

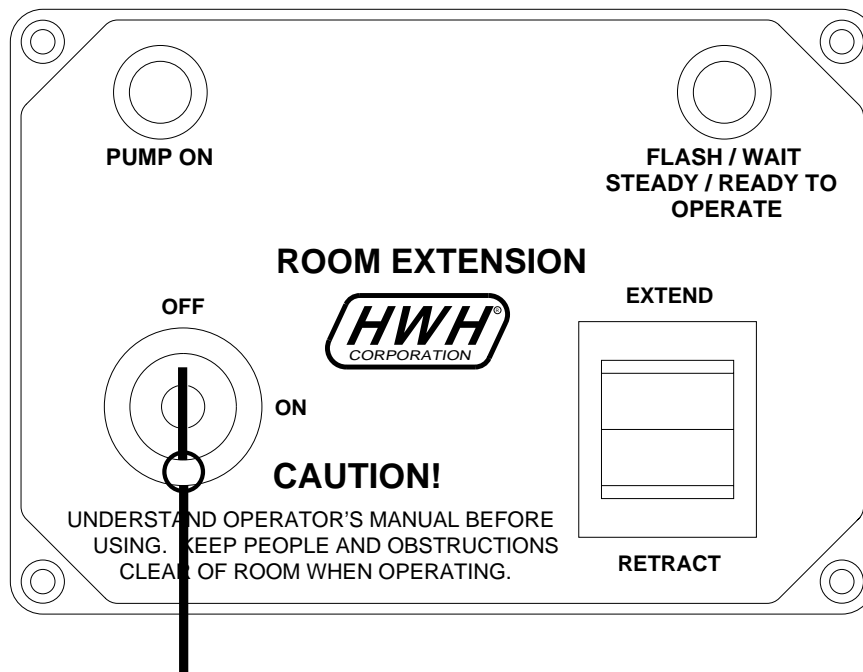


# OPERATOR'S MANUAL

## HWH HYDRAULIC SPACEMAKER® ROOM EXTENSION SYSTEM 2000 SERIES

### FEATURING:

*Dual Cylinder "Vertical Arm" Room Extension  
(With Synchronizing Cylinder, Room Locks and Air Seal)*



### HWH CORPORATION

(On I-80, Exit 267 South)

2096 Moscow Road | Moscow, Iowa 52760

Ph: 800/321-3494 (or) 563/724-3396 | Fax: 563/724-3408

[www.hwh.com](http://www.hwh.com)

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# OPERATOR'S MANUAL

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## CAUTION !

**READ THE ENTIRE OPERATOR'S MANUAL BEFORE OPERATING.**

**KEEP PEOPLE AND OBSTRUCTIONS CLEAR OF ROOM WHEN OPERATING. ANY OBJECT OBSTRUCTING ROOM MOVEMENT MAY BE CRUSHED CAUSING INJURY OR DEATH AND VEHICLE DAMAGE.**

**NEVER PLACE HANDS OR OTHER PARTS OF THE BODY NEAR HYDRAULIC LEAKS. OIL MAY PENETRATE SKIN CAUSING INJURY OR DEATH.**

**WEAR SAFETY GLASSES WHEN INSPECTING OR SERVICING THE SYSTEM TO PROTECT EYES FROM DIRT, METAL CHIPS, OIL LEAKS, ETC. FOLLOW ALL OTHER APPLICABLE SHOP SAFETY PRACTICES.**

## HOW TO OBTAIN WARRANTY SERVICE

### **THIS IS NOT TO BE INTERPRETED AS A STATEMENT OF WARRANTY**

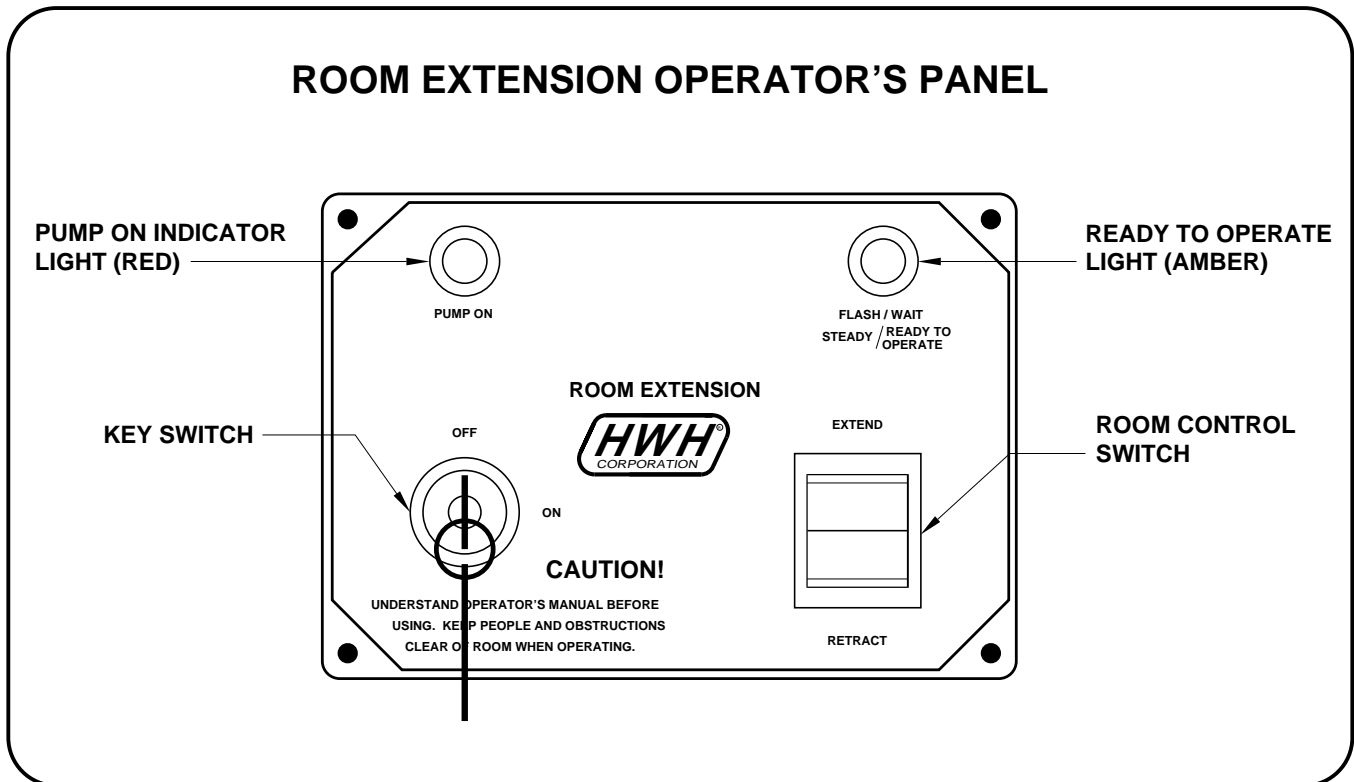
HWH CORPORATION strives to maintain the highest level of customer satisfaction. Therefore, if you discover a defect or problem, please do the following:

**FIRST:** Notify the dealership where you purchased the vehicle or had the leveling system installed. Dealership management people are in the best position to resolve the problem quickly. If the dealer has difficulty solving the problem, he should immediately contact the Customer Service Department, at HWH CORPORATION.

**SECOND:** If your dealer cannot or will not solve the problem, notify the Customer Service Department:  
HWH CORPORATION 2096 Moscow Rd. Moscow IA. 52760  
(563) 724-3396 OR (800) 321-3494. Give your name and address, coach manufacturer and model year, date the coach was purchased, or the date of system installation,

description of the problem, and where you can be reached during business hours (8:00 a.m. till 5:00 p.m. c.s.t.). HWH CORPORATION personnel will contact you to determine whether or not your claim is valid. If it is, HWH CORPORATION will authorize repair or replacement of the defective part, either by appointment at the factory or by the authorization of an independent service facility, to be determined by HWH CORPORATION. All warranty repairs must be performed by an independent service facility authorized by HWH CORPORATION, or at the HWH CORPORATION factory, unless prior written approval has been obtained from proper HWH CORPORATION personnel.

## CONTROL IDENTIFICATION



## CONTROL FUNCTIONS

**KEY SWITCH:** The KEY SWITCH controls power to the ROOM CONTROL SWITCH. When the KEY SWITCH is in the "ON" POSITION the room can be operated, and the key cannot be removed. When the KEY SWITCH is in the "OFF" position the room cannot be operated, and the key can be removed.

**NOTE:** Anytime the KEY SWITCH is "ON" the air seal will deflate. The air seal will not inflate until the KEY SWITCH is turned "OFF".

**ROOM CONTROL SWITCH:** The ROOM CONTROL SWITCH is a two position momentary switch. Pressing the switch in the EXTEND POSITION will extend the room. Pressing the switch in the RETRACT POSITION will retract the room. Releasing the ROOM CONTROL SWITCH will halt the operation of the room.

**PUMP ON INDICATOR LIGHT:** This light will be on when the pump is running.

**READY TO OPERATE LIGHT:** This light will flash for 20 seconds, after the KEY SWITCH is turned on. It will then glow steady. The room cannot be extended or retracted if this light is flashing.

If the PARK BRAKE is not set the READY TO OPERATE light will not turn ON when the KEY SWITCH is turned ON. The room will not operate. The Air Seal will not deflate.

## MASTER WARNING LIGHT

This light is on the dash, separate from the control panel. It can be on only if the ignition key is in the "ON" or "ACC" position.

The light will be on if a room in or room lock limit switch is not made.

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# OPERATING PROCEDURES

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## NETWORK INFORMATION

The HWH 2000 series CAN system is a computerized modular network. It controls all functions of the room extension. The network is active any time the ignition is in the "ON" or "ACC" position or when any room extension control panel key is "ON".

**NOTE:** The network will stay active for 10 minutes after the ignition key and all room extension control panel keys have been turned "OFF".

## GENERAL INSTRUCTIONS

Maintain adequate clearance in all directions for vehicles, room extensions, doors, steps, etc.. Vehicle may move in any direction due to raising or lowering of vehicle during leveling, settling of vehicle, equipment malfunction, etc..

**CAUTION: DO NOT MOVE THE VEHICLE IF A ROOM IS EXTENDED OR IF THE MASTER WARNING LIGHT IS ON.**

If the Park Brake is not set, the room extension will not operate.

The MASTER WARNING LIGHT will be ON if a room in or room lock limit switch is not made, if the ignition is in the "ON" position.

## NEUTRAL HOLD OVERRIDE SWITCH

If a room is not fully retracted and locked the transmission will not shift out of "NEUTRAL".

position labeled "220" the switch is located on the outside of the Central Control Module. This will allow the transmission to be shifted. The system should be serviced as soon as possible. The HOLD OVERRIDE selector switch should be left in the "110" position for normal operation.

If the rooms are fully retracted and locked and the transmission will not shift out of NEUTRAL, using a key or a screwdriver turn the HOLD OVERRIDE selector switch to the

## HWH LIGHTED RESET SWITCH

The HWH lighted reset switch is located on the vehicle dash. If there is a failure at any time in the HWH CAN network, the network will shut down. The room extension will not operate. If the ignition is off, no indicator lights will come on. If the ignition is in the "ON" or "ACC" position, the lighted reset switch and the MASTER WARNING Light will come on.

If the operation of the room is halted and the lighted reset switch is on, there may be a problem with an unlock limit switch. The room mechanism should be checked and repaired before trying to operate that room again. Operating a room with a lock extended may cause extensive damage to the room.

If the lighted reset switch is on, the switch must be pushed before the room can be operated.

If the lighted reset switch will not go out when pushed, there is a problem with the central control module of the network system. The room will not operate.

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# OPERATING PROCEDURES

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## ROOM EXTEND PROCEDURE

1. The park brake must be set for the room to be operated. If the park brake is not set, the READY TO OPERATE light will not come ON when the KEY SWITCH is turned "ON".

**CAUTION: KEEP PEOPLE AND OBSTRUCTIONS CLEAR OF ROOM WHEN OPERATING.**

**NOTE: Make sure there is adequate clearance to fully extend the room.**

2. Insert the KEY into the KEY SWITCH on the room extension operator's panel and turn it to the "ON" position. The READY TO OPERATE light will flash. When the amber light is on steady the room can be operated.

**NOTE: Anytime the KEY SWITCH is on, the room air seal will deflate.**

3. To extend the room, push and hold the ROOM CONTROL SWITCH in the extend position. The red PUMP ON light will come on. When the room is fully extended, the pump will automatically shut off. The red PUMP ON light will go out. DO NOT release the ROOM CONTROL SWITCH, until the PUMP ON light goes out. **If the red "PUMP ON" light remains on 45 seconds after the room is fully extended, release the room control switch.**

**NOTE: Under normal operation the direction of movement should not be reversed. If the movement of the room must be reversed, do not try to extend the room until the room has been fully retracted.**

**IMPORTANT: IF EITHER SIDE OF THE ROOM STOPS MOVING, RELEASE THE ROOM CONTROL SWITCH IMMEDIATELY. THE ROOM OPERATION WILL HALT. DO NOT FORCE THE ROOM. DO NOT REVERSE THE DIRECTION OF THE ROOM. BINDING OF THE ROOM CAN CAUSE ROOM DAMAGE. CONTACT HWH CORPORATION CUSTOMER SERVICE FOR ASSISTANCE.**

**NOTE: Releasing the ROOM CONTROL SWITCH will halt the operation of the room.**

4. Turn the KEY SWITCH to the "OFF" position and remove the key. The READY TO OPERATE light will go out. The air seal will inflate.

