

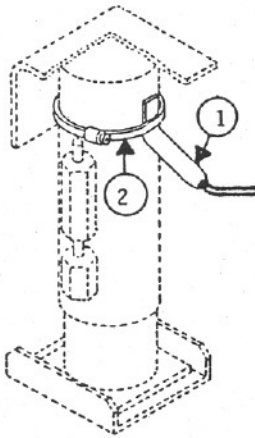
- 1) Cable is attached to rear of sensing unit
- 2) Orange or yellow four pin MTA connector

REPLACEMENT SENSING UNITS

PART NO.	CABLE LENGTH	DESCRIPTION
RAP5515	13 FT	SENSING UNIT STD/13/MTA
RAP5086	21 FT	SENSING UNIT STD/21/MTA

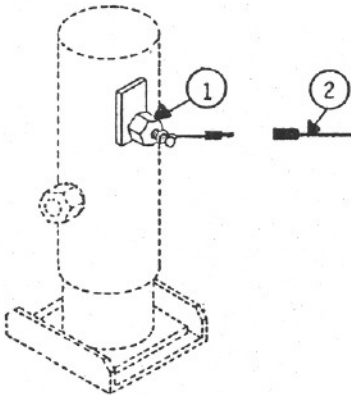
* Cut off the connector of the sensing unit cable if used with the black leveze light box.

FOR KICK-DOWN JACKS



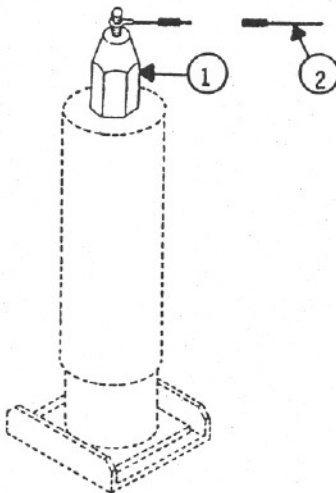
ITEM	PART NO.	DESCRIPTION
1	RAP3309	SWITCH WARNING SHORT 10" LONG LEADS. USED ON AP3289 SHORT STD., AP3342 TALL STD., AP3706 SHORT AUTO., AP3664 TALL AUTO JACKS.
1	RAP2477	SWITCH WARNING LONG 36" LONG LEADS. USED ON AP2381 LARGE STD., AP3677 LARGE AUTO AND AP1206 MECHANICAL KICK DOWN JACKS.
2	RP2508	CLAMP BAND H40 SMALL FOR JACKS WITH 2 5/8 DIA. CYLINDER BARRELS USED ON AP3289 SHORT STD., AP3342 TALL STD. AP3706 SHORT AUTO, AP3664 TALL AUTO., AND AP1206 MECHANICAL KICK DOWN JACKS.
2	RP2711	CLAMP BAND H52 LARGE FOR JACKS WITH 3 1/2" DIA CYLINDER BARRELS USED ON AP2381 LARGD STD. AND AP3677 LARGE AUTO JACKS.

FOR NON KICK-DOWN JACKS



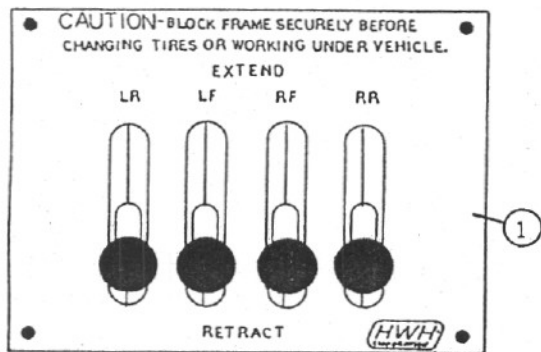
ITEM	PART NO.	DESCRIPTION
1	RAP5027	SWITCH WARNING SIDE PORT SWITCH MOUNTED IN PORT ON SIDE OF BARREL. USED ON AP5436 AND AP4790 JACKS ON BLUE BIRD COACHES. USED ON AP4154, AP3898 and AP3897 JACKS ON 1985 EII COACHES.
2	RAP4756	PIGTAIL W/PACKARD SHROUD (MATES TO PLUG ON WARNING SWITCH 8" LG.)

