



## ***SURGICAL TABLE OPERATORS MANUAL***



## ***6700B HERCULES***

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REV 6/06

Although current at time of publication, SKYTRON's policy of continuous development makes this manual subject to change without notice.

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**EQUIPMENT LABELS AND SPECIFICATIONS**

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INDICATES DANGEROUS VOLTAGE, 120 V, 60 Hz



CLASS I DEFIBRILLATION PROOF, TYPE B EQUIPMENT- IPX4 RATED.  
INTERNALLY POWERED EQUIPMENT



PROTECTIVE GROUNDING.  
IN ORDER TO ENSURE PROPER GROUNDING RELIABILITY,  
THIS TABLE MUST BE CONNECTED TO A PROPERLY GROUNDED  
HOSPITAL GRADE OUTLET.



CONNECTION FOR NEUTRAL CONDUCTOR SUPPLIED



UNIT TO BE USED ONLY IN SPECIFIED ENVIRONMENTAL CONDITIONS  
TEMPERATURE: 15° - 30° C (60° - 85° F)  
HUMIDITY: 30% - 60% RELATIVE HUMIDITY, NON CONDENSING



AC VOLTAGE

**IPX4**

ENCLOSURE CLASS

**V**

VOLTAGE RATING OF THE UNIT

**A**

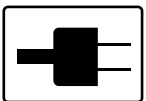
AMPERAGE RATING OF THE UNIT

**HZ**

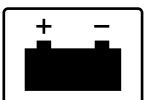
FREQUENCY OF THE UNIT



ATTENTION, CONSULT MANUAL FOR FURTHER INSTRUCTIONS.  
INDICATES SPECIAL USER ATTENTION.



POWERED BY AC VOLTAGE

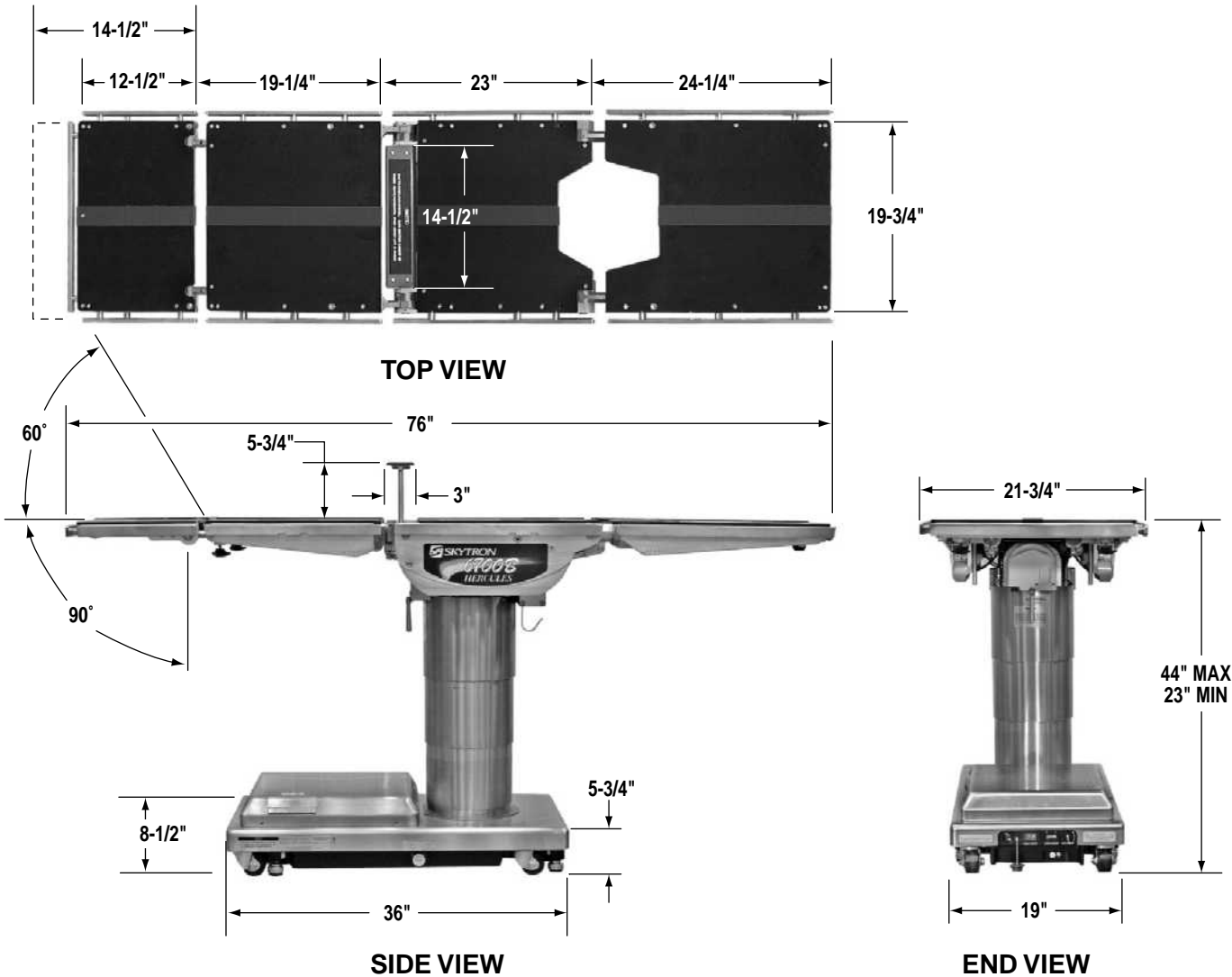


POWERED BY BATTERY

**BATTERY TYPE:** SEALED  
LEAD ACID 12V, VALVE REGULATED  
16AH, 10HR (530W/10MIN)

**15A** 15 AMP INTERNAL CIRCUIT BREAKER

# 6700B Hercules General Purpose Surgical Table Specifications



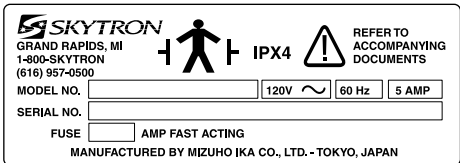
**ENTECLA CERTIFIED**

TO UL2601-1  
CAN/CSA601.1, IEC 60601-2-46



**Electrical Specifications**

Power requirements	120 VAC, 60Hz, 450 Watts
Current Leakage	Less than 100 micro amps
Power Cord	15 feet w/hospital grade connector (removable)



**SERIAL NUMBER TAG**



**SPECIAL USER ATTENTION**

**Prior to use, all personnel that may operate this table must be instructed in the correct operational procedures. This table is designed for use by trained and qualified personnel for human medical purposes only.**

**Initial use should not begin until after the users have been instructed by the manufacturer's representative.**

**A routine instructional program must be implemented by the facility for proper usage instructions for all personnel that may operate this table.**

**The maximum lifting capacity of the 6700B Hercules table is 1,200 pounds and the maximum articulation weight capacity is 1,000 pounds. When lifting or articulating large patients, pay close attention to the patient position as well as the positioning guidelines and limitations listed in the operation instructions.**

The extreme positioning capabilities of the 6700B Hercules Table requires special attention for possible interference points when using multiple function positioning. As with the operation of any surgical table, a certain amount of care should be exercised to position the patient safely. Although the thick pads and sheets substantially protect the patient, pinch points, located at the joints of the top section should always be considered. **BE SURE THAT THE ARMS, HANDS AND FINGERS OF THE PATIENT AND THOSE OF THE OPERATING ROOM PERSONNEL ARE CLEAR OF ALL MOVING PARTS BEFORE MOVING THE TABLE.** Proper restraints should always be used for patient safety.

Certain accessories such as the Uro-Drain Tray, Armboards and X-Ray top can be damaged when changing the position of the table top sections. Always look first to see if a desired movement is going to interfere with any accessories in use.

The operator has the ultimate responsibility of preventing damage to the table and surrounding equipment or possible injury to the patient or staff.

The operator must ensure proper positioning is maintained to prevent compromising respiration, nerve pathways or circulation.

In general, common sense will dictate when there is a potential hazard.

***The following precautions should be reviewed by all personnel prior to operating the table.***

**WARNING**

Indicates a possibility of personal injury.

**CAUTION**

Indicates a possibility of damage to equipment.

**NOTE**

Indicates important facts or helpful hints.

Do not use worn or damaged accessories, they represent an injury hazard.

Remove possible obstacles before lowering or tilting the operating table



Do not place objects on the base of the table, a danger of damage exists during positioning.

Use caution when articulating the table top, pinch hazards exist.

**NOTE**

Activating any function button will activate the brake system. Using the TABLE UP function to set the brakes provides a visual assurance that the brakes are locked without altering the table position, except when emergency brake is released.

**WARNING**

Possible explosion hazard exists if table is used in the presence of FLAMMABLE ANESTHETICS.

**NOTE**

An equalization grounding terminal is located under the main power panel. This is provided as an alternate pathway to reduce the risk of static shock hazards. Always follow recommended grounding procedures to ensure patient and staff safety.

**NOTE**

The table will operate correctly on battery power with the power cord connected to a wall outlet or disconnected.

**NOTE**

Battery Operation must be turned OFF at the pendant control. It can not be turned Off using the main power switch.

**NOTE**

Turning the Main Power Switch ON will change the table operation to 120 VAC power.

**NOTE**

When the red light starts to blink (indicating low power in battery) the table will operate for approximately 5 continuous minutes, typically long enough to use the table for the rest of the day.

**NOTE**

The charging system operates ONLY when the table is in AC120V operation mode.

**NOTE**

The table can be operated on 120VAC power while the battery is being recharged.

**NOTE**

If the table is stored for a period greater than 6 months, the batteries should be removed and stored in a dry, clean condition at a storage temperature of 68° F (20° C). Batteries should be recharged every 6 months of product storage.

**WARNING**

- Do Not unlock brakes when patient is on the table. An uneven patient weight load may cause instability.

- If circumstances demand table brakes to be unlocked, the patient must be centered and evenly distributed on the table top (i.e. supine or prone position) with the table lowered to its lowest height position. The maximum patient weight should not exceed 500 pounds. Table top rotation must be in normal orientation, that is, the back section over the long end of the table. Patient's head must be on the head section. Head section must be attached in its normal orientation to the table's back section.

- Prior to unlocking brakes, check for obstructions on the floor that might prevent the table from moving smoothly to new location. Relock the brakes immediately once the final position is reached and before commencing surgery. Table brakes should remain locked at all times if patient weight exceeds 500 pounds.

**NOTE**

With an evenly distributed patient weight load, all table positioning functions will operate smoothly and quietly with a patient weight of up to 1,000 pounds.

**NOTE**

To prevent table damage, a safety interlock limits Trendelenburg positioning to 20° if lateral tilt positioning exceeds 20°. An audible alarm will sound.

**WARNING**

To maximize patient safety, utilize proper restraint methods during extreme Trendelenburg positioning.

**NOTE**

To prevent table damage, a safety interlock limits lateral tilt positioning to 20° if Trendelenburg positioning exceeds 20°. An audible alarm will sound.

**WARNING**

To maximize patient safety, utilize proper restraint methods during extreme lateral tilt positioning.

**NOTE**

To prevent damage to the kidney lift, a safety interlock prevents the back section from going above horizontal if the kidney lift is not all the way down. If the kidney lift is raised, an audible alarm will sound when the BACK UP button is pressed.

**NOTE**

If back section is below horizontal, BACK UP function is limited to 800 pound patient weight.



**WARNING**



The Leg section may hit the table base or the floor if both the leg and elevation systems are placed in their full down position.

**NOTE**

When REFLEX button is activated, if Kidney Bridge is up, the back section will not go above horizontal.

**NOTE**

To prevent damage to the kidney lift, a safety interlock prevents the kidney lift from going up if the back section is raised above horizontal. An audible alarm will sound.

**NOTE**

Elevation and brake system functions are not affected by the return to level function.



**CAUTION**



The Back Section/Kidney Lift safety interlock is not operational when the emergency back-up control switches are used.



**CAUTION**



The EMERGENCY BRAKE LOCK switch does not activate the brake system timer. The switch must be held until the brakes are completely locked, approximately 10 seconds.

**NOTE**

The emergency back-up control switches will function when the table is operating on 120VAC power, battery power, or turned off.

**NOTE**

The Emergency Brake Release Valve must be closed and tightened (clockwise) before activating any function.

- If the Emergency Brake Release Valve has been operated, the BRAKE UNLOCK button on the pendant control will have to be pressed before brakes will lock again.

**NOTE**

To make the Back Section easier to handle, remove the Head Section and X-ray Top prior to removing the Back Section.



**WARNING**



Ensure that the Leg and Back sections are properly engaged and secured to pins before use to prevent injury.

**NOTE**

The Leg and Back sections are labeled for proper orientation. The Leg section cannot be installed on the Back section pins.



**NOTE**

Normal table top position is with the head (and back) section over the power cord end of the base.

**WARNING**

When an antistatic pathway is required, the table has to be used on an antistatic floor.

**WARNING**

Always lock the table top in position after rotation. DO NOT rotate the top with an unevenly distributed patient weight load as instability may result.

**WARNING**

The antistatic properties of the table are dependent on the use of the original pad set which was furnished with the table or an alternate approved replacement.

**WARNING**

- Make sure the TOP ROTATION LOCK HANDLE is tightened and the brakes are set before transferring the patient.

- Exercise caution with the table top rotated 90° to the base since an improperly distributed patient load may cause the table to be tipped over. A table support rod is required for 90° positioning. See Specialty Positioning.

**WARNING**

Certain accessories may limit weight capacities. Check with your SKYTRON representative.

**NOTE**

Always follow current AORN Journal Guidelines to ensure proper cleaning and disinfection procedure.

**WARNING**

Consult manufacturer's instructions when using high frequency surgical equipment, cardiac defibrillator and cardiac defibrillator monitors.

**WARNING**

Always follow OSHA blood-borne pathogens standards for protective clothing, including gloves, masks and eye protection when cleaning the surgical table.

**CAUTION**

Thoroughly read and follow the manufacturer's directions for all cleaning fluids. **DO NOT** use cleaners containing phenolics.

**CAUTION**

When using spray cleaners **DO NOT** spray fluids directly into electrical receptacles or micro switches.

**CAUTION**

Before replacing pads on the table, make sure the pads and all mating surfaces are completely dry. Moisture trapped between the pads and mating surfaces may cause distortion of table tops.

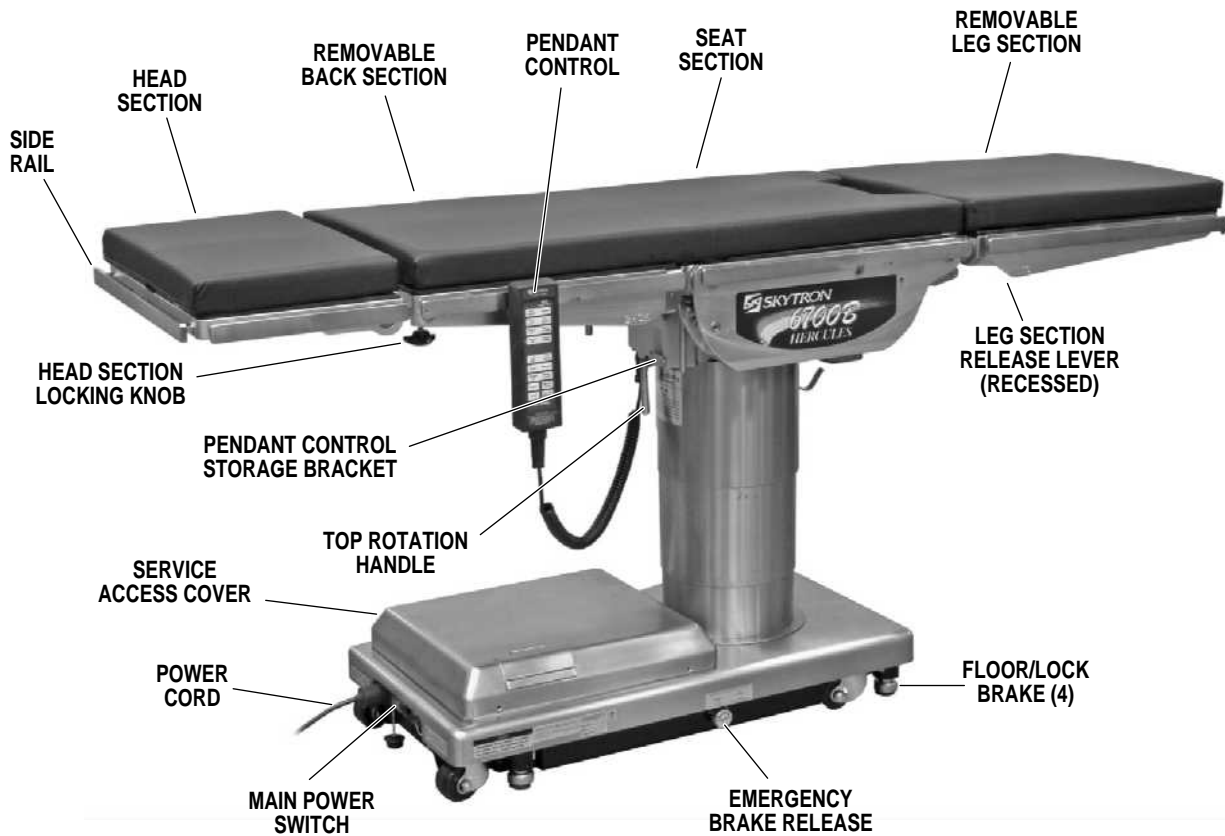


Figure 1-1. 6700B HERCULES

### 1-1. General

SKYTRON's 6700B Hercules Surgical Table is an electro-hydraulically operated, general purpose surgical table. See figure 1-1.

The electro-hydraulic positioning functions operated by the hand-held, push button, pendant control unit are: Trendelenburg, lateral tilt, back section, elevation, leg section, flex/reflex, kidney lift, return to level, beach chair and the floor lock/brake system.

Manual controls are provided for head section positioning, table top rotation, emergency brake release, back section removal and leg section removal.

### 1-2. Power Requirements

The 6700B Hercules Surgical Table requires a 120VAC, 60 Hz electrical power supply. The table is equipped with a removable 15 foot long power

cord with a three prong, hospital grade plug. The main power ON/OFF switch is located on the electrical panel on the front edge of the table base. See figure 1-2.

The battery charging indicator and foot control connector are also located on the electrical panel.

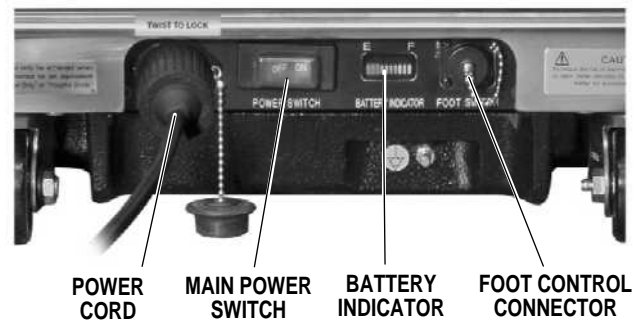


Figure 1-2. Electrical Panel

### 1-3. Pendant Control Unit

The hand-held pendant control unit (figure 1-3) has a non-slip rubber cover which assures a positive grip during use. A spring clip hanger is located on the back of the control for storage. When the Pendant Control is not in use, it should be stored on a convenient side or end rail. A bracket is located under the table top next to the pendant control connector for storage of the Pendant Control when the table is not in use and during cleaning. See figure 1-4.

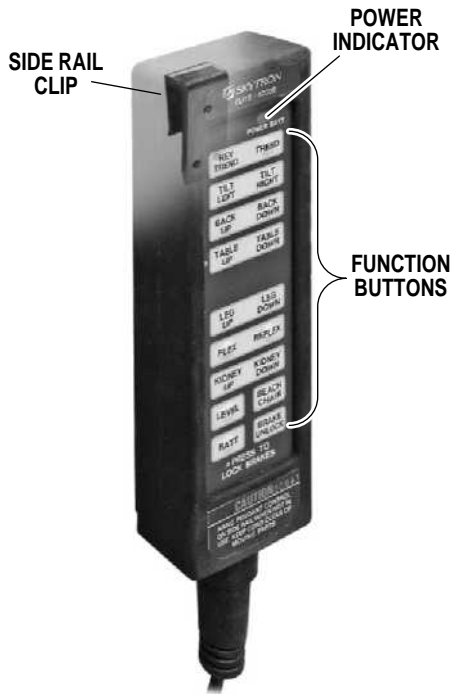


Figure 1-3. Pendant Control Unit

The function push buttons are identified with abbreviated descriptions for all functions. See figure 1-5. When illuminated the Trendelenburg and table up buttons are red, the remaining buttons are all green.

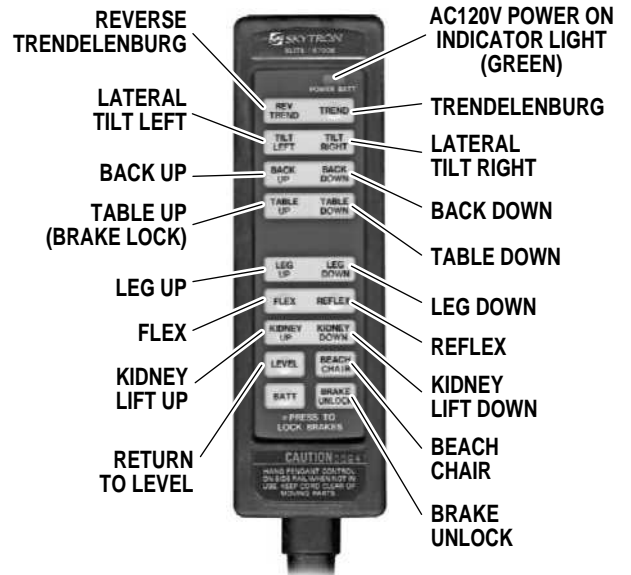


Figure 1-5. Function Buttons

### 1-4. Floor Lock/Brake System

The floor lock/brake system consists of four self-leveling, hydraulic brake cylinders which raise and support the table base off from the casters. Press the TABLE UP button on the pendant control to set the table's brakes. An electronic timer will activate the brake system until the brakes are completely set, approximately 8-10 seconds.

#### NOTE

Activating any function button will activate the brake system. Using the TABLE UP function to set the brakes provides a visual assurance that the brakes are locked without altering the table position, except when emergency brake is released.

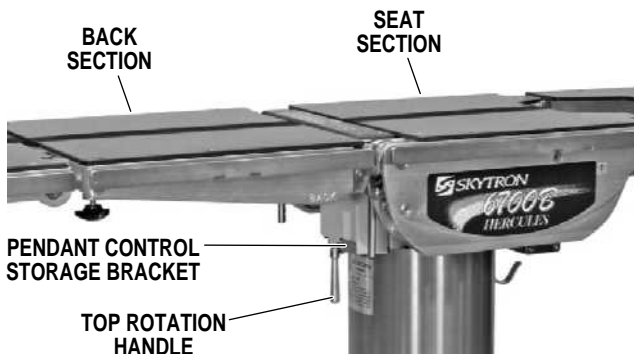


Figure 1-4. Pendant Control Storage Bracket

**2-1. Electrical Power**

The 6700B table will operate on either 120 VAC or battery power.



**WARNING**



Prior to operating the table, observe all table caution labels and review the SPECIAL USER ATTENTION section in the front of this manual.



**WARNING**



Possible explosion hazard exists if table is used in the presence of FLAMMABLE ANESTHETICS.

**NOTE**

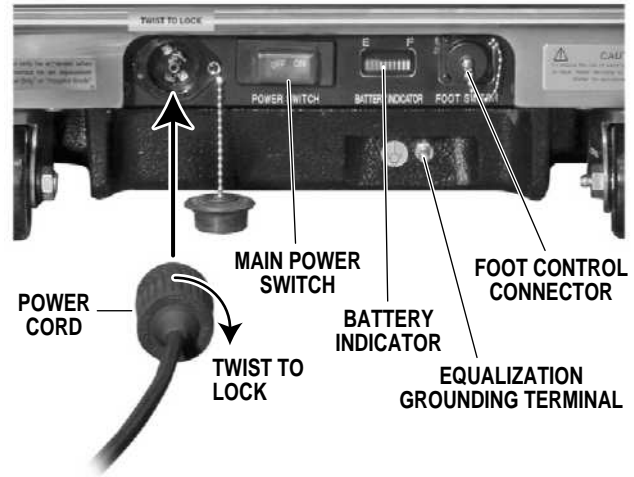
An equalization terminal is located under the main power panel. This is provided as an alternate pathway to reduce the risk of static shock hazards. Always follow recommended grounding procedures to ensure patient and staff safety.

**2-2. AC 120V Operation**

Use the following procedures to operate the table on 120 VAC power.

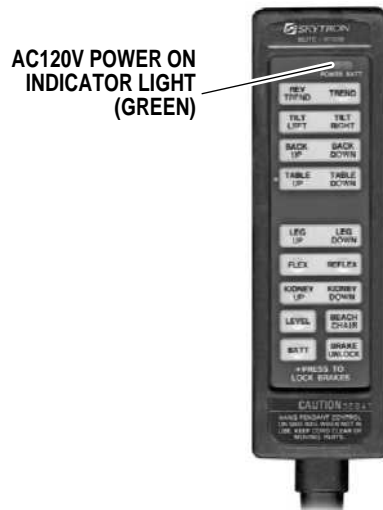
a. Make sure the Power cord is securely attached to the table. To install the power cord, align the cord connector with the base connector, insert the cord and twist clockwise to lock the cord into the connector. See figure 2-1. Plug the cord into a properly grounded, Hospital Grade, 120 VAC outlet. Make sure the power cord is routed to the outlet to prevent it from being in the way of operating personnel.

b. Activate the POWER SWITCH located on the electrical panel. The switch will illuminate.



**Figure 2-1. Electrical Panel**

The pendant control buttons and the green AC 120V, POWER indicator light located in the upper right corner of the pendant control will illuminate. See figure 2-2.



**Figure 2-2. Pendant Control**

c. The table is now ready for 120VAC operation.

### 2-3. Battery Operation

a. Make sure the Battery Indicator and Main Power Switch indicator lights, on the electrical panel, are OFF. See figure 2-2. If the indicator lights are ON, turn AC120V operation OFF with the main power switch.

#### NOTE

The table will operate correctly on battery power with the power cord connected to a wall outlet or disconnected.

b. Press the BATT button on the hand-held pendant control. The pendant control buttons and the red BATTERY indicator light, located in the upper right corner of the pendant control, will illuminate.

c. The table is now ready for BATTERY operation.

d. To extend the battery charge life, turn the BATTERY power OFF with the pendant control when the table is not going to be used.

#### NOTE

Battery Operation must be turned OFF at the pendant control. It cannot be turned OFF using the main power switch.

### 2-4. Automatic Shut-Off

a. To prevent unnecessary discharge of the battery, a timer is built into the battery circuit. This timer will automatically shut the battery power OFF after 1½ hours of table inactivity.

b. To turn the table ON again, press the BATT button on the pendant control, the pendant control buttons and the red indicator light will illuminate.

#### NOTE

Turning the Main Power Switch ON will change the table operation to 120 VAC power.

## 2-5. Charging the Battery

Batteries should be charged:

- When the table is placed into initial service
- As indicated by Battery Indicator
- Every week under normal service conditions

**a. Battery Indicator** The Battery Indicator consists of ten lighted bars, 3 red, 4 yellow and 3 green. See figure 2-3. Each bar represents a percentage of the battery charge condition. When all ten bars are illuminated, the batteries are fully charged. The following list shows the battery charge level as indicated by the lighted bars;

3 green	100% -Fully charged
2 green	89%
1 green	78%
4 yellow	67%
3 yellow	56%
2 yellow	45% -Needs Charging (BATT indicator on pendant will flash)
1 yellow	34% -Needs Charging
3 red	23% -Needs Charging (poor performance)
2 red	12% -Needs Charging (intermittent performance)
1 red	1% -Needs Charging (inoperable)

During charging, the bars will light in sequence to the respective charge level, turn off and light in sequence again.

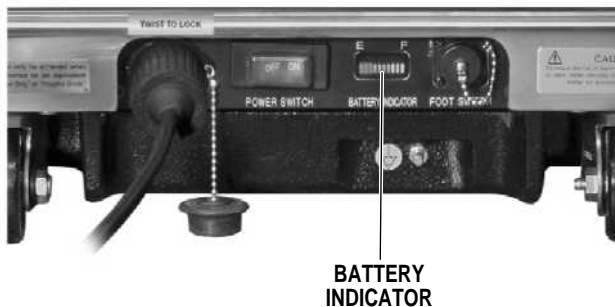


Figure 2-3. Battery Indicator

**b.** If the battery needs to be charged when operating the table on battery power, the red indicator light on the pendant control will begin to blink.

### NOTE

When the red light starts to blink (indicating low power in battery) the table will operate for approximately 5 continuous minutes, typically long enough to use the table for the rest of the day.

### NOTE

The charging system operates ONLY when the table is in AC120V operation mode.

**c.** To recharge the battery, make sure the power cord is connected, plugged into a 120VAC wall outlet and the main POWER SWITCH - ON.

### NOTE

The table can be operated on 120VAC power while the battery is being recharged.

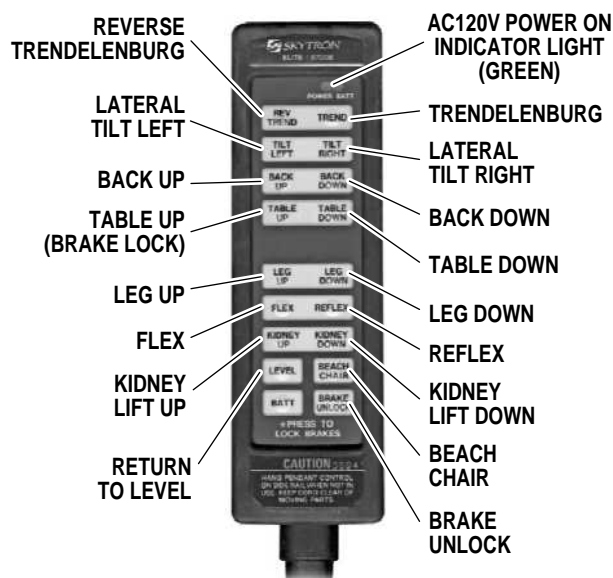
**d.** A full battery charge will last approximately 2 weeks under normal operating conditions. However, it is recommended to charge the batteries at the end of each week to establish a normal routine protocol. Lead acid batteries last longer if they are not permitted to fully discharge. The table features (2) 12 volt, sealed, lead acid batteries which require no manual maintenance. Lead acid gel batteries, under a proper charging program, feature an approximate normal life of 4 years.

### NOTE

If the table is stored for a period greater than 6 months, the batteries should be removed and stored in a dry, clean condition at a storage temperature of 68° F (20° C). Batteries should be recharged every 6 months of product storage.

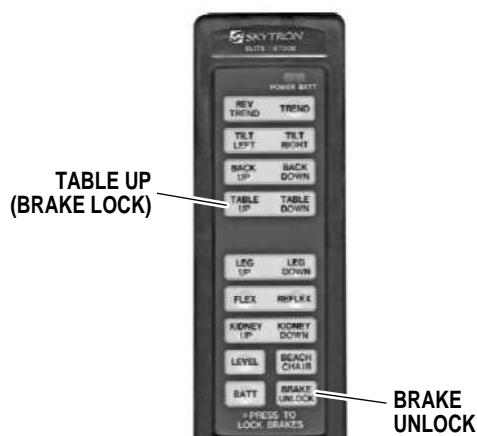
## 2-6. Positioning Functions

The hand-held pendant control (figure 2-4) activates the following table functions:



**Figure 2-4. Pendant Control Function Buttons**

**a. Floor Lock/Brake System.** To activate the brakes without affecting table positioning, press the TABLE UP button. See figure 2-5. The elevation cylinder will not function until the brakes are completely extended.



**Figure 2-5. Brake System Activation**

Press the BRAKE UNLOCK button on the pendant control to release the four self-leveling brake feet in order to move the table. See figure 2-5. The brake delay circuit automatically retracts the brake system. It takes approximately 7-8 seconds to totally release the system.



### WARNING



- Do Not unlock brakes when patient is on the table. An uneven patient weight load may cause instability.

- If circumstances demand table brakes to be unlocked, the patient must be centered and evenly distributed on the table top (i.e. supine or prone position) with the table lowered to its lowest height position. The maximum patient weight should not exceed 500 pounds. Table top rotation must be in normal orientation, that is, the back section over the long end of the table. Patient's head must be on the head section. Head section must be attached in its normal orientation to the table's back section.

- Prior to unlocking brakes, check for obstructions on the floor that might prevent the table from moving smoothly to new location. Relock the brakes immediately once the final position is reached and before commencing surgery. Table brakes should remain locked at all times if patient weight exceeds 500 pounds.

### NOTE

With an evenly distributed patient weight load, all table positioning functions will operate smoothly and quietly with a patient weight of up to 1,000 pounds.



**b. Trendelenburg.** To place the table in a Trendelenburg (head down) position, press the TREND button (figure 2-6). To place the table in a reverse Trendelenburg (head up) position, press the REV TREND button. Trendelenburg positioning of up to 30° may be obtained if lateral tilt positioning is less than 20°.