**NOTE: If the KEY SWITCH is left "ON" the air seal will not inflate and the Network will stay active and not power down.**

**IN THE EVENT OF THE FAILURE OF THE ROOM TO EXTEND, CONTACT HWH CORPORATION CUSTOMER SERVICE AT 1-800-321-3494 FOR ASSISTANCE.**

## ROOM RETRACT PROCEDURE

**CAUTION: KEEP PEOPLE AND OBSTRUCTIONS CLEAR OF ROOM WHEN OPERATING.**

1. The park brake must be set for the room to be operated. If the park brake is not set, the READY TO OPERATE light will not come ON when the KEY SWITCH is turned "ON".

2. Insert the KEY into the KEY SWITCH on the room extension operator's panel and turn it to the "ON" position. The air seal will deflate. The READY TO OPERATE light will flash. When the amber light is on steady the room can be operated.

3. To retract the room, push and hold the ROOM CONTROL SWITCH in the "RETRACT" position. The red PUMP ON light will come on. When the room is fully retracted, the pump will automatically shut off. The red PUMP ON light will go out. DO NOT release the ROOM CONTROL SWITCH until the PUMP ON light goes out. **If the red "PUMP ON" light remains on 45 seconds after the room is fully retracted, release the room control switch.**

**NOTE: (FOR ROOMS WITH HWH LOCKS) If the ROOM CONTROL SWITCH is released before the red PUMP ON light goes out, the room may not be properly locked. The transmission will not shift out of "NEUTRAL".**

**NOTE: Under normal operation the direction of movement should not be reversed. If the movement of the room must be reversed, do not try to retract the room until the room has been fully extended.**

**IMPORTANT: IF EITHER SIDE OF THE ROOM STOPS MOVING, RELEASE THE ROOM CONTROL SWITCH IMMEDIATELY. THE ROOM OPERATION WILL HALT. DO NOT FORCE THE ROOM. DO NOT REVERSE THE DIRECTION OF THE ROOM. BINDING OF THE ROOM CAN CAUSE ROOM DAMAGE. CONTACT HWH CORPORATION CUSTOMER SERVICE FOR ASSISTANCE.**

**NOTE: Releasing the ROOM CONTROL SWITCH will halt the operation of the room.**

4. Turn the KEY SWITCH to the "OFF" position and remove the key. The READY TO OPERATE light will go out. The air seal will inflate.

**NOTE: If the KEY SWITCH is left "ON" the air seal will not inflate and the Network will stay active and not power down.**

**IN THE EVENT OF THE FAILURE OF THE ROOM TO RETRACT, CONTACT HWH CORPORATION CUSTOMER SERVICE AT 1-800-321-3494 FOR ASSISTANCE.**

**MP35.315C  
24APR02**

# MANUAL ROOM AND GENERATOR SLIDE RETRACT PROCEDURE (WITH SOLENOID VALVES WITH VALVE RELEASE NUTS)

(USE ONLY WHEN THE ROOM WILL NOT RETRACT WITH THE ROOM CONTROL SWITCH)

## OVERVIEW

The room can be retracted manually if a hydraulic or electric failure prevents the room from being retracted using the CONTROL SWITCH. For normal retract sequence see the ROOM SLIDE RETRACT PROCEDURES. Refer to the vehicle manufacturer for storage location of the winch and information for connecting the winch to the room.

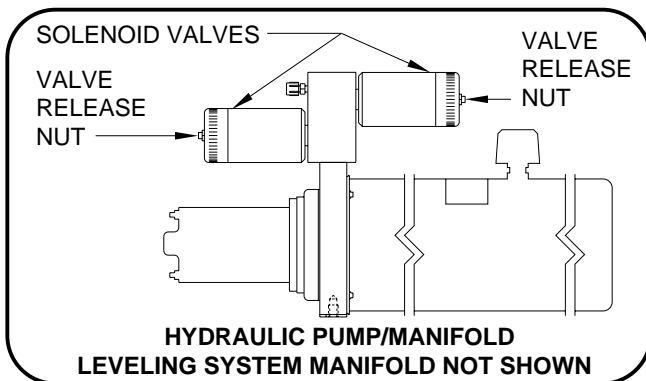
**IMPORTANT:** If the vehicle is not equipped with a winch, DO NOT use other pulling devices to retract the room. Follow steps 2 and 3 and try pushing the room in. Contact the vehicle manufacturer or HWH Customer Service at 1-800-321-3494 or 563-724-3396 for assistance.

**CAUTION:** THE MANUAL RETRACT WINCH IS EQUIPPED FOR MANUALLY RETRACTING THE ROOM ONLY. IT IS NOT TO BE USED FOR LIFTING OR ANY OTHER APPLICATION. HIGH FORCES ARE CREATED WHEN USING A WINCH, CREATING POTENTIAL SAFETY HAZARDS. FAILURE TO FOLLOW ALL CAUTIONS AND INSTRUCTIONS MAY CAUSE FAILURE OF THE MANUAL RETRACT WINCH OR CONNECTIONS RESULTING IN DAMAGE OR PERSONAL INJURY. MAINTAIN FIRM GRIP ON THE WINCH HANDLE AT ALL TIMES. NEVER RELEASE THE HANDLE WHEN RATCHET LEVER IS IN THE OFF POSITION AND THE WINCH IS LOADED. THE WINCH HANDLE COULD SPIN VIOLENTLY AND CAUSE PERSONAL INJURY. CHECK THE WINCH AND STRAPS FOR DAMAGE OR WEAR, AND CHECK FOR PROPER RATCHET OPERATION ON EACH USE OF THE WINCH. DO NOT USE IF DAMAGED OR WORN.

1. Retract jacks following the LEVELING SYSTEM RETRACT PROCEDURE.

**NOTE :** When manually retracting the room, make sure the jacks are retracted before retracting the room.

2. Locate the HYDRAULIC PUMP/MANIFOLD unit.



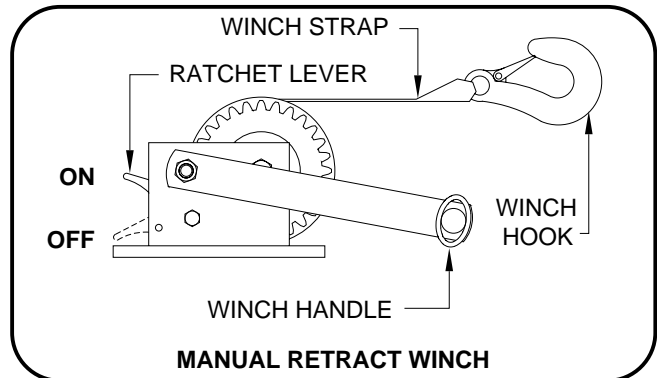
3. Open the Solenoid Valves by slowly turning the valve release nuts counter clockwise using the 1/4" nut driver supplied.

**IMPORTANT:** Only open the valves enough to retract the room. DO NOT turn the release nuts more than 4 and 1/2 turns. Turning the nuts more could damage the valves.

**NOTE:** Prior to APRIL 2002 a 1/4" Nut Driver was sent with the Operators Manual. As of APRIL 2002 the 1/4" Nut Driver has been incorporated into the Breather Cap. See the back page of this manual for further info.

**NOTE:** The room may move slightly as the SOLENOID VALVES are opened and internal pressure is released.

4. Locate the MANUAL RETRACT WINCH and connect it to the room according to the vehicle manufacturer's instructions. To extend the WINCH STRAP firmly grasp WINCH HANDLE, place RATCHET LEVER in its OFF position, and slowly rotate the WINCH HANDLE counter clockwise, keeping a firm grip on the handle. When enough WINCH STRAP is extended, place the RATCHET LEVER in its ON position and slowly rotate the WINCH HANDLE clockwise until the RATCHET LEVER locks.



5. Slowly winch the room in by turning the WINCH HANDLE clockwise. The RATCHET LEVER should produce a loud, sharp, clicking noise.

**NOTE:** Winching the room in quickly will raise pressure in the hydraulic fluid and make winching more difficult.

**CAUTION:** OPERATE THE MANUAL RETRACT WINCH BY HAND POWER ONLY. IF THE WINCH CANNOT BE CRANKED EASILY WITH ONE HAND IT IS PROBABLY OVERLOADED. IF WINCHING BECOMES TOO DIFFICULT STOP AND CHECK FOR OBSTRUCTIONS OR RESTRICTIONS ON THE ROOM AND ROOM EXTENSION MECHANISM.

6. When the room is fully retracted, engage the room locking devices. Leave the retract winch engaged and the solenoid valves open.

**CAUTION:** THE ROOM EXTENSION SOLENOID VALVE RELEASE NUTS MUST BE IN THE OPEN POSITION WHEN THE MANUAL RETRACT WINCH IS ENGAGED.

7. The system should be repaired before using again.

**NOTE:** After repairs are made, when closing the VALVE RELEASE NUTS, do not over tighten the nuts.

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## MAINTENANCE

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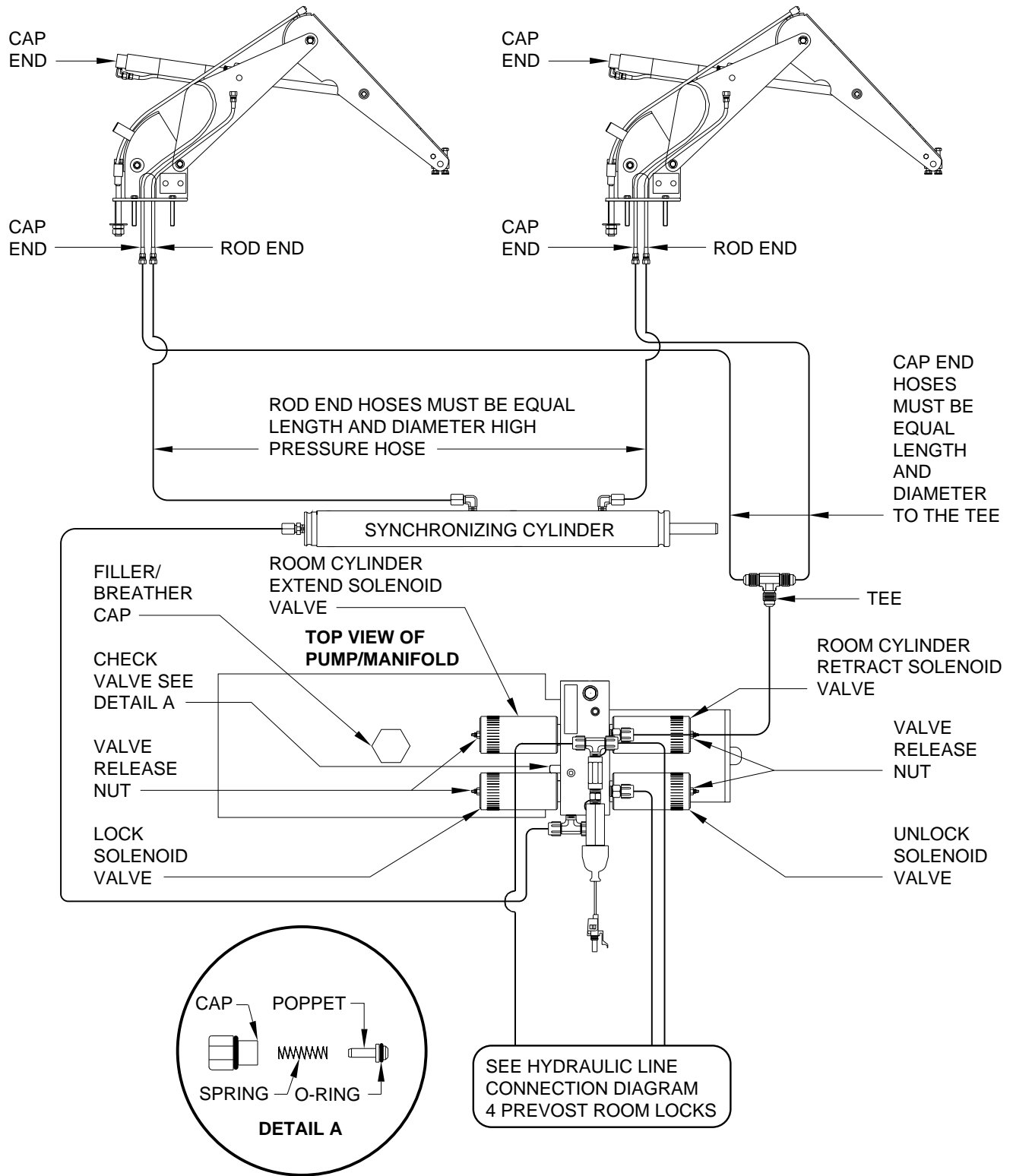
### OIL LEVEL

It is important that the slide is fully retracted before checking the hydraulic oil level. To check the oil supply, remove the breather cap from the top of the hydraulic oil reservoir. The oil level should be approximately one inch below the top of the reservoir when adequately filled.