FOR NON KICK-DOWN JACKS



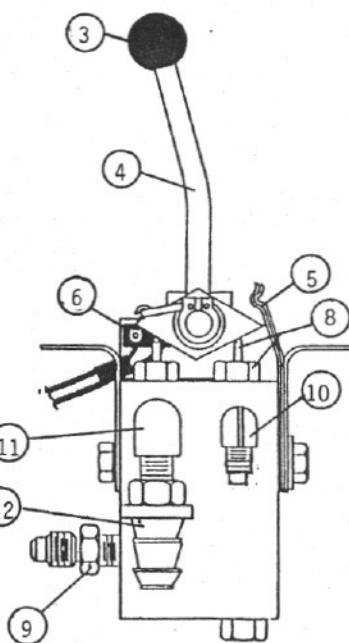
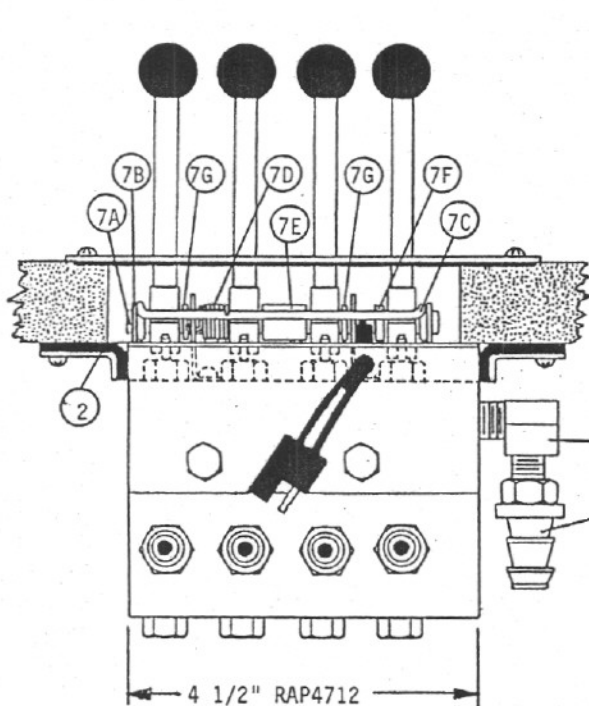
ITEM	PART NO.	DESCRIPTION
1	RAP4707	SWITCH WARNING 2" TRAVEL USED ON AP5572 AND AP3116 REAR JACKS ON BLUE BIRD PUSHER COACHES.
2	RAP4756	PIGTAIL W/PACKARD SHROUD (MATES TO PLUG ON WARNING SWITCH 8" LG.)

FOUR LEVER CONTROL VALVE WITH 4 1/2" BODY
(USED ON SOME BLUEBIRD AND NEWELL COACHES)

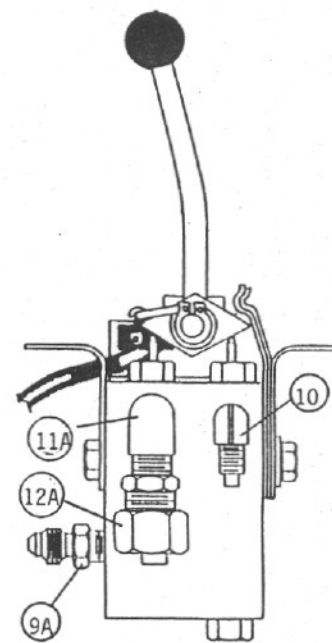


REPLACEMENT VALVES AND ACCESSORIES

ITEM	PART NO.	DESCRIPTION
	RAP4712	VALVE KIT 4 1/2 (EXCLUDING ITEMS 1 & 2) (ALL HANDLES TILTED BACK) (INCLUDES FITTINGS FOR 1/2 ID OR 1/2 OD RETURN LINES AND 5/16 OR 1/4 JACK LINES)
1	RAP1146	BEZEL PLATE W/GASKET HWH
2	RAP1153	END SHIELD KIT WITH SEAL (RAP1153 INCLUDES 2 END SHIELDS)