**NOTE**

To prevent table damage, a safety interlock limits Trendelenburg positioning to 20° if lateral tilt positioning exceeds 20°. An audible alarm will sound.



**WARNING**



To maximize patient safety, utilize proper restraint methods during extreme Trendelenburg positioning.

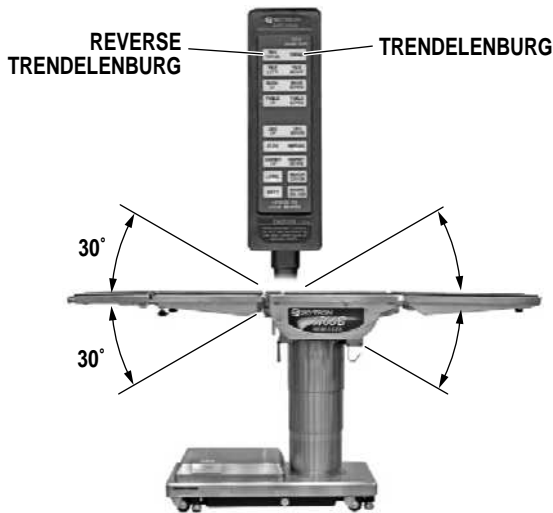


Figure 2-6. Trendelenburg Positioning

**c. Lateral Tilt.** To achieve lateral tilt right (as viewed from the head end of the table), press the TILT RIGHT button (figure 2-7). To achieve lateral tilt left, press the TILT LEFT button. Tilt of up to 30° may be obtained if Trendelenburg positioning is less than 20°.

**NOTE**

To prevent table damage, a safety interlock limits lateral tilt positioning to 20° if Trendelenburg positioning exceeds 20°. An audible alarm will sound.



**WARNING**



To maximize patient safety, utilize proper restraint methods during extreme lateral tilt positioning.

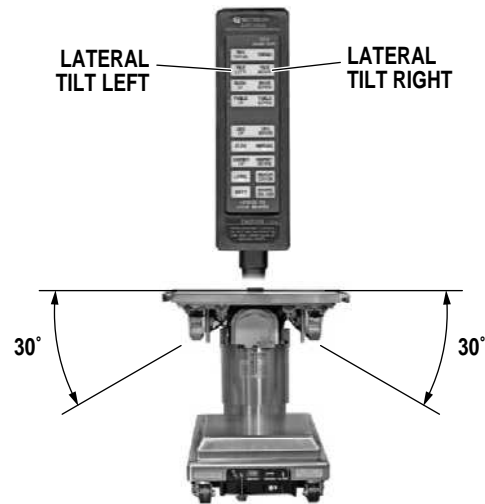


Figure 2-7. Lateral Tilt Positioning

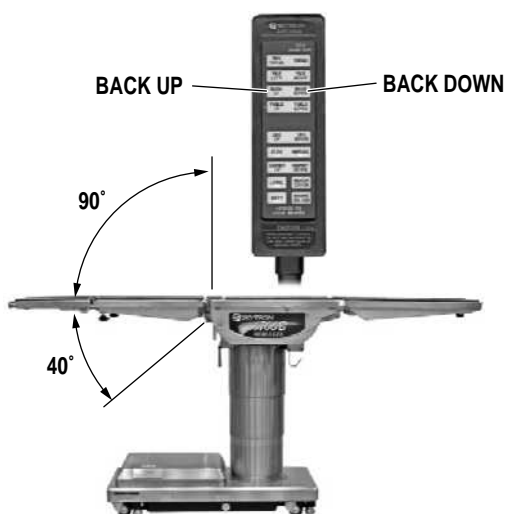
**d. Back Section.** To raise the back section, press the BACK UP button (figure 2-8). The back section will raise up to 90° above horizontal. To lower the back section, press the BACK DOWN button. The back section will go down to 40° below horizontal.

#### NOTE

To prevent damage to the kidney lift, a safety interlock prevents the back section from going above horizontal if the kidney lift is not all the way down. If the kidney lift is raised, an audible alarm will sound when the BACK UP button is pressed.

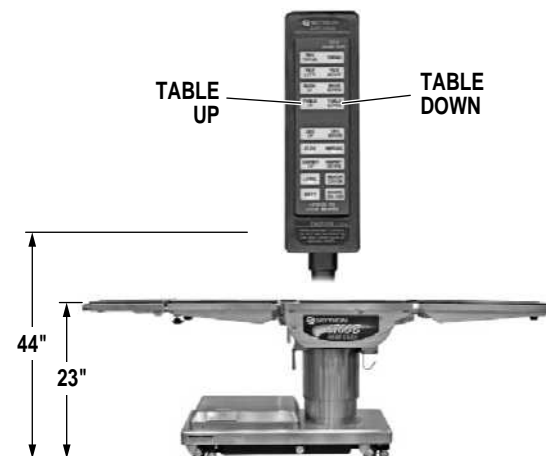
#### NOTE

If back section is below horizontal, BACK UP function is limited to 800 pound patient weight.



**Figure 2-8. Back Section Positioning**

**e. Elevation.** To raise table top, press the TABLE UP button (figure 2-9). The table will lift a patient weight of 1,200 pounds up to a maximum height of 44" (48" with X-Ray top and 2" pad). To lower the table top, press the TABLE DOWN button. The table top will go down to a minimum height of 23".



**Figure 2-9. Elevation Function**

**f. Leg Section.** To lower the leg section, press the LEG DOWN button (figure 2-10). The leg section will go down to 100° below horizontal. To raise the leg section, press the LEG UP button. The leg section will go up to 20° above horizontal.



**WARNING**



The Leg section may hit the table base or the floor if both the leg and elevation systems are placed in their full down position.

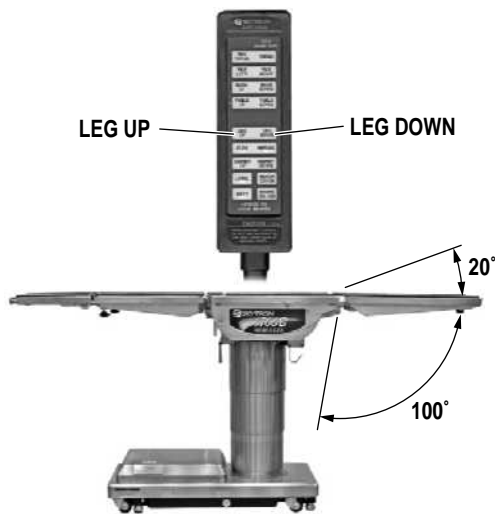


Figure 2-10. Leg Section Positioning

**g. Flex Positioning.** To place the table top in a flex position from horizontal, press the FLEX button (figure 2-11). To return the table top to a horizontal position or into a reflex position, press the LEVEL or REFLEX button.

**NOTE**

When REFLEX button is activated, if Kidney Bridge is up, the back section will not go above horizontal.

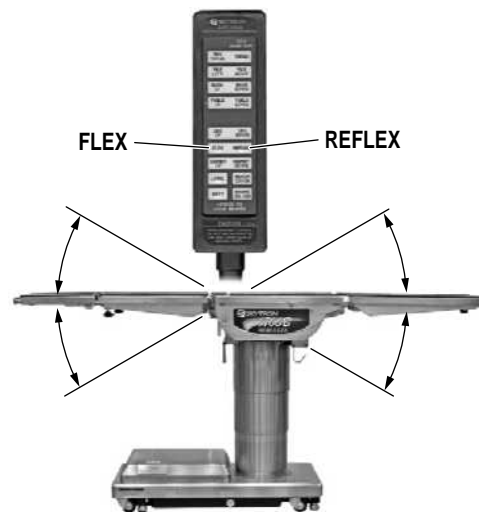


Figure 2-11. Flex/Reflex Positioning

**h. Kidney Lift.** To raise the built-in kidney lift, press the KIDNEY UP button (figure 2-12). Up to 5.75 inches of lift can be achieved. Press the KIDNEY DOWN button to lower the kidney lift.

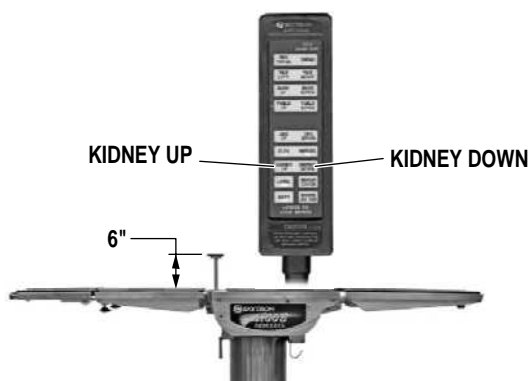


Figure 2-12. Kidney Lift Positioning

**NOTE**

To prevent damage to the kidney lift, a safety interlock prevents the kidney lift from going up if the back section is raised above horizontal. An audible alarm will sound.

**i. Return To Level.** To return the table top to a level position, press the LEVEL button (figure 2-13).

**NOTE**

Elevation and brake system functions are not affected by the return to level function.

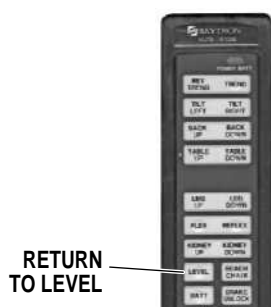


Figure 2-13. Return To Level

**j. Beach Chair.** To place the top in the beach chair position from a level position, press the BEACH CHAIR button (figure 2-14). The back section will raise, the leg section will lower and the Trendelenburg positioning will function simultaneously. The functions will stop when Trendelenburg reaches its limit.



Figure 2-14. Beach Chair Positioning

## 2-7. Emergency Back-up Controls

a. The emergency back-up control switches are located under the access door on the service access cover in the table base. See figure 2-15.

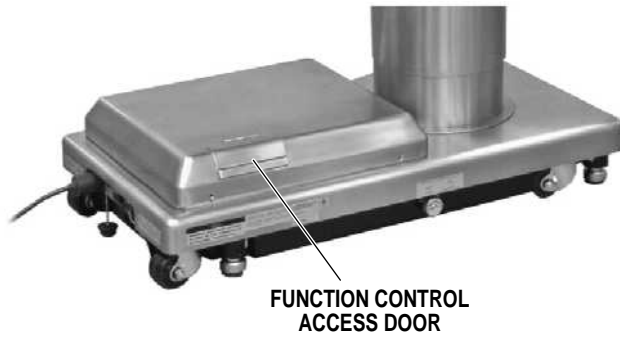


Figure 2-15. Emergency Controls Location

b. In the event of either a power failure or a problem with the hand-held pendant control, the table can be operated using the emergency back-up switches. Simply push the desired emergency switch in the appropriate direction to operate the table functions. See figure 2-16.



**CAUTION**



The Back Section/Kidney Lift safety interlock is not operational when the emergency back-up control switches are used.

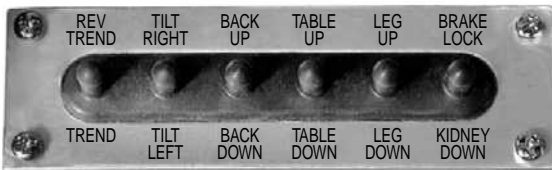


Figure 2-16. Emergency Back-Up Controls



**CAUTION**



The EMERGENCY BRAKE LOCK switch does not activate the brake system timer. The switch must be held until the brakes are completely locked, approximately 10 seconds.

### NOTE

The emergency back-up control switches will function when the table is operating on 120VAC power, battery power, or turned off.

c. Switches are provided for Trendelenburg, lateral tilt, back section, elevation, leg section, kidney down and brake lock. These switches are spring-loaded so they return to the neutral or center position when released.

## 2-8. Emergency Brake Release.

In case of a power failure or an electrical problem within the table, the emergency brake release system can be used to move the table. The control knob for this function is located on the side of the table base and is identified by an EMERGENCY BRAKE RELEASE label. Turn the knob counter-clockwise to release the brakes. See figure 2-17.



**WARNING**



- Do Not unlock brakes when patient is on the table. An uneven patient weight load may cause instability.

- If circumstances demand table brakes to be unlocked, the patient must be centered and evenly distributed on the table top (i.e. supine or prone position) with the table lowered to its lowest height position. The maximum patient weight should not exceed 500 pounds. Table top rotation must be in normal orientation, that is, the back section over the long end of the table. Patient's head must be on the head section. Head section must be attached in its normal orientation to the table's back section.

- Prior to unlocking brakes, check for obstructions on the floor that might prevent the table from moving smoothly to new location. Relock the brakes immediately once the final position is reached and before commencing surgery. Table brakes should remain locked at all times if patient weight exceeds 500 pounds.



**Figure 2-17. Emergency Brake Release**

#### NOTE

The Emergency Brake Release Valve must be closed and tightened (clockwise) before activating any function.

- If the Emergency Brake Release Valve has been operated, the UNLOCK button on the pendant control will have to be pressed before brakes will lock again.

## 2-9. Head Section

a. A quick release positioning bar located under and to the front of the head section (figure 2-18) is used to raise or lower the head section. Pull the release bar toward the head end to allow the section to pivot up or down. Positioning from 60° above horizontal to 90° below horizontal in 15° increments is available. Release the bar to lock the head section in position.

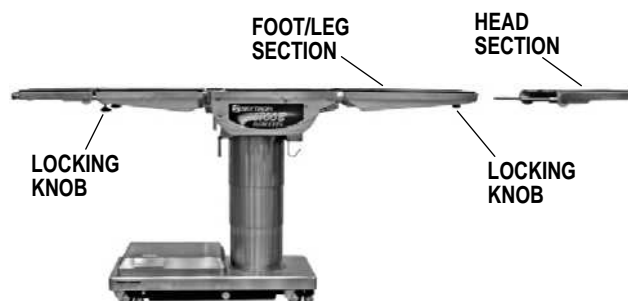


**Figure 2-18. Head Section Adjustment**

b. By loosening two locking knobs beneath the back section, an additional 1.5" of longitudinal adjustment can be achieved. If desired, the head section may be removed by loosening the locking knobs and pulling it straight out of the back section.

The 6700B Hercules Table has the capability of attaching the head section to the leg section for use as a foot extension ONLY. Do Not reverse the patient on the table without first consulting with SKYTRON.

Two locking knobs are located on the inside of the leg section for securing the head section. See figure 2-19.



**Figure 2-19. Repositioning Head Section (for use as a Foot Extension)**

## 2-10. Leg and Back Section Removal.

a. The Leg Section and the Back Section on the 6700B Hercules tables are both removable. See figure 2-20 (Leg Section shown).

b. To remove either section, level the table top, simultaneously depress both release levers and pull the section out. Press the LEG DOWN or BACK DOWN button on the pendant control to position the attachment pins down and out of the way.

### NOTE

To make the Back Section easier to handle, remove the Head Section and X-ray Top prior to removing the Back Section.

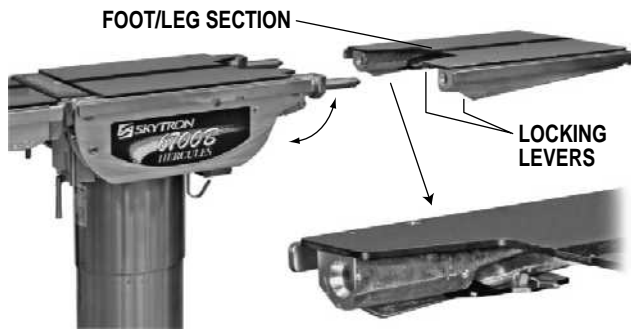


Figure 2-20. Leg Section Removal

c. To install the Leg Section, press and hold the LEG UP button until the attachment pins completely stop. Install the section on the pins. Level the table top and pull out on the section to make sure the release levers are completely locked.

d. To install the Back Section if the attachment pins are not aligned, press and hold the BACK DOWN button until the attachment pins completely stop (40° down). Press REV TREND to bring the pins up to a level position.



**WARNING**



Ensure that the Leg and Back sections are properly engaged and secured to pins before use to prevent injury.

### NOTE

The Leg and Back sections are labeled for proper orientation. The Leg section cannot be installed on the Back section pins.

## 2-11. Table Top Rotation.

### NOTE

Normal table top position is with the head (and back) section over the power cord end of the base.

a. The table top can be horizontally rotated 210° without having to rotate the entire table. Refer to figure 2-21. To rotate the top, turn the TOP ROTATION LOCK HANDLE counterclockwise to release, grasp the table by the head end and rotate the top counterclockwise. Lock the top in position by tightening the TOP ROTATION LOCK HANDLE clockwise.



**WARNING**



Always lock the table top in position after rotation. DO NOT rotate the top with an unevenly distributed patient weight load as instability may result.

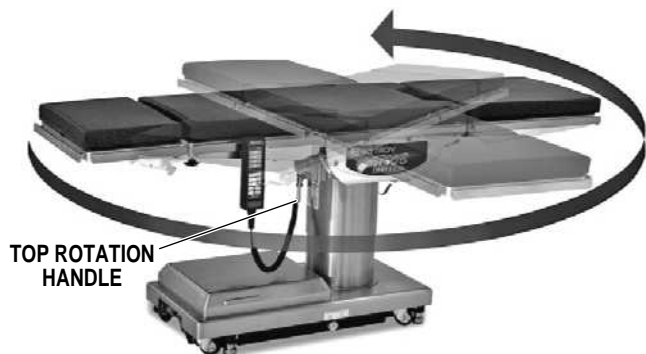


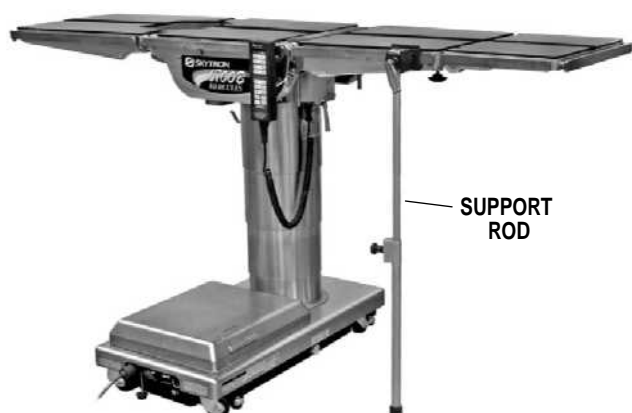
Figure 2-21. Top Rotation

b. The use of the optional support rod allows the table top to be rotated 90° from the base. See figure 2-22.



- Make sure the TOP ROTATION LOCK HANDLE is tightened and the brakes are set before transferring the patient.

- Exercise caution with the table top rotated 90° to the base since an improperly distributed patient load may cause the table to be tipped over. A table support rod is required for 90° positioning. See figure 2-22.



**Figure 2-22. 90 Degree Top Rotation**



Consult manufacturer's instructions when using high frequency surgical equipment, cardiac defibrillator and cardiac defibrillator monitors.



When an antistatic pathway is required, the table has to be used on an antistatic floor.



The antistatic properties of the table are dependent on the use of the original pad set which was furnished with the table or an alternate approved replacement.

## 2-12. Positioning

The use of certain optional accessories available from SKYTRON further extend the positioning capabilities of the 6700B Hercules Tables. Refer to the following "Positioning Guidelines" or contact your SKYTRON representative for further details.



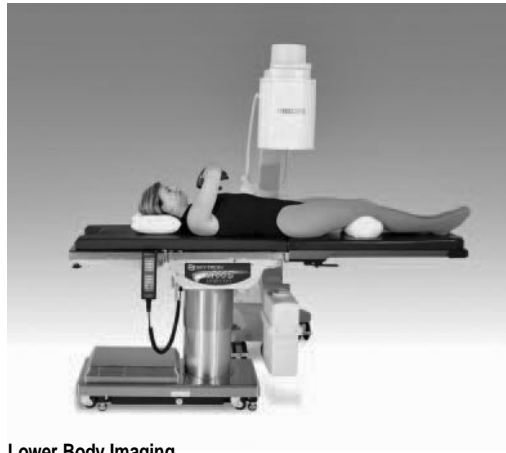
Certain accessories may limit weight capacities. Check with your SKYTRON representative.



# 6700B HERCULES General Purpose Patient Positioning Guidelines



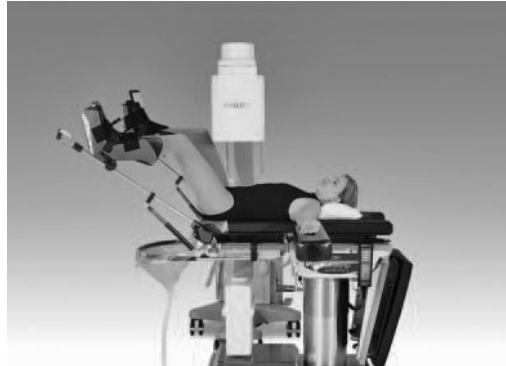
Upper Body Imaging



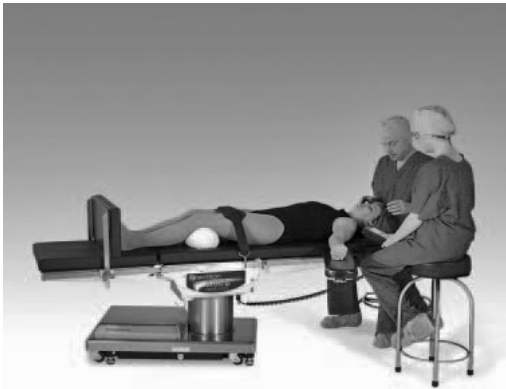
Lower Body Imaging



Lap Nissen



Urology



Ophthalmic/ENT



Nephrectomy



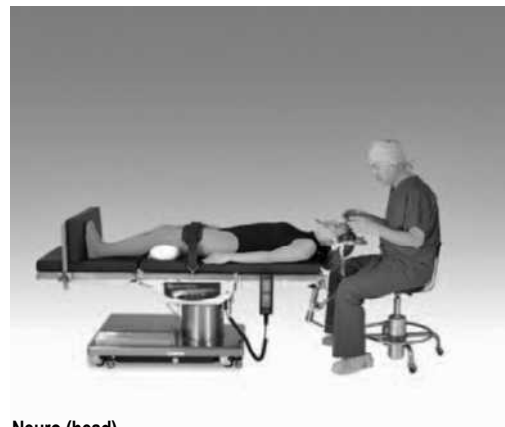
Neuro (neck)



Neuro (lumbar)



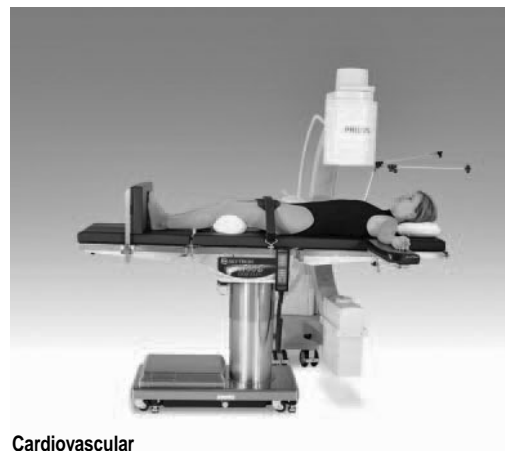
Shoulder Arthroscopy



Neuro (head)



Hip Revision



Cardiovascular

### 6700B HERCULES Bariatric Recommended Patient Positioning Guidelines



Abdominal



Gall Bladder



Cysto/GYN



Cardiovascular

### 3-1. Preventive Maintenance

The following preventive maintenance checks and services are recommended to ensure the serviceability and proper operation of your SKYTRON Surgical Table, and should only be performed by qualified SKYTRON trained personnel.

**a.** During normal cleaning, a general visual examination should be made checking for leaks, loose bolts or parts, and cracked, chipped, or missing paint. Any necessary repairs should be made. Refer to the 6700B Maintenance Manual.

**b.** Semi-annually the following checks and services should be performed:

1. Check all hydraulic fittings, mini-valves and slave cylinders for proper operation and any signs of leaks.
2. Check the hydraulic speed controls and adjust if necessary.
3. Pressure check (with a gauge) the pressure relief valve.
4. Check all mechanical adjustments and adjust as necessary.
5. Check hydraulic fluid level.
6. Lubricate the slider assembly.
7. Check function of foot leg release levers, (release knob early models). Lubricate as necessary.

### 3-2. Cleaning Recommendations

#### NOTE

Always follow current AORN Journal Guidelines to ensure proper cleaning and disinfection procedure.

The following procedures should be followed when cleaning the surgical table between cases.

Place table top in level position prior to starting cleaning procedure.



#### WARNING



Always follow OSHA blood-borne pathogens standards for protective clothing, including gloves, masks and eye protection when cleaning the surgical table.

Remove major contaminants from the table with disposable materials following appropriate biohazard waste disposal procedures.

Remove all table pads and place them on a flat surface for cleaning.



#### CAUTION



Thoroughly read and follow the manufacturer's directions for all cleaning fluids. **DO NOT** use cleaners containing phenolics.

Apply cleaning fluid liberally to top and sides of each pad and wipe with a clean lint-free cloth.

Using a clean, damp, lint-free cloth, wipe the pads to remove the cleaning fluid.

Using a clean, dry, lint-free cloth, wipe the pads to remove all moisture.

Repeat the steps to clean the bottom of the each pad.

**CAUTION**

When using spray cleaners **DO NOT** spray fluids directly into electrical receptacles or micro switches.

Repeat cleaning procedure for all table surfaces including the top, sides, elevation column, base and all accessories.

**CAUTION**

Before replacing pads on the table, make sure the pads and all mating surfaces are completely dry. Moisture trapped between the pads and mating surfaces may cause distortion of table tops.

When the cleaning procedure is complete, replace all pads and accessories as applicable.

Remove pendant control from table side rail and apply cleaning solution to the pendant control and cord.

Use a clean cloth dampened with water to remove cleaning solution.

Use another clean damp cloth to remove any remaining residue.

Install pendant control on side rail for storage when cleaning procedure is complete.

**3-3. Service**

Table maintenance can be performed by trained maintenance personnel using SKYTRON authorized replacement parts and service techniques. Service instructions and parts are available from SKYTRON.

Preventive Maintenance contracts are available through your local SKYTRON representative.

To obtain service instructions, replacement parts, factory service or preventive maintenance contracts, contact the SKYTRON representative listed below.

Or contact:

**SKYTRON**

**5000 36th Street S.E.**

**Grand Rapids, MI 49512**

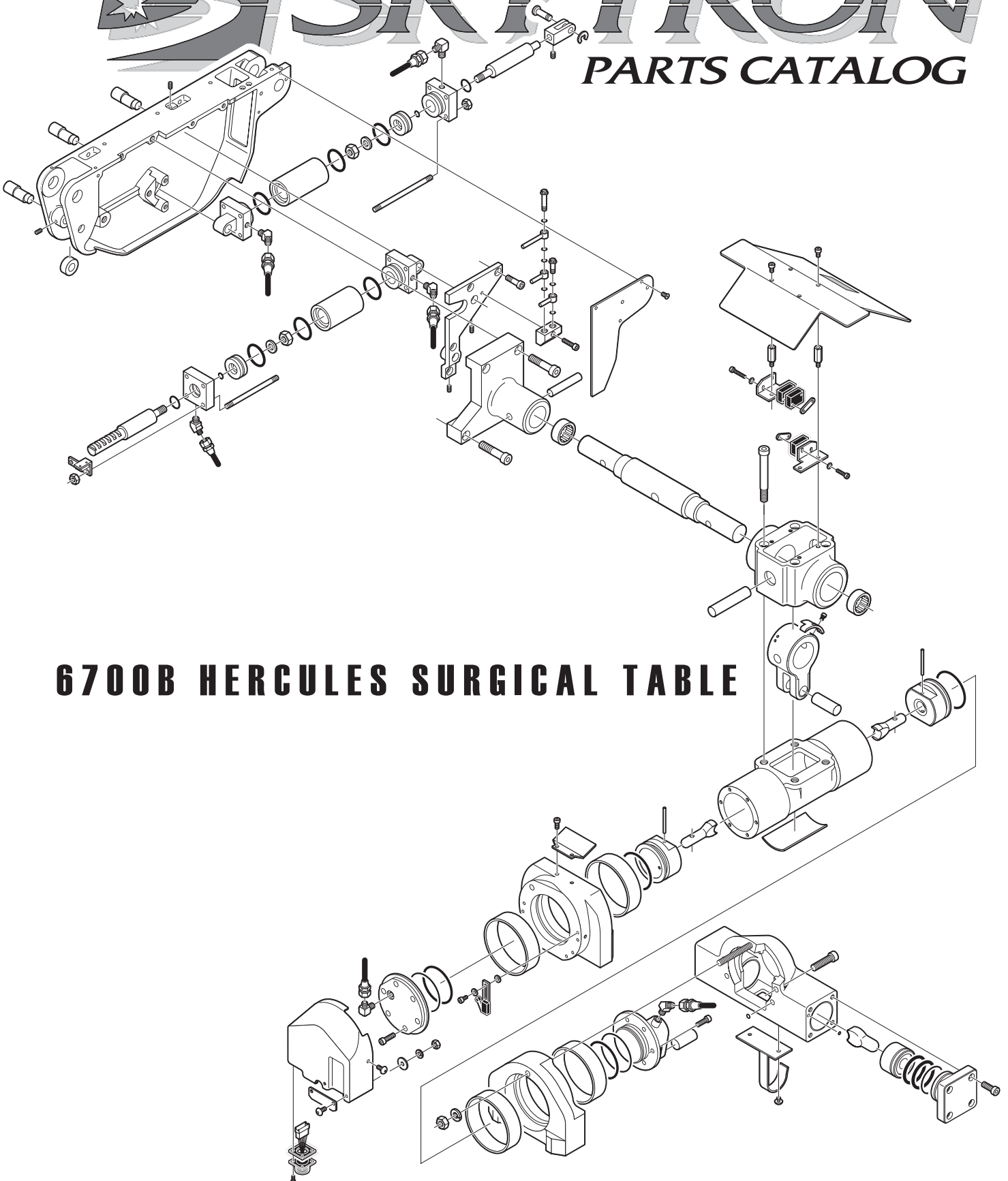
**1-800-SKYTRON (1-800-759-8766)**

**Fax. 1-616-957-5053**



# SKYTRON

**PARTS CATALOG**



## **6700B HERCULES SURGICAL TABLE**

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# INTRODUCTION

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This manual contains the exploded views and replacement parts lists for the serviceable components of the SKYTRON Model 6700B Surgical Table.

Each serviceable part in these exploded views is identified by a reference number. Use this number to locate necessary part information in the parts list adjacent to the exploded view.




Always use the complete SKYTRON part number and description when ordering replacement parts.

**Always use the complete table serial number (S.N.) when ordering replacement parts.**

**Special Tools and Maintenance Items listed on page 38.**

## Abbreviations

As Required ..... A/R  
Optional ..... opt  
Serial Number ..... S.N.  
Not Shown.....NS

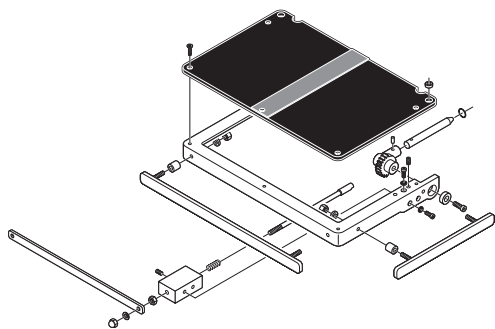
			REFER TO ACCOMPANYING DOCUMENTS
GRAND RAPIDS, MI 1-800-SKYTRON (616) 957-0500			
MODEL NO. <input type="text"/>	120V 	60 Hz	5 AMP
SERIAL NO. <input type="text"/>			
FUSE <input type="checkbox"/>	AMP FAST ACTING		
MANUFACTURED BY MIZUHO IKA CO., LTD. - TOKYO, JAPAN			

**SERIAL NUMBER TAG**

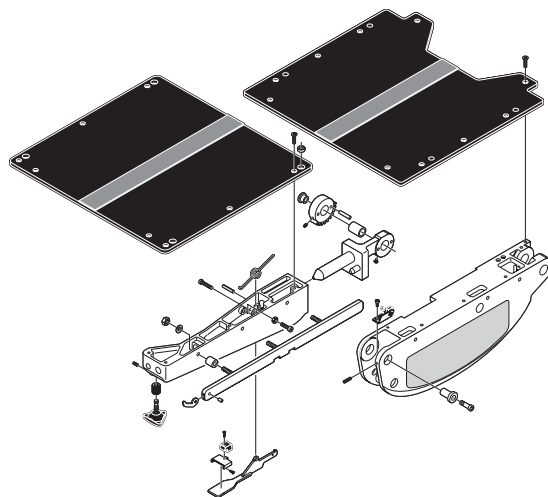


Although current at the time of publication, SKYTRON's policy of continuous development makes this manual subject to change without notice.