**FLUID:** HWH Specialty Hydraulic Oil is recommended. In an emergency Dexron automatic transmission fluid can be used.

**NOTE:** Dexron automatic transmission fluid contains red dye and can cause staining should a leak occur. **DO NOT USE** brake fluid or hydraulic jack fluid. Use of these can damage seals.

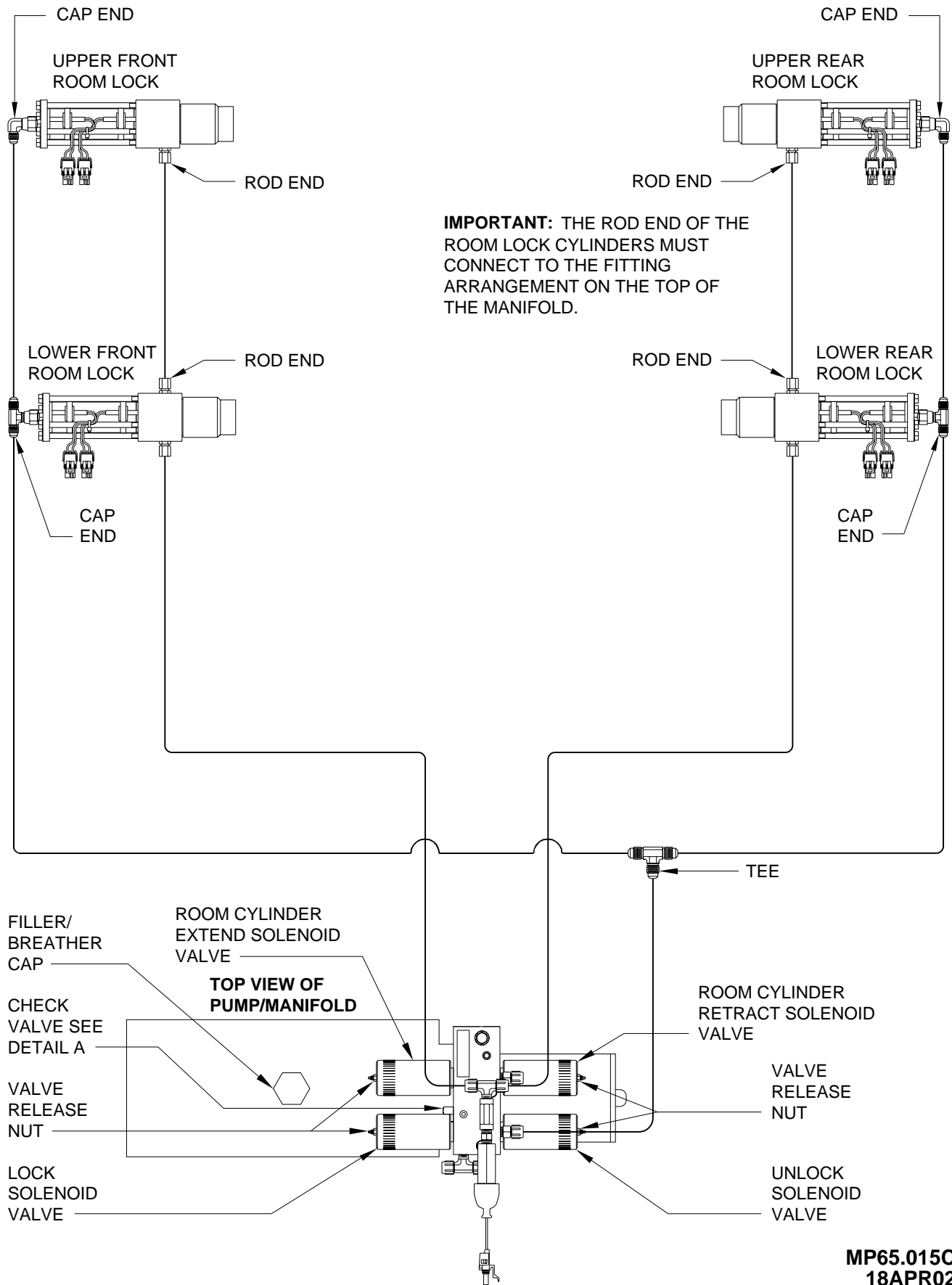
# HYDRAULIC LINE CONNECTION DIAGRAM VERTICAL ARM ROOM EXTENSION (WITH SYNCHRONIZING CYLINDER)



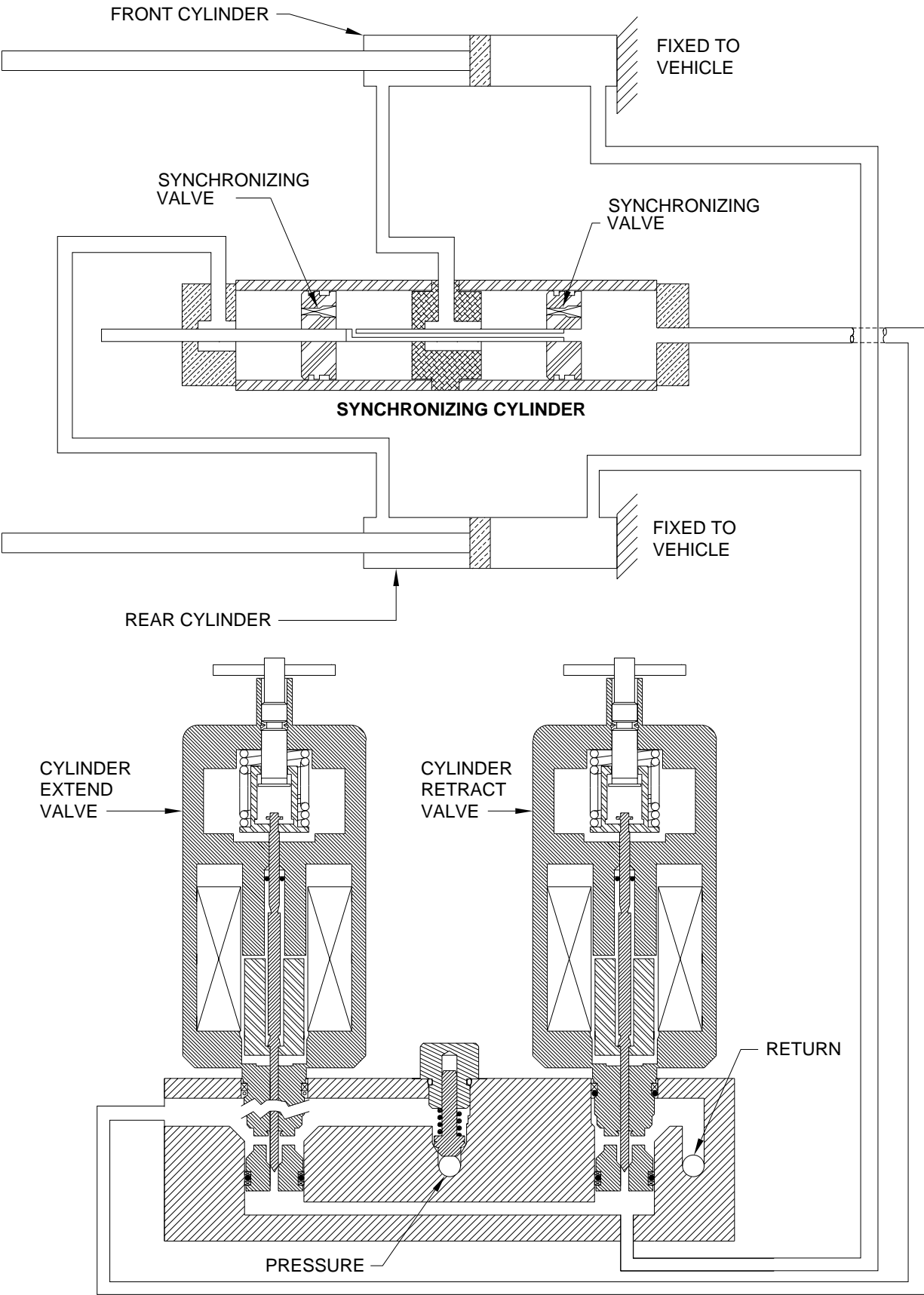


# HYDRAULIC LINE CONNECTION DIAGRAM

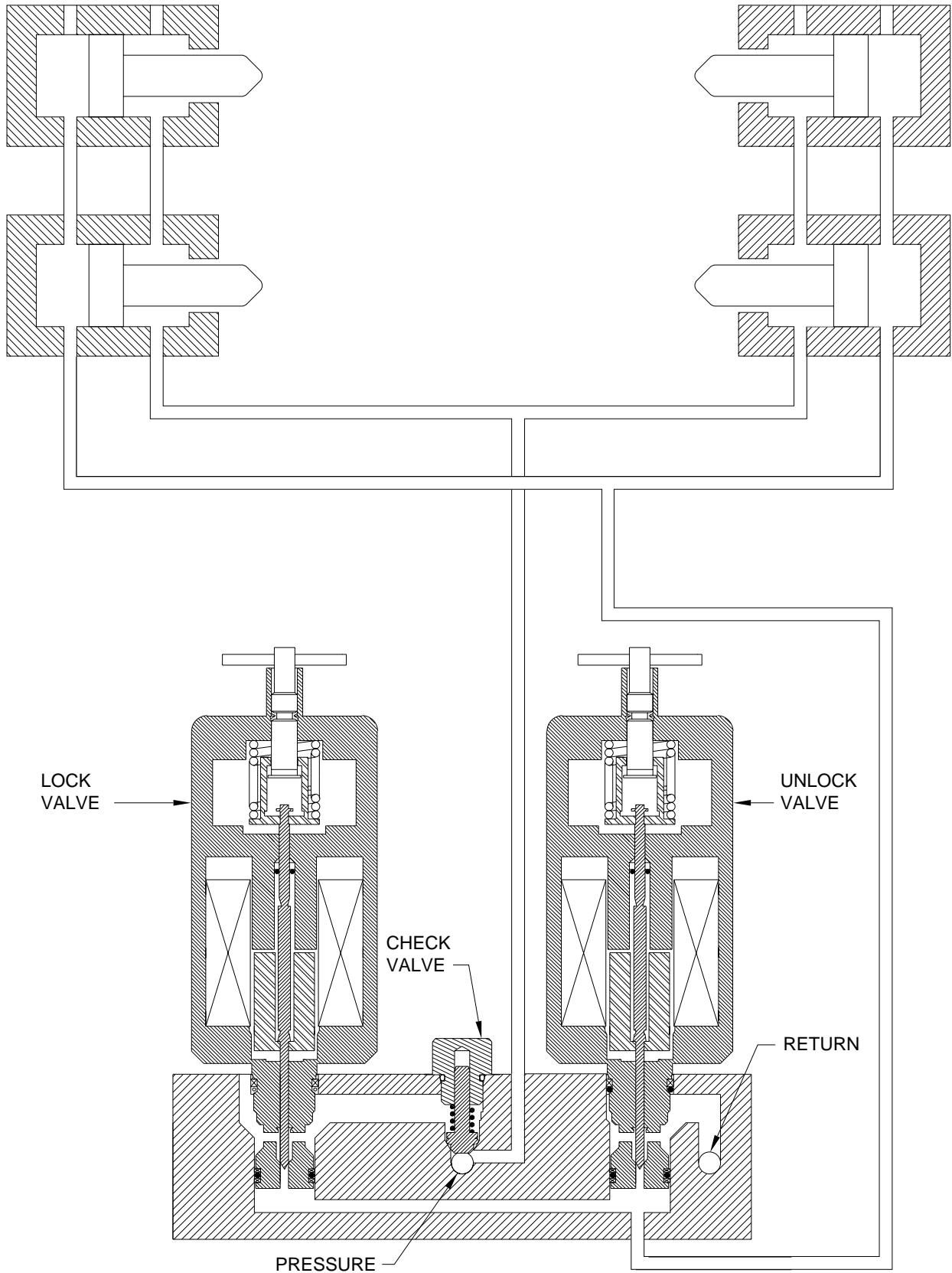
## 4 PREVOST ROOM WITH LOCKS



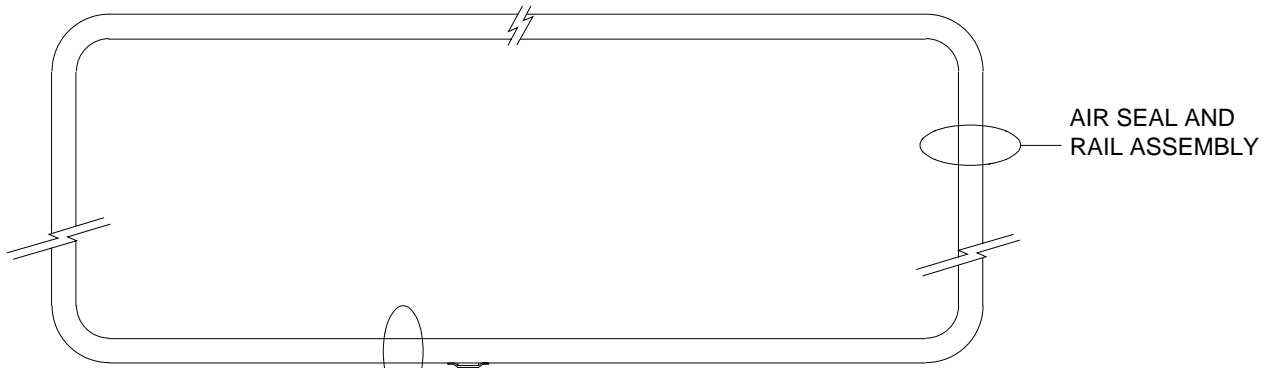
**HYDRAULIC FLOW DIAGRAM  
VERTICAL ARM OR DUAL CYLINDER ROOM EXTENSION  
WITH SYNCHRONIZING CYLINDER  
STATIONARY POSITION**