CURRENT FITTINGS



ALTERNATE FITTINGS

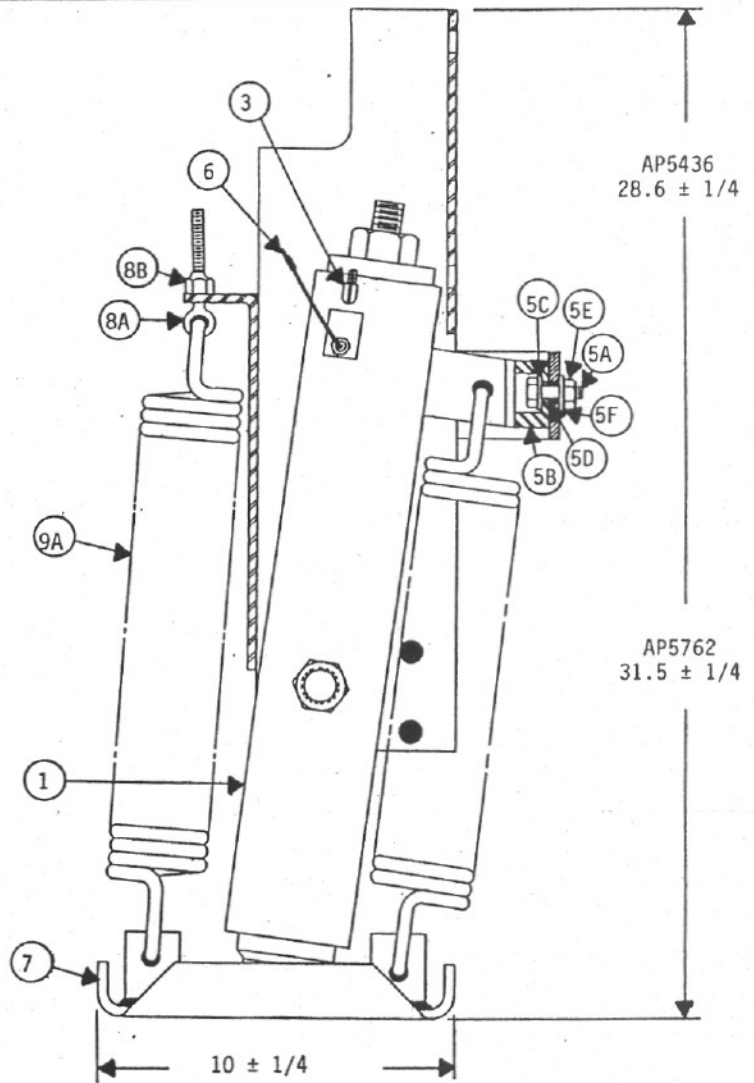
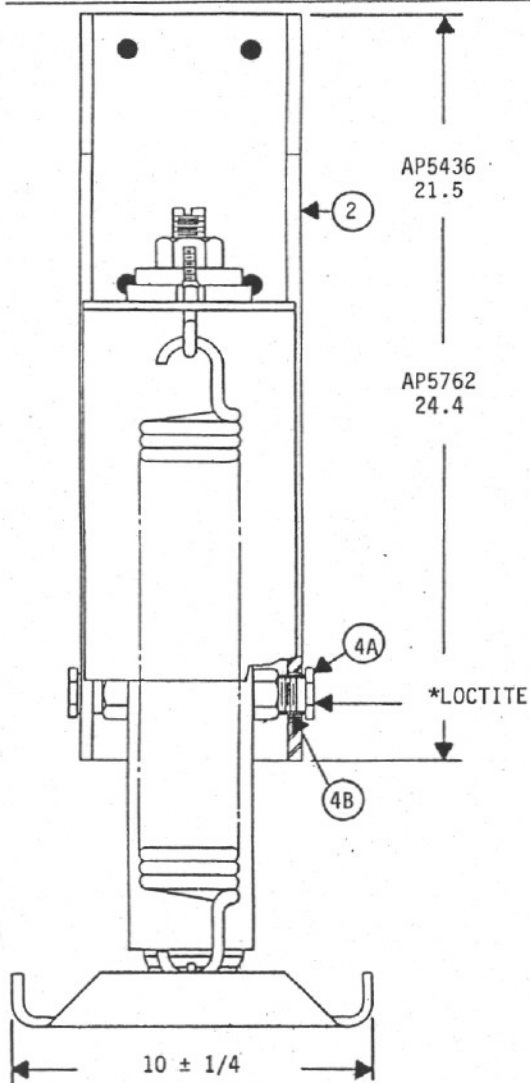
VALVE REPAIR PARTS