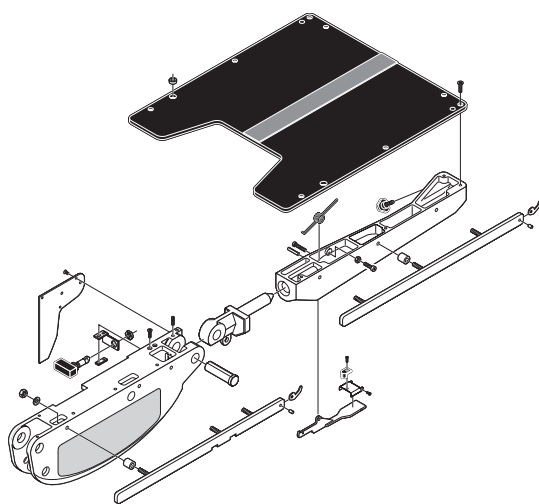
1. Head Section Assembly ..... Page 4



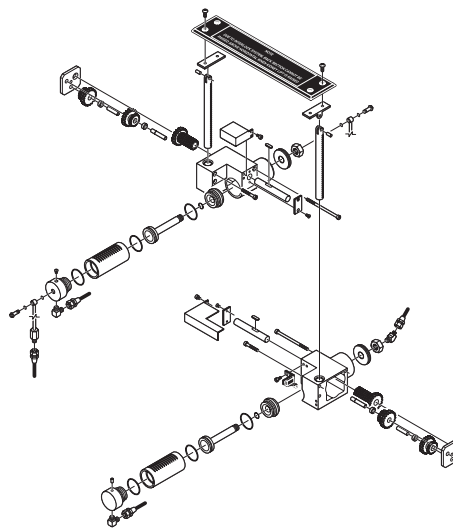
2. Back & Seat Section Assemblies ..... Page 6



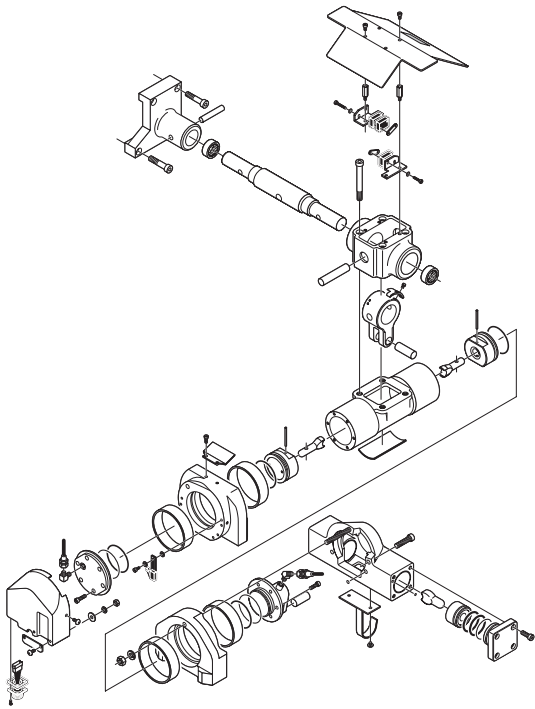
3. Top & Side Frame Assemblies - Foot/Leg Sections .... Page 8



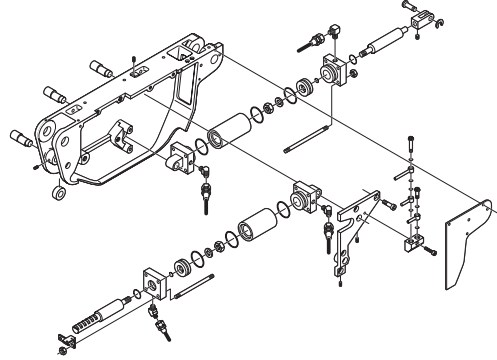
4. Kidney Lift Assemblies ..... Page 10



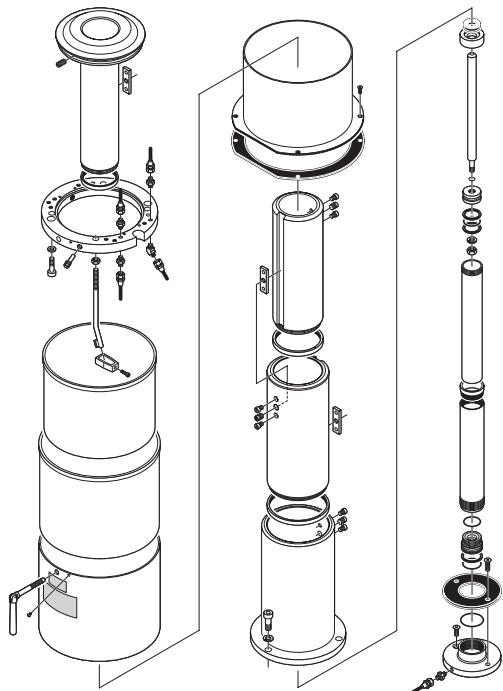
5. Trendelenburg & Lateral Tilt Cylinders ..... Page 14



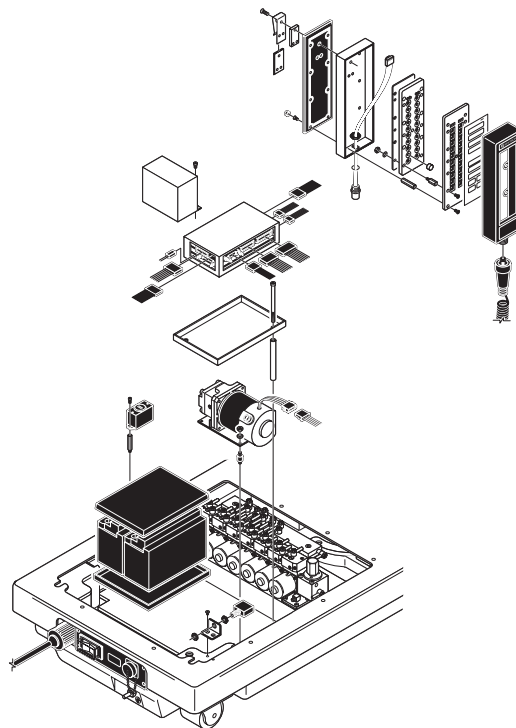
6. Side Frame & Hydraulic Cylinders ..... Page 18



7. Support Column Assembly ..... Page 22

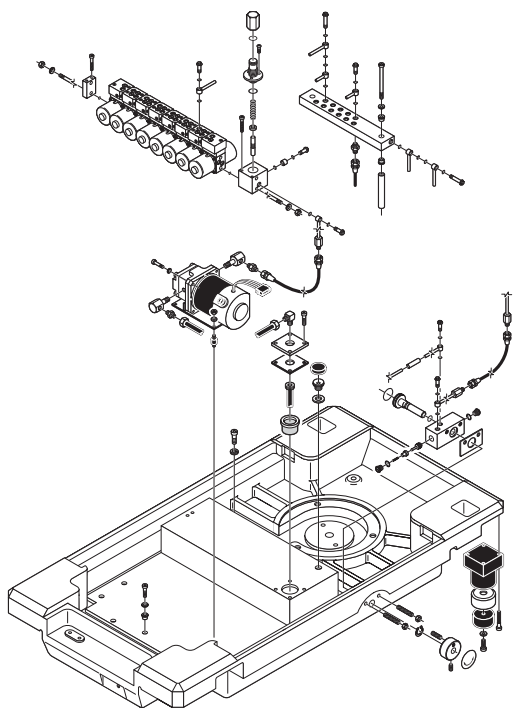


8. Electrical Components ..... Page 26

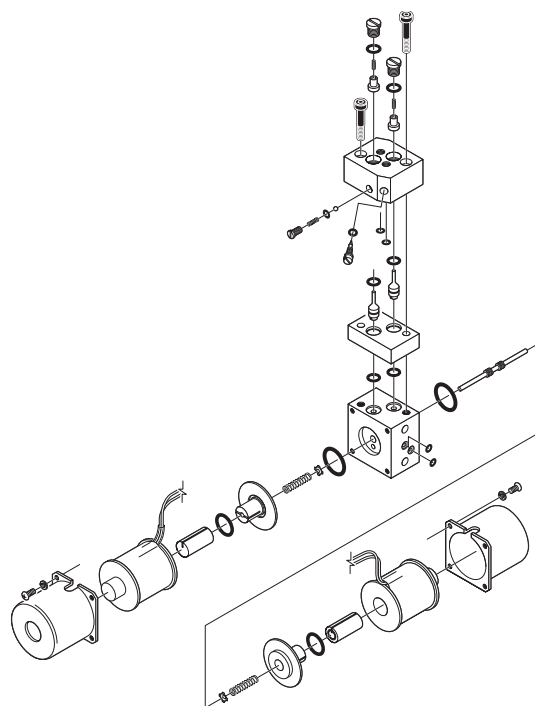




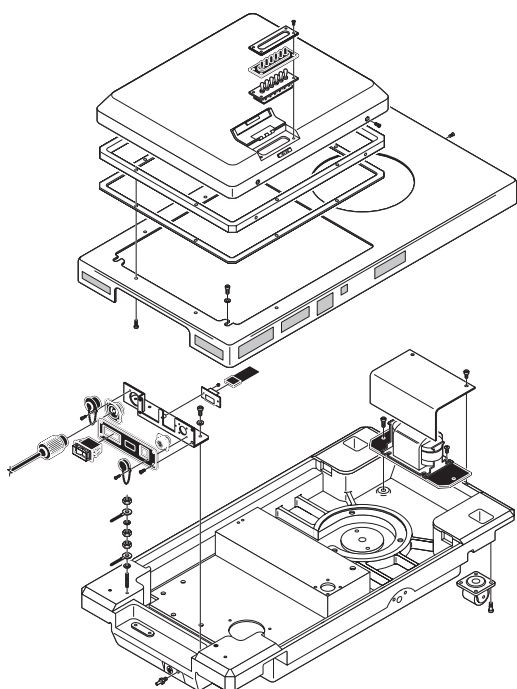
9. Hydraulic Valves & Fittings ..... Page 28



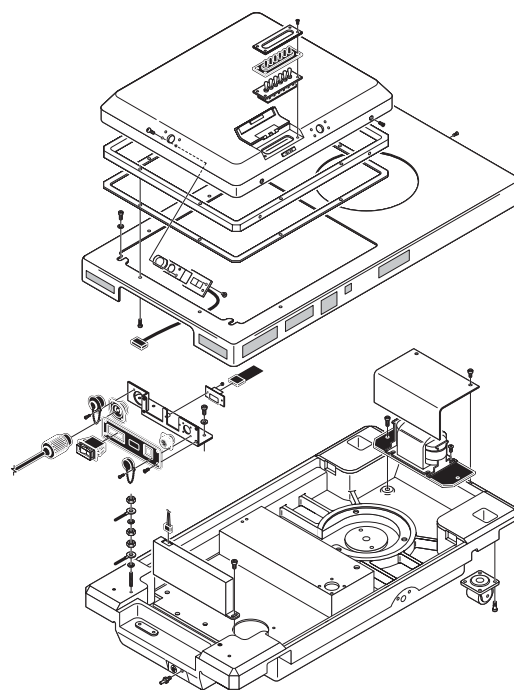
10. Electro / Mini Valve Assembly ..... Page 32

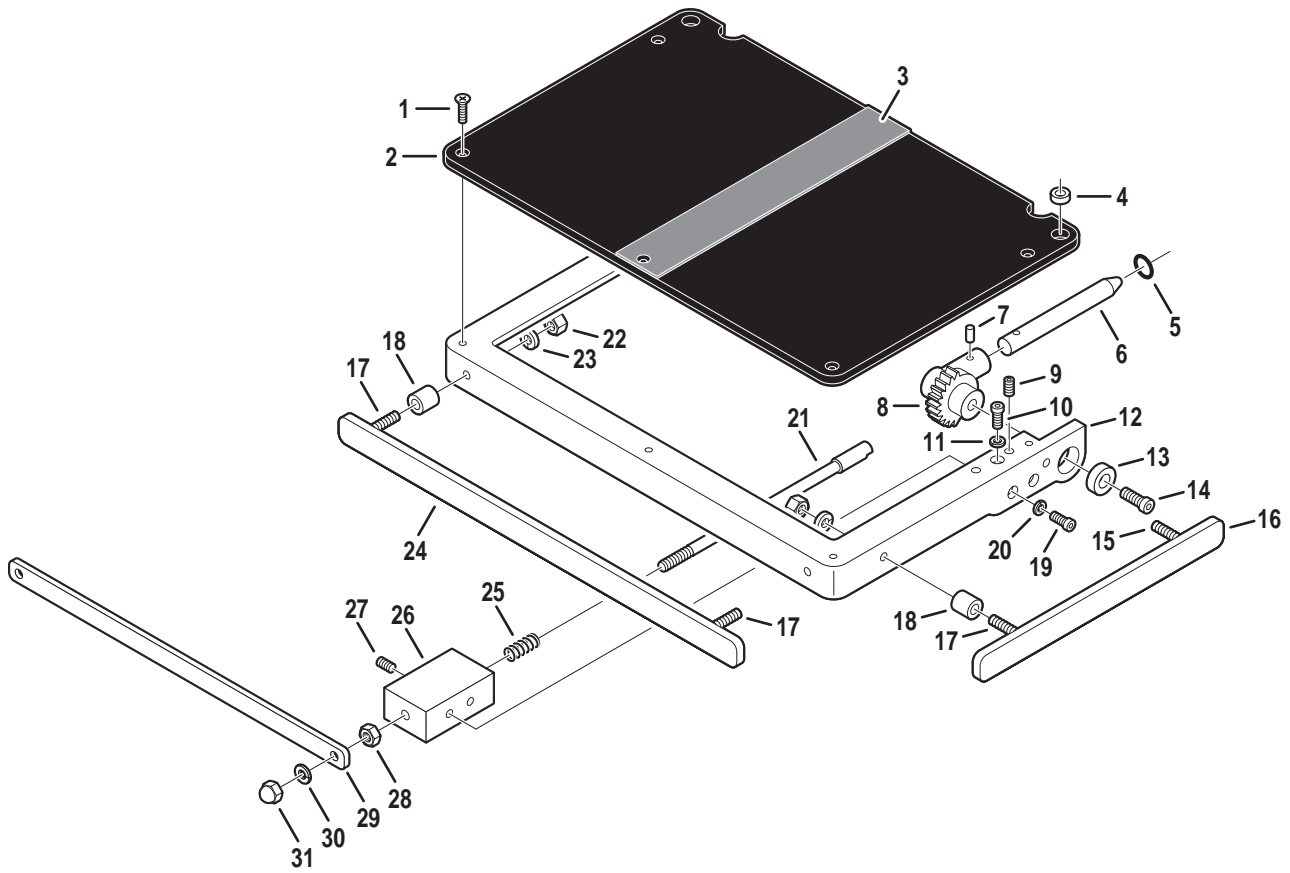


11. Base Assembly ..... Page 34



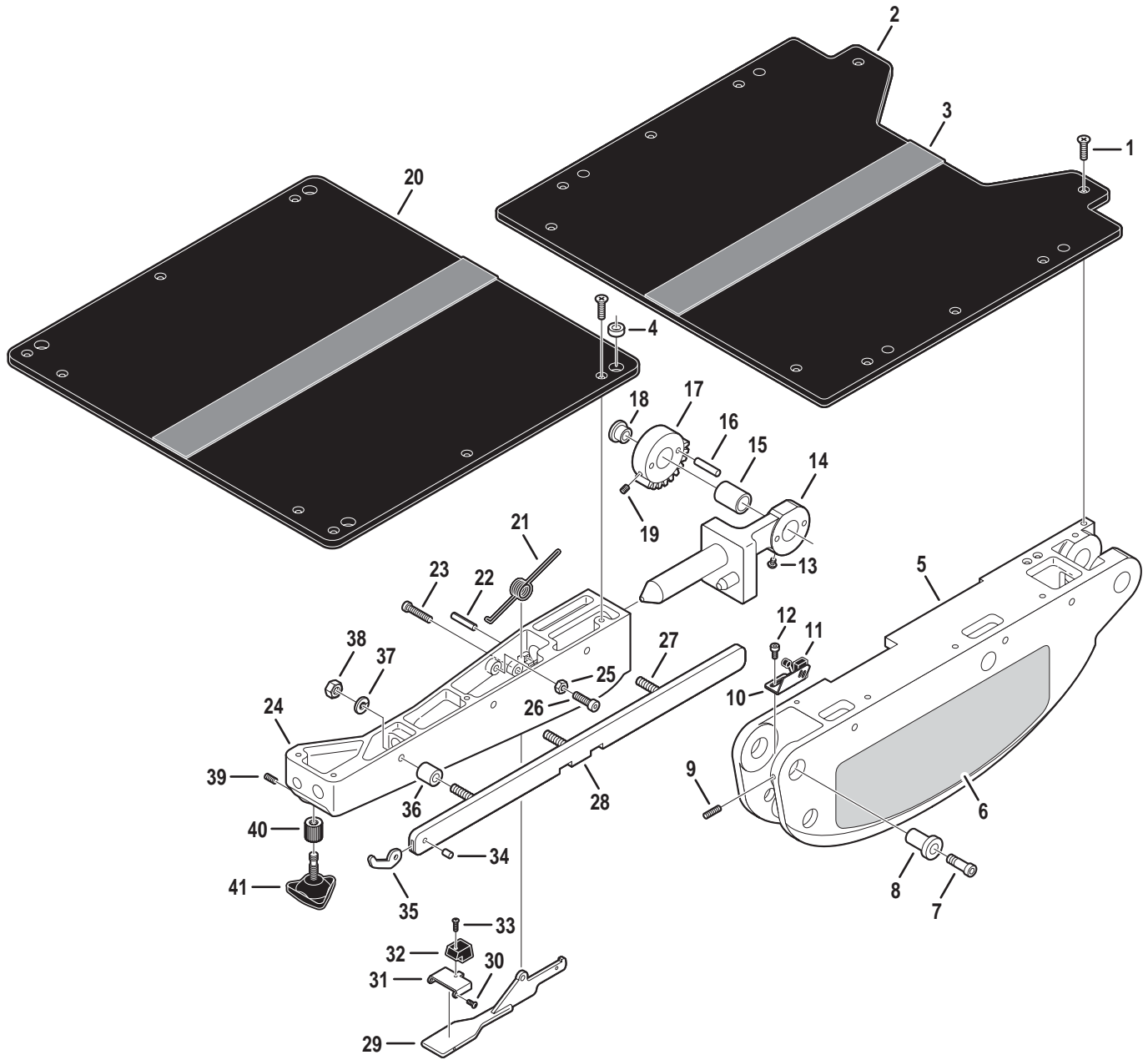
12. Base Assembly - IR Remote ..... Page 36



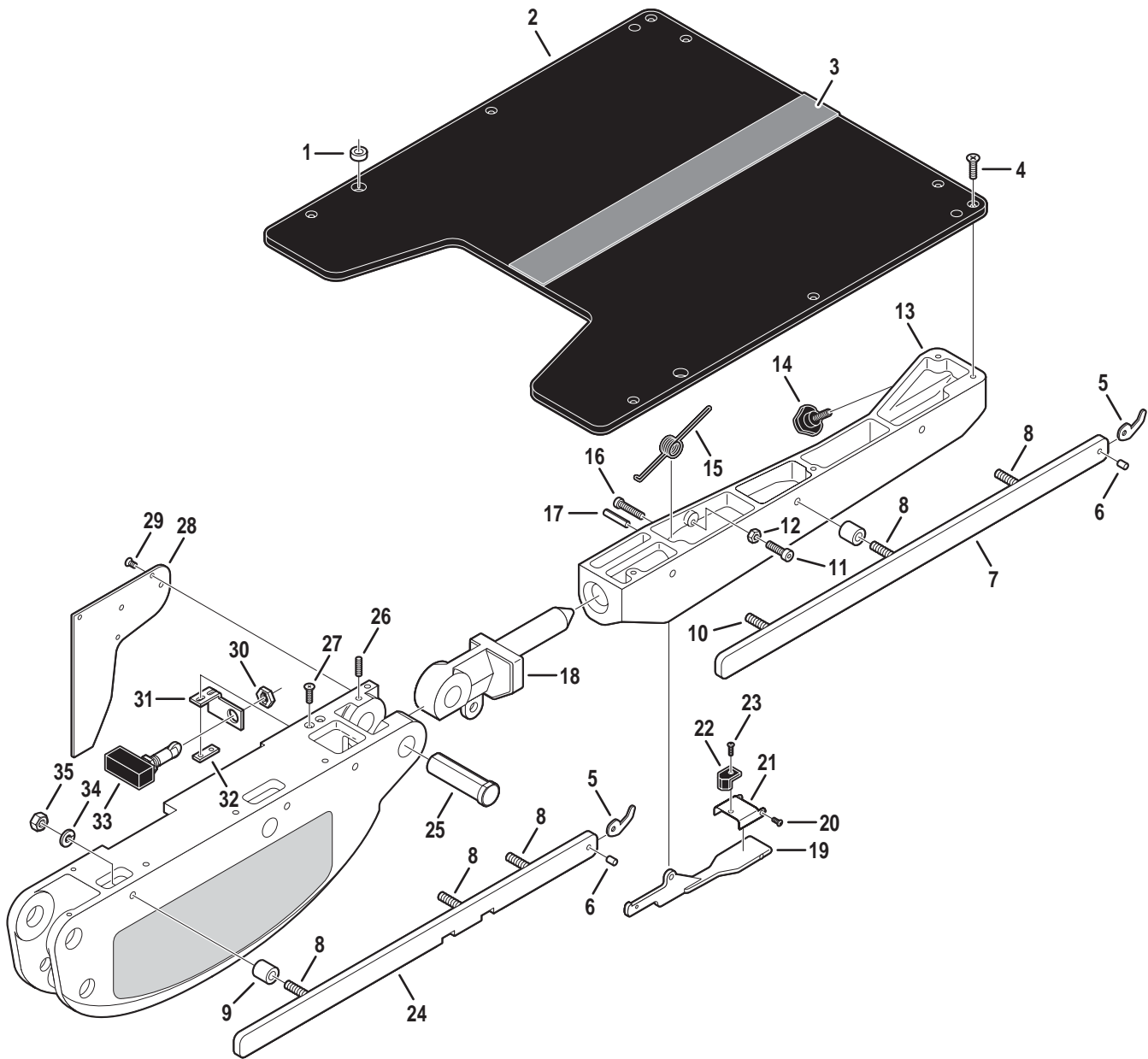


Item	Part No.	Description	Qty.
	1-010-35-P	PAD SET, regular .....	opt.
	1-010-35-S	PAD SET, soft .....	opt.
1	D3-010-19	SCREW, phillips head .....	4
2	D3-067-01	TOP, head section .....	1
3	D3-010-18-H	VELCRO, hook .....	A/R
4	5-010-01-8	BUSHING, x-ray top .....	2
5	D4-010-14	O-RING, P-12 .....	2
6	D3-067-02	SHAFT, extension, head section (roll pin) .....	2
7	D6-050-33	PIN, roll, M5 x 20 .....	2
8	D3-032-80	GEAR, trunnion, right .....	1
	D3-032-81	GEAR, trunnion, left .....	1
9	D6-010-41-1	SCREW, set, M8 x 15 (plated) .....	2
10	D6-010-38-1	BOLT, allen, M6 x 15 (plated) .....	2
11	D6-010-40-1	WASHER, lock, M6 (plated) .....	2
12	D3-067-03	FRAME, head section .....	1
13	D3-034-22	BUSHING, head section .....	2
14	D6-010-53-1	BOLT, allen, M8 x 20 (plated) .....	2
15	D3-032-34	STUD, side rail mount, M8 x 45 .....	2
16	D3-067-04	RAIL, side, head section .....	2
17	D3-032-35	STUD, side rail mount, M8 x 40 .....	4
18	D3-010-01	COLLAR, side rail .....	6
19	D6-010-38	BOLT, allen, M6 x 15 .....	4
20	D6-010-40	WASHER, lock, M6 .....	4
21	D3-067-05	PLUNGER, release, right .....	1
	D3-067-06	PLUNGER, release, left .....	1
22	D6-010-13	NUT, hex, M8 .....	6
23	D6-010-09	WASHER, lock, M8 .....	6
24	D3-032-33	RAIL, accessory .....	1
25	D3-067-07	SPRING, release .....	2
26	D3-032-40	BLOCK, bearing .....	2
27	D6-010-11	SCREW, set, M5 x 8 (plated) .....	2
28	D6-010-13-1	NUT, hex, M8 (plated) .....	2
29	D3-010-24	RELEASE BAR, head section .....	1
30	D6-010-09	WASHER, lock, M8 .....	2
31	D6-010-08	NUT, acorn, M8 .....	2

2. BACK & SEAT SECTION ASSEMBLIES

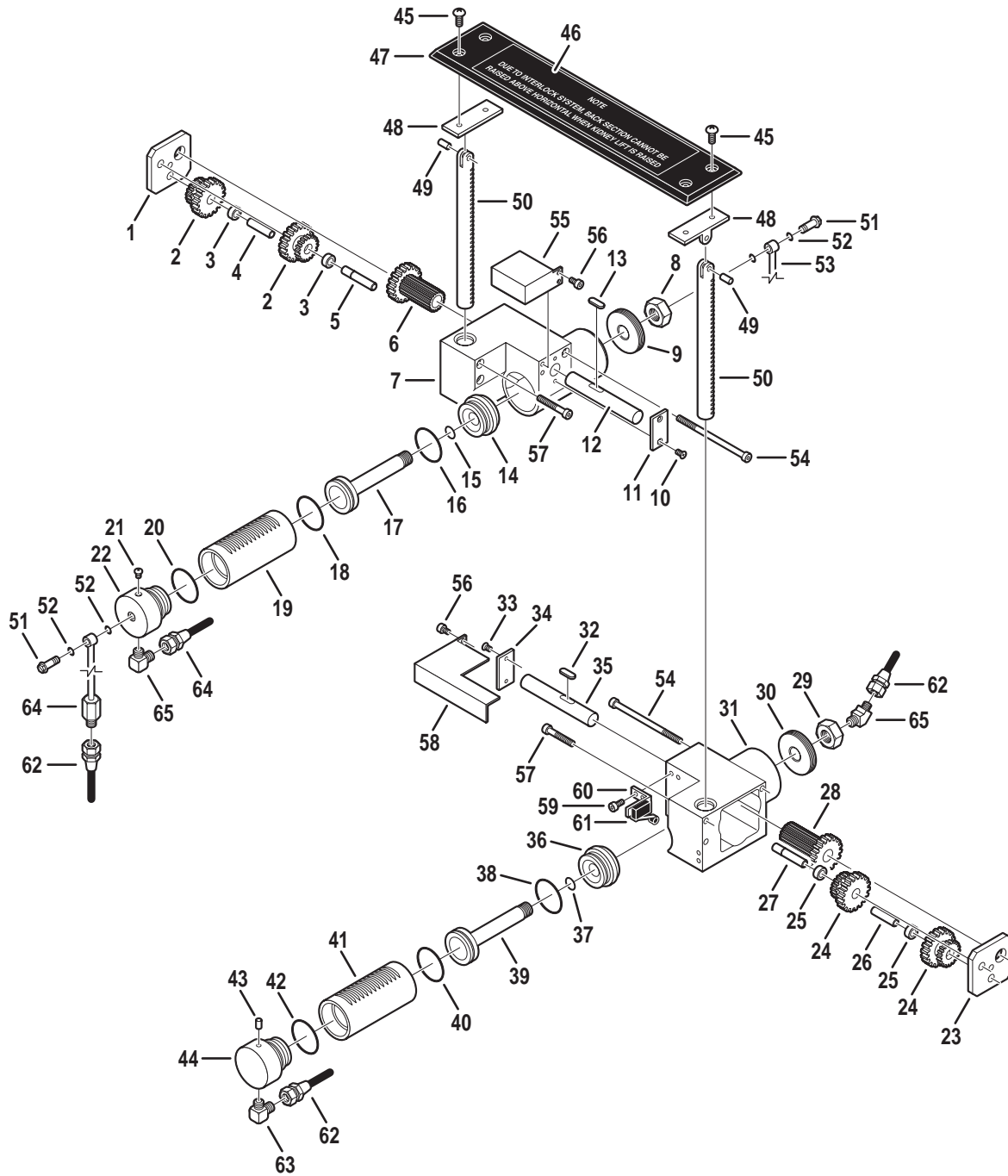


Item	Part No.	Description	Qty.
	1-010-35-P	PAD SET, regular .....	opt.
	1-010-35-S	PAD SET, soft .....	opt.
1	D3-010-19	SCREW, phillips head .....	18
2	D3-067-08	TOP, seat section .....	1
3	D3-010-18-H	VELCRO, hook .....	A/R
4	5-010-01-8	BUSHING, x-ray top .....	4
5	D3-067-09	FRAME, side, right .....	1
	D3-067-10	FRAME, side, left .....	1
6	D3-067-11	NAMEPLATE, label, 6700B .....	2
7	D6-032-28	BOLT, allen .....	2
8	D3-032-37	AXIS, back section .....	2
9	D6-010-50	SCREW, set, M6 x 15 .....	2
10	D5-067-42	BRACKET, microswitch mounting .....	1
11	D5-067-07	MICROSWITCH .....	1
12	D6-067-27	BOLT, allen, M6 x 6 .....	2
13	D6-067-26	SCREW .....	1
14	D3-067-12	LEVER, axis, back / seat section, right .....	1
	D3-067-13	LEVER, axis, back / seat section, left .....	1
15	D3-032-31	BUSHING, back section .....	2
16	D6-034-01	PIN, spur gear, tapered, M7 x 35 .....	2
17	D3-067-14	GEAR, spur, back section .....	2
18	D3-032-36	CAP, back section, axis .....	2
19	D6-010-10-1	SCREW, set, M6 x 10 .....	2
20	D3-033-01	TOP, back section .....	1
21	D3-032-51	SPRING, back section, right .....	1
	D3-032-51-1	SPRING, back section, left .....	1
22	D6-032-37	PIN, roll, M4 x 30 .....	2
23	D6-010-65-1	BOLT, allen, M5 x 35 (plated) .....	2
24	D3-067-15	FRAME, back section, right .....	1
	D3-067-16	FRAME, back section, left .....	1
25	D6-010-76	NUT, M5 .....	2
26	D6-010-83	BOLT, allen, M5 x 30 .....	2
27	D3-032-34	STUD, side rail mount, M8 x 45 .....	6
	D3-032-34-1	STUD, side rail mount, long (w/ collar) .....	6
28	D3-034-12	SIDE RAIL, back section, right .....	1
	D3-034-13	SIDE RAIL, back section, left .....	1
29	D3-034-14-1	LEVER, release .....	2
30	D6-010-79	SCREW, phillips, button head, M3 x 5 .....	4
31	D3-034-47	HINGE .....	2
32	D3-034-46	STOP, rubber .....	2
33	D6-067-01	SCREW, phillips, button head, M3 x 8 .....	2
34	D3-010-41	PIN, rail stop .....	2
35	D3-010-43	STOP, rail (large) .....	2
36	D3-010-01	COLLAR, side rail .....	6
37	D6-010-09-1	WASHER, lock, M8 (plated) .....	6
38	D6-010-13-1	NUT, M8 (plated) .....	6
39	D6-067-02	SCREW, set, M5 x 13 .....	2
40	D3-031-82	BUSHING .....	2
41	D3-031-83	KNOB, head section .....	2



Item	Part No.	Description	Qty.
	1-010-35-P	PAD SET, regular .....	opt.
	1-010-35-S	PAD SET, soft .....	opt.
1	5-010-01-8	BUSHING, x-ray top .....	2
2	D3-067-17	TOP, foot / leg section .....	1
3	D3-010-18-H	VELCRO, hook .....	A/R
4	D3-010-19	SCREW, phillips head .....	8
5	D3-010-43	STOP, rail, large .....	4
6	D3-010-41	PIN, rail stop .....	4
7	D3-032-15	RAIL, side, foot / leg section, right .....	1
	D3-032-16	RAIL, side, foot / leg section, left .....	1
8	D3-032-34	STUD, side rail mount, M8 x 45 .....	10
	D3-032-34-1	STUD, side rail mount, long (w/ collar) .....	10
9	D3-010-01	COLLAR, side rail .....	12
10	D3-032-35	STUD, side rail mount, M8 x 40 .....	2
	D3-032-34-2	STUD, side rail mount, short (w/ collar) .....	2
11	D6-010-83	BOLT, allen, M5 x 30 .....	4
12	D6-010-76	NUT, M5 .....	2
13	D3-067-18	FRAME, foot / leg section, right .....	1
	D3-067-19	FRAME, foot / leg section, left .....	1
14	D6-031-01	KNOB, retaining, foot / leg section .....	2
15	D3-034-18	SPRING, foot / leg section, right .....	1
	D3-034-19	SPRING, foot / leg section, left .....	1
16	D6-010-65-1	BOLT, allen, M5 x 35 (plated) .....	2
17	D6-034-02	PIN, roll, M4 x 30 .....	4
18	D3-034-31	LEVER, axis, foot / leg section, right .....	1
	D3-034-32	LEVER, axis, foot / leg section, left .....	1
19	D3-034-14-1	LEVER, release .....	2
20	D6-010-79	SCREW, phillips, button head, M3 x 5 .....	4
21	D3-034-47	HINGE .....	2
22	D3-034-46	STOP, rubber .....	2
23	D6-067-01	SCREW, phillips, button head, M3 x 8 .....	2
24	D3-067-20	RAIL, side, seat section, right .....	1
	D3-067-21	RAIL, side, seat section, left .....	1
25	D3-030-05	AXIS, foot / leg section .....	2
26	D6-010-50	SCREW, set, M6 x 15 .....	4
27	D6-066-18	SCREW, phillips, countersunk, M4 x 15 .....	4
28	D3-034-41	COVER, microswitch, right .....	1
	D3-034-40	COVER, microswitch, left .....	1
29	D6-067-03	SCREW, phillips, countersunk, M3 x 6 .....	6
30	D6-067-04	NUT, custom (micro-switch mounting) .....	2
31	D5-067-03	BRACKET, micro-switch, right .....	1
	D5-067-04	BRACKET, micro-switch, left .....	1
32	D5-067-05	PLATE, bracket .....	2
33	D5-067-06	MICRO-SWITCH .....	2
34	D6-010-09-1	WASHER, lock, M8 (plated) .....	6
35	D6-010-13-1	NUT, M8 (plated) .....	6