**HYDRAULIC FLOW DIAGRAM  
ROOM LOCK  
STATIONARY POSITION**



# AIR SEAL CONNECTION DIAGRAM



DETAIL A

CONNECTING  
HOSE

+12 VOLT  
3-WAY AIR VALVE

3-WAY

VACUUM

+12 VOLT NORMALLY  
CLOSED AIR VALVE

CHECK VALVE

FROM AIR  
SUPPLY

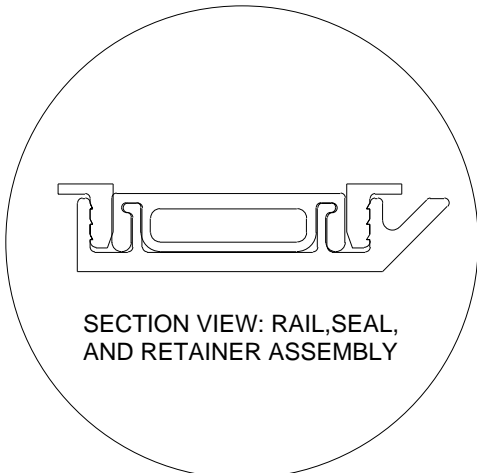
AIR SEAL  
MANIFOLD  
ASSEMBLY

AIR PRESSURE  
REGULATOR -  
SET AT 15 P.S.I.  
DO NOT CHANGE

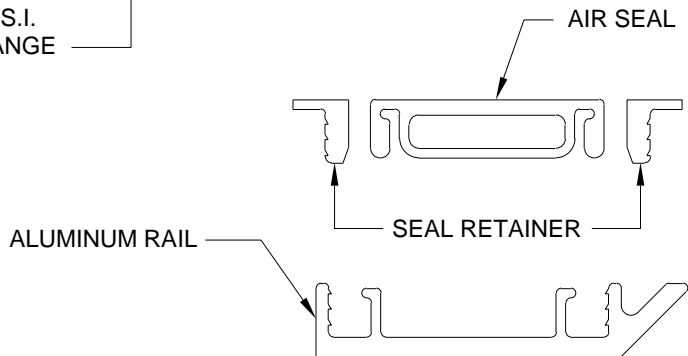
**NOTE:** SOME VEHICLES ARE  
EQUIPPED WITH A +12 VOLT AIR  
COMPRESSOR THAT IS ONLY USED  
TO SUPPLY AIR FOR THE AIR SEAL.

WHEN THERE IS NO +12 POWER  
TO THE AIR VALVES CONSTANT  
AIR PRESSURE IS SUPPLIED TO  
THE AIR SEAL FROM THE AIR  
SUPPLY.

WHEN +12 IS SUPPLIED TO THE  
AIR VALVES, AIR WILL EXHAUST  
FROM THE AIR SEAL.



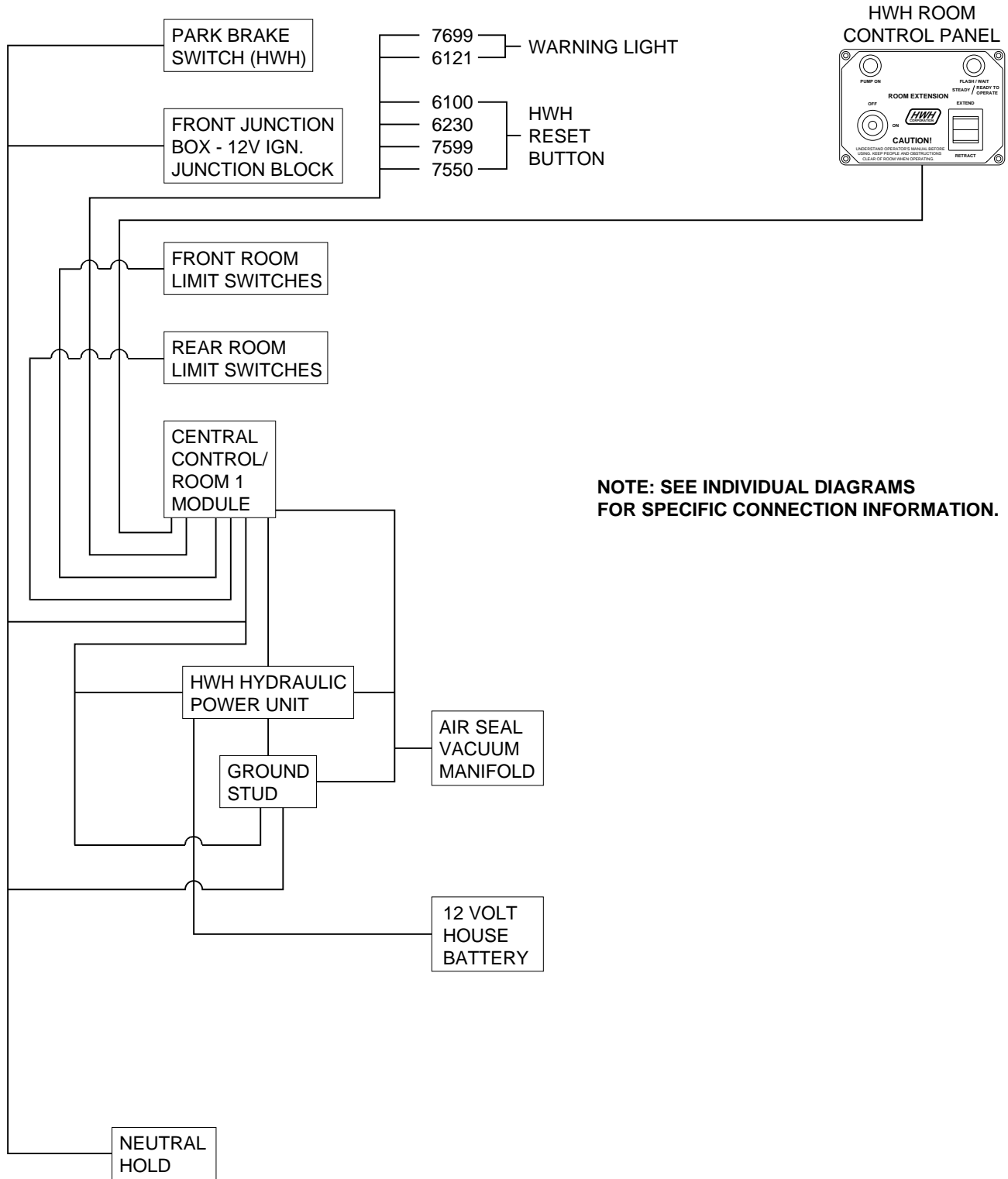
DETAIL A



# ELECTRICAL CONNECTION DIAGRAM

## PREVOST 2000 SERIES CAN SYSTEM

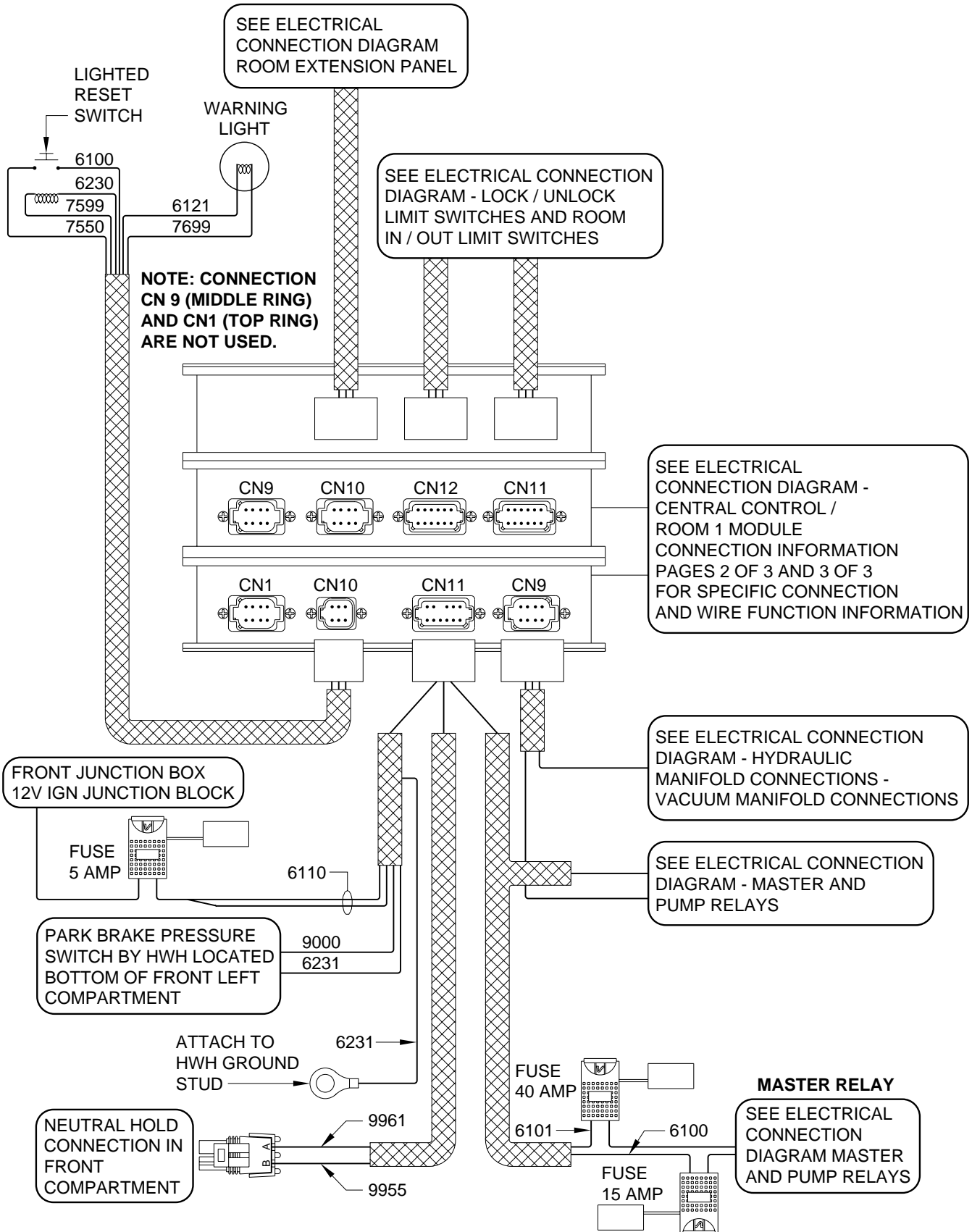
### VERTICAL ARM ROOM EXTENSION - 4 LOCKS - AIR SEAL



**NOTE: SEE INDIVIDUAL DIAGRAMS FOR SPECIFIC CONNECTION INFORMATION.**

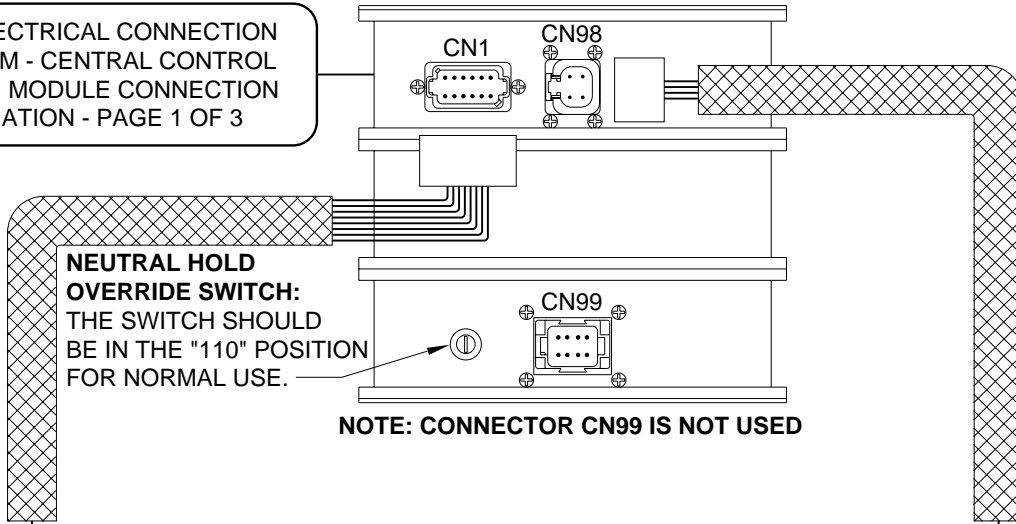
# ELECTRICAL CONNECTION DIAGRAM ONE ROOM EXTENSION SYSTEM WITH 4 PREVOST LOCKS AND AIR SEAL