ITEM	PART NO.	QTY.	DESCRIPTION	ITEM	PART NO.	QTY.	DESCRIPTION
3	RAP1379	4	KNOB BLACK (4 KNOBS PER RAP1379)	9	RF3475	4	5-4-FTX-S MALE CONNECTOR (1/4 NPT x 1/2 - 20 FOR 5/16 HYD LINE) (1 FITTING PER RF3475)
4	RAP1143	4	VALVE HANDLE WITH KNOB (1 HANDLE PER RAP1143)	*9A	RF1477	(4)	4-4-FTX-S MALE CONNECTOR (1/4 NPT x 7/16 - 20 FOR 1/4" HYD LINE) (1 FITTING PER RF1477)
5	RP1150	2	DETENT PLATE (2 PLATES PER RP1150)	10	RF1453	1	4-CTX-S 90D MALE ELBOW (1/4 NPT x 7/16 - 20 FOR 1/4" LINE)
6	RAP4249	1	SWITCH KIT WITH BRKT.	11	RF4709	1	2202P-6-6 ELBOW (BRASS) (3/8 NPT MALE x 3/8 NPT FEMALE)
7	R5284	1	VALVE PIVOT KIT	*11A	RF3340	(1)	2202P-4-4 ELBOW (BRASS) (1/4 NPT MALE x 1/4 NPT FEMALE)
7A		1	PIVOT ROD	12	RF4385	1	PUSH-LOK 3/8 NPT x 1/2 HOSE (3/8 NPT x 1/2 ID HOSE)
7B		2	SNAP RING	*12A	RF1458	(1)	68 NTA-8-4 1/2 TUBE x 1/4 NPT (1/4 NPT x 1/2 OD HOSE)
7C		1	SWITCH ACTIVATING ROD				
7D		1	SPRING TORSION				
7E		1	SPACER .59				
7F		1	SPACER .15				
7G		2	SPACER .10				
8	R1217	8	PLUNGER AND GUIDE (8 PLUNGER & GUIDE PER R1217)				

Indented items are included with preceding item.
* Alternate parts used on some existing valves.