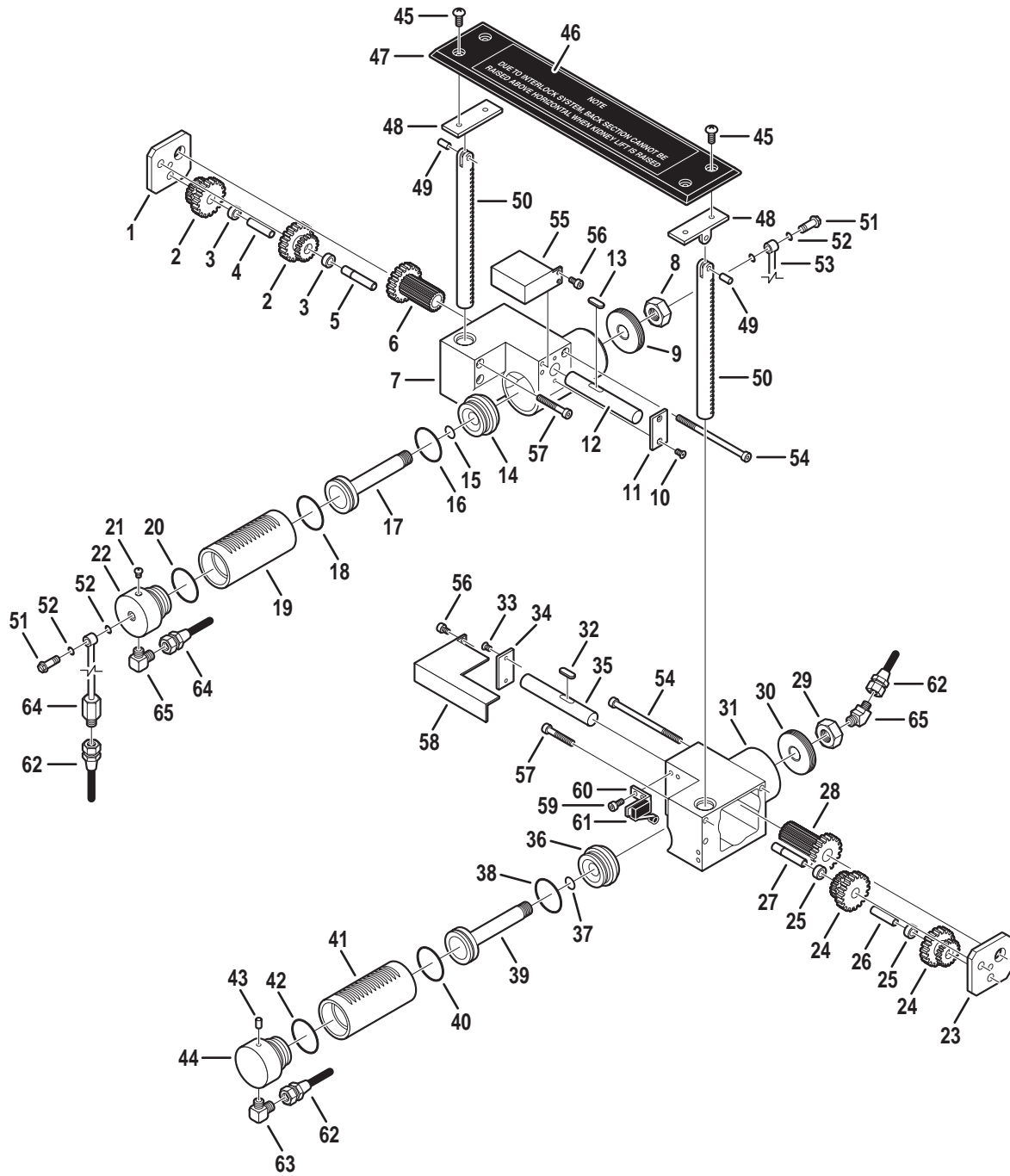
4. KIDNEY LIFT ASSEMBLIES





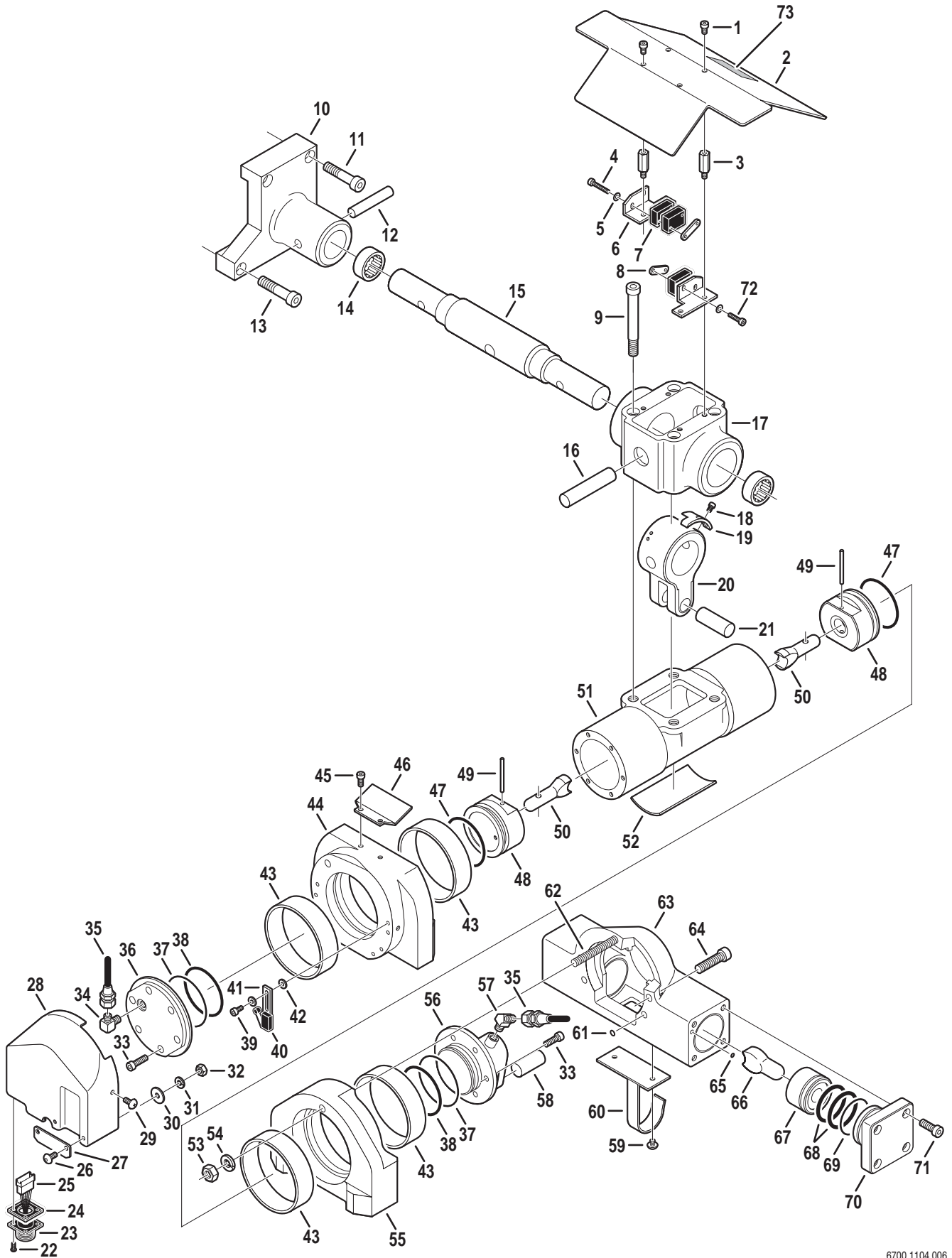
Item	Part No.	Description	Qty.
--	D4-067-04	CYLINDER ASSEMBLY, kidney lift, left .....	1
1	D4-032-29	•COVER .....	1
2	D4-032-32	•GEAR, dual .....	2
3	D4-032-30	•BUSHING .....	2
4	D4-032-34	•PIN .....	1
5	D4-032-35	•PIN .....	1
6	D4-032-36	•GEAR .....	1
7	D4-067-05	•HOUSING, cylinder assembly, left .....	1
8	D4-032-89	•NUT .....	1
9	D4-032-88	•END CAP .....	1
10	D6-067-03	•SCREW, phillips, countersunk, M3 x 6 .....	2
11	D4-067-06	•PLATE .....	1
12	D4-067-07	•SHAFT, drive .....	1
13	D4-032-37	•KEY .....	1
14	D4-034-02	•RETAINER .....	1
15	D4-041-15	•O-RING, P-18 .....	1
16	D4-050-01	•O-RING, P-29 .....	1
17	D4-034-03	•PISTON .....	1
18	D4-050-01	•O-RING, P-29 .....	1
19	D4-034-04	•CYLINDER .....	1
20	D4-050-01	•O-RING, P-29 .....	1
21	D6-034-05	•SCREW, phillips, M4 x 5 .....	1
22	D4-067-08	•END CAP .....	1
--	D4-067-09	CYLINDER ASSEMBLY, kidney lift, right .....	1
23	D4-032-29	•COVER .....	1
24	D4-032-32	•GEAR, dual .....	2
25	D4-032-30	•BUSHING .....	2
26	D4-032-34	•PIN .....	1
27	D4-032-35	•PIN .....	1
28	D4-032-36	•GEAR .....	1
29	D4-032-89	•NUT .....	1
30	D4-032-88	•END CAP .....	1
31	D4-067-10	•HOUSING, cylinder assembly, right .....	1
32	D4-032-37	•KEY .....	1
33	D6-067-03	•SCREW, phillips, countersunk, M3 x 6 .....	2
34	D4-067-11	•PLATE .....	1
35	D4-067-12	•SHAFT, drive .....	1
36	D4-034-02	•RETAINER .....	1
37	D4-041-15	•O-RING, P-18 .....	1
38	D4-050-01	•O-RING, P-29 .....	1
39	D4-034-03	•PISTON .....	1
40	D4-050-01	•O-RING, P-29 .....	1
41	D4-034-04	•CYLINDER .....	1
42	D4-050-01	•O-RING, P-29 .....	1
43	D4-034-06	•PIN .....	1
44	D4-034-05	•END CAP .....	1
45	D5-035-42-1	SCREW, round head, M5 x 10 .....	4
46	D6-032-43	DECAL, kidney bridge .....	1

4. KIDNEY LIFT ASSEMBLIES (CONTINUED)

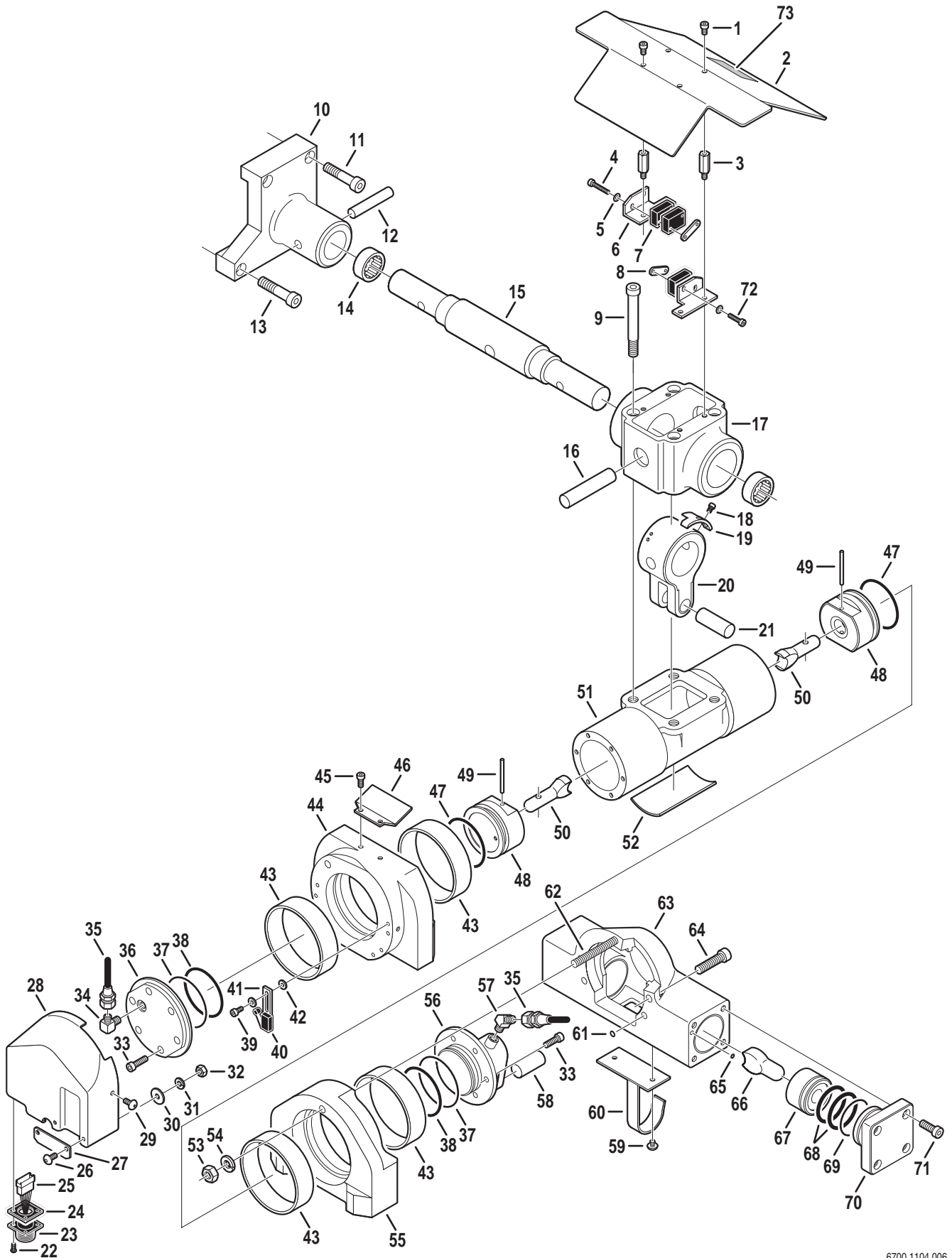


Item	Part No.	Description	Qty.
47	D5-035-42	TOP, kidney bridge .....	1
48	D3-032-39-1	PIVOT, kidney lift, flat .....	2
49	D6-031-24	PIN, roll, M5 x 12 .....	2
50	D4-032-52	SHAFT, kidney lift .....	2
51	D4-010-24	BOLT, plumbing, M6 .....	2
52	D4-010-08	O-RING, P-7 .....	4
53	----	OIL LINE (specify function) .....	A/R
54	D6-067-05	BOLT, allen, M5 x 95 .....	2
55	D5-067-07	COVER, micro-switch .....	1
56	D6-035-18	BOLT, allen, M4 x 6 .....	4
57	D6-010-65	BOLT, allen, M5 x 35 .....	4
58	D5-067-08	COVER, micro-switch .....	1
59	D6-060-07	BOLT, allen, M4 x 8 .....	2
60	D4-032-39	BRACKET, micro-switch .....	1
61	D5-032-15	MICRO-SWITCH .....	2
62	----	HOSE, flexible (specify function) .....	A/R
63	D4-010-29	FITTING, hydraulic, 90° elbow .....	2
64	D4-032-39	OIL LINE .....	1
65	D4-067-13	FITTING, hydraulic, 45° elbow .....	1

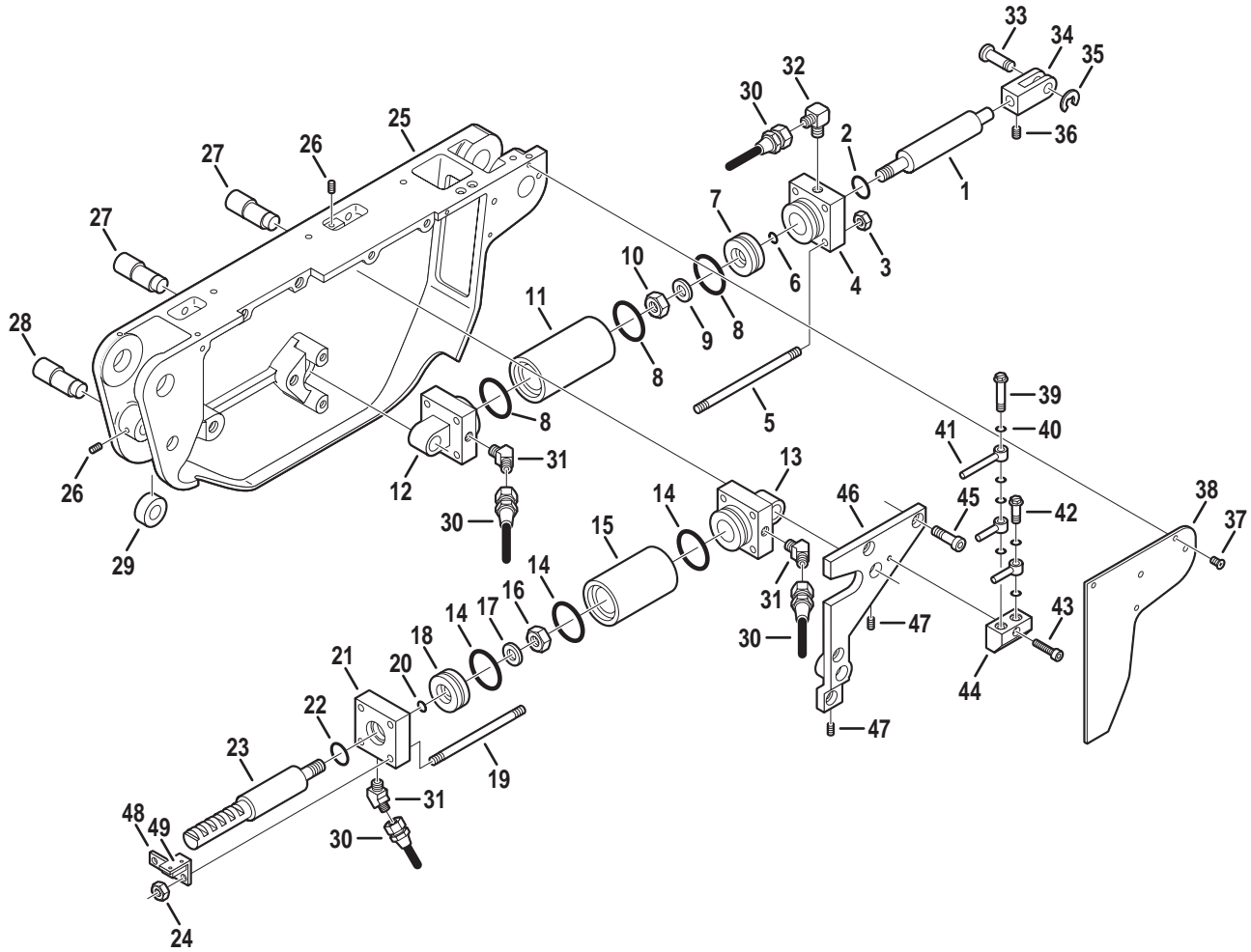
5. TRENDELENBURG & LATERAL TILT CYLINDERS



Item	Part No.	Description	Qty.
1	D6-050-36	BOLT, allen, M5 x 8 .....	4
2	D2-067-01	COVER, flexible hose .....	1
3	D2-010-38	STAND-OFF, cover .....	4
4	D6-067-06	BOLT, allen, M3 x 26 .....	2
5	D6-034-07	WASHER, flat, M3 .....	4
6	D5-067-10	BRACKET, micro-switch mounting .....	2
7	D5-032-16	MICRO-SWITCH, Trendelenburg .....	3
8	D5-067-11	BACK PLATE, micro-switch bracket .....	2
9	D6-010-29	BOLT, allen, M10 x 85 .....	4
10	D3-067-22	INNER CASTING, side frame, left .....	1
	D3-067-23	INNER CASTING, side frame, right .....	1
11	D6-010-71-1	BOLT, allen, M10 x 40 (plated) .....	A/R
12	D6-032-01	PIN, tapered, M12 x 65 .....	2
13	D6-010-10-2	BOLT, allen, M10 x 45 (plated) .....	A/R
14	D2-032-01	BEARING, Trendelenburg axis .....	2
15	D3-032-03	AXIS, Trendelenburg .....	1
16	D6-067-07	PIN, tapered, M16 x 90 .....	1
17	D2-067-02	CASTING, Trendelenburg bearing .....	1
18	D6-010-70	BOLT, allen, M5 x 10 .....	4
19	D2-067-03	RAMP, micro-switch .....	2
20	D2-067-04	LEVER, Trendelenburg .....	1
21	D6-067-08	PIN, M18 x 50 .....	1
22	D6-010-44	SCREW, phillips, M3 x 12 .....	4
23	D5-034-06	CONNECTOR, 7-pin, female .....	1
24	----	GASKET, (part of D5-034-06) .....	1
25	D5-067-12	CONNECTOR, 7-pin, male .....	1
26	D6-067-09	BOLT, allen, button head, M5 x 8 .....	2
27	D6-067-10	PLATE, Trendelenburg cylinder cover .....	1
28	D2-067-05	COVER, Trendelenburg cylinder .....	1
29	D6-066-22	BOLT, phillips, button head, M5 x 8 .....	2
30	D6-067-11	WASHER, flat, M6 (large) .....	2
31	D6-010-77	WASHER, lock, M5 .....	2
32	D6-010-76	NUT, hex, M5 .....	2
33	D6-010-30-1	BOLT, allen, M6 x 20 (plated) .....	12
34	D4-010-29	FITTING, hydraulic, 90° elbow .....	1
35	----	HOSE, flexible (specify function) .....	A/R
36	D2-067-06	CAP, head, Trendelenburg cylinder .....	1
37	D4-032-80	O-RING, S-70 .....	2
38	D4-010-10	O-RING, G-65 .....	2
39	D6-010-70	BOLT, allen, M5 x 10 .....	6
40	D5-032-15	MICRO-SWITCH, lateral tilt .....	3
41	D5-067-13	BRACKET, micro-switch mounting .....	3
42	D6-034-03	WASHER, flat, M5 .....	12
43	D2-067-07	BUSHING, graphite .....	4
44	D2-067-08	PIVOT BLOCK, lateral tilt, head .....	1
45	D6-010-70	BOLT, allen, M5 x 10 .....	2
46	D2-067-09	GAURD, flexible hose .....	1
47	D4-010-06	O-RING, P-60 .....	2
48	D2-067-10	PISTON, Trendelenburg .....	2

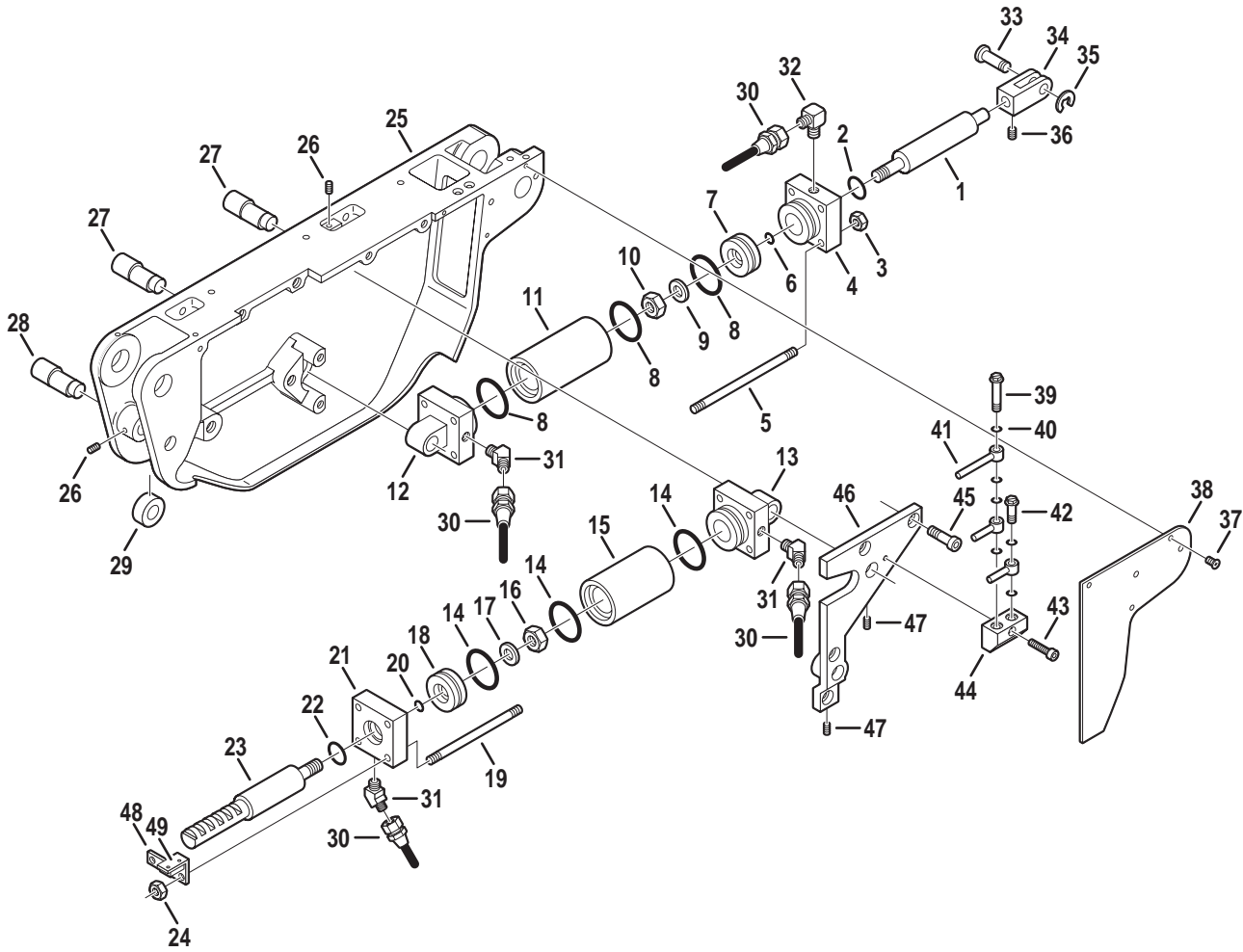


Item	Part No.	Description	Qty.
49	D6-067-12	PIN, roll.....	2
50	D2-067-11	ROD, Trendelenburg piston .....	2
51	D2-067-12	HOUSING, Trendelenburg .....	1
52	D2-067-13	COVER, Trendelenburg housing .....	1
53	D6-010-43	NUT, hex, M10 .....	1
54	D6-010-42	WASHER, lock, M10 .....	1
55	D2-067-14	PIVOT BLOCK, lateral tilt, tail .....	1
56	D2-067-15	CAP, tail .....	1
57	D4-010-30	FITTING, hydraulic, 45° elbow .....	1
58	D6-067-13	PIN, M18 x 40 .....	1
59	D6-010-16-1	SCREW, phillips, button head, M5 x 6 .....	2
60	D2-067-16	PLATE, inspection cover .....	1
61	D4-010-08	O-RING, P-7 .....	2
62	D6-067-14	STUD .....	1
63	D2-067-17	HOUSING, lateral tilt .....	1
64	D6-010-71	BOLT, allen, M10 x 40 .....	2
65	D4-010-52	O-RING, P-4 .....	2
66	D2-032-07-1	ROD, piston .....	2
67	D2-067-18	PISTON, lateral tilt .....	2
68	D4-060-24	O-RING, P-49 .....	4
69	D4-032-79	O-RING, S-55 .....	2
70	D2-067-19	CAP, lateral tilt, right .....	1
	D2-067-20	CAP, lateral tilt, left .....	1
71	D6-010-53	BOLT, allen, M8 x 20 .....	8
72	D6-067-15	BOLT, allen, M3 x 15 .....	2
73	----	TAG, serial number / table info. ....	1





Item	Part No.	Description	Qty.
--	D4-032-02	CYLINDER ASSEMBLY, foot / leg section, left (shown) .....	1
--	D4-067-14	CYLINDER ASSEMBLY, foot / leg section, right .....	1
1	-----	•RAM (not available separately) .....	1
2	D4-010-03	•O-RING, P-25 .....	1
3	D6-010-55	•NUT, M8 .....	4
4	-----	•HEAD CAP (not available separately) .....	1
5	D4-010-48	•STUD, cylinder .....	4
6	D4-010-02	•O-RING, P-14 .....	1
7	-----	•PISTON (not available separately) .....	1
8	D4-010-04	•O-RING, P-44 .....	3
9	D4-010-42	•WASHER, lock, M10 .....	1
10	D6-010-43	•NUT, M10 .....	1
11	D4-034-11	•CYLINDER .....	1
12	-----	•TAIL CAP (not available separately) .....	1
--	D4-067-15	CYLINDER ASSEMBLY, back section, left (shown) .....	1
--	D4-067-16	CYLINDER ASSEMBLY, back section, right .....	1
13	-----	•TAIL CAP (not available separately) .....	1
14	D4-010-04	•O-RING, P-44 .....	3
15	D4-067-17	•CYLINDER .....	1
16	D6-010-43	•NUT, M10 .....	1
17	D6-010-42	•WASHER, lock, M10 .....	1
18	-----	•PISTON (not available separately) .....	1
19	D4-067-18	•STUD, cylinder .....	4
20	D4-010-02	•O-RING, P-14 .....	1
21	-----	•HEAD CAP (not available separately) .....	1
22	D4-010-03	•O-RING, P-25 .....	1
23	-----	•RAM (not available separately) .....	1
24	D6-010-55	•NUT, M8 .....	4
25	D3-067-24	FRAME, side, left .....	1
	D3-067-25	FRAME, side, right .....	1
26	D6-010-34	SCREW, set, M6 x 6 .....	A/R
27	D3-010-37	AXIS, eccentric cam .....	4
28	D3-010-38	AXIS, eccentric cam .....	2
29	D3-010-36	BEARING, support .....	2
30	-----	HOSE, flexible (specify function) .....	A/R
31	D4-010-30	FITTING, hydraulic, 45° elbow .....	6
32	D4-010-29	FITTING, hydraulic, 90° elbow .....	2
33	D6-030-03	PIN, clevis .....	2
34	D6-031-19	CLEVIS .....	2
35	D6-030-01	CIRCLIP .....	2
36	D6-030-34	SCREW, set, M6 x 6 .....	2
37	D6-010-80	SCREW, phillips, M3 x 6 .....	6
38	D3-034-40	COVER, micro-switch, left .....	1
	D3-034-41	COVER, micro-switch, right .....	1
39	D4-010-26	BOLT, plumbing, M6 (long) .....	A/R
40	D4-010-08	O-RING, P-7 .....	A/R
41	-----	OIL LINE (specify function) .....	A/R
42	D4-010-24	BOLT, plumbing, M6 .....	A/R
43	D6-067-17	BOLT, allen, M5 x 26 .....	1