PAGE 1 OF 2



**ELECTRICAL CONNECTION DIAGRAM  
ONE ROOM EXTENSION SYSTEM  
WITH 4 PREVOST LOCKS AND AIR SEAL  
PAGE 2 OF 2**

SEE ELECTRICAL CONNECTION  
DIAGRAM - CENTRAL CONTROL  
ROOM 1 MODULE CONNECTION  
INFORMATION - PAGE 1 OF 3



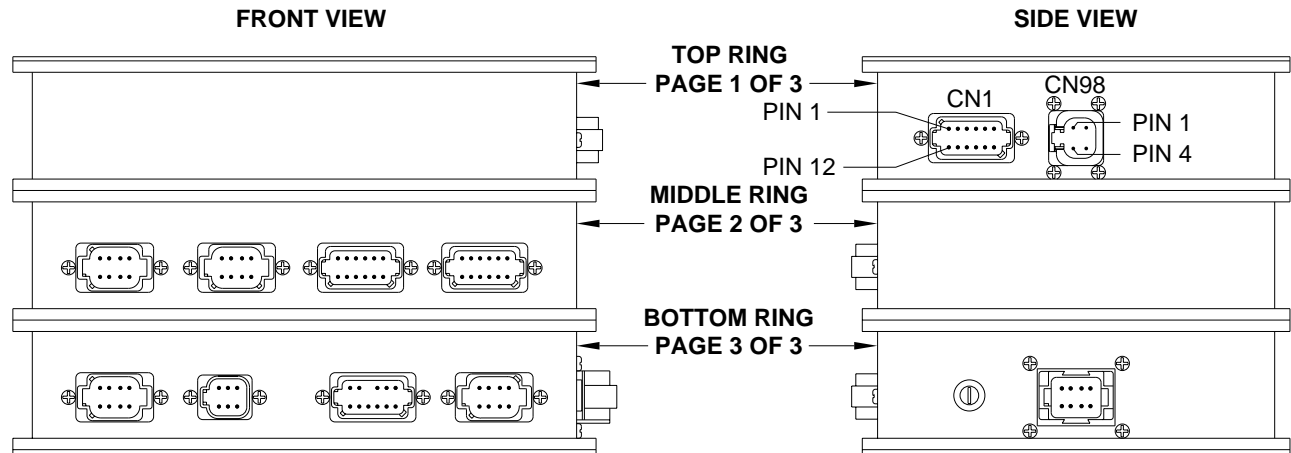
SEE ELECTRICAL CONNECTION  
DIAGRAM - HYDRAULIC MANIFOLD  
CONNECTIONS - VACUUM  
MANIFOLD CONNECTIONS

SEE ELECTRICAL CONNECTION  
DIAGRAM - MASTER AND  
PUMP RELAYS

# ELECTRICAL CONNECTION DIAGRAM

## CENTRAL CONTROL / ROOM 1 MODULE CONNECTION INFORMATION

### PAGE 1 OF 3



PIN #	WIRE COLOR	WIRE NUMBER	WIRE DESCRIPTION AND FUNCTION
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**TOP RING CN1 ————— 12 PIN BROWN CONNECTOR**

1	BLACK	5000	ROOM 1 CYLINDER EXTEND VALVE - SWITCHED +12
2	BLACK	5100	ROOM 1 CYLINDER RETRACT VALVE - SWITCHED +12
3	BLACK	5200	ROOM 1 LOCK VALVE - SWITCHED +12
4	BLACK	5300	ROOM 1 UNLOCK VALVE - SWITCHED +12
5 THRU 8			NO CONNECTION
9	BLACK	5650	AIR SEAL MANIFOLD VACUUM VALVE - SWITCHED +12
10	BLACK	5600	AIR SEAL MANIFOLD 3-WAY VALVE - SWITCHED +12
11 AND 12			NO CONNECTION

**TOP RING CN98 ————— 4 PIN GRAY CONNECTOR**

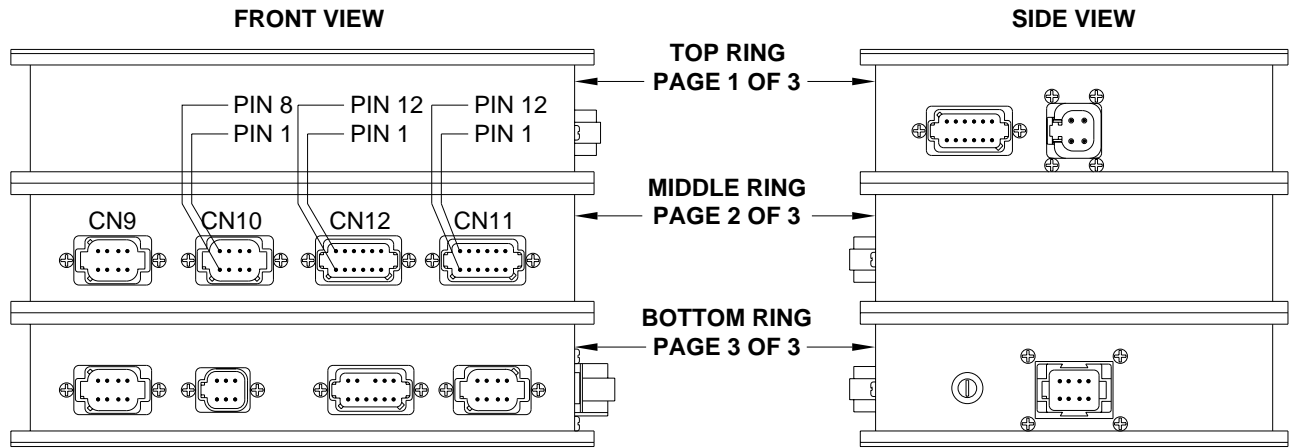
1	RED	6800	SWITCHED +12 BATTERY FROM 12 VOLT MASTER RELAY
2	RED	6800	SWITCHED +12 BATTERY FROM 12 VOLT MASTER RELAY
3	WHITE	6230	GROUND FROM GROUND STUD FOR ALL SOLENOID VALVES
4	WHITE	6230	GROUND FROM GROUND STUD FOR ALL SOLENOID VALVES



# ELECTRICAL CONNECTION DIAGRAM

## CENTRAL CONTROL / ROOM 1 MODULE CONNECTION INFORMATION

### PAGE 2 OF 3

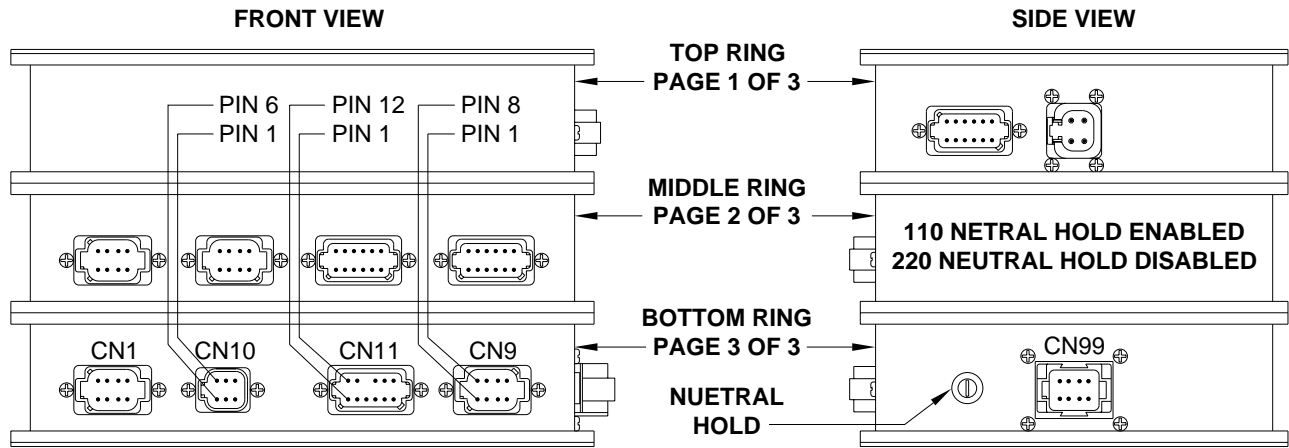


PIN #	WIRE COLOR	WIRE NUMBER	WIRE DESCRIPTION AND FUNCTION
<b>MIDDLE RING CN9</b>			<b>NO CONNECTION</b>
<b>MIDDLE RING CN10</b>			<b>8 PIN GRAY CONNECTOR</b>
1			NO CONNECTION
2	BLACK	7510	READY TO OPERATE LIGHT CONTROL - SWITCHED +12
3	BLACK	7530	PUMP ON LIGHT - SWITCHED +12
4	BLACK	7501	ROOM EXTEND - SWITCHED +12 FROM ROOM CONTROL SWITCH
5	BLACK	7502	ROOM RETRACT - SWITCHED +12 FROM ROOM CONTROL SWITCH
6	RED	6805	SWITCHED +12 BATTERY TO ROOM PANEL KEY SWITCH
7	BLACK	7631	SYSTEM WAKE UP - SWITCHED GROUND FROM PANEL KEY SWITCH
8	WHITE	6230	GROUND TO ROOM PANEL KEY SWITCH
<b>MIDDLE RING CN12</b>			<b>12 PIN GRAY CONNECTOR</b>
1	BLACK	5706	SWITCHED +12 FROM LOWER FRONT UNLOCK SWITCH
2	BLACK	5701	SWITCHED GRND FROM FRONT ROOM OUT HALL EFFECT LIMIT SW
3			NO CONNECTION
4	BLACK	5710	SWITCHED +12 FROM LOWER FRONT LOCK SWITCH
5			NO CONNECTION
6	WHITE	6230	GROUND FOR ROOM IN AND OUT HALL EFFECT LIMIT SWITCHES
7	RED	6120	SWITCHED +12 BATTERY TO ALL FRONT LIMIT SWITCHES
8			NO CONNECTION
9	BLACK	5708	SWITCHED +12 FROM UPPER FRONT LOCK SWITCH
10	BLACK	5703	SWITCHED GROUND FROM FRONT ROOM IN LIMIT SWITCH
11			NO CONNECTION
12	BLACK	5704	SWITCHED +12 FROM UPPER FRONT UNLOCK SWITCH
<b>MIDDLE RING CN11</b>			<b>12 PIN GREEN CONNECTOR</b>
1	BLACK	5707	SWITCHED +12 FROM LOWER REAR UNLOCK SWITCH
2	BLACK	5700	SWITCHED GRND FROM REAR ROOM OUT HALL EFFECT LIMIT SW
3			NO CONNECTION
4	BLACK	5711	SWITCHED +12 FROM LOWER REAR LOCK SWITCH
5			NO CONNECTION
6	WHITE	6230	GROUND FOR ROOM IN AND OUT HALL EFFECT SWITCHES
7	RED	6120	SWITCHED +12 BATTERY TO ALL REAR HALL EFFECT LIMIT SW
8			NO CONNECTION
9	BLACK	5709	SWITCHED +12 FROM UPPER REAR LOCK SWITCH
10	BLACK	5702	SWITCHED GRND FROM REAR ROOM IN HALL EFFECT LIMIT SWITCH
11			NO CONNECTION
12	BLACK	5705	SWITCHED +12 FROM UPPER REAR UNLOCK SWITCH