AP5436 JACK 2.75 X 13" STROKE 7° 16000 LB

AP5762 JACK 2.75 X 13 STROKE 7° 16000 LB TALL BRKT



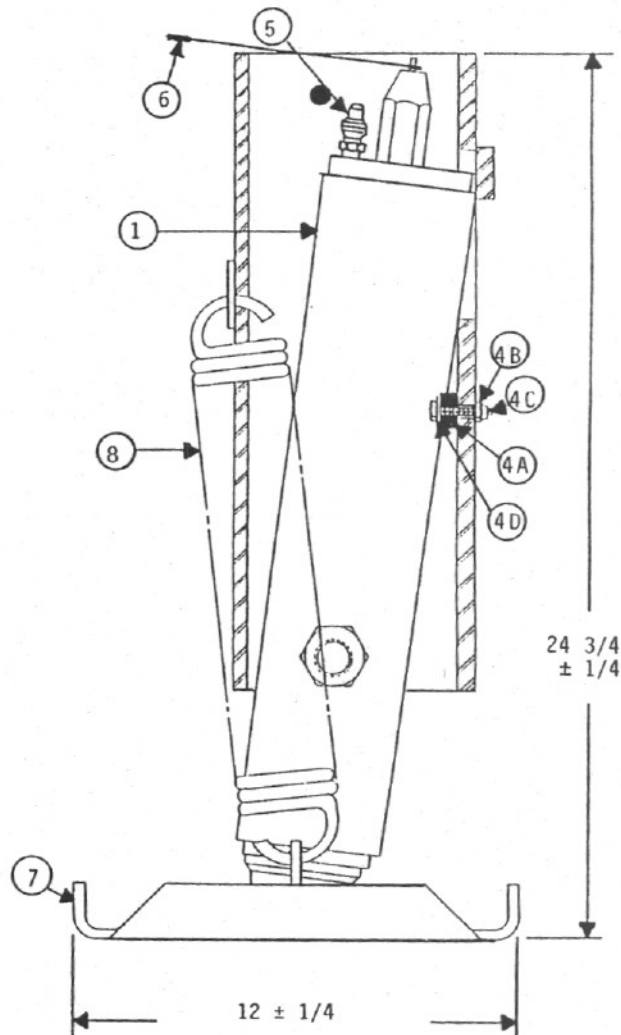
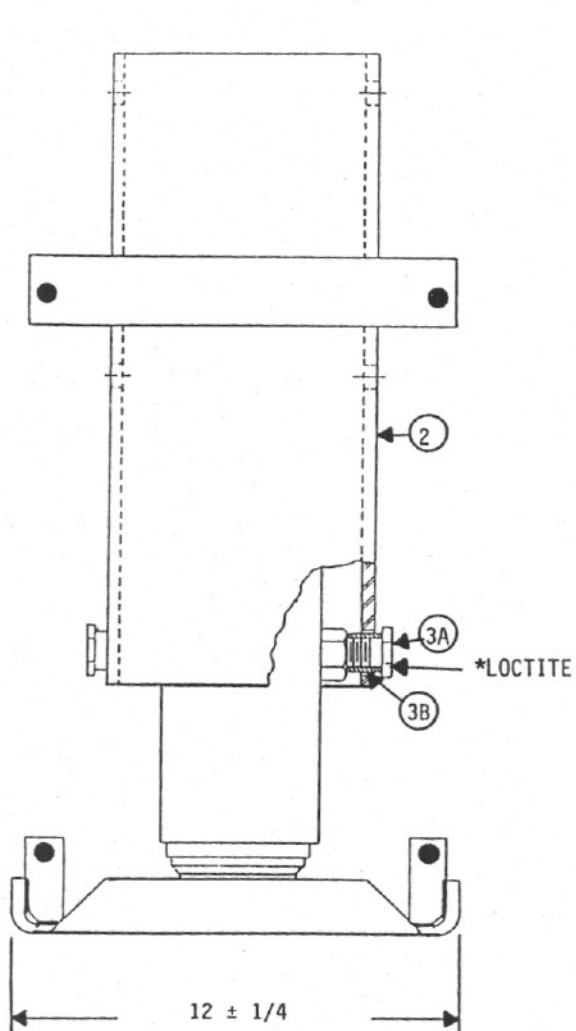
ITEM	PART NO.	QTY.	DESCRIPTION
	RAP5436		JACK 2.75 X 13" 16 S (COMPLETE ASSY.)
	RAP5762		JACK 2.75 X 13" 16 S TALL BRKT (COMPLETE ASSY.)
1	RAP5452	1	CYL ASSY 2.75 x 13" (SAME FOR BOTH JACK ASSY'S) (INCLUDES ITEMS 3 AND 6)
2	RAP5454	1	PIVOT BRKT ASSY 2.75" 7° (INCLUDES ITEM 5)
2	RAP5763	1	PIVOT BRKT ASSY 2.75" 7° TALL (INCLUDES ITEM 5)
3	RF5996		4-VTX-S 45° MALE ELBOW
4	R2329	1	PIVOT BOLT KIT 7/8 HEX
4A		2	HEX CAPSCREW 7/8 SPEC.
4B		2	BUSHING 1 1/8 OD PLD
5	R2511	1	STOP KIT
5A		1	HHCS 1/2 - 13 X 1 1/4 PLD

ITEM	PART NO.	QTY.	DESCRIPTION
5B		1	BUMPER URETHANE 2"
5C		1	WASHER STRUCT 1/2 PLD
5D		1	SPACER 5/8 OD
5E		1	HEX NUT 1/2 - 13 REG PLD
5F		1	LOCKWASHER 1/2 EXT. STAR
6	RAP5027	1	WARNING SWITCH SIDE PORT
7	RAP5453	1	FOOT WELDMENT 10" SQ.
8	R5491	1	EYE BOLT KIT
8A		1	3/8 - 16 X 3.5 EYE BOLT
8B		1	3/8 - 16 ESSNA LOCK NUT
9	R2365	1	SPRING KIT 2 3/4 X 13 1/2
9A		2	SPRING 2 3/4 X 13 1/2

Indented items are included with preceding item.

* Apply a thread locking adhesive such as loctite #271, 277, 242, or 569.