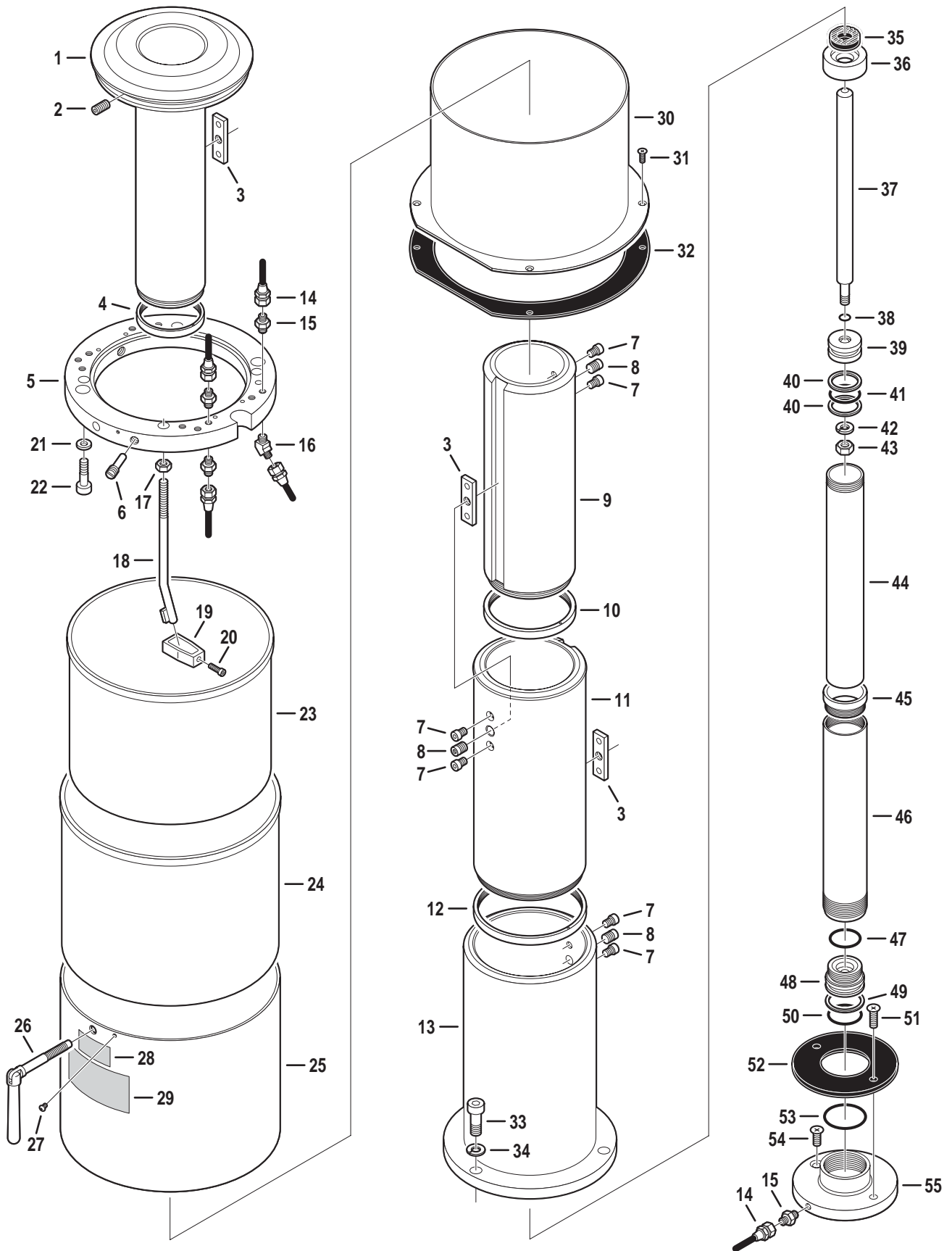


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Item	Part No.	Description	Qty.
44	D4-067-19	VALVE, kidney lift adjust .....	1
45	D6-010-17-1	BOLT, allen, M8 x 15 (plated) .....	8
46	D3-067-26	BRACE, side frame, left .....	1
	D3-067-27	BRACE, side frame, right .....	1
47	D6-010-34	SCREW, set, M6 x 6 .....	A/R
48	D5-067-14	BRACKET, micro-switch mounting .....	2
49	D5-067-15	MICRO-SWITCH .....	2

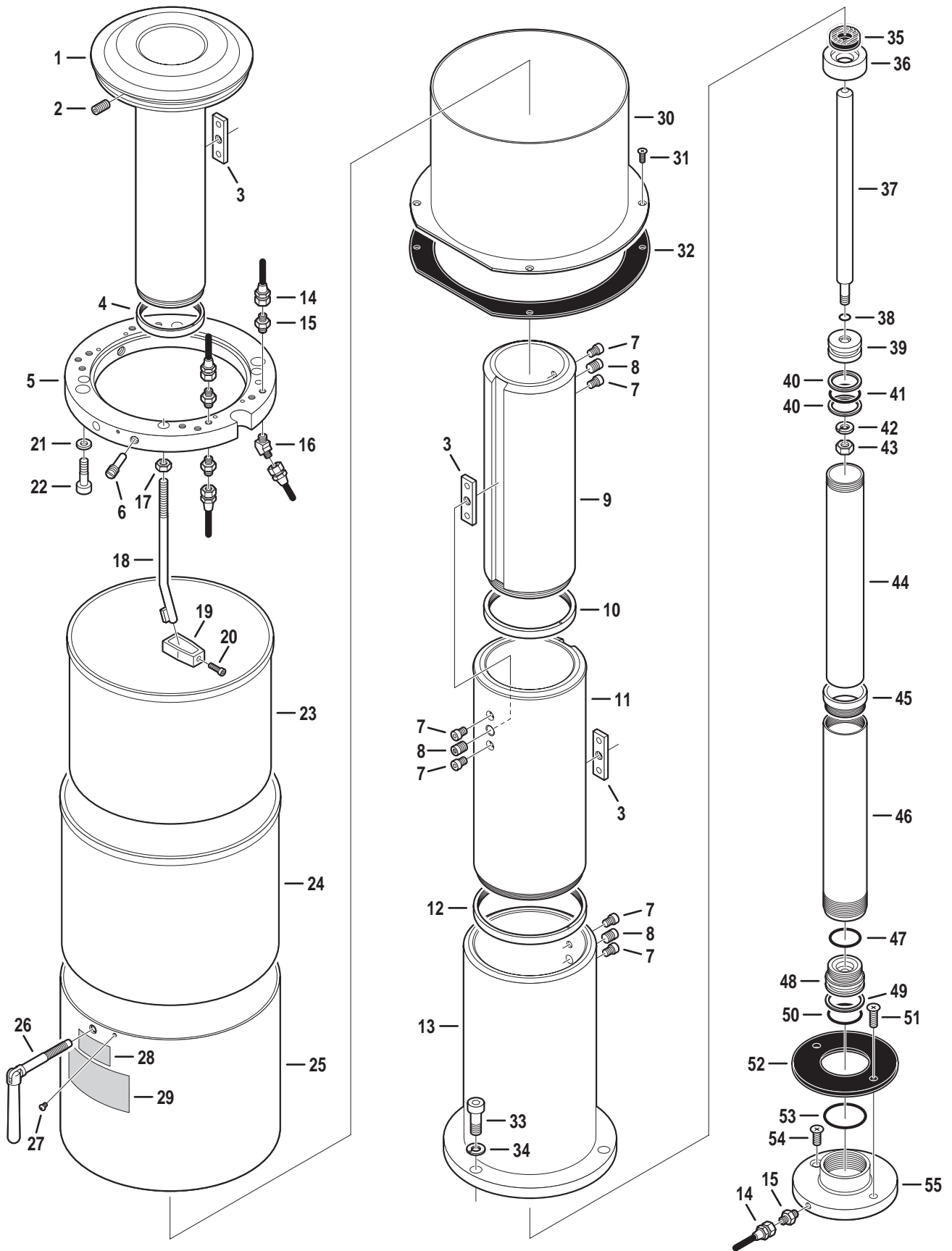
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7. SUPPORT COLUMN ASSEMBLY



Item	Part No.	Description	Qty.
--	D2-067-21	SLIDER ASSEMBLY .....	1
1	D2-067-26	•SLIDER SECTION #1 .....	1
2	D6-032-23	•SCREW, set, M10 x 20 .....	1
3	D2-032-27	•KEY, slider .....	3
4	D2-067-27	•STOPPER, slider section #1 .....	1
5	D2-067-23	•RING, elevation clamp .....	1
	D6-032-40	•BALL, steel, 4mm .....	A/R
6	D2-067-24	•STOPPER, rotation .....	1
7	D6-067-18	•BOLT, allen, M8 x 8 .....	6
8	D2-010-14	•BOSS, slider .....	3
9	D2-067-28	•SLIDER SECTION #2 .....	1
10	D2-067-29	•STOPPER, slider section #2 .....	1
11	D2-067-30	•SLIDER SECTION #3 .....	1
12	D2-067-31	•STOPPER, slider section #3 .....	1
13	D2-067-32	•SLIDER SECTION, main .....	1
14	----	HOSE, flexible (specify function) .....	A/R
15	D4-010-31	FITTING, flexible hose .....	A/R
16	D4-010-30	FITTING, hydraulic, 45° elbow .....	A/R
17	D6-011-07	NUT, M12 .....	2
18	D2-032-71	BAR, hose guide .....	2
19	D2-010-45	HOLDER, HOSE .....	2
20	D6-011-08	BOLT, allen, M5 x 18 .....	2
21	D6-010-21	WASHER, lock, M12 .....	2
22	D6-011-06	BOLT, allen, M12 x 45 .....	2
23	D2-067-33	SHROUD, elevation, section #2 .....	1
24	D2-067-34	SHROUD, elevation, section #3 .....	1
25	D2-067-35	SHROUD, elevation, section #4 .....	1
26	D2-067-36	HANDLE, table top mounting .....	1
27	D6-010-19	SCREW, phillips, M5 x 10 .....	3
28	D6-034-18	LABEL, table top handle .....	1
29	D6-067-19	LABEL, table top warning .....	1
30	D2-067-37	SHROUD, elevation, section #1 .....	1
31	D6-010-49	SCREW, phillips, M5 x 12 .....	4
32	D2-067-38	GASKET, shroud .....	1
33	D6-010-22	BOLT, allen, M12 x 35 .....	4
34	D6-010-21	WASHER, lock, M12 .....	4
--	D4-067-20	ELEVATION CYLINDER ASSEMBLY .....	1
35	D4-034-43	•CUSHION, rubber .....	1
36	D4-067-21	•CAP .....	1
37	D4-067-22	•ROD, primary piston .....	1
38	D4-010-56	•O-RING, P-10A .....	1
39	D4-067-23	•PISTON, primary .....	1
40	D4-067-31	•RING, back-up P-34 .....	2
41	D4-010-54	•O-RING, P-34 .....	1
42	D6-010-42	•WASHER, lock, M10 .....	1
43	D6-010-56	•NUT, hex, M10 .....	1
44	D4-067-24	•TUBE, secondary piston .....	1
45	D4-067-25	•CAP, elevation tube .....	1

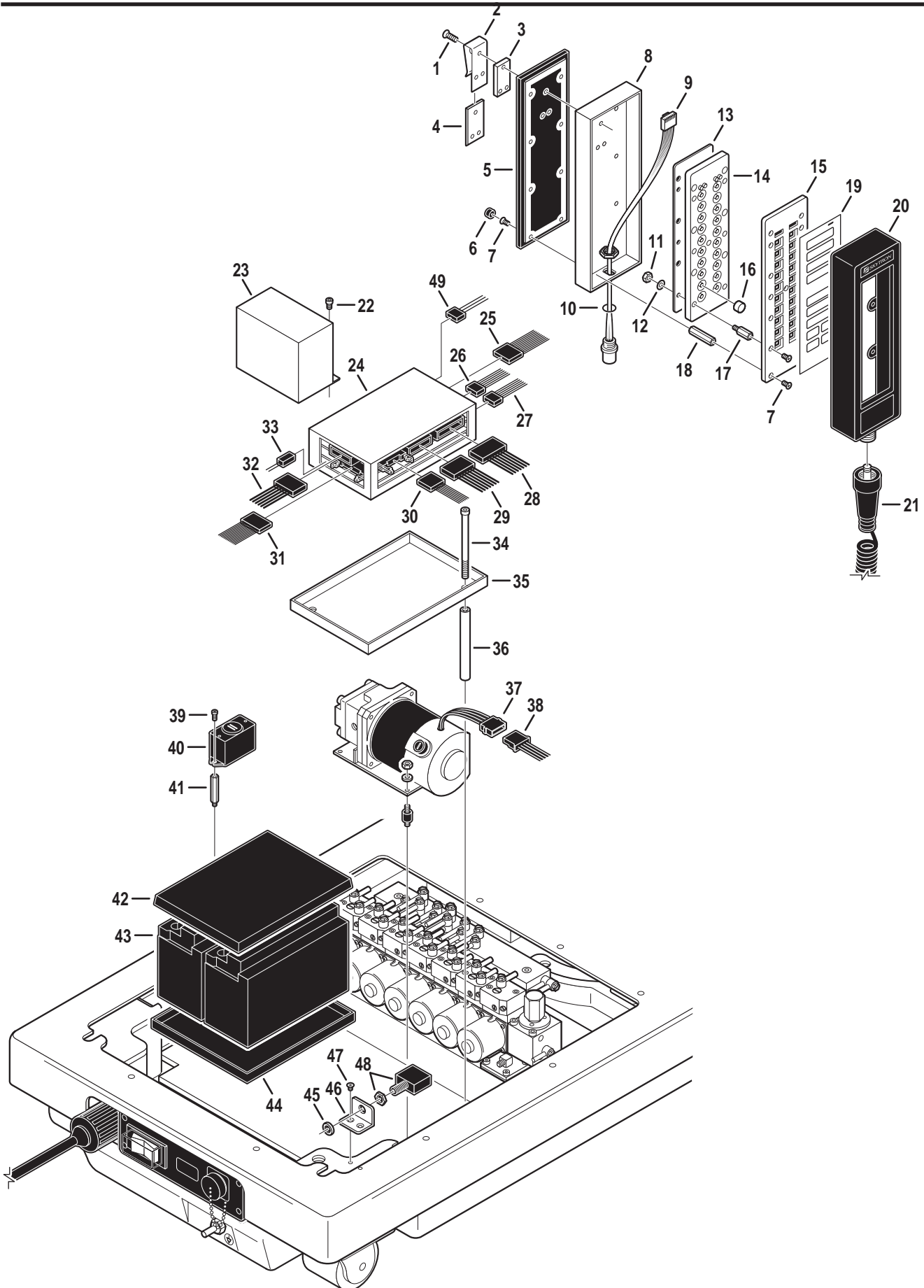
7. SUPPORT COLUMN ASSEMBLY (CONTINUED)



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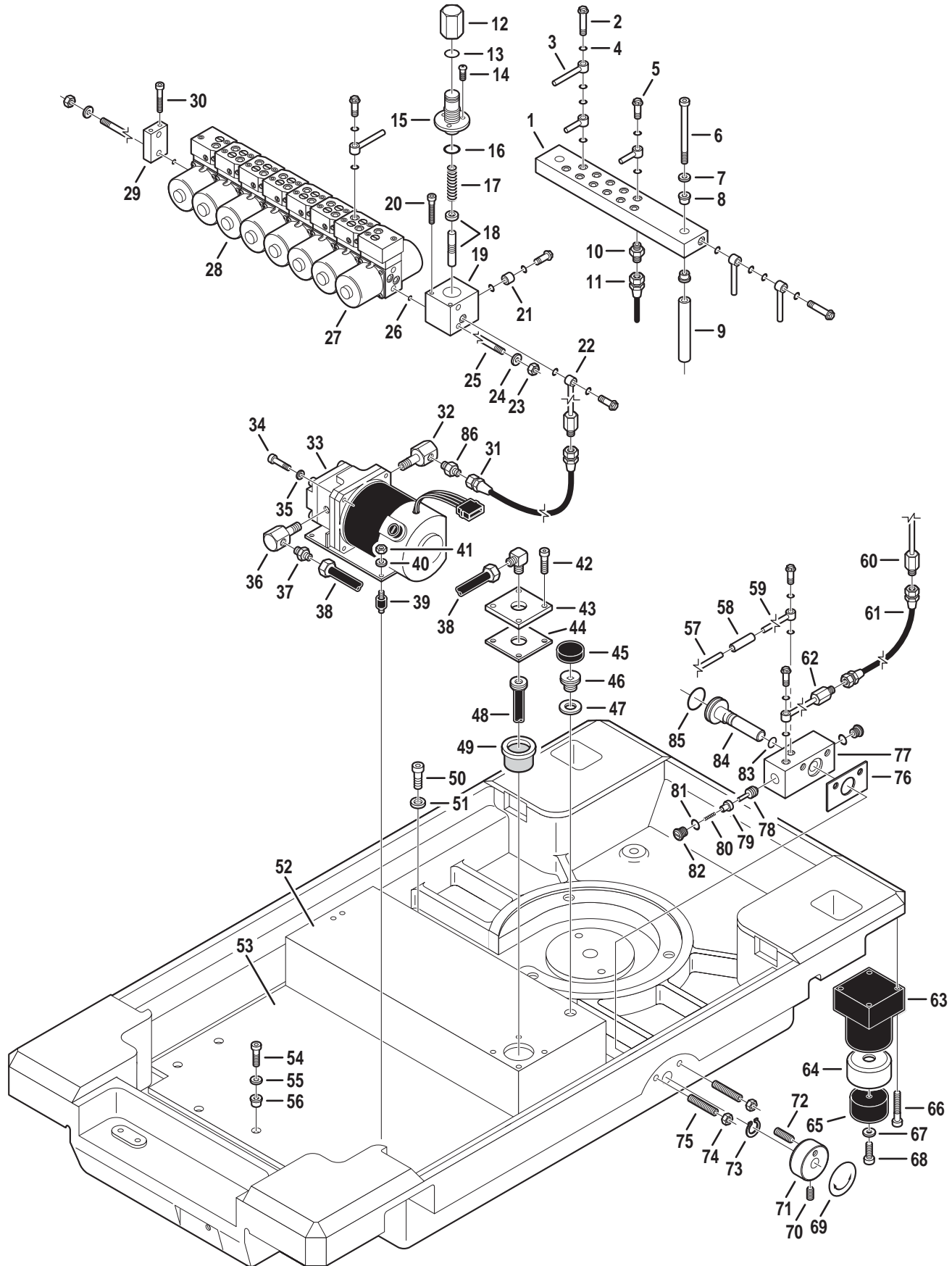
Item	Part No.	Description	Qty.
46	D4-067-26	•TUBE, elevation cylinder .....	1
47	D4-010-53	•O-RING, P-36 .....	1
48	D4-067-27	•PISTON, secondary .....	1
49	D4-067-32	•RING, back-up, P-41 .....	1
50	D4-067-28	•O-RING, P-41 .....	1
51	D4-067-20	•SCREW, phillips, countersunk, M8 x 25 .....	1
52	D4-067-29	•CUSHION, rubber dropping .....	1
53	D4-010-58	•O-RING, P-50 .....	1
54	D6-067-21	•SCREW, phillips, countersunk, M8 x 20 .....	1
55	D4-067-30	•SAUCER, elevation cylinder .....	1

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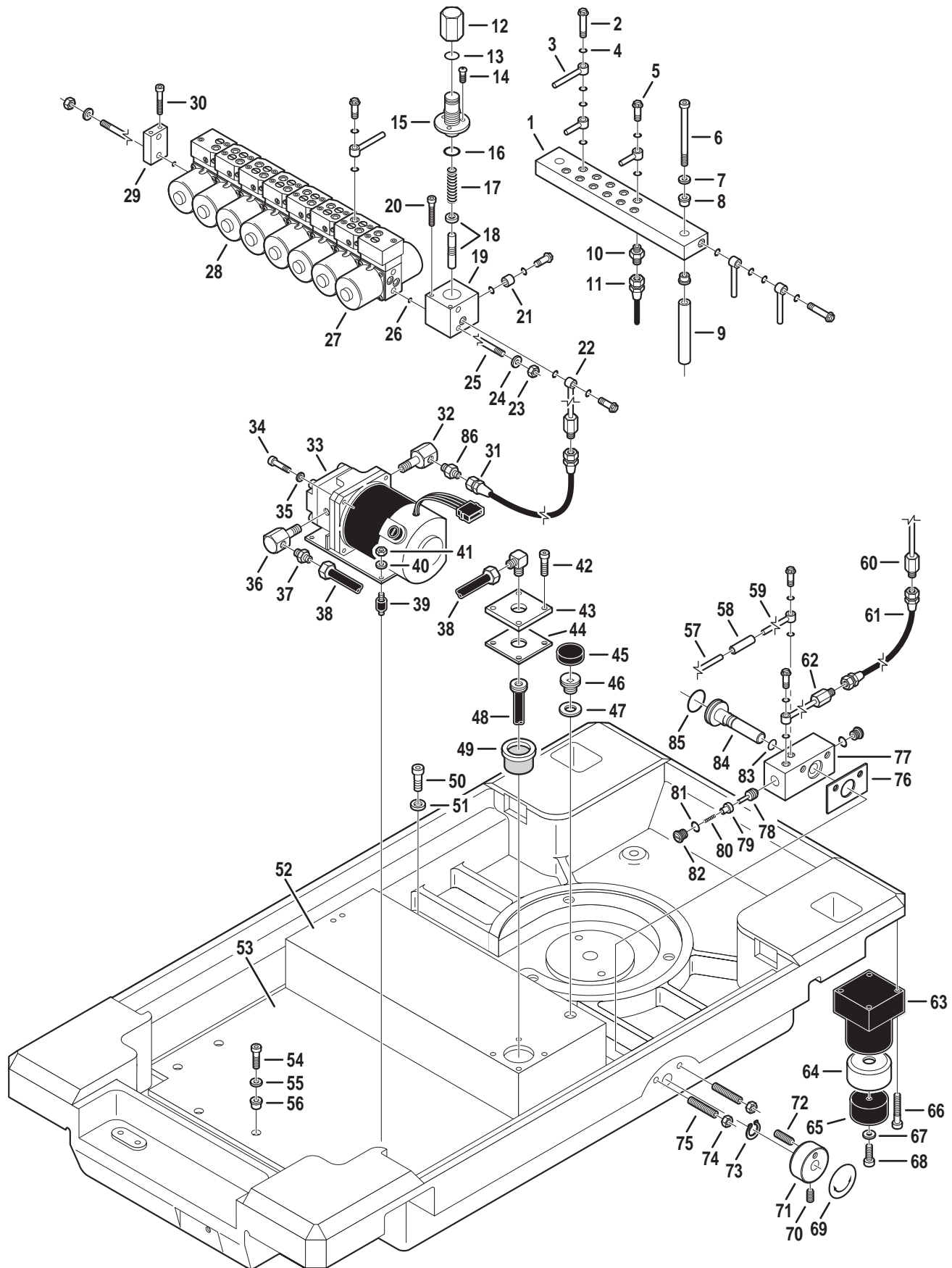




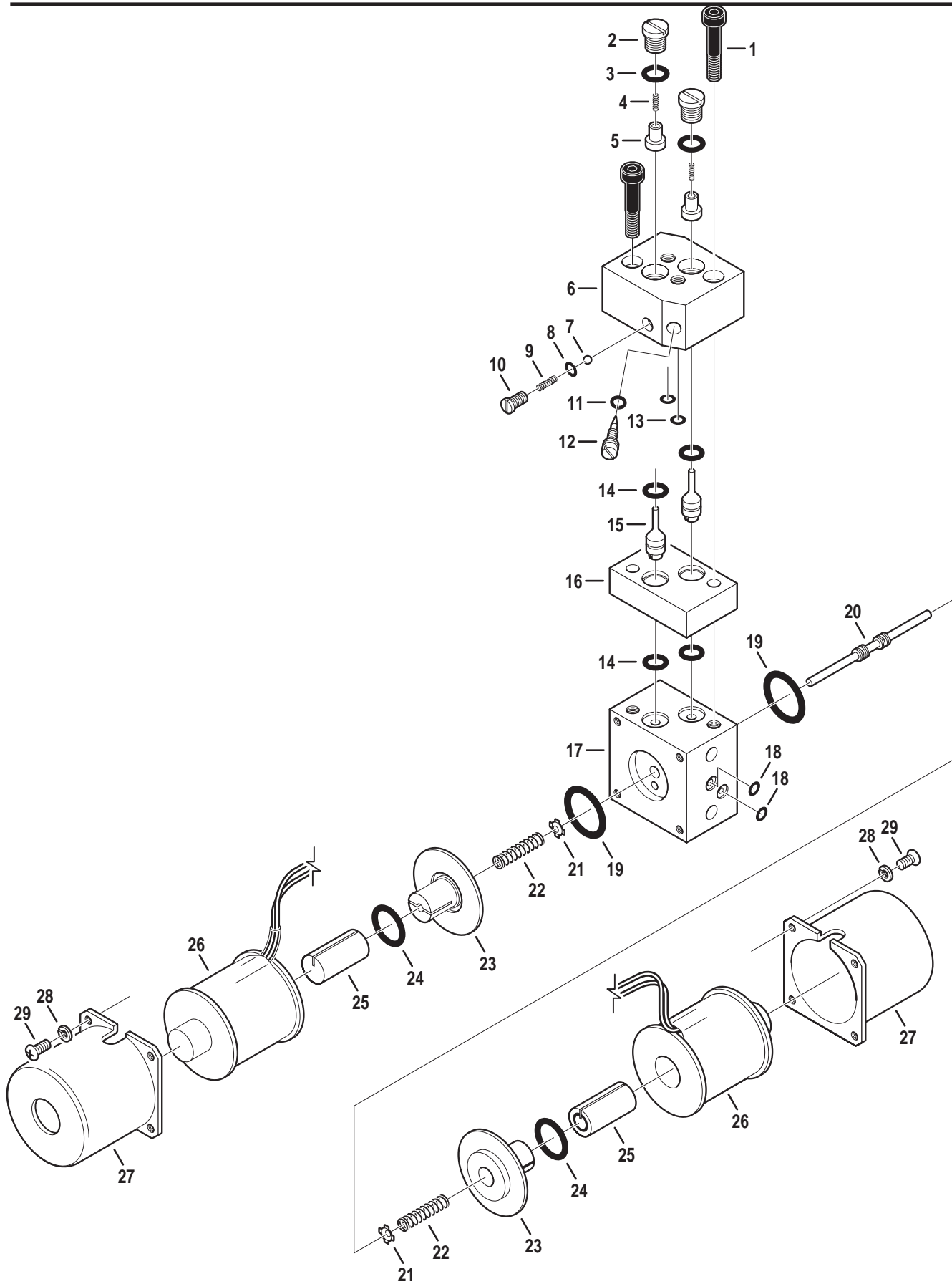
Item	Part No.	Description	Qty.
--	D5-067-16	PENDANT CONTROL ASSEMBLY .....	1
1	D6-032-33	•SCREW, pendant hook, M4 x 12 .....	3
2	D5-034-07	•HOOK, pendant .....	1
3	D5-034-08	•PLATE, pendant hook .....	1
4	----	•INSERT, pendant hook (part of D5-034-07) .....	1
5	D5-034-10	•BACK PLATE .....	1
6	D6-034-07	•PLUG, rubber .....	8
7	D6-010-79-1	•SCREW, M3 x 5 (plated) .....	A/R
8	D5-034-11	•HOUSING .....	1
9	D5-034-12	•CONNECTOR ASSEMBLY, 7-pin, female .....	1
10	----	•O-RING, connector assembly .....	1
11	D6-034-08	•NUT, M3 (plated) .....	A/R
12	D6-034-09	•WASHER, M3 .....	A/R
13	D5-067-17	•CIRCUIT BOARD .....	1
14	D5-067-18	•PLATE, circuit board mounting .....	1
15	D5-067-19	•COVER, circuit board mounting plate .....	1
16	D6-034-10	•BUTTON .....	A/R
17	D6-034-11	•STAND-OFF .....	A/R
18	D6-034-12	•STAND-OFF .....	A/R
19	D5-067-20	•FACEPLATE, pendant control .....	1
20	D5-067-21	•COVER, rubber .....	1
21	D5-034-18	•CORD ASSEMBLY .....	1
22	D6-035-18	BOLT, allen, M4 x 6 .....	2
23	D5-067-22	CAPACITOR / RECTIFIER UNIT .....	1
24	D5-067-23	RELAY BOX .....	1
25	D5-067-24	CONNECTOR, 12-pin, female (CN-3) .....	1
26	D5-067-25	CONNECTOR, 7-pin, female (CN-8) .....	1
27	D5-067-26	CONNECTOR, 7-pin, female (CN-7) .....	1
28	D5-067-27	CONNECTOR, 20-pin, female (CN-18) .....	1
29	D5-067-28	CONNECTOR, 16-pin, female (CN-1A) .....	1
30	D5-067-29	CONNECTOR, 16-pin, female (CN-2) .....	1
31	D5-067-30	CONNECTOR, 26-pin, female (CN-10) .....	1
32	D5-067-31	CONNECTOR, 12-pin, female (CN-4) .....	1
33	D5-067-32	CONNECTOR, 2-pin, female .....	1
34	D6-032-21	BOLT, allen, M5 x 105 .....	2
35	D1-032-23	TRAY, relay box .....	1
36	D1-032-22	STAND-OFF .....	2
37	D5-067-33	CONNECTOR, female, 4-pin .....	1
38	D5-067-34	CONNECTOR, male, 4-pin .....	1
39	D6-060-07	BOLT, allen, M4 x 8 .....	2
40	D5-034-49	BUZZER .....	1
41	D6-034-13	STAND-OFF .....	2
42	D1-032-21	COVER, battery .....	1
43	D5-032-43	BATTERY, 12V .....	2
44	D1-032-20	TRAY, battery .....	1
45	D6-067-22	NUT .....	1
46	D5-067-35	BRACKET, circuit breaker .....	1
47	D6-067-23	SCREW, phillips, countersunk, M4 x 8 .....	2
48	D5-067-36	CIRCUIT BREAKER ASSEMBLY 15A .....	1



Item	Part No.	Description	Qty.
1	D4-032-23	TERMINAL, plumbing .....	1
2	D4-010-26	BOLT, plumbing, M6 (long) .....	A/R
3	----	OIL LINE (specify function) .....	A/R
4	D4-010-08	O-RING, P-7 .....	A/R
5	D4-010-24	BOLT, plumbing, M6 .....	A/R
6	D6-032-13	BOLT, allen, M6 x 140 .....	2
7	D6-010-85	WASHER, flat, M6 .....	2
8	D6-031-16	BUSHING, isolation .....	4
9	D4-032-81	STAND-OFF .....	2
10	D4-010-31	FITTING, flexible hose .....	A/R
11	----	HOSE, flexible (specify function) .....	A/R
--	D4-031-23	PRESSURE RELIEF VALVE .....	1
12	D4-034-20	•CAP, pressure relief valve .....	1
13	D4-031-67	•O-RING, P-10 .....	1
14	D6-034-14	•SCREW .....	3
15	D4-034-21	•BODY, pressure relief valve .....	1
16	D4-010-51	•O-RING, P-16 .....	1
17	D4-031-12	•SPRING .....	1
18	D4-031-23-4	•VALVE, relief, 5mm dia. (steel) .....	1
19	D4-031-23-2	•HOUSING, relief valve (5mm dia. valve) .....	1
20	D6-010-65	BOLT, allen, M5 x 35 .....	4
21	D4-010-18	CAP, blind, M6 .....	1
22	D4-032-58	OIL LINE, pump outlet .....	1
23	D6-010-76	NUT, M5 .....	4
24	D6-010-77	WASHER, lock, M5 .....	4
25	D6-032-14	STUD, M5 x 345 .....	2
26	D4-010-52	O-RING, P-4 .....	A/R
27	D4-067-33	ELECTRO / MINI VALVE ASSY. (3-way), 24VDC, elevation .....	A/R
	D4-067-34	ELECTRO / MINI VALVE ASSY. (3-way), 24 VDC, brake, (blue dot) .....	A/R
28	D4-067-35	ELECTRO / MINI VALVE ASSY. (4-way), 24VDC .....	A/R
29	D4-010-40	CAP, end .....	1
30	D6-010-64	BOLT, allen, M5 x 40 .....	2
31	D4-067-36	HOSE, flexible, pump outlet .....	1
32	D5-034-33-1	FITTING, pump outlet .....	1
33	D4-034-32	PUMP / MOTOR ASSEMBLY .....	1
34	D6-032-22	BOLT, allen .....	2
35	D6-060-16	WASHER, lock, M4 .....	4
36	D5-034-33	FITTING, pump inlet .....	1
37	D4-032-67	FITTING, hydraulic, pump inlet .....	1
38	D4-067-37	HOSE, flexible, pump inlet .....	1
39	D4-031-65	ISOLATION MOUNT, motor .....	4
40	D6-010-77	WASHER, lock, M5 .....	4
41	D6-010-76	NUT, M5 .....	4
42	D6-010-67	BOLT, allen, M5 x 15 .....	4
43	D4-031-14	COVER, oil tank .....	1
44	D4-031-13	GASKET, oil tank cover .....	1
45	D4-010-39	CAP, oil filler .....	1
46	D4-010-38	FITTING, oil filler .....	1
47	D4-010-37	GASKET, oil filler .....	1