# ELECTRICAL CONNECTION DIAGRAM

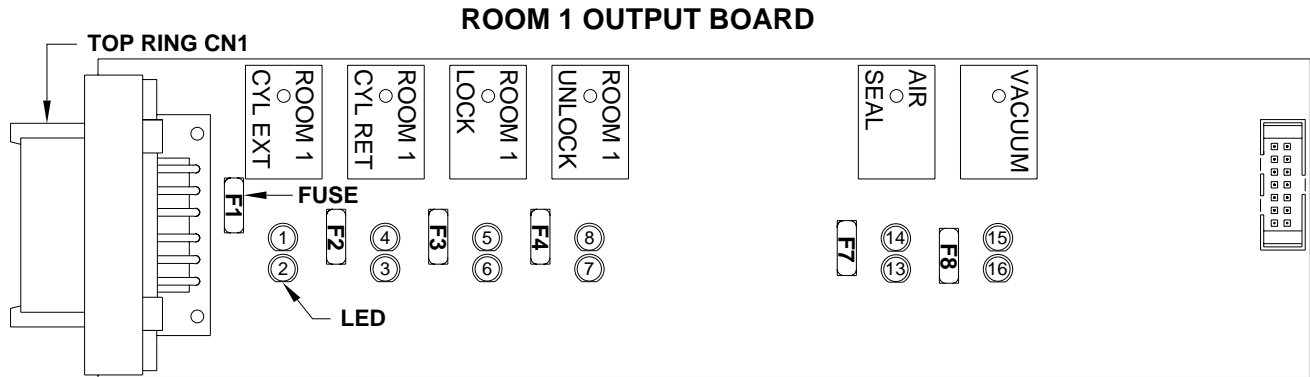
## CENTRAL CONTROL / ROOM 1 MODULE CONNECTION INFORMATION

### PAGE 3 OF 3



PIN #	WIRE COLOR	WIRE NUMBER	WIRE DESCRIPTION AND FUNCTION
<b>BOTTOM RING CN1</b>			<b>NO CONNECTION</b>
<b>BOTTOM RING CN10</b>			<b>6 PIN GRAY CONNECTOR</b>
1	BLACK	7599	RESET SWITCH LIGHT CONTROL - SWITCHED +12
2	RED	6100	RESET SWITCH SUPPLY - BATTERY +12
3	BLACK	7550	RESET SWITCH OUTPUT +12
4	RED	6121	MASTER WARNING LIGHT SUPPLY - IGNITION +12
5	WHITE	6230	RESET SWITCH LIGHT - GROUND
6	BLACK	7699	MASTER WARNING LIGHT CONTROL - SWITCHED GROUND
<b>BOTTOM RING CN11</b>			<b>12 PIN GRAY CONNECTOR</b>
1	RED	6110	SWITCHED +12 FROM IGNITION
2 THRU 4			NO CONNECTION
5	RED	6110	SWITCHED +12 FROM IGNITION
6	RED	6100	BATTERY +12
7	WHITE	6230	GROUND FOR PROCESSOR AND DATA SWITCHES
8	BLACK	9961	NEUTRAL HOLD
9	BLACK	9955	NEUTRAL HOLD
10			NO CONNECTION
11	BLACK	9000	FROM PARK BRAKE SWITCH - SWITCHED GROUND
12	RED	6100	BATTERY +12
<b>BOTTOM RING CN9</b>			<b>8 PIN GREEN CONNECTOR</b>
1	BLACK	8500	MASTER RELAY CONTROL - SWITCHED +12
2	BLACK	8100	HYDRAULIC MANIFOLD PRESSURE SWITCH - SWITCHED GROUND
3			NO CONNECTION
4	BLACK	8600	PUMP RELAY CONTROL - SWITCHED +12
5	BLACK	9900	SPEED SWITCH - SLOW SPEED +12
6	BLACK	9901	SWITCHED BATTERY +12 FROM PUMP RELAY
7 AND 8			NO CONNECTION
<b>BOTTOM RING CN99</b>			<b>NO CONNECTION</b>

**ELECTRICAL CONNECTION DIAGRAM**  
**LED - FUSE LOCATION AND DESCRIPTION**  
**CENTRAL CONTROL / ROOM 1 MODULE (TOP RING)**  
**PAGE 1 OF 3**



LED	RELAY DESCRIPTION	FUSE	CN1
1-YELLOW	ROOM 1 CYL EXTEND	F1-15 AMP	PIN 1
2-RED	ROOM 1 CYL EXTEND	F2-15 AMP	PIN 2
3-RED	ROOM 1 CYL RETRACT	F3-15 AMP	PIN 3
4-YELLOW	ROOM 1 CYL RETRACT	F4-15 AMP	PIN 4
5-YELLOW	ROOM 1 LOCK		
6-RED	ROOM 1 LOCK		
7-RED	ROOM 1 UNLOCK		
8-YELLOW	ROOM 1 UNLOCK		
13-RED	AIR SEAL 3-WAY VALVE	F7-15 AMP	PIN 10
14-YELLOW	AIR SEAL 3-WAY VALVE		
15-YELLOW	AIR SEAL VACUUM	F8-15 AMP	PIN 9
16-RED	AIR SEAL VACUUM		

**NOTE: FOR DETAILED INPUT / OUTPUT INFORMATION ABOUT PIN CONNECTIONS SEE ELECTRICAL CONNECTION DIAGRAM - CENTRAL CONTROL / ROOM 1 MODULE CONNECTION INFORMATION - PAGE 1 OF 3.**

**NOTE: A LIT YELLOW LED INDICATES THERE IS A GROUND SIGNAL TO TURN THE CORRESPONDING RELAY ON.**

**A LIT RED LED INDICATES THERE IS VOLTAGE ON IT'S CORRESPONDING CN1 PIN.**

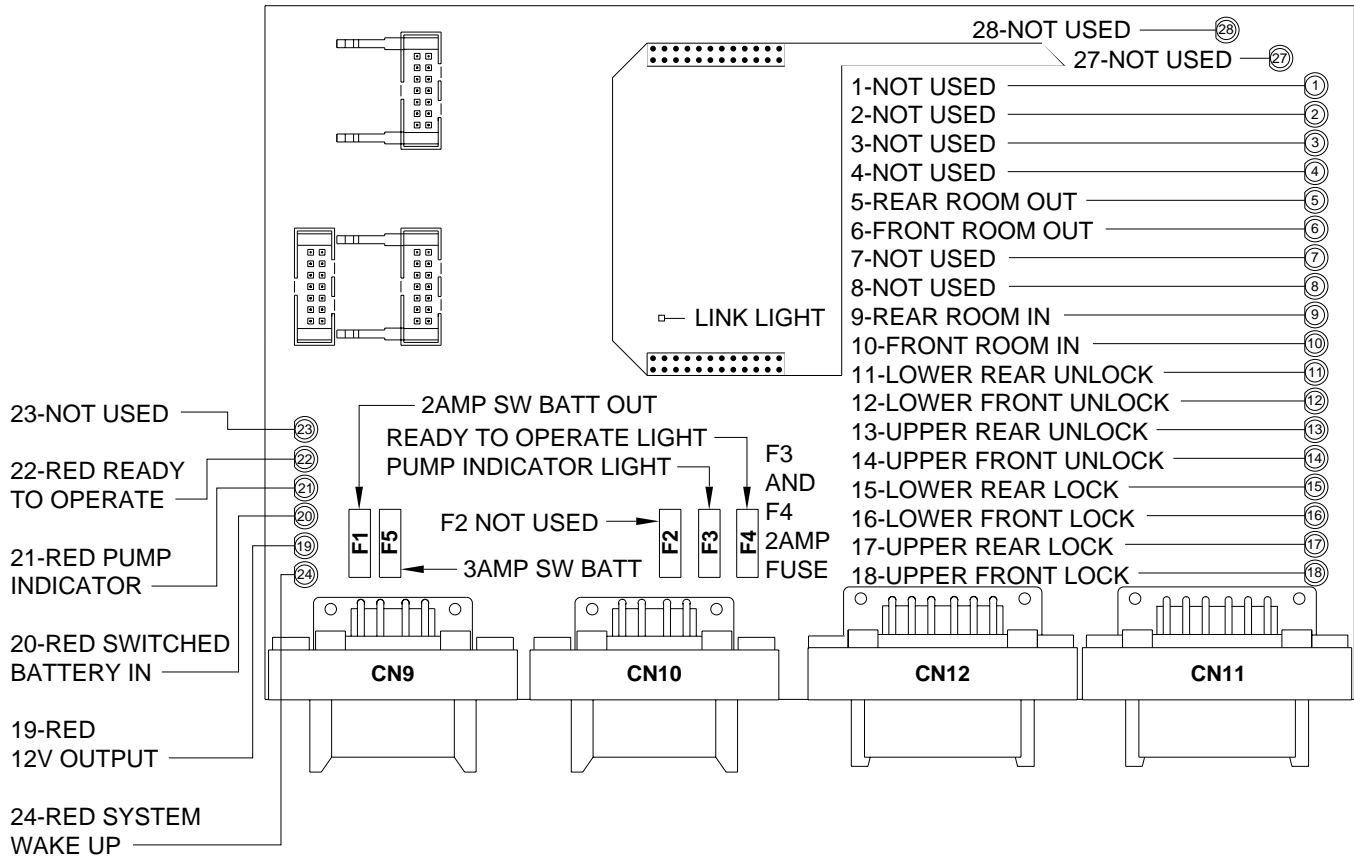
**IF A YELLOW LED IS LIT AND THE CORRESPONDING RED LED IS OFF, EITHER IT'S FUSE IS BLOWN OR THE RELAY IS BAD.**

**IF THE YELLOW LEDS ARE WORKING BUT NO RED LED IS COMING ON THERE IS A PROBLEM WITH INPUT VOLTAGE IN THE 4-PIN CONNECTOR ON THE TOP RING.**

**IF A YELLOW LED IS NOT LIT, THIS INDICATES A PROBLEM WITH A MODULE.**

**ELECTRICAL CONNECTION DIAGRAM**  
**LED - FUSE LOCATION AND DESCRIPTION**  
**CENTRAL CONTROL / ROOM 1 MODULE (MIDDLE RING)**  
**PAGE 2 OF 3**

**ROOM 1 I/O BOARD**



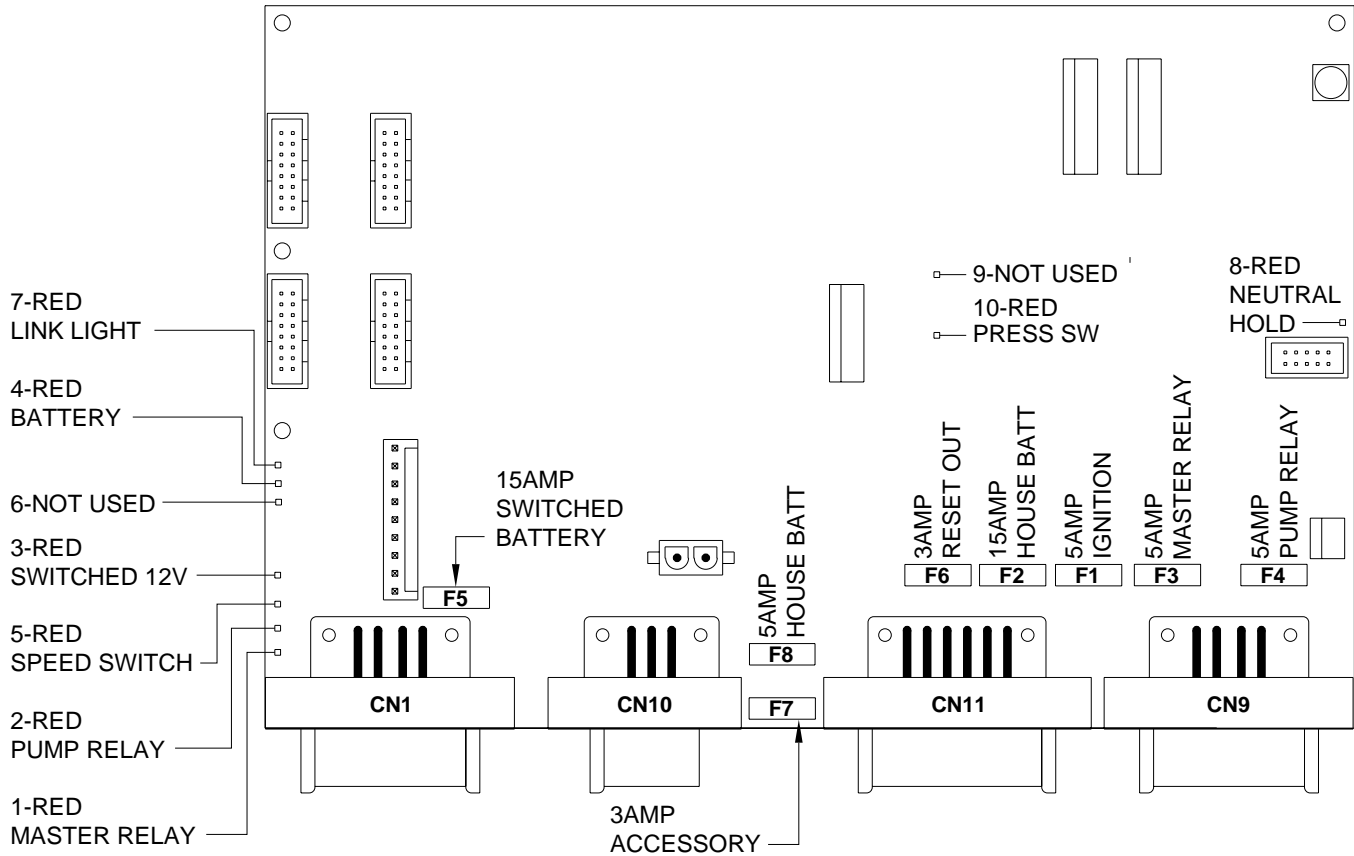
LED	DESCRIPTION	CN AND PIN
1 THRU 4 NOT USED	NOT USED	NOT USED
5-YELLOW	REAR ROOM OUT	CN 11 - PIN 2
6-YELLOW	FRONT ROOM OUT	CN 12 - PIN 2
7 AND 8-NOT USED	NOT USED	NOT USED
9-GREEN	REAR ROOM IN	CN 11 - PIN 10
10-GREEN	FRONT ROOM IN	CN 12 - PIN 10
11-YELLOW	LOWER REAR UNLOCK	CN 11 - PIN 1
12-YELLOW	LOWER FRONT UNLOCK	CN 12 - PIN 1
13-YELLOW	UPPER REAR UNLOCK	CN 11 - PIN 12
14-YELLOW	UPPER FRONT UNLOCK	CN 12 - PIN 12
15-GREEN	LOWER REAR LOCK	CN 11 - PIN 4
16-GREEN	LOWER FRONT LOCK	CN 12 - PIN 4
17-GREEN	UPPER REAR LOCK	CN 11 - PIN 9
18-GREEN	UPPER FRONT LOCK	CN 12 - PIN 9
19-RED	SWITCHED +12V OUT	CN 11/CN 12 - PIN 7
20-RED	SWITCHED +12V IN	CN 9 - PIN 3
21-RED	PUMP INDICATOR	CN 10 - PIN 3
22-RED	READY TO OPERATE	CN 10 - PIN 2
23-NOT USED	NOT USED	NOT USED
24-RED	SYSTEM WAKE UP	CN 10 - PIN 7
25 THRU 28 NOT USED	NOT USED	NOT USED