AP5572 3.50" X 13" STROKE 7° PIVOT 24000 LB



ITEM	PART NO.	QTY.	DESCRIPTION
	RAP5572		JACK 3.50" X 13 24S (COMPLETE ASSY)
1	RAP5577	1	CYLINDER ASSY 3.5 X 13"
2	RAP5573	1	PIVOT BRKT ASSY 7° J (INCLUDES ITEM 4)
3	R3003	1	PIVOT BOLT KIT
3A		2	HEX CAPSCREW 1" SPECIAL
3B		2	BUSHING 1 1/4 OD PLATED

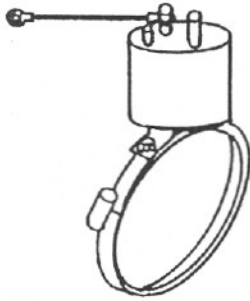
ITEM	PART NO.	QTY.	DESCRIPTION
4	R5718	1	STOP KIT 1.5 X 4.5 X .5
4A		1	URETHANE BUMPER
4B		2	HEX NUT 1/4 - 20 ESNA PLD
4C		2	HHCS 1/4 - 20 X 1 - 1/4 PLD 5
4D		2	WASHER COMMON 1/4 PLD
5	RF3475	1	5-4-FTX-S MALE CONNECTER
6	RAP4707	1	SWITCH WARNING 2" TRAVEL
7	RAP5574	1	FOOT WELDMENT 12" SQ.
8	R2365	1	SPRING KIT 2 - 3/4 X 13 - 1/2 (2 SPRINGS PER R2365)

Indented items are included with preceding item.

*Apply a thread locking adhesive such as Loctite #271, 277, 242, or 569.

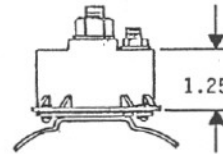
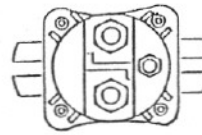
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USED PRIMARILY ON FOUR LEVER CONTROL SYSTEMS



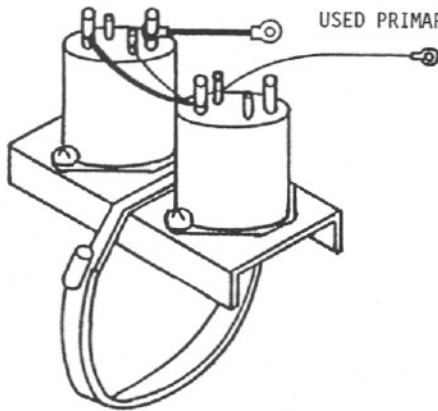
RAP5147 SOLENOID KIT INTERMIT.

Pump solenoid for any four lever control system. Includes intermittent duty solenoid, battery cable, and band clamp for mounting to power unit motor.



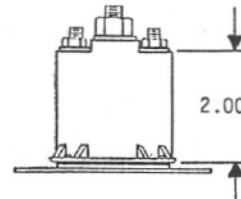
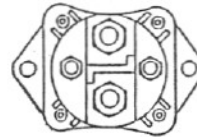
RAP4985 Solenoid intermit duty
Intermittent duty solenoid only.
Same as RAP5147 but w/o battery cable
and band clamp.

USED PRIMARILY ON PADDLE SWITCH SYSTEMS



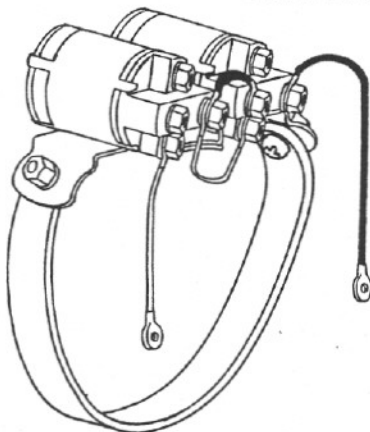
R5231 SOLENOID KIT AU W/ BRKT.

Pump solenoid for systems with computerized control panels. Includes two continuous duty solenoids, mounting brkt., band clamp, and connecting wires.



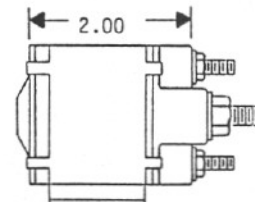
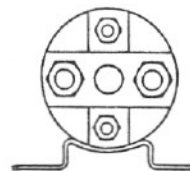
RAP4276 Solenoid Continuous Duty
Same solenoid as in R5231 solenoid
kit.