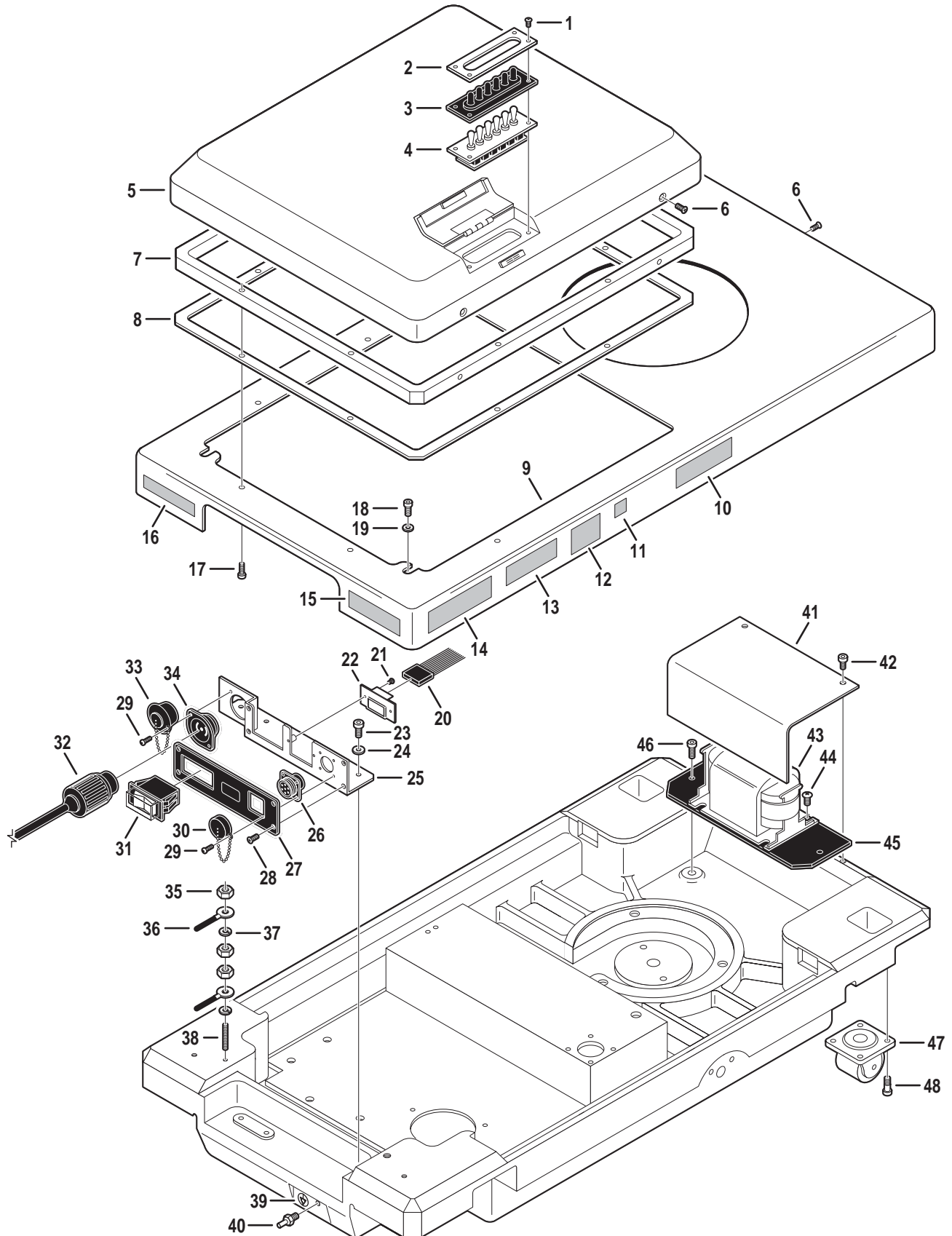


Item	Part No.	Description	Qty.
48	D4-030-19	TUBE, induction .....	1
49	D4-031-11	STRAINER, oil .....	1
50	D6-010-51	BOLT, allen, M6 x 10 .....	2
51	D6-010-85	WASHER, flat, M6.....	2
52	D4-034-22	RESERVOIR, oil tank.....	1
53	D4-067-38	PLATE, oil tank receiving.....	1
54	D6-010-30	BOLT, allen, M6 x 20 .....	3
55	D6-031-15	WASHER.....	3
56	D1-031-12	BUSHING, isolation.....	6
57	----	OIL LINE (specify function) .....	A/R
58	D4-032-51	FLEXIBLE TUBE .....	1
59	D4-032-50	OIL LINE .....	1
60	----	OIL LINE (specify function) .....	A/R
61	D4-032-48	FLEXIBLE HOSE .....	1
62	D4-032-49	OIL LINE .....	1
63	D4-035-47	CYLINDER ASSEMBLY, brake .....	4
64	D4-031-95-1	SEAT, brake rubber.....	4
65	D4-031-96	PAD, brake, self-leveling, hard .....	2
	D4-031-97	PAD, brake, self-leveling, soft.....	2
66	D6-010-39	BOLT, allen, M6 x 45 .....	16
67	D6-010-36	WASHER.....	4
68	D6-010-30	BOLT, allen, M6 x 20 .....	4
--	D4-017-15	EMERGENCY BRAKE RELEASE ASSEMBLY .....	1
69	D6-017-29	•DECAL .....	1
70	D6-060-38	•SCREW, set, M5 x 10 .....	1
71	D6-017-30	•KNOB .....	1
72	D6-010-87	SCREW, set, M6 x 20 .....	1
73	D6-017-31	•RING, retaining .....	1
74	D6-010-41	•NUT, hex, M6 .....	2
75	D6-035-06	•SCREW, set, M6 x 25 .....	2
76	D6-017-32	•SPACER .....	1
77	D4-017-16	•BLOCK, emergency brake release .....	1
78	D4-017-18	•PILOT PLUNGER .....	1
79	D4-017-17	•VALVE .....	1
80	D6-017-33	•SPRING .....	1
81	D4-010-08	•O-RING, P-7 .....	3
82	D6-017-34	•CAP, plug.....	2
83	D4-010-19	•PLUNGER .....	1
84	D4-010-15	•O-RING, P-18 .....	1
85	D4-032-63	FITTING, hydraulic, pump outlet .....	1



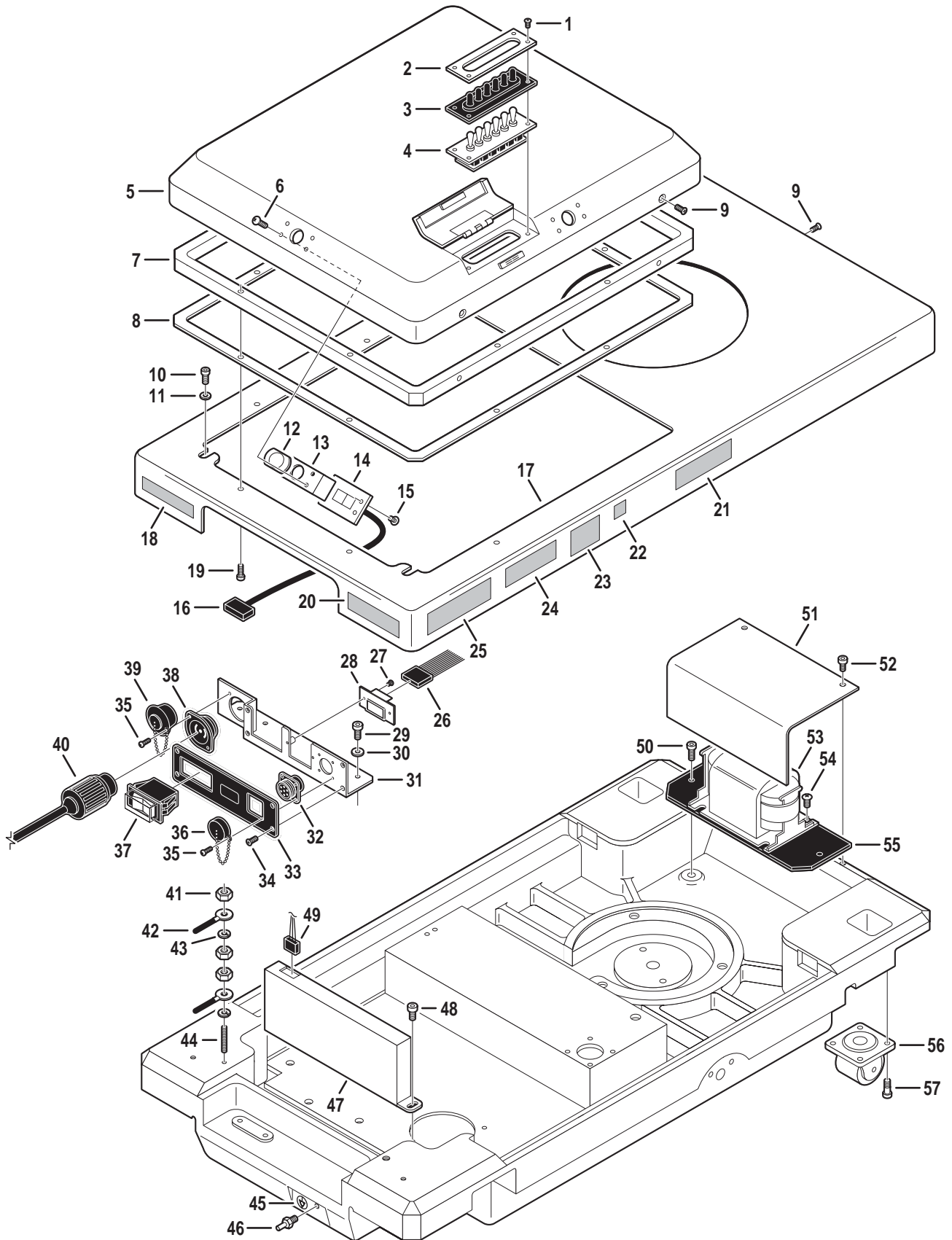
Item	Part No.	Description	Qty.
1	D6-010-65	BOLT, allen, M5x35 .....	2
2	D4-010-41	PLUG, cap .....	A/R
3	D4-010-08	O-RING, P-7 .....	A/R
4	D4-010-42	SPRING, return .....	A/R
5	D4-010-25	VALVE, non-return .....	A/R
6	D4-010-43	VALVE BLOCK, 4-way .....	A/R
	D4-010-23	VALVE BLOCK, 3-way .....	A/R
7	D4-034-25	BALL, check .....	A/R
8	D4-050-12	O-RING, P-5 .....	A/R
9	D4-034-26	SPRING .....	A/R
10	D4-034-27	PLUG .....	A/R
11	D4-010-20	O-RING, P-3 .....	A/R
12	D4-010-44	VALVE, needle, speed control .....	A/R
13	D4-010-19	O-RING, P-6 .....	A/R
14	D4-010-01	O-RING, P-8 .....	A/R
15	----	PILOT PLUNGER (not available separately) .....	A/R
16	----	VALVE BLOCK (not available separately) .....	A/R
17	----	VALVE BLOCK (not available separately) .....	A/R
18	D4-010-52	O-RING, P-4 .....	A/R
19	D4-010-51	O-RING, P16 .....	A/R
20	----	SPOOL VALVE (not available separately) .....	A/R
21	D4-034-28	RETAINER, spool valve .....	A/R
22	D4-034-29	SPRING, return, spool valve .....	A/R
23	D4-034-30	GUIDE, bushing .....	A/R
24	D4-010-14	O-RING, P-12 .....	A/R
25	D4-034-31	PLUNGER, spool valve .....	A/R
26	D5-067-37	SOLENOID, 24VDC .....	A/R
	D5-067-02	•PIN, connector .....	A/R
27	D5-034-37	HOUSING, solenoid .....	A/R
28	D6-010-78	WASHER, lock, M3 .....	8
29	D6-010-79	SCREW, phillips, M3x5 .....	8

11. BASE ASSEMBLY

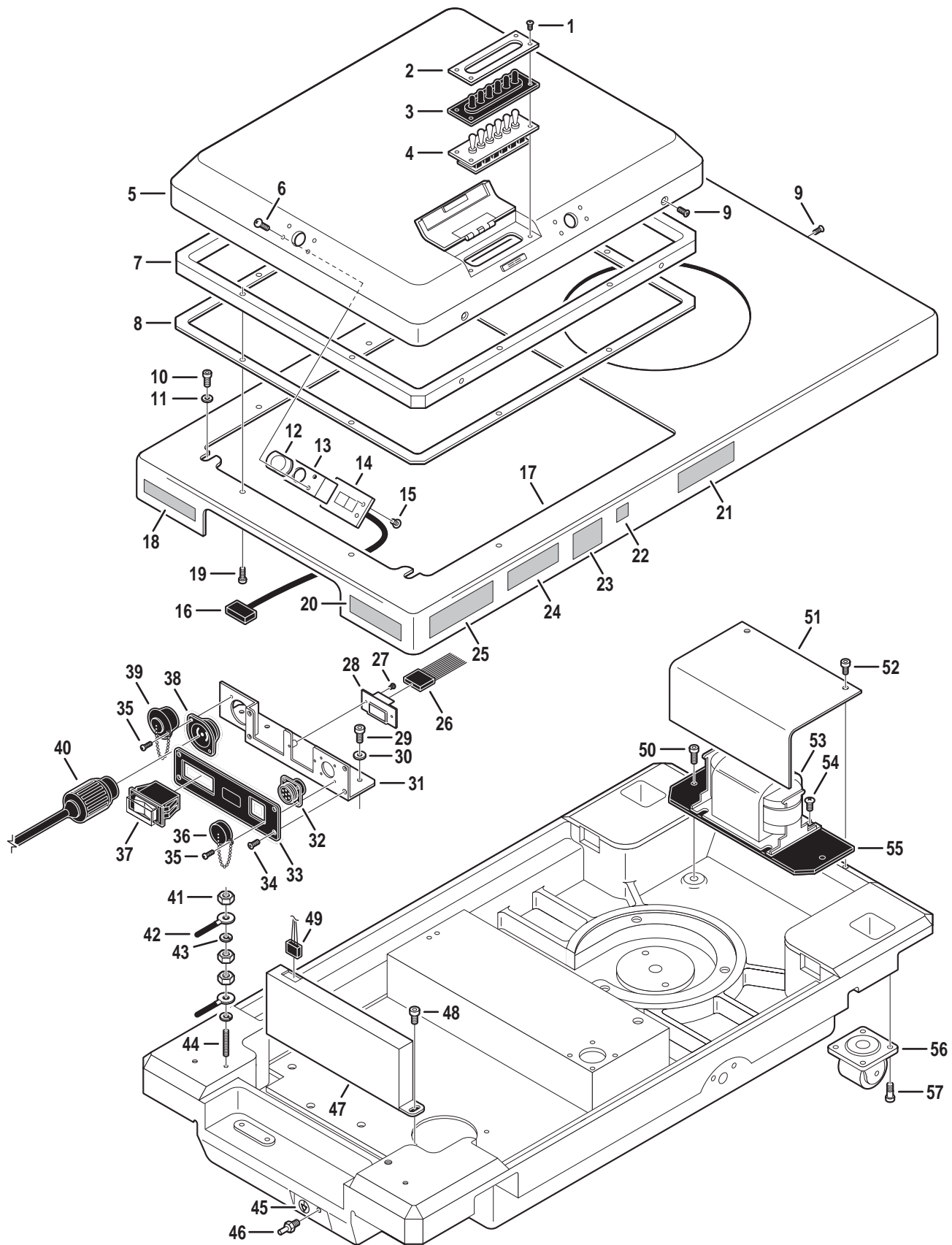




Item	Part No.	Description	Qty.
1	D6-032-31	SCREW, phillips, M4 x 8 .....	4
2	D5-034-38	FACEPLATE, 6-switch .....	1
3	D5-034-39	COVER, switch assembly .....	1
4	D5-034-40	SWITCH PLATE ASSEMBLY .....	1
	D5-034-41	•SWITCH, toggle, 2 position .....	6
5	D1-034-01	COVER, service access .....	1
6	D6-050-37	SCREW, phillips, M4 x 8 .....	4
7	D1-034-03	FRAME .....	1
8	D1-034-04	GASKET .....	1
9	D1-067-01	HOUSING, base .....	1
10	D6-065-26	DECAL, emergency brake release .....	1
11	D6-067-24	DECAL, equipment type B .....	1
12	D6-065-25	DECAL, model number .....	1
13	D6-065-24	DECAL, DANGER EXPLOSION HAZARD 2 .....	1
14	D6-065-23	DECAL, DANGER EXPLOSION HAZARD 1 .....	1
15	D6-065-22	DECAL, CAUTION, electric shock .....	1
16	D6-065-21	DECAL, grounding reliability .....	1
17	D6-010-67	BOLT, allen, M5 x 15 .....	10
18	D6-010-51	BOLT, allen, M6 x 10 .....	2
19	D6-010-85	WASHER, flat, M6 .....	2
20	D5-067-38	CONNECTOR, 12-pin, female .....	1
21	D6-067-25	SCREW .....	2
22	D5-067-39	BATTERY INDICATOR ASSEMBLY .....	1
23	D6-010-51	BOLT, allen, M6 x 10 .....	3
24	D6-010-40	WASHER, lock, M6 .....	3
25	D5-067-40	BRACKET .....	1
26	D5-034-44	CONNECTOR, 7-pin, female .....	1
27	D5-067-41	FACEPLATE .....	1
28	D6-060-41	SCREW, allen, M4 x 3 .....	4
29	D6-034-05	SCREW, phillips, M6 x 7 (plated) .....	2
30	D5-034-47	COVER, w/chain .....	1
31	D5-034-46	SWITCH, on/off (includes cover) .....	1
32	D5-066-31	POWER CORD ASSEMBLY .....	1
33	D5-066-32	COVER, w/chain .....	1
34	D5-066-30	CONNECTOR, 3-prong .....	1
35	D6-010-76	NUT, M5 .....	3
36	----	WIRE, ground .....	A/R
37	D6-017-28	WASHER, lock, M5 .....	2
38	D6-035-02	SCREW, set, M5 x 25 .....	1
39	D6-034-21	DECAL, equalization terminal .....	1
40	D6-034-20	EQUALIZATION TERMINAL .....	1
41	D1-032-16	COVER, transformer .....	1
42	D6-050-36	BOLT, allen, M5 x 8 .....	2
43	D5-032-58	TRANSFORMER .....	1
44	D6-032-17	SCREW, phillips .....	2
45	D1-032-17	PLATE, transformer mounting .....	1
46	D6-032-18	BOLT, allen .....	2
47	D1-010-30	CASTER, 105HB-P .....	4
48	D6-010-96	BOLT, allen, M10 x 20 .....	16



Item	Part No.	Description	Qty.
1	D6-032-31	SCREW, phillips, M4 x 8 .....	4
2	D5-034-38	FACEPLATE, 6-switch .....	1
3	D5-034-39	COVER, switch assembly .....	1
4	D5-034-40	SWITCH PLATE ASSEMBLY .....	1
	D5-034-41	•SWITCH, toggle, 2 position .....	6
5	D1-067-02	COVER, service access .....	1
6	D6-010-57	SCREW, buttonhead, phillips, M4 x 10 .....	16
7	D1-034-03	FRAME .....	1
8	D1-034-04	GASKET .....	1
9	D6-050-37	SCREW, phillips, M4 x 8 .....	4
10	D6-010-51	BOLT, allen, M6 x 10 .....	2
11	D6-010-85	WASHER, flat, M6 .....	2
12	D5-067-43	COVER, infrared sensor .....	4
13	D5-067-44	BRACKET, infrared sensor circuit board .....	4
14	D5-067-45	CIRCUIT BOARD, infrared sensor .....	4
15	D6-035-04	SCREW, buttonhead, phillips, M4 x 8 .....	8
16	D5-067-46	CONNECTOR, 16-pin, female .....	4
17	D1-067-01	HOUSING, base .....	1
18	D6-065-21	DECAL, grounding reliability .....	1
19	D6-010-67	BOLT, allen, M5 x 15 .....	10
20	D6-065-22	DECAL, CAUTION, electric shock .....	1
21	D6-065-26	DECAL, emergency brake release .....	1
22	D6-067-24	DECAL, equipment type B .....	1
23	D6-065-25	DECAL, model number .....	1
24	D6-065-24	DECAL, DANGER EXPLOSION HAZARD 2 .....	1
25	D6-065-23	DECAL, DANGER EXPLOSION HAZARD 1 .....	1
26	D5-067-38	CONNECTOR, 12-pin, female .....	1
27	D6-067-25	SCREW .....	2
28	D5-067-39	BATTERY INDICATOR ASSEMBLY .....	1
29	D6-010-51	BOLT, allen, M6 x 10 .....	3
30	D6-010-40	WASHER, lock, M6 .....	3
31	D5-067-40	BRACKET .....	1
32	D5-034-44	CONNECTOR, 7-pin, female .....	1
33	D5-067-41	FACEPLATE .....	1
34	D6-060-41	SCREW, allen, M4 x 3 .....	4
35	D6-034-05	SCREW, phillips, M6 x 7 (plated) .....	2
36	D5-034-47	COVER, w/chain .....	1
37	D5-034-46	SWITCH, on/off (includes cover) .....	1
38	D5-066-30	CONNECTOR, 3-prong .....	1
39	D5-066-32	COVER, w/chain .....	1
40	D5-066-31	POWER CORD ASSEMBLY .....	1
41	D6-010-76	NUT, M5 .....	3
42	----	WIRE, ground .....	A/R
43	D6-017-28	WASHER, lock, M5 .....	2
44	D6-035-02	SCREW, set, M5 x 25 .....	1
45	D6-034-21	DECAL, equalization terminal .....	1
46	D6-034-20	EQUALIZATION TERMINAL .....	1
47	D5-067-47	RELAY BOX .....	1
48	D6-010-70	BOLT, allen, M5 x 10 .....	2



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Item	Part No.	Description	Qty.
49	D5-067-48	WIRE HARNESS .....	1
50	D6-032-18	BOLT, allen .....	2
51	D1-032-16	COVER, transformer .....	1
52	D6-050-36	BOLT, allen, M5 x 8 .....	2
53	D5-032-58	TRANSFORMER .....	1
54	D6-032-17	SCREW, phillips .....	2
55	D1-032-17	PLATE, transformer mounting .....	1
56	D1-010-30	CASTER, 105HB-P .....	4
57	D6-010-96	BOLT, allen, M10 x 20 .....	16

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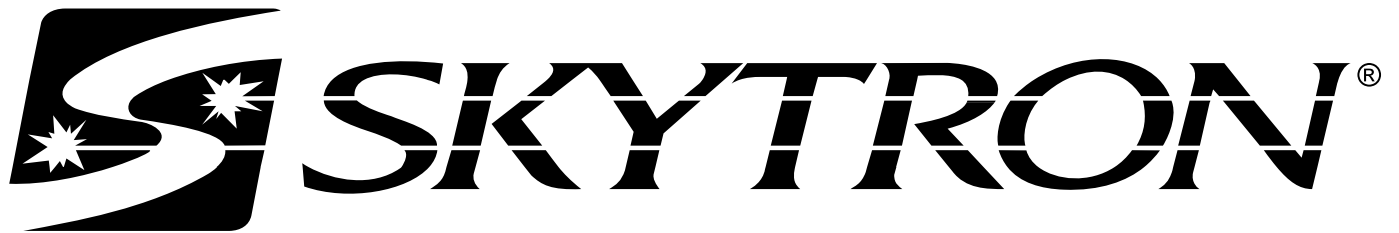
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Item	Part No.	Description	Qty.
	6-050-02	GAUGE, oil pressure .....	A/R
	D6-010-89	GREASE, slider .....	2.8 oz
	D6-010-90	OIL, hydraulic .....	Qt
	D4-011-02	HOSE, hydraulic, specify length .....	A/R
	D4-011-03	FITTING, hydraulic hose end .....	A/R

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5000 36th Street S.E. • Grand Rapids, MI 49512  
1.800.SKYTRON • 1.616.957.0500 • FAX 1.616.957.5053



***SURGICAL TABLE  
MAINTENANCE MANUAL***



***MODEL 6700B HERCULES***





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REV 2/07

Although current at the time of publication, SKYTRON'S policy of continuous development makes this manual subject to change without notice.

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**WARNING**



Indicates a possibility of personal injury.

**NOTE**

Indicates important facts or helpful hints.



**CAUTION**



Indicates a possibility of damage to equipment.

**BASIC RECOMMENDED TOOLS:**

1/8". 1/4" STRAIGHT BLADE SCREWDRIVERS  
 #2 PHILLIPS SCREWDRIVER  
 HYDRAULIC PRESSURE GAUGE SKYTRON P.N. 6-050-02  
 METRIC ALLEN® WRENCHES 1.5mm-8mm  
 ADJUSTABLE CRESCENT WRENCH  
 DIGITAL VOLTMETER, TRUE RMS  
 METRIC OPEN END WRENCHES 7mm-18mm  
 LEVEL (CARPENTERS)

**BASIC RECOMMENDED MAINTENANCE PROCEDURES**

The basic items notes below should be inspected at a minimal interval period of 6 months (dependant on usage). For optimal usage, safety and longevity of the product, have it serviced only by an authorized Skytron representative with authentic Skytron replacement parts.

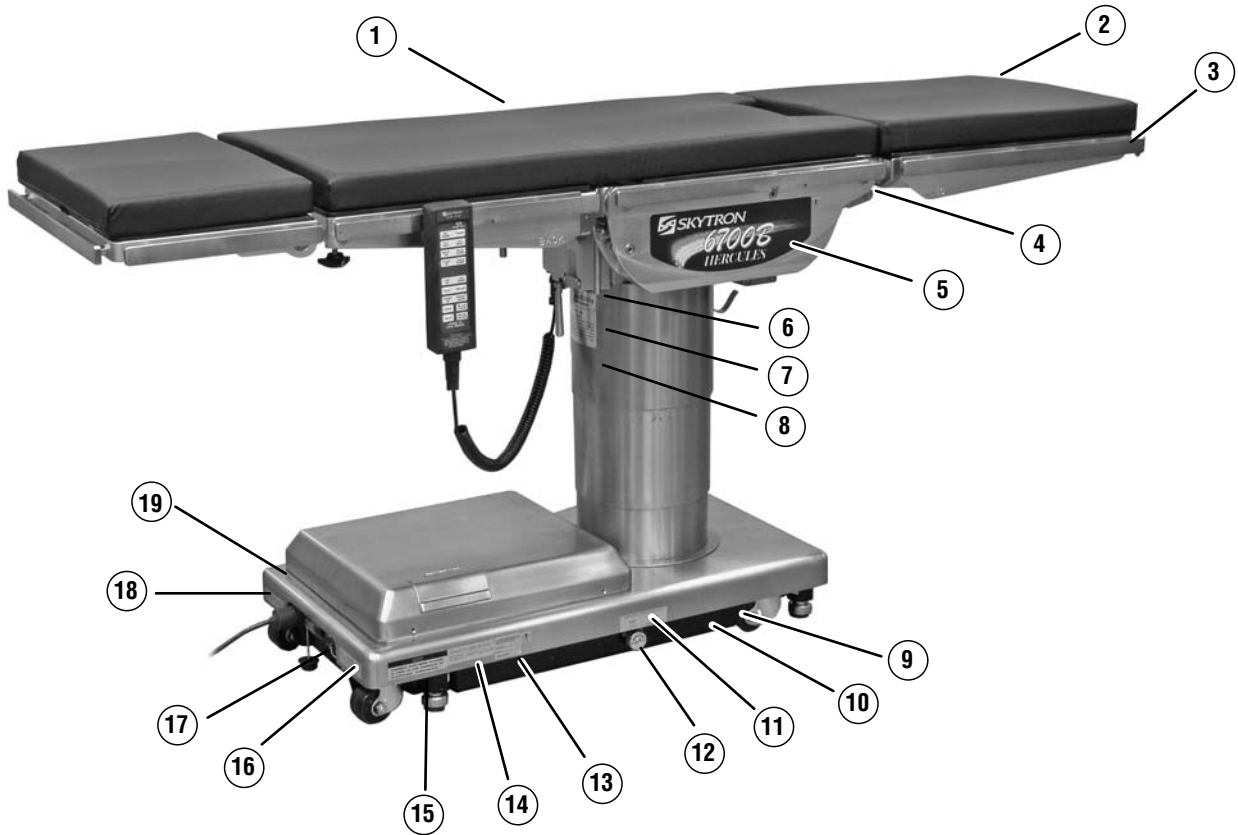
- Check Power Cord (if applicable)
- Check Pendant Control (if applicable)
- Check Oil Level in Reservoir
- Check For Hydraulic Leaks
- Check Pressure Relief Valve Setting
- Check All Table Functions
- Check Side Rails
- Check Velcro
- Check Lateral Tilt Housing Bolts
- Lubricate Elevation Slider Assembly with SKYTRON Slider Grease P/N D6-010-89
- Tighten X-Ray Top Stand-Offs, Use Loc-tite
- Lubricate Castors
- Check brake pads for wear and inspect brake cylinders for proper operation.



Only facility-authorized SKYTRON trained, maintenance personnel should troubleshoot the SKYTRON 6700B Surgical Table. Trouble shooting by unauthorized personnel could result in personal injury or equipment damage.

How to contact us:  
 Skytron  
 5000 36th St. SE, Grand Rapids, MI 49512  
 PH: 1-800-759-8766 (SKY-TRON)  
 FAX: 616-957-5053

# 6700B Equipment Labels



D6-032-43

**1** **<NOTE>**  
DUE TO INTERLOCK SYSTEM, BACK SECTION CANNOT BE RAISED ABOVE HORIZONTAL WHEN KIDNEY LIFT IS RAISED

D6-032-47

**2** **WARNING**  
USE HEAD SECTION AS FOOT EXTENSION ONLY - WHEN REVERSING PATIENT ON TABLE REFER TO OPERATOR MANUAL.

D6-032-46

**3** **WARNING**  
DO NOT SIT ON END OF LEG SECTION(S) AS LOADS IN EXCESS OF 140 LBS. MAY CAUSE INSTABILITY THAT COULD CAUSE THE TABLE TO BE TIPPED OVER.

**4** **REFER TO ACCOMPANYING DOCUMENTS**  
GRAND RAPIDS, MI 1-800-SKYTRON (616) 957-0500  
MODEL NO. \_\_\_\_\_ 120V 60 Hz 5 AMP  
SERIAL NO. \_\_\_\_\_  
FUSE \_\_\_\_\_ AMP FAST ACTING  
MANUFACTURED BY MIZUHO IKA CO., LTD., TOKYO, JAPAN

D6-067-11



D6-034-18



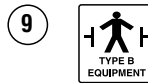
D6-011-29

**7** **TABLE TOP**  
**WARNING**  
ALWAYS LOCK THE TABLE TOP IN POSITION AFTER A FULL ROTATION OF 180°. DO NOT ROTATE THE TOP WITH AN UNDISTRIBUTED PATIENT LOAD AS INSTABILITY MAY RESULT. EXERCISE CAUTION WITH THE TABLE TOP ROTATED 90° TO THE BASE SINCE AN IMPROPERLY DISTRIBUTED PATIENT LOAD MAY CAUSE THE TABLE TO BE TIPPED OVER.

D6-034-26

**8** **Table Capacity:**  
**Lift 1200 lbs.**  
**Articulate 1000 lbs.**  
See Operators Manual for Limitations.

D6-017-05



L1-010-00



D6-065-26



D6-067-33



D6-011-34

**13** THIS PRODUCT COMPLIES WITH RADIATION PERFORMANCE STANDARD 21 CFR AT THE TIME OF MANUFACTURE  
Manufacturer: \_\_\_\_\_  
Model No. \_\_\_\_\_  
SKYTRON

D6-011-32

**14** **DANGER - EXPLOSION HAZARD. DO NOT USE IN THE PRESENCE OF FLAMMABLE ANAESTHETICS**  
**DANGER - RISQUE D'EXPLOSION. NE PAS EMPLOYER EN PRESENCE D'ANESTHESIQUES INFLAMMABLES**

D6-031-43

**15** **DANGER**  
**POSSIBLE EXPLOSION HAZARD IF USED IN THE PRESENCE OF FLAMMABLE ANESTHETICS.**

D6-065-22

**16** **CAUTION**  
To reduce the risk of electric shock, do not move cover or back. Refer servicing to qualified service personnel. Refer to accompanying documents.

D6-034-21



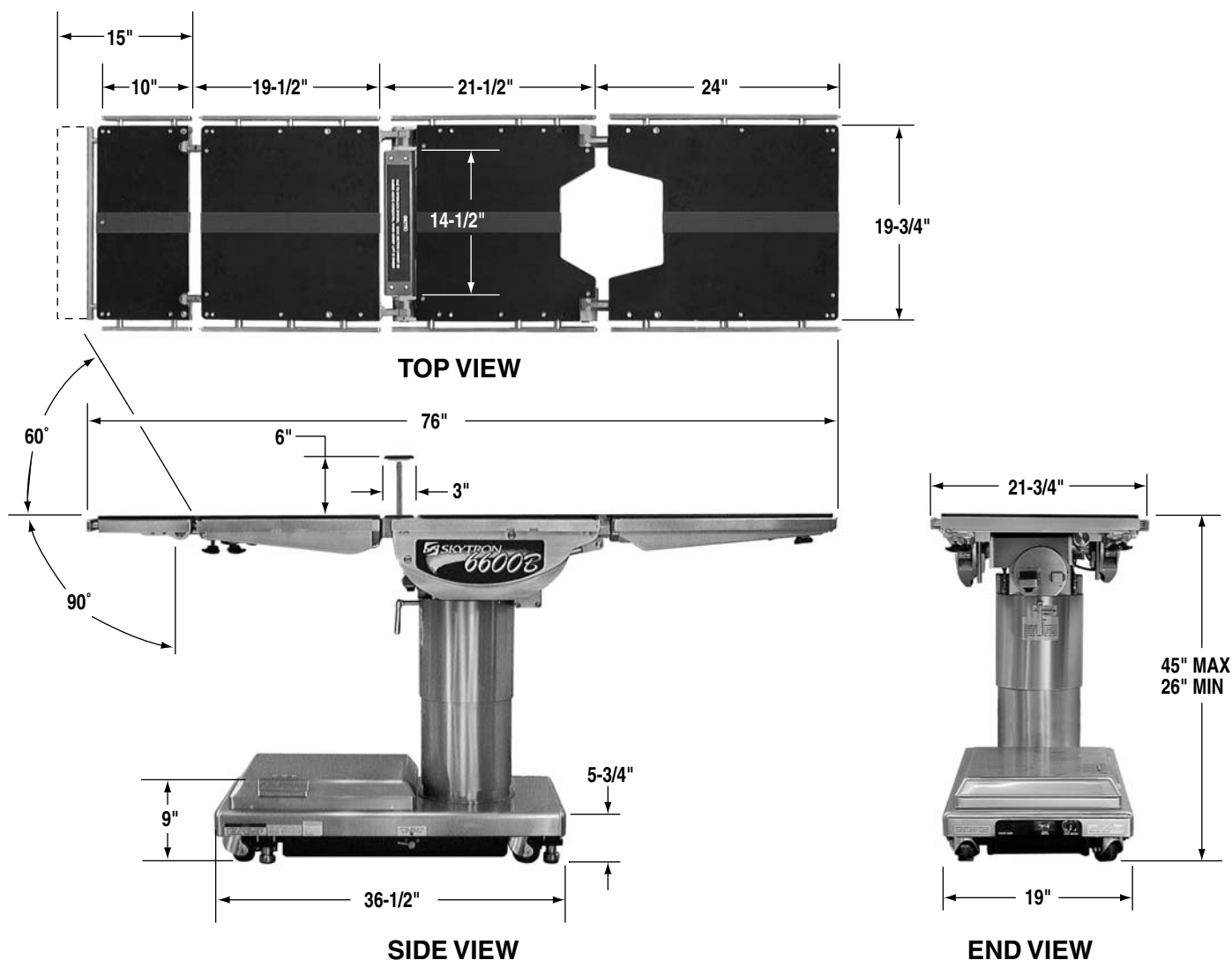
D6-065-21

**18** Grounding reliability can only be achieved when the equipment is connected to an equivalent receptacle marked "Hospital Only" or "Hospital Grade"

D6-067-27

**19** TWIST TO LOCK OR RELEASE PLUG

# 6700B Hercules General Purpose Surgical Table Specifications



### Electrical Specifications

Power requirements

120 VAC, 60Hz, 450 Watts

Current Leakage

Less than 100 micro amps

Power Cord

15 feet w/hospital grade connector(removeable)

### ENTECLA CERTIFIED

TO UL2601-1

CAN/CSA601.1, IEC 60601-2-46





1-1. General

Electro-Hydraulic System

The hydraulic system (with the exception of the hydraulic cylinders and hoses) is contained within the base of the table. The hydraulic valves and pump are electrically controlled by the use of a hand-held push button pendant control. The power requirements for the table are 120 VAC, 5 amp, 60 Hz.