FUSE DESCRIPTION
F1 - 2AMP SW BATTERY OUT
F2 - 2AMP NOT USED
F3 - 2AMP PUMP INDICATOR LIGHT
F4 - 2AMP READY TO OPERATE LIGHT
F5 - 3AMP SWITCHED BATTERY

**NOTE: FOR DETAILED INPUT / OUTPUT INFORMATION ABOUT PIN CONNECTIONS SEE ELECTRICAL CONNECTION DIAGRAM - CENTRAL CONTROL / ROOM 1 MODULE CONNECTION INFORMATION - PAGE 2 OF 3.**

**ELECTRICAL CONNECTION DIAGRAM**  
**LED - FUSE LOCATION AND DESCRIPTION**  
**CENTRAL CONTROL / ROOM 1 MODULE (BOTTOM RING)**  
**PAGE 3 OF 3**

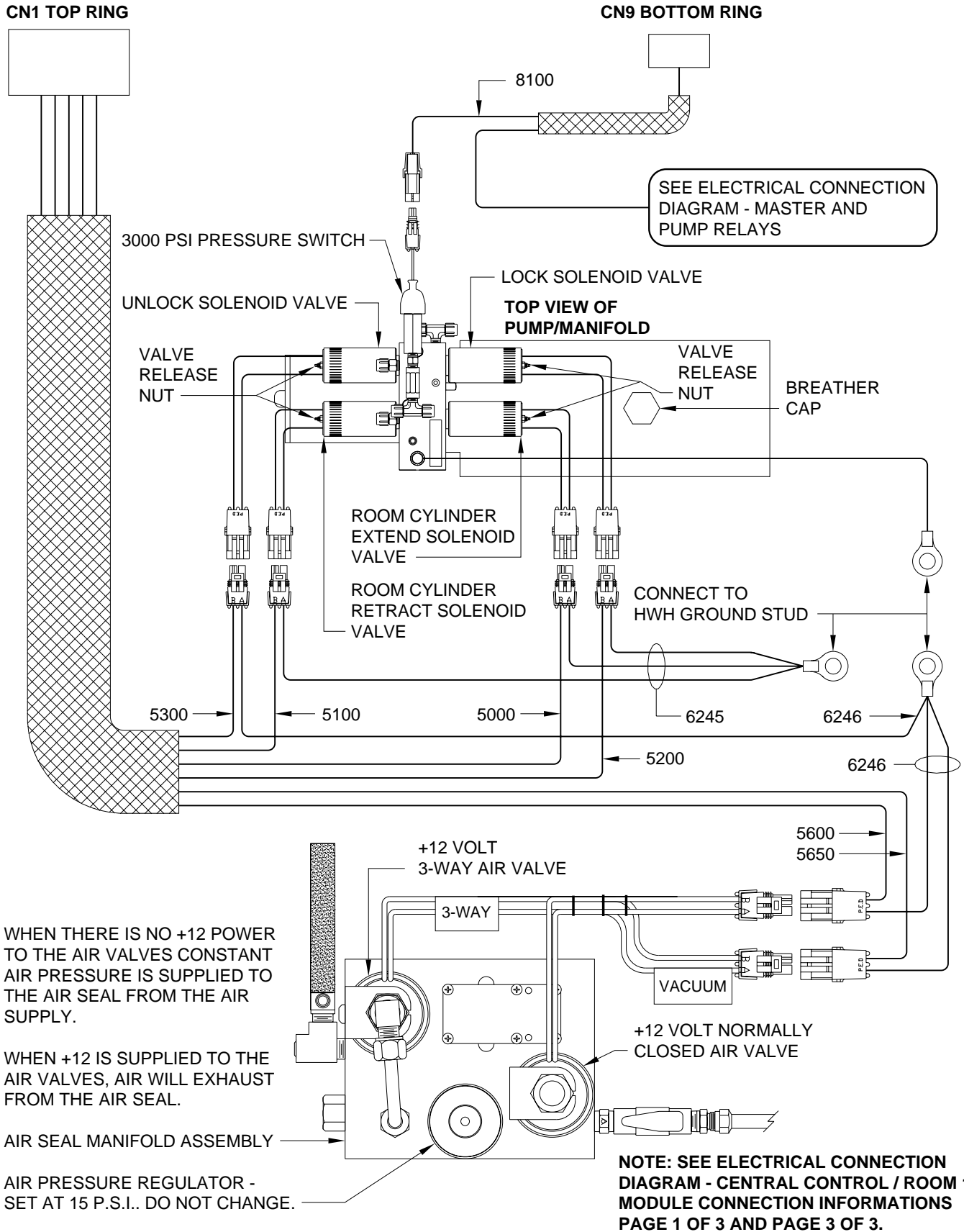
**CENTRAL CONTROL MOTHER BOARD**



LED	DESCRIPTION	CN AND PIN	FUSE DESCRIPTION
1-RED	MASTER RELAY	CN 9 - PIN 1	F1 - 5AMP IGNITION IN
2-RED	PUMP RELAY	CN 9 - PIN 4	F2 - 15AMP BATTERY IN
3-RED	SWITCHED +12V	NA	F3 - 5AMP MASTER RELAY
4-RED	BATTERY +12V	CN 11 - PIN 12	F4 - 5AMP PUMP RELAY
5-RED	SPEED SWITCH	CN 9 - PIN 5	F5 - 15AMP SWITCHED BATTERY
6-NOT USED	NOT USED	NOT USED	F6 - 3AMP RESET OUT
7-RED	LINK LIGHT	NA	F7 - 3AMP ACCESSORY IN
8-RED	NEUTRAL HOLD	CN 11 - PIN 8 & 9	F8 - 5AMP BATTERY IN
9-NOT USED	NOT USED	NOT USED	
10-RED	3000 LBS PRESSURE SWITCH	CN 9 - PIN 2	

**NOTE: FOR DETAILED INPUT / OUTPUT INFORMATION ABOUT PIN CONNECTIONS SEE ELECTRICAL CONNECTION DIAGRAM - CENTRAL CONTROL / ROOM 1 MODULE CONNECTION INFORMATION - PAGE 3 OF 3.**

# ELECTRICAL CONNECTION DIAGRAM HYDRAULIC MANIFOLD CONNECTIONS VACUUM MANIFOLD CONNECTIONS

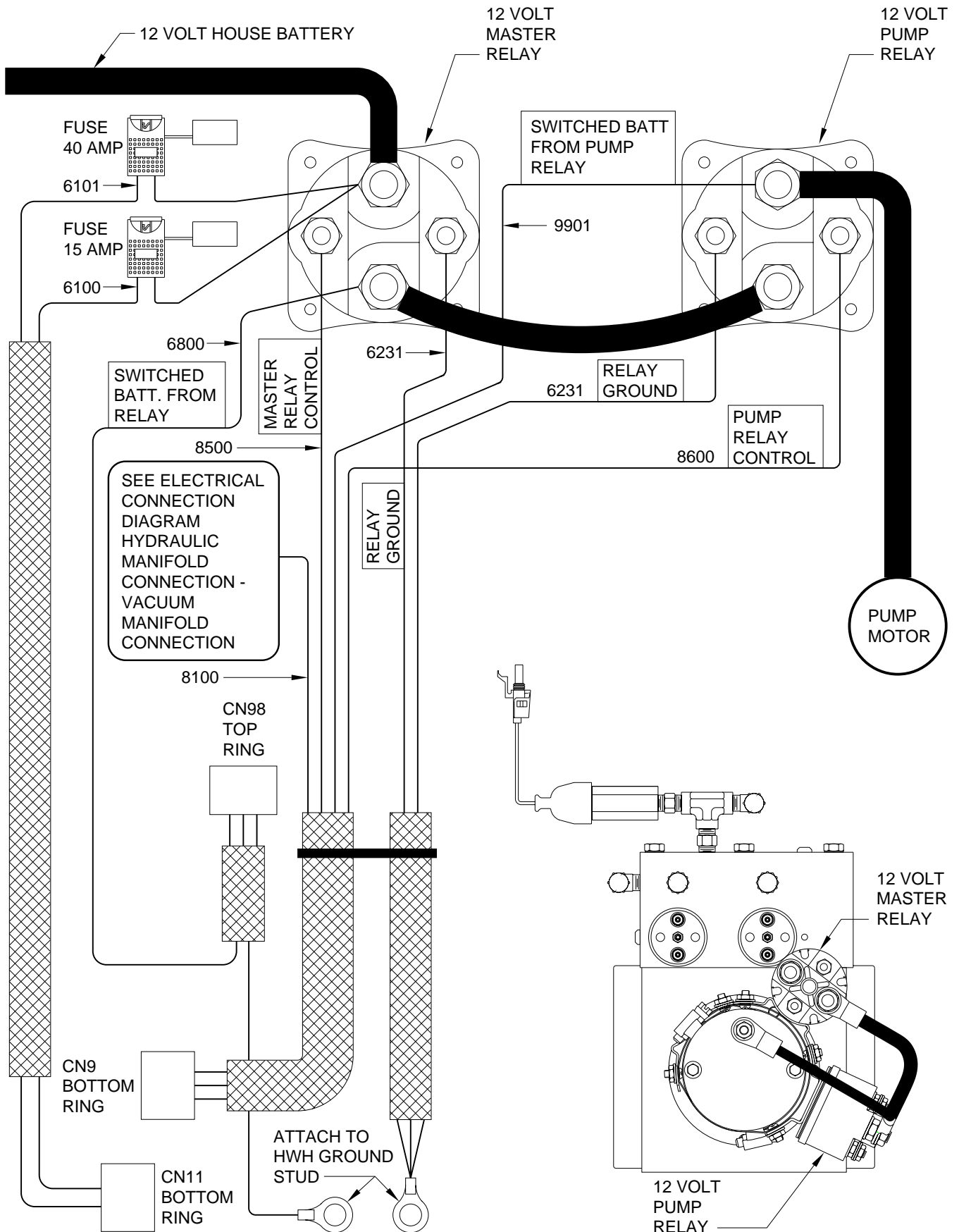


WHEN THERE IS NO +12 POWER TO THE AIR VALVES CONSTANT AIR PRESSURE IS SUPPLIED TO THE AIR SEAL FROM THE AIR SUPPLY.

WHEN +12 IS SUPPLIED TO THE AIR VALVES, AIR WILL EXHAUST FROM THE AIR SEAL.