USED PRIMARILY ON TOUCHPANEL SYSTEMS



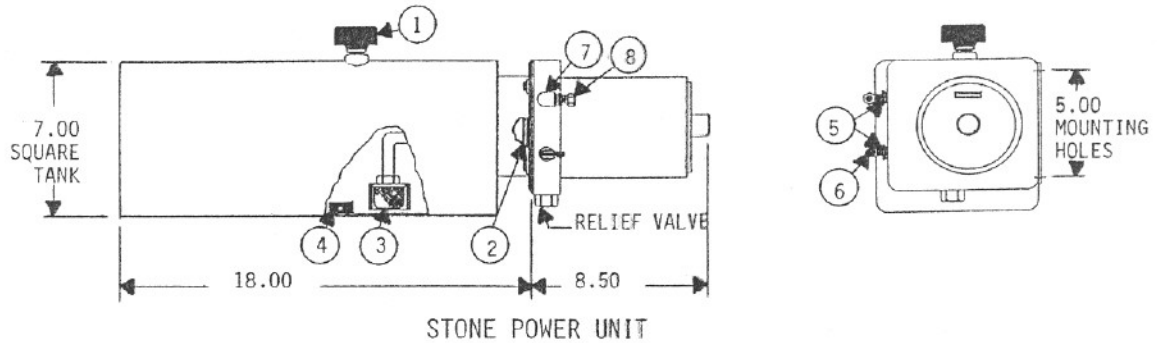
R7572 SOLENOID KIT

Pump solenoids for systems with touchpanel controls. Includes two continuous duty solenoids, band clamp, and connecting wires.



RAP75015 Solenoid Continuous Duty
Same solenoid as in R7572 solenoid
Kit..

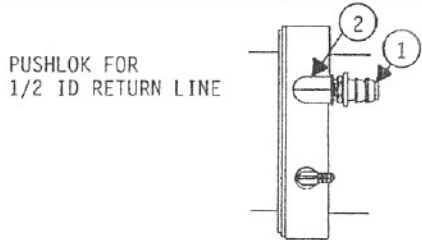
PARTS MANUAL
HYDRAULIC POWER UNITS CON'T



STONE POWER UNIT
3.5 GAL. SIDE MOUNT - SUPPLIED 1987 TO --

ITEM	PART NO.	QTY.	DESCRIPTION	ITEM	PART NO.	QTY.	DESCRIPTION
RAP4702	POWER UNIT SMS/3.5 (SIDE MOUNT 3.5 GAL. LESS SOLENOIDS)		REPLACES THE FOLLOWING: AP4702 STONE 3.5 GAL. AP3910 & RAP3910 STONE 2.0 GAL., WEBSTER 2.0 GAL. SIDE MOUNT	1	RP1474	1	BREATHER CAP
		2		RP3515	1	"O" RING RESERVOIR	
		3		RP5292	1	STRAINER W/SHROUD	
		4		RP3526	1	MAGNET	
		5		RF2912	2	3/8 x 1/4 PTR-S REDUCER (3/8 NPT MALE x 1/4 NPT FM) (1 FITTING PER RF2912)	
		6	RF1514	1	4-4 CTX-S MALE ELBOW (1/4 NPT x 7/16 - 20 FOR 1/4 LINE)		
		7	RF3340	1	2202P-4-4 ELBOW (BRASS) (1/4 NPT MALE x 1/4 NPT FM)		
		8	RF1458	1	68 NTA-8-4 1/2 TUBE x 1/4 NPT (1/4 NPT x COMPRESSION FOR 1/2 OD TUBE)		

See "Alternate Return Fittings" below or "R5302 Fitting Kit" on page MLP5.64 for Blue Bird Coaches.