The table contains the following components. Refer to the block diagram (figure 1-1) for relationship.

a. Oil Reservoir - Main oil supply. Approximately two quarts.

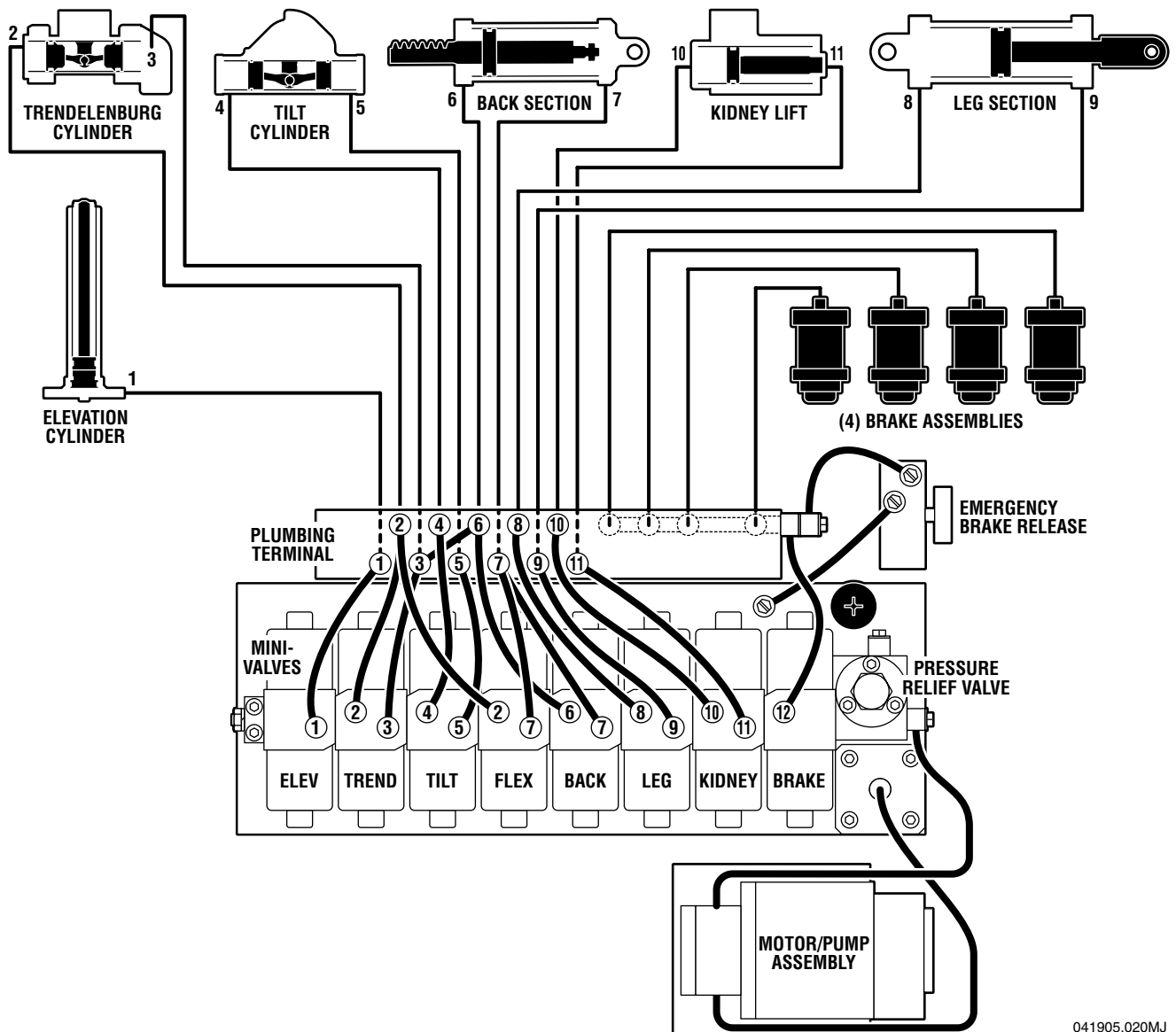
b. Motor/Pump Assembly - A positive displacement gear type pump provides the necessary oil pressure and volume.

c. Pressure Relief Valve - Provides an alternate oil path when the hydraulic cylinders reach the end of their stroke.

d. Electro/Hydraulic Mini-Valve Assemblies - These direct the fluid to the appropriate hydraulic cylinders.

e. Hydraulic Lines, Fittings, Connections - They provide a path for the hydraulic oil.

f. Hydraulic Cylinders - They convert the hydraulic fluid pressure and volume into mechanical motion.



041905.020MJ

Figure 1-1. Hydraulic Block Diagram



1-2. Component Operation

a. Motor/Pump Operation

The motor/pump assembly is a gear type pump that provides the oil pressure and volume for the entire hydraulic system. The pump has an inlet side and an outlet side. The inlet side is connected to the reservoir which provides the oil supply. The reservoir has a very fine mesh screen strainer which prevents foreign material from entering the oil system.

The output line of the pump is connected to the main oil galley which is internal and common to all the hydraulic mini-valves and pressure relief valve. Also, common to the hydraulic mini-valves and pressure relief valve is an oil galley that internally connects to the oil reservoir to provide a return path for the hydraulic oil. See figure 1-2.

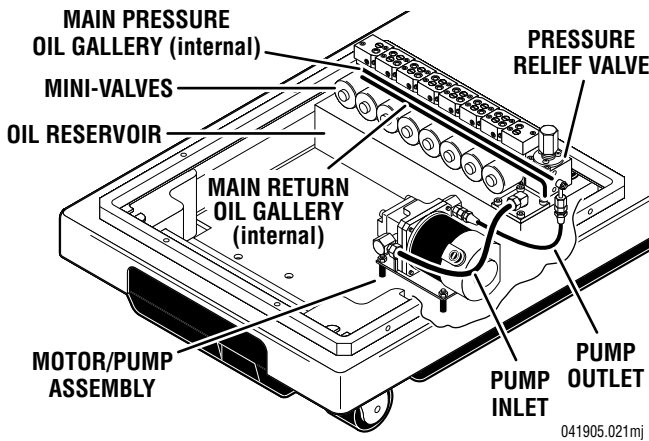
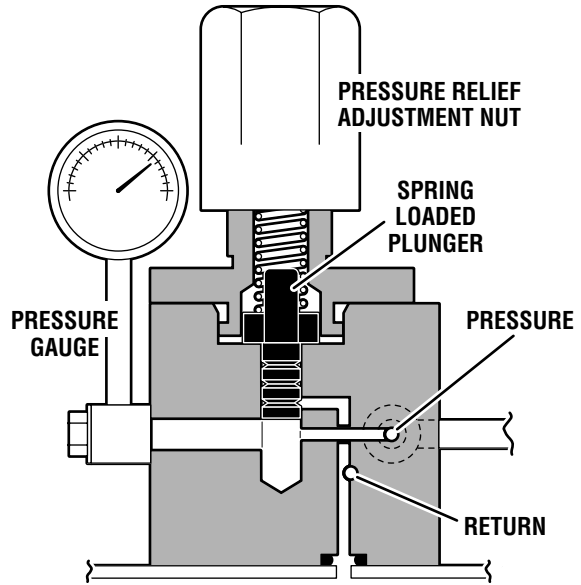


Figure 1-2.

b. Pressure Relief Valve

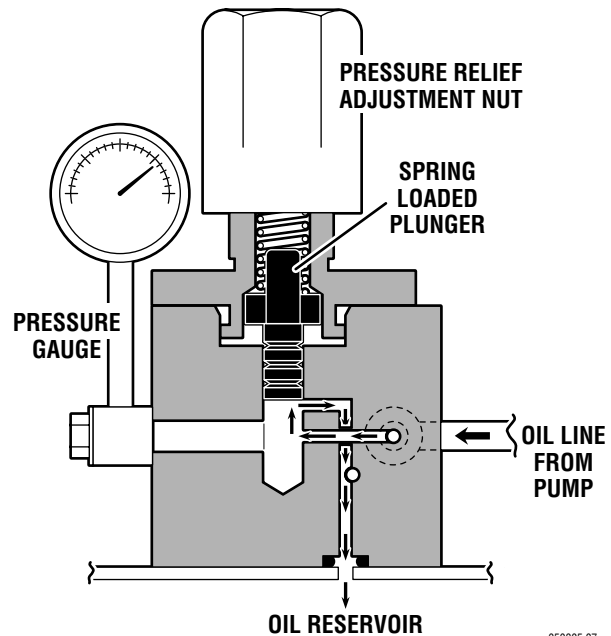
This device provides an alternate oil path back to the reservoir when the hydraulic cylinders reach the end of their stroke and the pump continues to run. If this path were not provided, the pump motor would stall because the oil cannot be compressed. The pressure relief valve is directly connected to the mini-valve bodies and shares both the common internal main pressure oil galley, and the return oil galley that internally connects to the reservoir. See figure 1-3.

The main component of the valve is an adjustable spring loaded plunger that when it is pushed off from its seat by the oil pressure, the oil flows back into the reservoir. See figure 1-4. Turning the adjustment nut clockwise increases the amount of oil pressure required to open the valve, and turning it counterclockwise decreases the amount of oil pressure. (See adjustment section for specification.)



050305.06

Figure 1-3. Pressure Relief Valve Not Functioning



050305.07

Figure 1-4. Pressure Relief Valve Functioning

### c. Mini-Valves

The operation of the mini-valves is identical for all table functions except the elevation and brake circuits. These two hydraulic circuits use a 3-way (single check valve) type mini-valve. All other functions use a 4-way (dual check valve) type mini-valve.

Either type mini-valve is controlled by two pushing type, electrically operated solenoids. The solenoids push the spool valve (located in the lower portion of the valve) one way or the other. This motion opens the main supply galley (which has pump pressure) allowing the oil to flow through the various parts of the mini-valve to the function. The spool valve also opens an oil return circuit which allows the oil to return to the oil reservoir.

The main components of the mini-valve and their functions are listed below:

1. Spool Valve - Opens the main oil galley (pump pressure) to either mini-valve outlet depending on which direction the spool valve is pushed. Also it provides a return path for the oil returning back into the reservoir.
2. Pilot Plunger - There are two plungers in a four-way mini-valve (one in a 3-way mini-valve), one under each check valve. The purpose of the pilot plungers is to mechanically open the return check valve allowing the oil to return back into the reservoir.
3. Check Valve - Two are provided in each four-way mini-valve to seal the oil in the cylinders and oil lines and prevent any movement of the table. One check valve is provided in a 3-way mini-valve.
4. Speed Controls - There are two speed controls in each 4-way mini-valve. They are needle valve type controls which restrict the volume of oil returning back into the reservoir, thereby controlling the speed of the table surface movement. A 3-way mini-valve has only one speed adjustment.

The speed controls are always located in the return oil circuit to allow the movement of the cylinder to be controlled. Also, by using this control method, it does not matter what size cylinder and piston is used because the speed is controlled by restricting

the return oil. If the pump puts out more volume to a slave cylinder than is allowed by the speed control, the pressure relief valve opens and provides an alternate path for the pump oil to return to the reservoir.

The following material depicts the three operating positions of the mini-valve. The movement of the slave cylinder piston (extend or retract) is determined by which port of the Mini-Valve is activated.

#### Mini-Valve in Neutral Position

(No fluid flow) See figure 1-5.

- Spool Valve Centered - This closes off both oil pressure and oil return galleys.
- Pilot Plungers Both Closed - The pilot plungers control the opening of the check valves. If they are closed, the check valves must be closed.
- Check Valves - Both check valves are closed trapping the oil in the cylinder and oil lines.
- Speed Control - When the mini-valve is in the neutral position, the speed control does not affect anything.

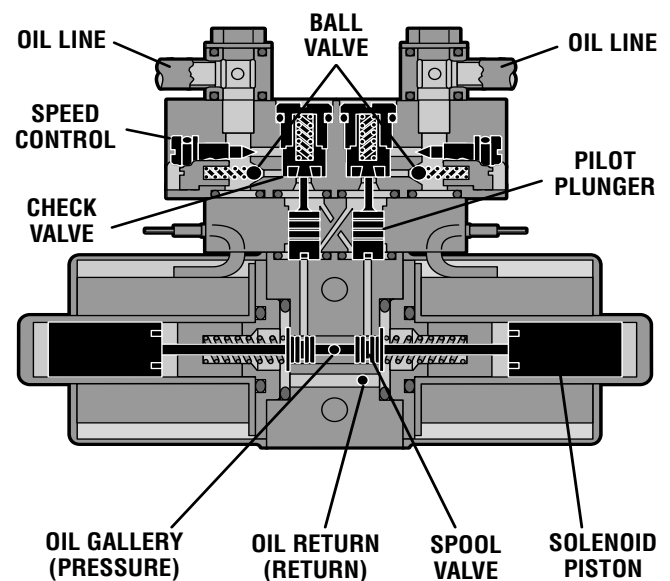
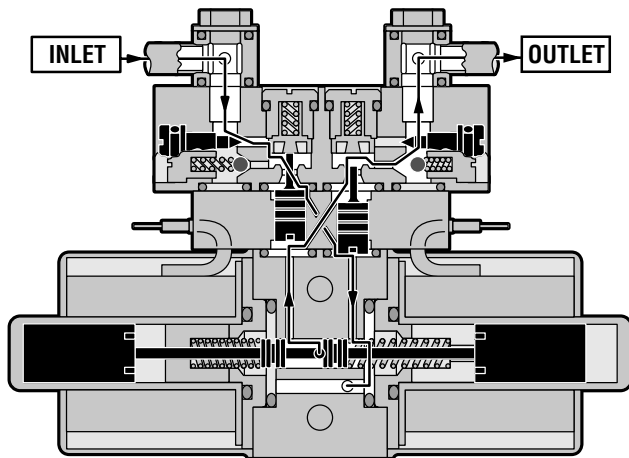


Figure 1-5. Mini-Valve in Neutral Position

**Mini-Valve Right Port Activated**

(See figure 1-6)

Right Mini-Valve Port is Supply Line  
Left Mini-Valve Port is Return Line



**Figure 1-6. Mini-Valve Right Port Activated**

- Spool Valve-Pushed to the left by electric solenoid. This opens the internal oil pressure galley allowing the fluid to go through the check valve and on to the cylinder. Also, the spool valve opens the oil return line providing an oil path through the internal oil galley back to the reservoir.

- Pilot Plunger Valve - Left pilot plunger valve is pushed up by the incoming oil pressure mechanically opening the check valve located above it in the return circuit. This action allows the oil from the return side of the slave cylinder to go back into the reservoir. The right pilot plunger valve is not affected in this operation mode.

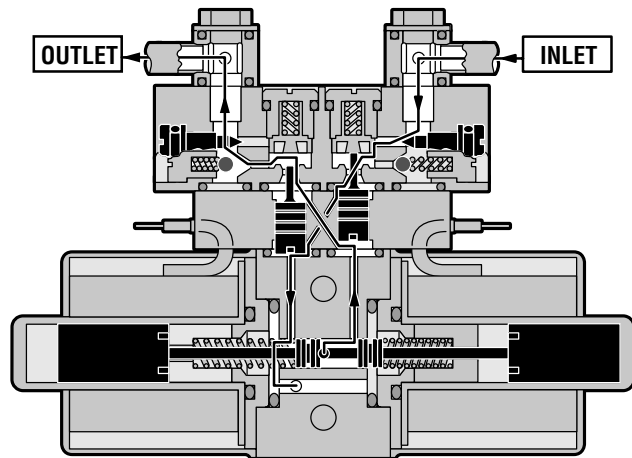
- Check Valves - Both check valves are opened in this operation mode. The right check valve is pushed open by the oil pressure created by the pump. The oil then continues through the lines and supplies the inlet pressure to move the slave cylinder piston. The left check valve is held open mechanically by the pilot plunger and allows the oil from the return side of the slave cylinder to go through the mini-valve back to the reservoir.

- Speed Control - The right speed control (output side) does not have any effect in this operation mode because the oil is routed around the speed control through a by-pass valve to the output port. The left speed control controls the speed of the table function by restricting the flow of oil going back into the reservoir.

**Mini-Valve Left Port Activated**

(See figure 1-7.)

Left Mini-Valve Port is Supply Line  
Right Mini-Valve Port is Return Line



**Figure 1-7. Mini-Valve Left Port Activated**

- Spool Valve-Pushed to the right by electric solenoid. This opens the internal oil pressure galley allowing the fluid to go through the check valve and on to the cylinder. Also, the spool valve opens the oil return line providing an oil path through the internal oil galley back to the reservoir.

- Pilot Plunger Valve - Right pilot plunger valve is pushed up by the incoming oil pressure mechanically opening the check valve located above it in the return circuit. This action allows the oil from the return side of the slave cylinder to go back into the reservoir. The left pilot plunger valve is not affected in this operation mode.

- Check Valves - Both check valves are opened in this operation mode. The left check valve is pushed open by the oil pressure created by the pump. The oil then continues to go through the lines and supplies the inlet pressure to move the slave cylinder piston. The right check valve is held open mechanically by the pilot plunger and allows the oil from the return side of the slave cylinder to go through the mini-valve back to the reservoir.

- Speed Control - The left speed control (output side) does not have any effect in this operation mode because the oil is routed around the speed control through a by-pass valve to the output port. The right speed control controls the speed of the table function by restricting the flow of oil going back into the reservoir.

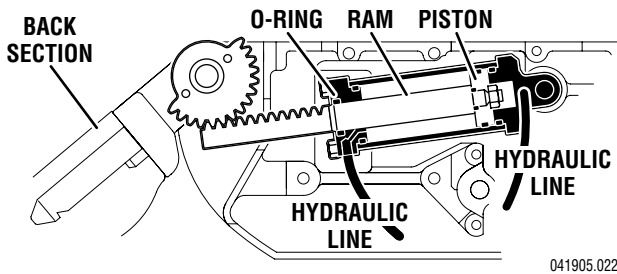
**d. Hydraulic Cylinders (Slave Cylinders)**

There are several different types of hydraulic cylinders used in the table that activate the control functions. With the exception of the elevation and brake cylinders, all operate basically the same way. The control functions are listed below.

- Back Section ----- 2 double action cylinders
- Leg Section ----- 2 double action cylinders
- Trendelenburg ---- 1 double action cylinder
- Lateral Tilt----- 1 double action cylinder
- Elevation ----- 1 single action cylinder
- Kidney Lift ----- 2 double action cylinders
- Brakes----- 4 single action cylinders

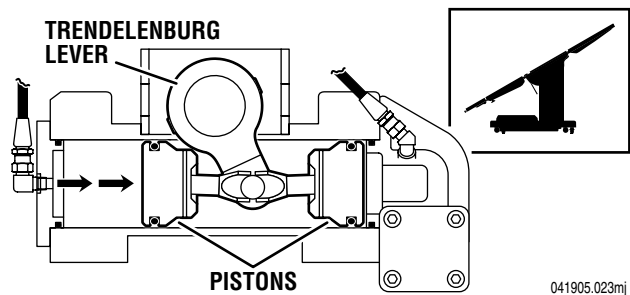
1. Back Section and Leg Section Cylinders - The double action cylinders are closed at one end and have a movable piston with hydraulic fluid on both sides. Connected to this piston is a ram or shaft that exits out of the other end of the cylinder. Through the use of either a gear, or clevis and pin arrangement, this ram is connected to a movable table surface.

The movable surface can be moved one way or the other by pumping hydraulic fluid into the cylinder on either side of the piston. Obviously, if oil is pumped into one side of the cylinder, a return path must be provided for the oil on the other side. See figure 1-8.



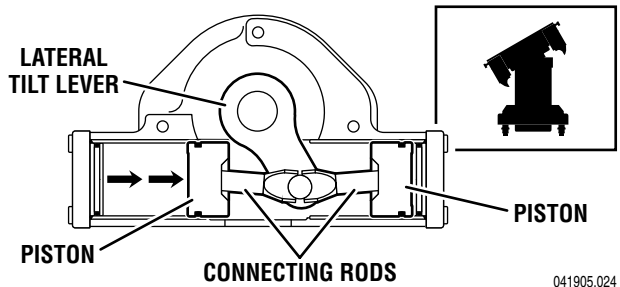
**Figure 1-8. Back Section Cylinder**

2. Trendelenburg Cylinder Assembly - The Trendelenburg tilt assembly consists of two cylinders, pistons and connecting rods. The connecting rods connect to the Trendelenburg lever which connects to the table side frames via the Trendelenburg axis. When hydraulic fluid is pumped into one cylinder, the piston and connecting rod pushes the Trendelenburg lever which tilts the table top. To tilt the table top in the opposite direction, fluid is pumped into the opposite cylinder. See figure 1-9.



**Figure 1-9. Trendelenburg Cylinder Assy.**

3. Lateral Tilt Assembly - The lateral tilt assembly consists of two cylinders, pistons and connecting rods. The connecting rods attach to the lateral tilt lever which connects to the table side frames. When hydraulic fluid is pumped into one cylinder, the piston and connecting rod pushes the lateral tilt lever which tilts the table top to one side. To tilt the table top in the opposite direction, fluid is pumped into the opposite cylinder. See figure 1-10.

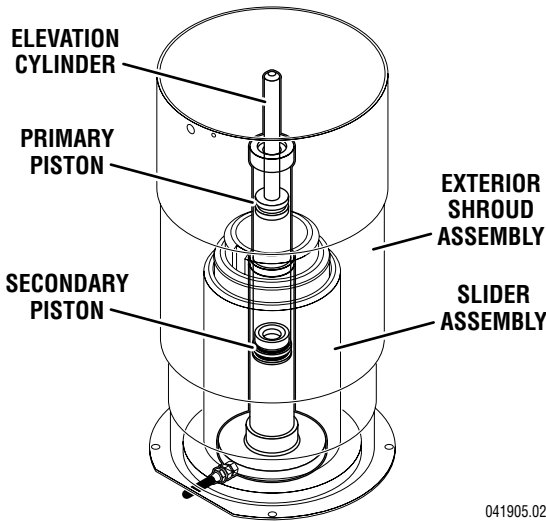


**Figure 1-10. Lateral Tilt Cylinder Assembly**

4. Elevation Cylinder - This single action cylinder does not have hydraulic fluid on both sides of the piston. It depends on the weight of the table top assembly to lower it.

The cylinder is set in the center of the elevation main column. The two stage cylinder is elevated by the driven force of the oil pressure. When lowering, the oil that is accumulated in the cylinder is returned to the oil reservoir through the mini-valve due to the table top weight.

A slider support assembly is used to support the weight of the upper table section. A stainless steel shroud covers the flexible hydraulic hoses and slider. See figure 1-11.



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Figure 1-11. Elevation Cylinder Assembly

5. Kidney Lift - The two kidney lift cylinder assemblies are a unique type of double action cylinder where the piston remains stationary and the outer housing or cylinder has the relative motion. The cylinder housing has rack teeth cut into the top which meshes with a pinion gear. This gear meshes with other gears to supply the up or down drive for the kidney lift bars, depending on which direction the oil is pumped into the cylinder. See figure 1-12.

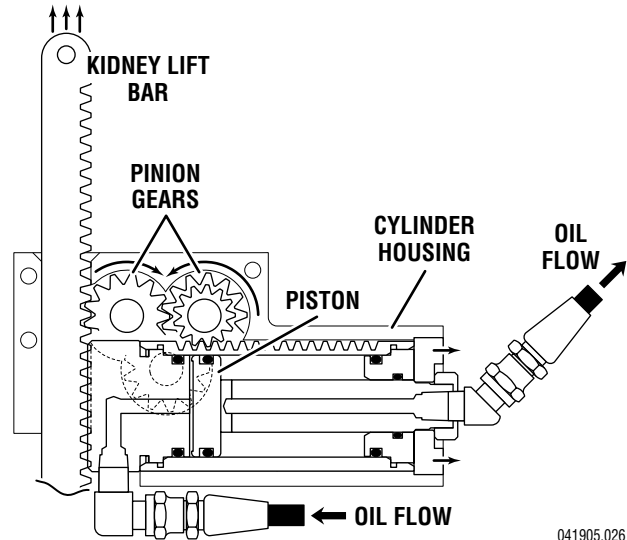


Figure 1-12. Kidney Lift Cylinder Assembly

6. Brake Cylinders - The brake cylinders are single action type similar to the elevation cylinder. The movable piston's ram is connected to a brake pad. See figure 1-13. Oil pumped into the top of the cylinder pushes the piston down raising the table base off its casters. An internal return spring on the bottom of the piston, pushes the piston up to return the oil through the mini-valve to the reservoir.

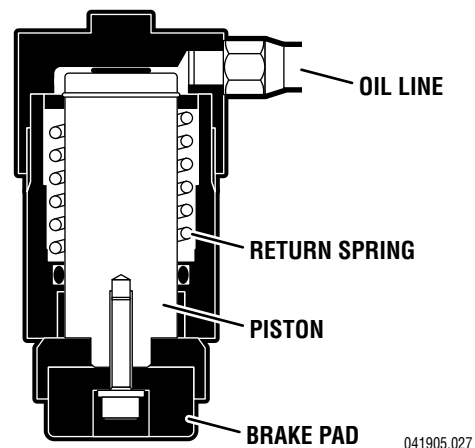
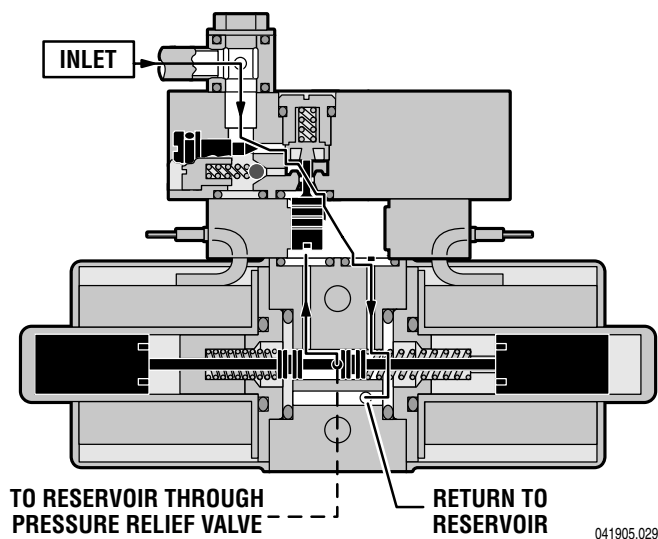


Figure 1-13. Single Action Brake Cylinder

### e. Elevation Cylinder Return Circuit

A three-way (single check valve type) mini-valve controls both the elevation and return circuits. The elevation circuit operation within the mini-valve is identical to the operation of the four-way valves previously described (inlet pressure opens the check valve allowing the oil to enter the cylinder). In the return position, inlet pressure pushes the pilot plunger up and opens the return check valve. See figure 1-14. The open check valve allows a path for the oil in the elevation cylinder to return to the reservoir. When the pilot plunger valve is opened, the continuing pump pressure opens the pressure relief valve which provides a return oil path to the reservoir.

The mini-valve used in the elevation circuit contains only one check valve (all four-way mini-valves use two check valves). The check valve is used to trap the oil in the elevation cylinder thereby supporting the table top. When the top is being lowered the check valve is mechanically held open by the pilot plunger through pump pressure.



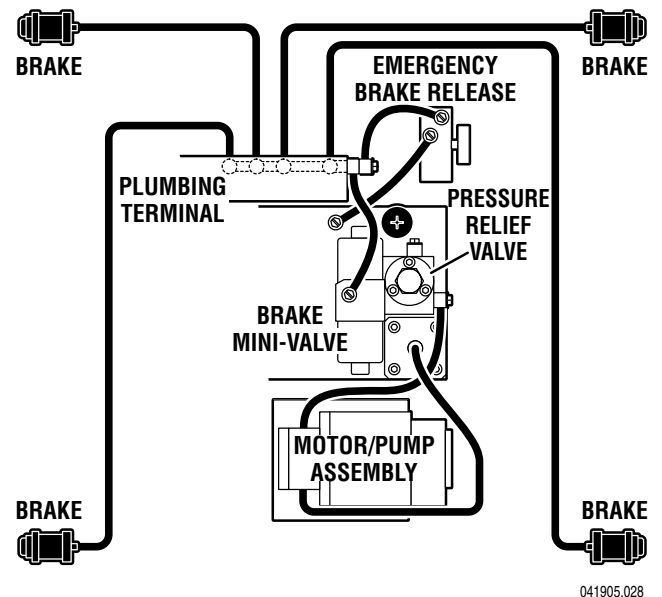
**Figure 1-14. Elevation Return Circuit**

### f. Brake System

The brake system consists of the following components: (figure 1-15)

1. Single action slave cylinders (4 each).
2. 3-way (single check valve type) mini-valve.

3. Manually controlled emergency brake release.
4. Plumbing terminal, flexible hoses, copper lines and "O" rings.
5. Portions of the electrical system.



**Figure 1-15. Brake System Block Diagram**

Each corner of the cast-iron table base has a hydraulic brake cylinder. These single action cylinders are hydraulically connected in parallel to the mini-valve and all four are activated together. It is normal for one corner of the table to raise before the others due to the weight distribution of the table.

An electronic timer in the relay box is activated when any function on the pendant control is pushed momentarily. The pump/motor and brake system mini-valve are activated and the brake cylinders are completely set. The electronic timer runs for approx. 8-10 seconds.

The brakes are released by pushing the BRAKE UNLOCK button momentarily. An electronic timer in the relay box activates the brake function hydraulic mini-valve and pump/motor.

When activated, the return hydraulic circuit operates similar to the elevation cylinder return circuit. Return springs inside the single action brake cylinders retract the brake pads and provide the pressure to return the hydraulic oil back to the reservoir. The electronic timer operates the return circuit for approximately 8-10 seconds.

**g. Emergency Brake Release**

The emergency brake release is simply a manually operated bypass valve connected in parallel to the brake cylinders and the oil reservoir. See figure 1-16. When the valve is opened (turned counter-clockwise) a return circuit for the brake hydraulic fluid is opened. The return springs force the pistons up pushing the hydraulic oil back into the reservoir and retracting the brake pads.

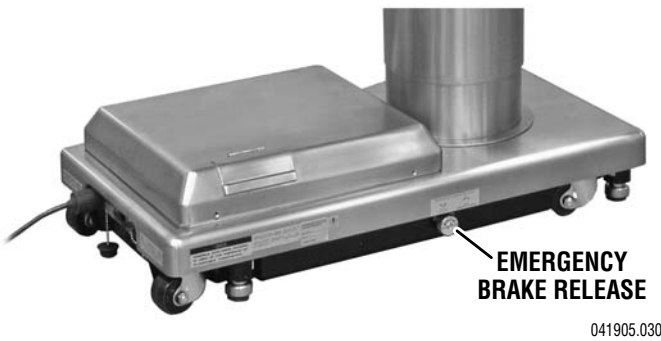


Figure 1-16.

**NOTE**

- The emergency brake release valve must be tightened securely when not in use.
- If the emergency brake release valve has been operated, the UNLOCK button on the pendant control may have to be pressed before brakes will lock again.

If the emergency brake release valve is open, the brakes will release slowly- depending on how loose the valve is, this could take anywhere from a few minutes to several hours.