**AIR SEAL MANIFOLD ASSEMBLY**  
**AIR PRESSURE REGULATOR - SET AT 15 P.S.I.. DO NOT CHANGE.**

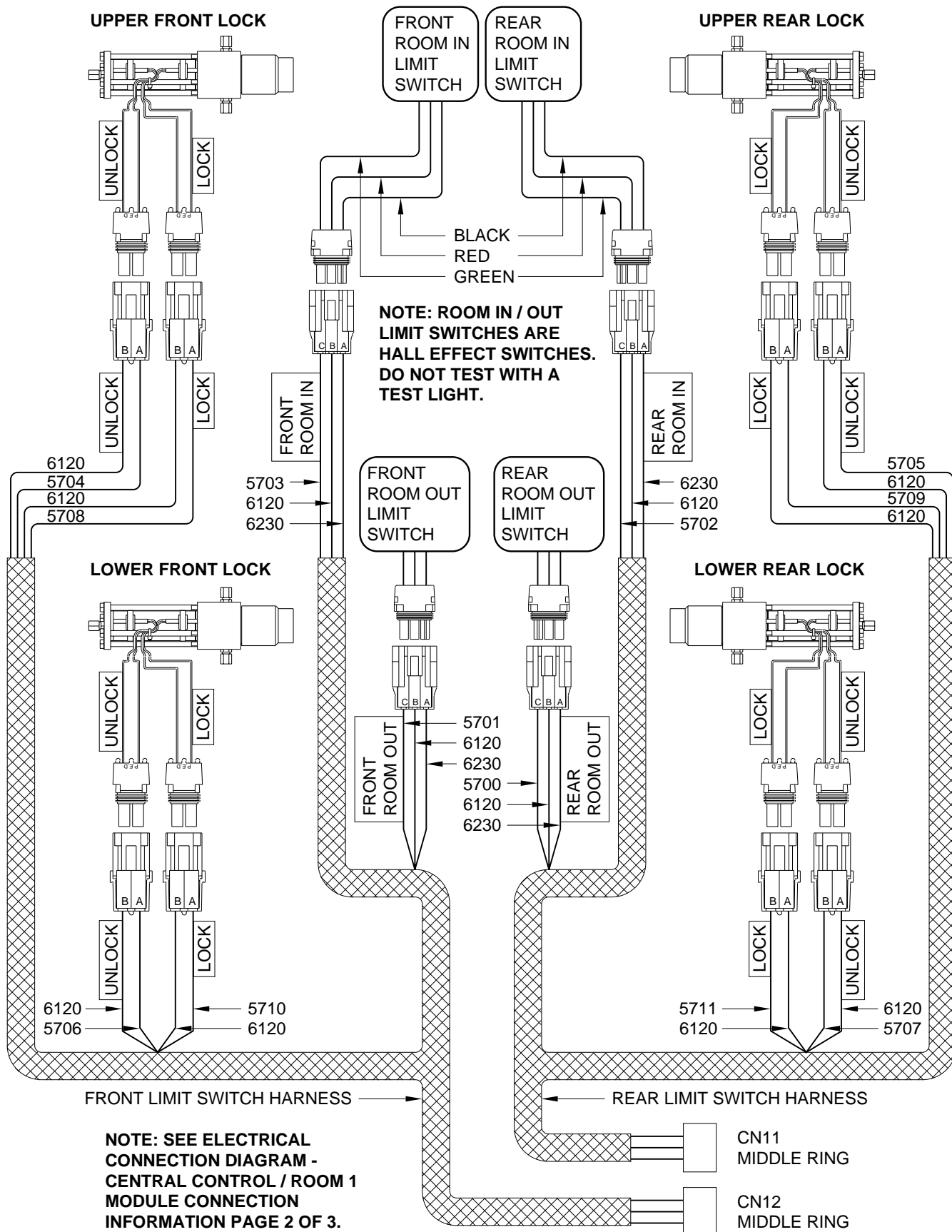
# ELECTRICAL CONNECTION MASTER AND PUMP RELAYS



# ELECTRICAL CONNECTION DIAGRAM

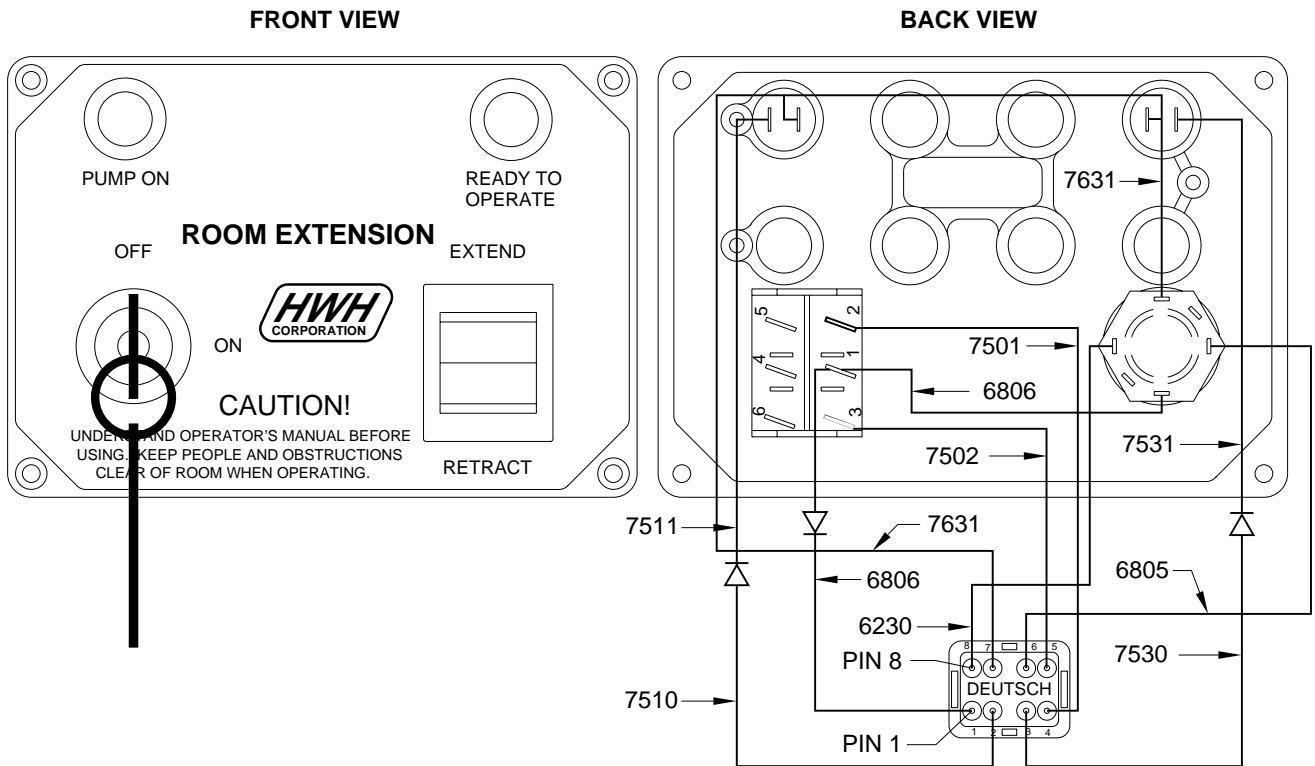
## VERTICAL ARM ROOM EXTENSION

### LOCK / UNLOCK LIMIT SWITCHES AND ROOM IN / OUT LIMIT SWITCHES





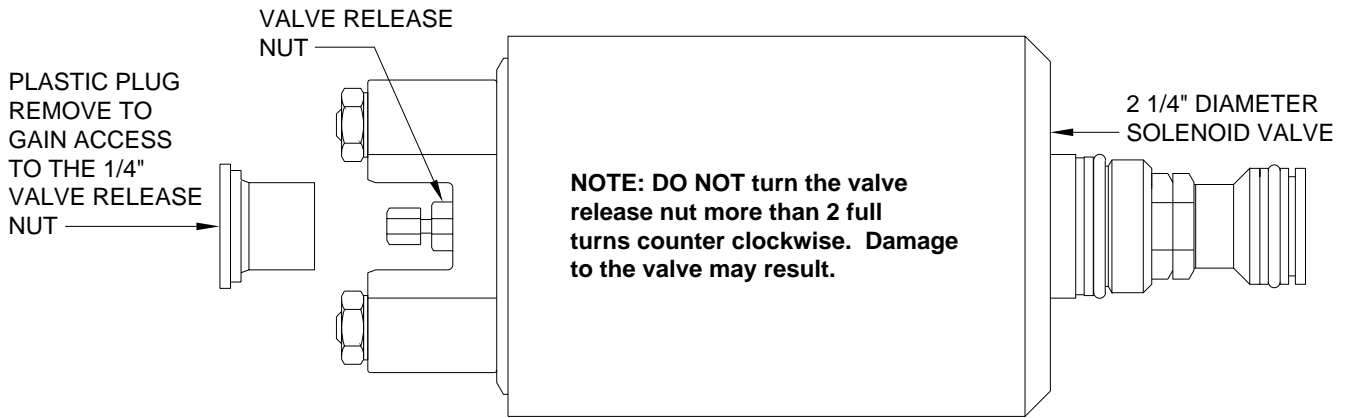
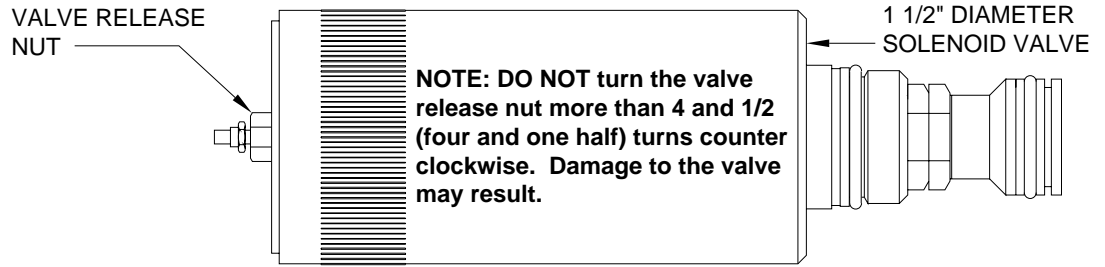
# ELECTRICAL CONNECTION DIAGRAM ROOM EXTENSION PANEL



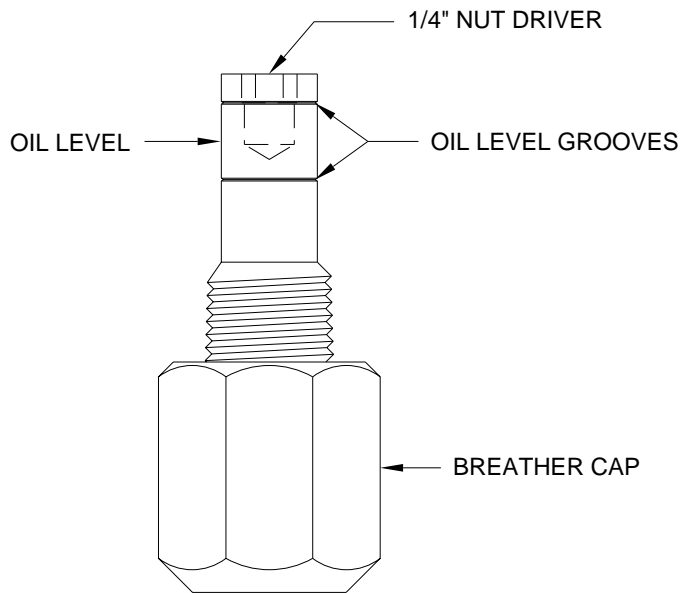
CONNECTOR PIN #	WIRE NUMBER	WIRE DESCRIPTION AND FUNCTION
1	6806	SWITCHED +12 FROM KEY SWITCH FOR ROOM CONTROL SWITCH
2	7510/7511	READY TO OPERATE LIGHT CONTROL WIRE SWITCHED +12V
3	7530/7531	PUMP ON LIGHT CONTROL WIRE SWITCHED +12
4	7501	ROOM EXTEND - SWITCHED +12V FROM ROOM CONTROL SWITCH
5	7502	ROOM RETRACT - SWITCHED +12V FROM ROOM CONTROL SWITCH
6	6805	SWITCHED +12V TO ROOM PANEL KEY SWITCH
7	7631	SWITCHED GROUND FROM ROOM PANEL KEY SWITCH FOR PANEL INDICATOR LIGHTS AND SYSTEM WAKE UP
8	6230	GROUND SUPPLY FOR ROOM PANEL KEY SWITCH



# BREATHER CAP - DIPSTICK - 1/4" NUT DRIVER



**NOTE: THE BREATHER CAP IS LOCATED ON THE TOP SIDE OF THE POWER UNIT RESERVOIR.**



**IMPORTANT: PRIOR TO REMOVING THE BREATHER CAP, EITHER TO CHECK THE OIL LEVEL OR TO USE THE 1/4" NUT DRIVER, CLEAN ANY DEBRIS FROM THE TOP OF THE RESERVOIR. BEFORE RETURNING THE BREATHER CAP TO THE RESERVOIR, REMOVE ANY PAINT CHIPS OR OTHER DEBRIS FROM THE DIPSTICK INCLUDING DEBRIS INSIDE THE 1/4" NUT DRIVER.**