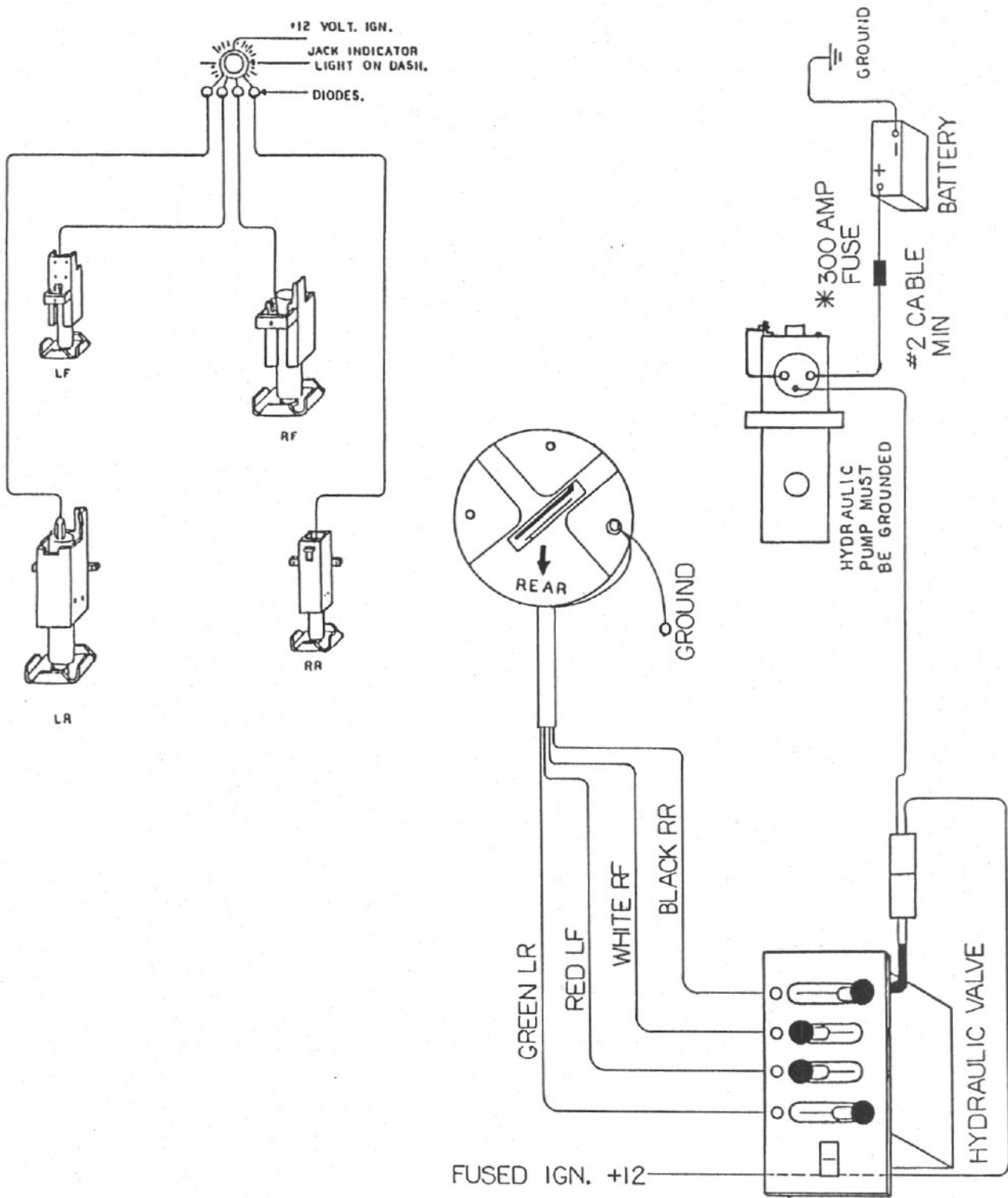


ITEM	PART NO.	QTY.	DESCRIPTION
1	RF4385	1	PUSH-LOK 3/8 NPT x 1/2 HOSE (3/8 NPT x 1/2 ID HOSE)
2	RF4709	1	2202P-6-6 ELBOW (BRASS) (3/8 NPT MALE x 3/8 NPT FM)

ALTERNATE RETURN LINE FITTINGS

Used on some Blue Bird Coaches beginning in 1987.

ELECTRICAL DIAGRAM
 FOUR LEVER CONTROLLED HYDRAULIC LEVELING SYSTEM
 BLUE BIRD COACHES



* FUSE MAYBE REQUIRED-CHECK APPLICABLE CODE

HYDRAULIC CIRCUIT
FOR FOUR LEVER CONTROL SYSTEMS
WITH REMOTE LIGHT PANEL