**h. Flex/Reflex System**

The Flex/Reflex system incorporates an additional mini-valve which connects the trendelenburg and back section hydraulic systems in a series. When FLEX is activated by the pendant control, the Flex/Reflex mini-valve opens the oil pressure path to the Reverse Trendelenburg piston. The return oil path from the Trendelenburg piston is routed through the back section cylinder to the mini-valve return port. See figure 1-17

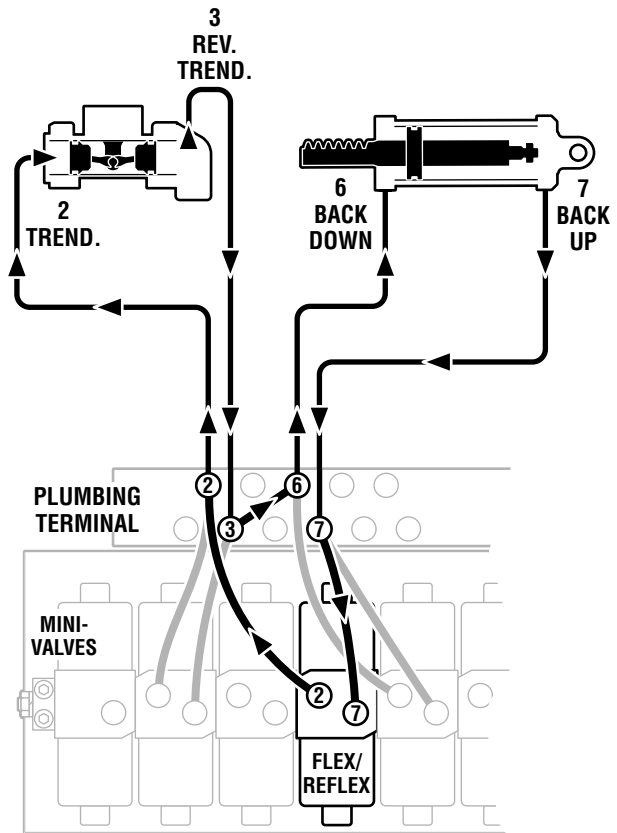


Figure 1-17. Flex/Reflex System

## 1-3. Hydraulic Adjustments

### a. Fluid Level.

The fluid level should be approximately 1/2" below the filler hole or gasket surface. If additional fluid is needed, remove the filler vent cap with a phillips screwdriver and add fluid through this opening using a funnel. See figure 1-18.

#### NOTE

The elevation cylinder should be completely down, the brakes released and all the other control functions in their neutral position when checking oil level.

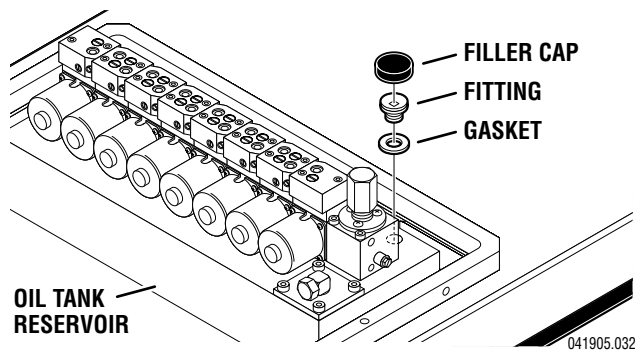


Figure 1-18.

The type of oil that should be used is SKYTRON P.N. D6-010-90 or equivalent. This is a very high quality hydraulic oil. The table requires approximately two quarts of oil to operate properly. Exercise caution when determining equivalence to avoid damage to the hydraulic system.

### b. Bleeding The Hydraulic System

To purge the air from the hydraulic system, operate each function back and forth at least two or three times.

#### NOTE

Whenever a hydraulic line or component is replaced, bleed the air out of the line using the pump pressure by activating the function before making the final connection. Then operate the function until it stalls in both directions.

### c. Pressure Relief Valve

The pressure relief valve is adjusted by turning the adjustment nut until the desired pressure is reached.

To adjust:

1. Remove the blind cap and attach a hydraulic pressure gauge to the main oil galley using a 6mm plumbing bolt. See figure 1-19.

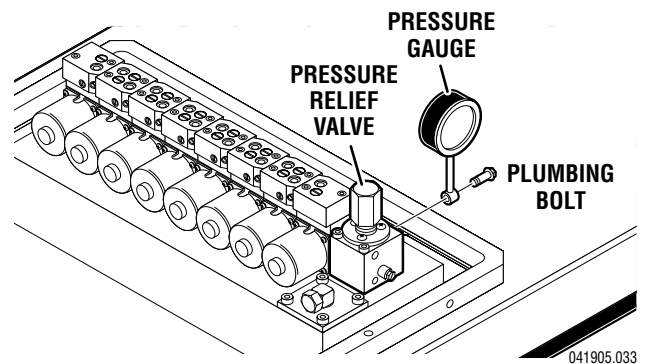


Figure 1-19.

2. Raise the table top until the piston reaches the end of its stroke and stalls. Observe reading on pressure gauge and turn the adjustment nut (clockwise to increase oil pressure, counter-clockwise to decrease) until desired reading is obtained. Pressure should be 8MPA (80KG/CM<sup>2</sup> - 1138 PSI). An erratic reading and/or inability to adjust to the recommended setting may indicate the need for replacement of the pressure relief valve.

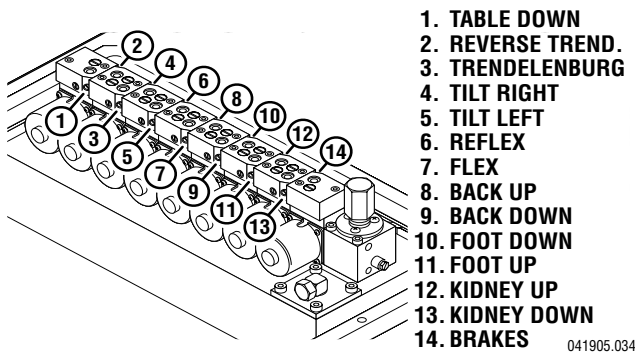


**d. Speed Controls**

The speed controls restrict the volume of oil returning back to the reservoir thereby controlling the speed of each control function.

All four-way mini-valves, have two speed controls located in the ends of each valve body. All three-way mini-valves have only one speed control.

One speed control adjusts one direction of a particular function and the opposite speed control adjusts the other direction. They are adjustable by using a small straight blade screwdriver and turning the adjustment screw clockwise to decrease the speed and counterclockwise to increase the speed. See figure 1-20.



**Figure 1-20.**

Any control function should move in either direction at the same rate. If the rate of a certain function is too slow, open the speed control slightly and recheck. Use the second hand on a watch and time a particular function. Match that time in the opposite direction by opening or closing the speed control. Approximate operating times are as follows:

Lateral Tilt	7 seconds
Back Up	25 seconds
Back Down	15 seconds
Kidney Lift	7 seconds

A pressure gauge should be used to set the speed of the back section, Trendelenburg and flex control functions.

To adjust:

1. Attach the pressure gauge onto the main oil galley as shown in figure 1-19.

2. The gauge should read the following values when operating the various control functions in either direction. Turn the speed controls until desired values are obtained.

Back Section	Up	65KG/CM <sup>2</sup> -925PSI
	Dn	65KG/CM <sup>2</sup> -925PSI
Trendelenburg	Up	65KG/CM <sup>2</sup> -925PSI
	Dn	65KG/CM <sup>2</sup> -925PSI
Flex		70KG/CM <sup>2</sup> -995PSI
Reflex		70KG/CM <sup>2</sup> -995PSI

**NOTE**

When adjusting Flex/Reflex speed controls, set Reflex last.

Elevation - There is not a speed adjustment for raising the table. The speed control will only affect the rate of descent and it should equal the rate of elevation.

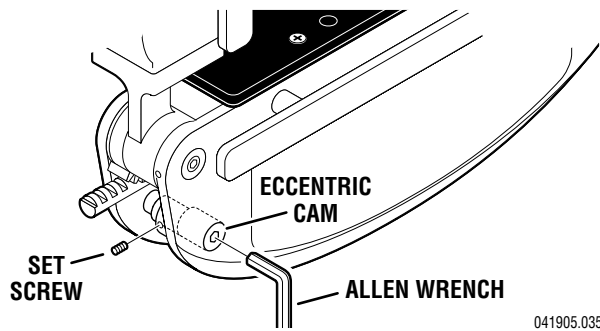
## SECTION II MECHANICAL TABLE ADJUSTMENTS

### 2-1. Back Section Gear Mesh Adjustment

The gear mesh is adjusted by the use of an eccentric cam. This cam moves the gear teeth closer together to eliminate gear lash. This adjustment arrangement compensates for any wear between the gears that might occur.

To adjust:

Loosen the cam locking allen set screw. Use an allen wrench to rotate the eccentric cam. See figure 2-1. Tighten the locking set screw when adjustment is complete.



**Figure 2-1. Eccentric Cam Adjustment**

### 2-2. Hydraulic Cylinder Adjustment

The hydraulic cylinder rams that control both the back and foot / leg sections must move together so that these sections are not twisted when operated. This is accomplished by the use of eccentric cams that move the cylinder bodies fore and aft to adjust their effective stroke.

#### NOTE

Adjust gear mesh before adjusting eccentric cams for the back section.

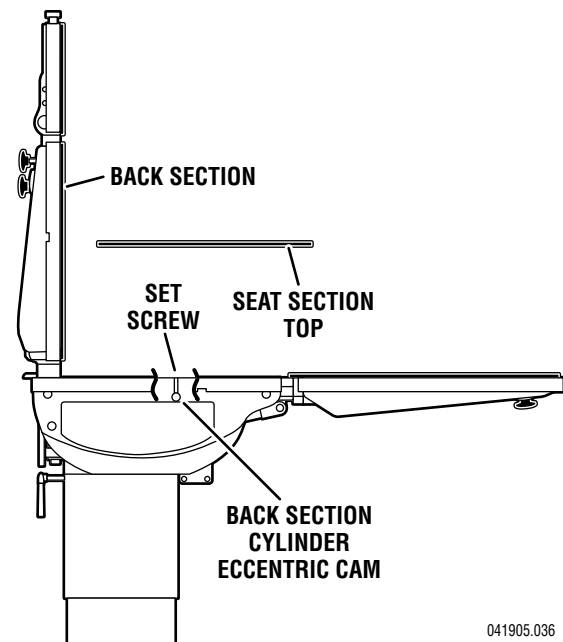
#### a. Back Section

Position the back section all the way up until it stalls. Both sides of the back section should stop moving at the same time and should not show any signs of twisting.

Any twisting or flexing of the back section as it approaches the stalled position indicates that one of the cylinders is not reaching its fully extended position at the same time as the other. This condition would require an adjustment.

To adjust:

Remove the seat section top for access to the cam locking set screws and loosen the set screws. Use an allen wrench to turn the cylinder eccentric cams as required to shift either cylinder fore or aft as needed so no twisting or flexing of the back section is observed when it is stalled in the full up position. See figure 2-2. Tighten the set screws and replace the seat section top when the adjustment is completed.



**Figure 2-2. Back Section Adjustment**

#### b. Leg Section

Position the leg section all the way up. Both sides of the leg section should stop moving at the same time and should not show any signs of twisting.

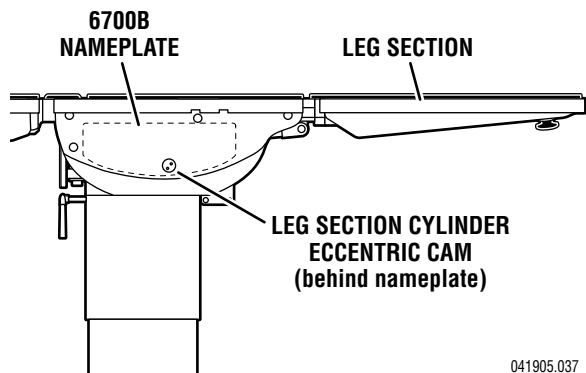
Any twisting or flexing of the leg section as it approaches the stalled position indicates that one of the cylinders is not reaching its fully extended position at the same time as the other and an adjustment is required.

**NOTE**

The leg section cylinder eccentric cam is located under the nameplate on the side casting. To make an adjustment, the nameplate will have to be removed and a new nameplate will have to be installed when the adjustment is completed.

To adjust:

Loosen the cam locking set screws located inside the table side frames. See figure 2-3. Use an allen wrench to turn the cylinder eccentric cams as required to shift either cylinder fore or aft as needed so no twisting or flexing of the leg section is observed when it is stalled in the above horizontal position. Tighten set screws when proper adjustment is achieved.



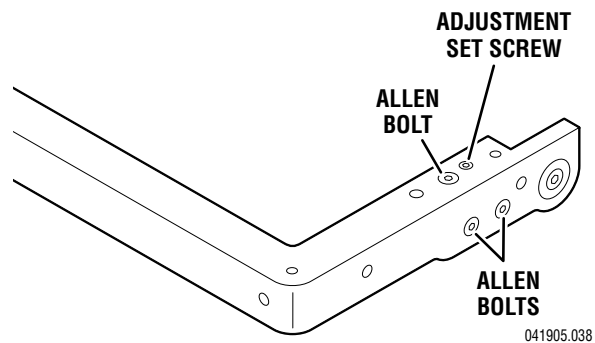
**Figure 2-3. Leg Section Adjustment**

**2-3. Head Section Adjustment**

The head section can be adjusted to eliminate any flexing throughout it's range of travel.

To adjust:

Place the head section in level position and remove the top. See figure 2-4. Loosen but do not remove the allen bolts securing the bearing block to the frame. Loosen the allen bolt in the top of the frame and turn the set screw as required to achieve proper adjustment. One or both of the blocks may require adjustment to achieve proper alignment. Tighten all allen bolts when adjustment is complete. Test the head section throughout its range of travel. Re-adjust as needed. Replace top section when proper adjustment is achieved.



**Figure 2-4. Head Section Adjustment**

## SECTION III HYDRAULIC TROUBLESHOOTING

### 3-1. Precautions

Before attempting to troubleshoot any hydraulic problem on the table, please read through the precautions and notes below.



**CAUTION**



When disconnecting any of the hydraulic lines, fittings, joints, hoses, etc., for the following control functions, be sure these table surfaces are in their down position or completely supported.

Elevation  
Back Section  
Leg Section  
Kidney Lift

When working on the trendelenburg or lateral tilt hydraulic circuits, be sure to support the table top. When working on the brake system make sure the brakes are completely retracted.



**WARNING**



Failure to follow these precautions may result in an uncontrolled oil spray and damage to the table or personal injury.

### 3-2. Troubleshooting Notes

When troubleshooting a table malfunction, first determine the following:

1. Does the problem affect all control functions?
2. Does the problem affect only one control function?
3. If the problem affects one control function is it in both directions?
4. Is the problem intermittent?

5. Is the problem no movement of a table surface or does the table surface lose position?

Once the problem has been determined, concentrate on that particular hydraulic circuit or control function.

Listed below are the hydraulic components that are common with all hydraulic circuits. If there is a problem with any of them, it could affect all control functions.

1. Motor/Pump Assembly
2. Reservoir
3. Pressure Relief Valve
4. Certain Oil Lines and Galleys

If there was a problem in the following components, only one control function would normally be affected.

1. Mini-Valve
2. Slave Cylinder
3. Oil Lines

### NOTE

Whenever a hydraulic line or component is replaced, bleed the air out of the lines using the pump pressure before making the final connection. After all connections are tight, cycle the control function back and forth two or three times to purge the remaining air from the system.



**CAUTION**



When installing new "O" rings use hydraulic oil or white lithium grease to thoroughly lubricate the "O" rings and cylinder. Keep everything clean.

Each complete oil circuit is shown on the following pages. When troubleshooting a particular function, refer to the appropriate oil circuit diagram and the list of possible problems.

### 3-3. ELEVATION DIAGNOSIS CHART

**Problem**

Table will not elevate properly

**Reason**

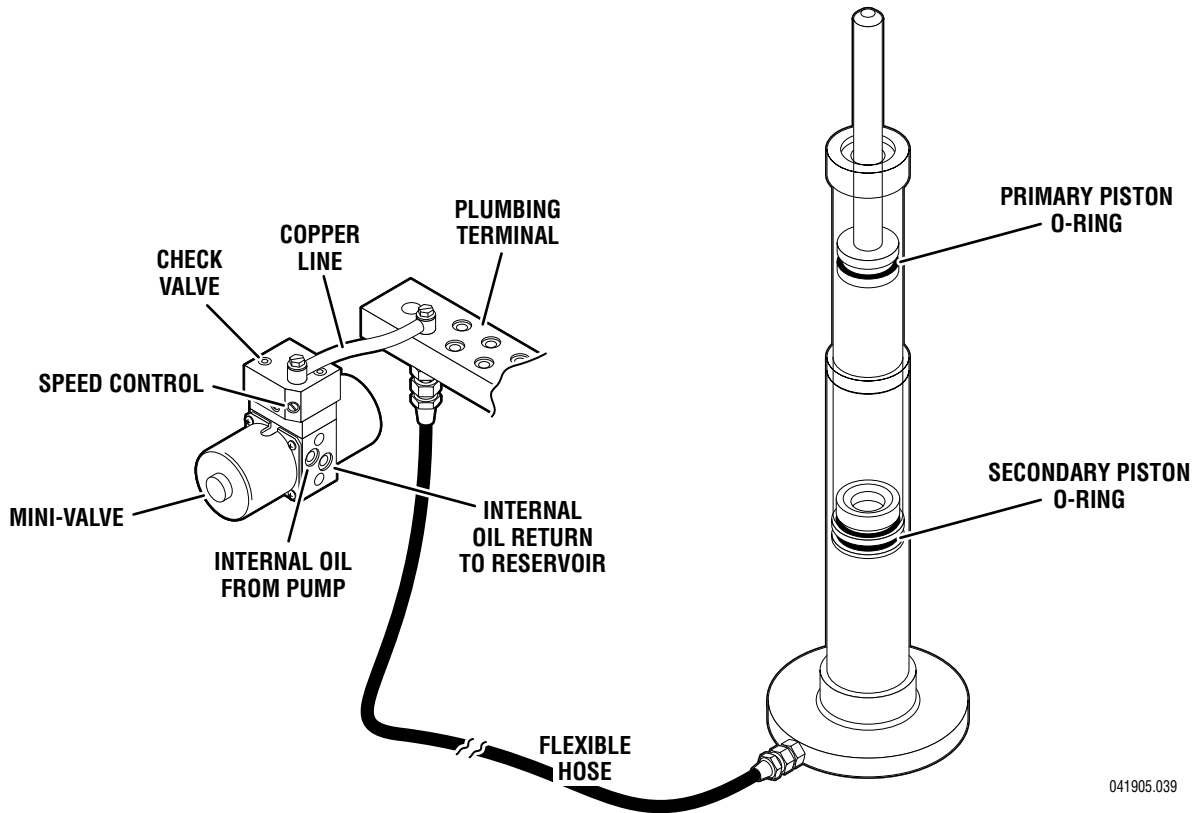
- Pressure Relief Valve Not Set Properly
- Low on Oil
- Spool Valve Not Centered
- Defective Pump
- Defective Mini-Valve
- Defective Solenoid or Wiring
- Defective Relay Box or Pendant Control
- Leaking Cylinder Hose
- Uneven Weight Distribution

Table will not descend properly

- Incorrect Speed Adjustment
- Bad Check Valve
- Spool Valve Not Centered
- Galled Slider Assembly
- Defective Solenoid or Wiring
- Defective Relay Box or Pendant Control
- Uneven Weight Distribution

Table loses elevation

- Bad Check Valve
- Leaking Mini-Valve
- Loose Fittings, Joints, Hoses
- Leaking "O" Ring Inside Cylinder



041905.039

Figure 3-1. Elevation Circuit

### 3-4. TRENDELENBURG DIAGNOSIS CHART

**Problem**

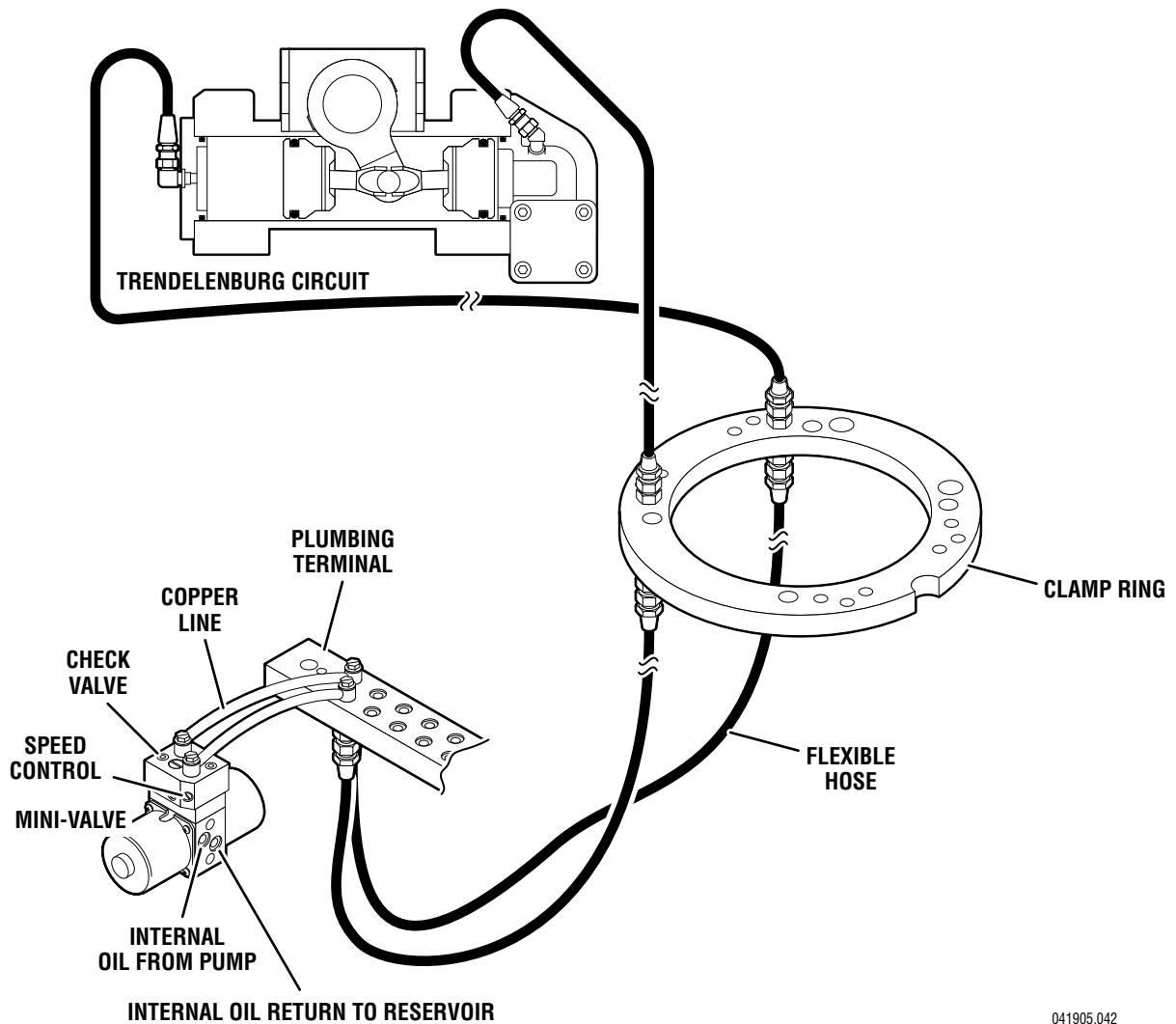
Trendelenburg function moves improperly

**Reason**

- Incorrect Speed Adjustment
- Spool Valve Not Centered
- Bad Check Valves
- Low on Oil
- Pinched Hose
- Defective Mini-Valve
- Pressure Relief Valve Not Set Properly
- Bad Solenoid or Wiring
- Defective Relay Box or Pendant Control

Trendelenburg function chatters or loses position

- Defective or Dirty Check Valve
- Oil Leakage in Circuit
- Air Inside Cylinder
- Pinched Hose
- Low on Oil



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Figure 3-2. Trendelenburg Circuit

### 3-5. LATERAL TILT DIAGNOSIS CHART

**Problem**

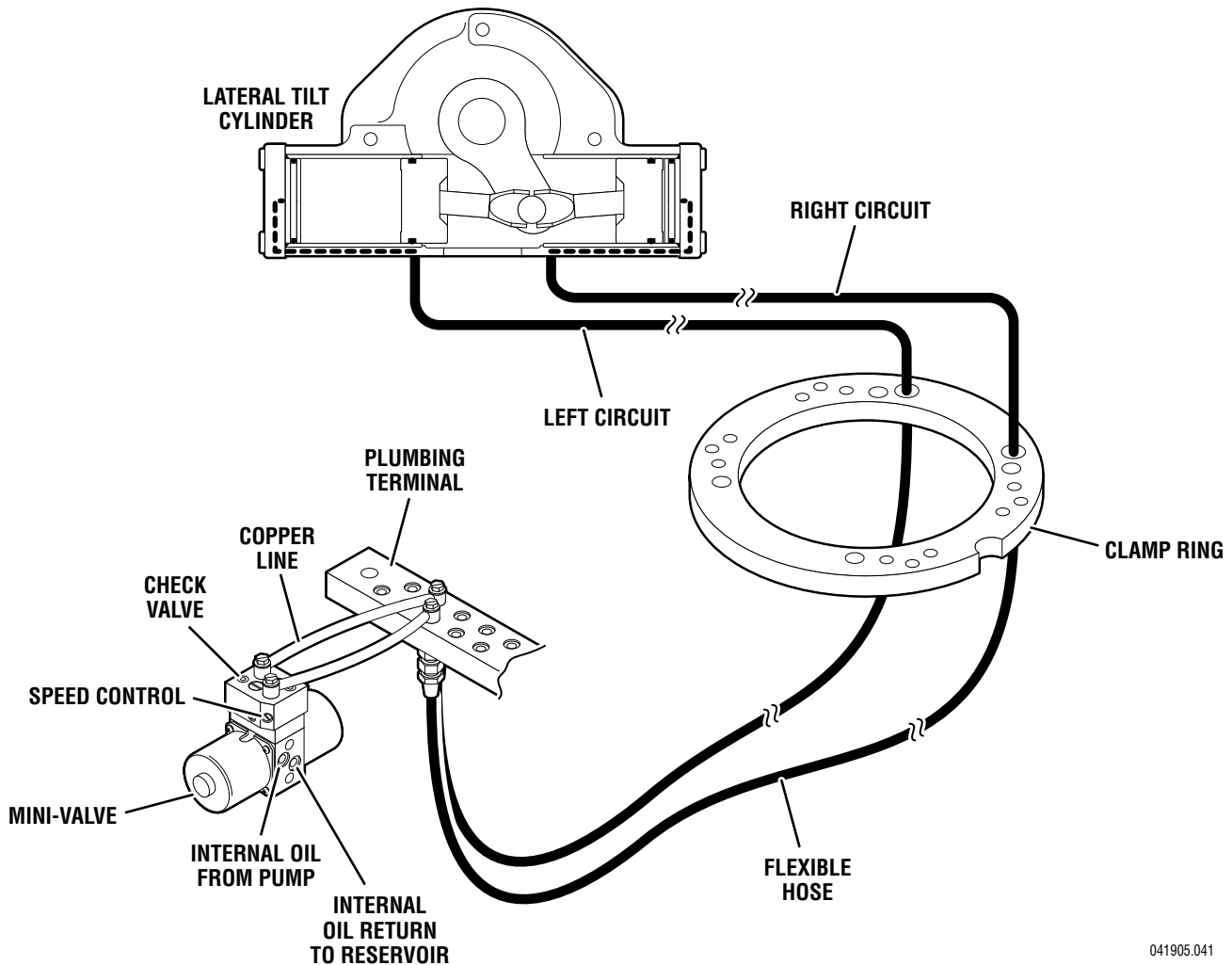
Lateral tilt function moves improperly

**Reason**

- Incorrect Speed Adjustment
- Spool Valve Not Centered
- Bad Check Valves
- Low on Oil
- Pinched Hose
- Defective Mini-Valve
- Pressure Relief Valve Not Set Properly
- Bad Solenoid
- Defective Relay Box or Pendant Control

Lateral tilt function chatters or loses position

- Defective or Dirty Check Valves
- Oil Leakage in Circuit
- Air Inside Cylinder
- Pinched Hose
- Low on Oil



041905.041

Figure 3-3. Lateral Tilt Circuit

### 3-6. FLEX SYSTEM DIAGNOSIS CHART

**Problem**

Back Section or Trendelenburg function moves improperly

**Reason**

- Incorrect Speed Adjustment (Trendelenburg, Back section or Flex - check with gauge)
- Spool Valve Not Centered
- Bad Check Valves
- Low on Oil
- Pinched Hose
- Defective Mini-Valve
- Pressure Relief Valve Not Set Properly
- Bad Solenoid
- Defective Relay Box or Pendant Control
- Kidney Bridge Raised

**NOTE**

If Flex System does not function properly, check the back section and Trendelenburg functions before adjusting the flex system.

Back Section or Trendelenburg function chatters or loses position

- Defective or Dirty Check Valves
- Oil Leakage in Circuit
- Air Inside Cylinder
- Pinched Hose
- Low on Oil

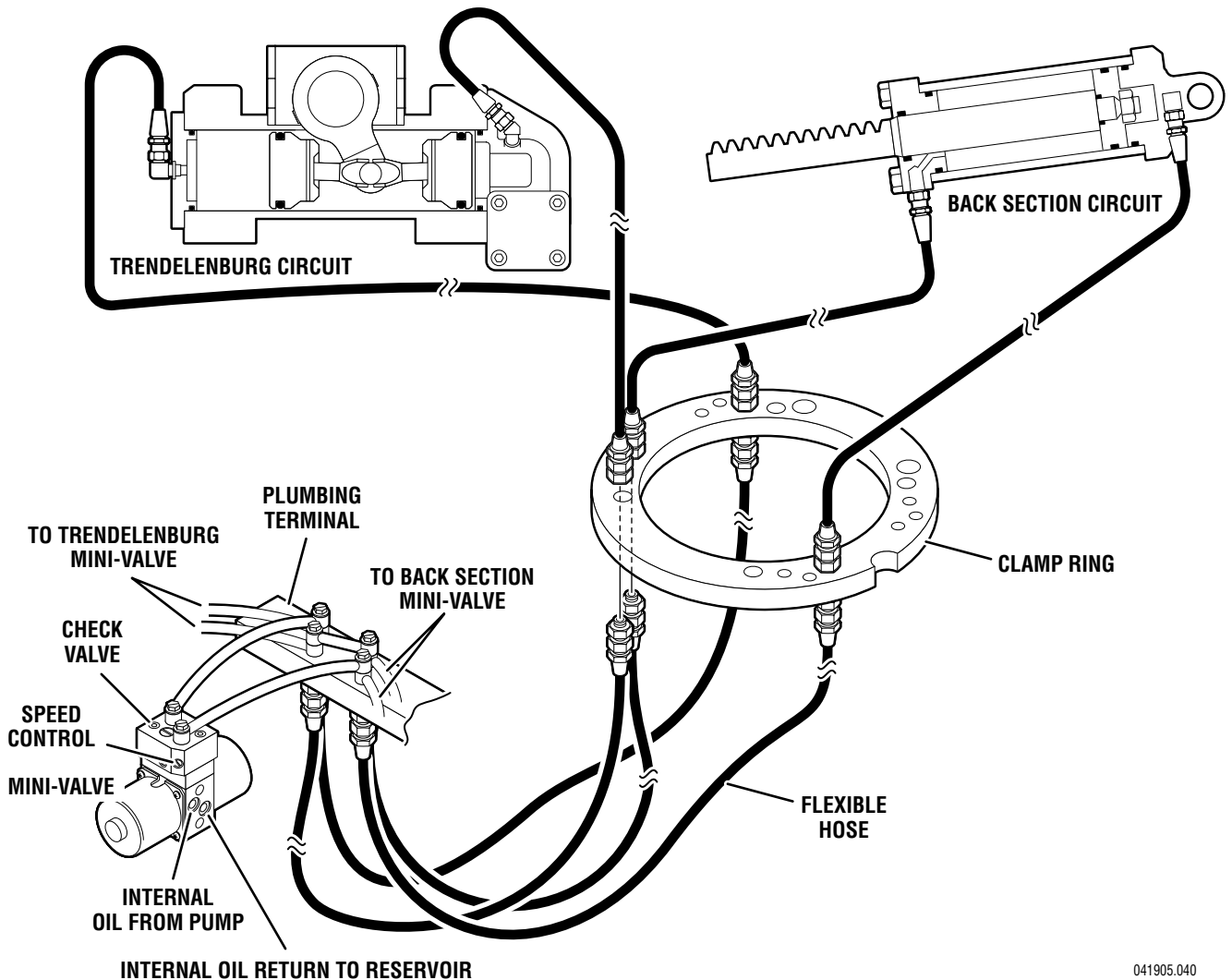


Figure 3-4. Flex System Circuit

041905.040



### 3-7. BACK SECTION DIAGNOSIS CHART

**Problem**

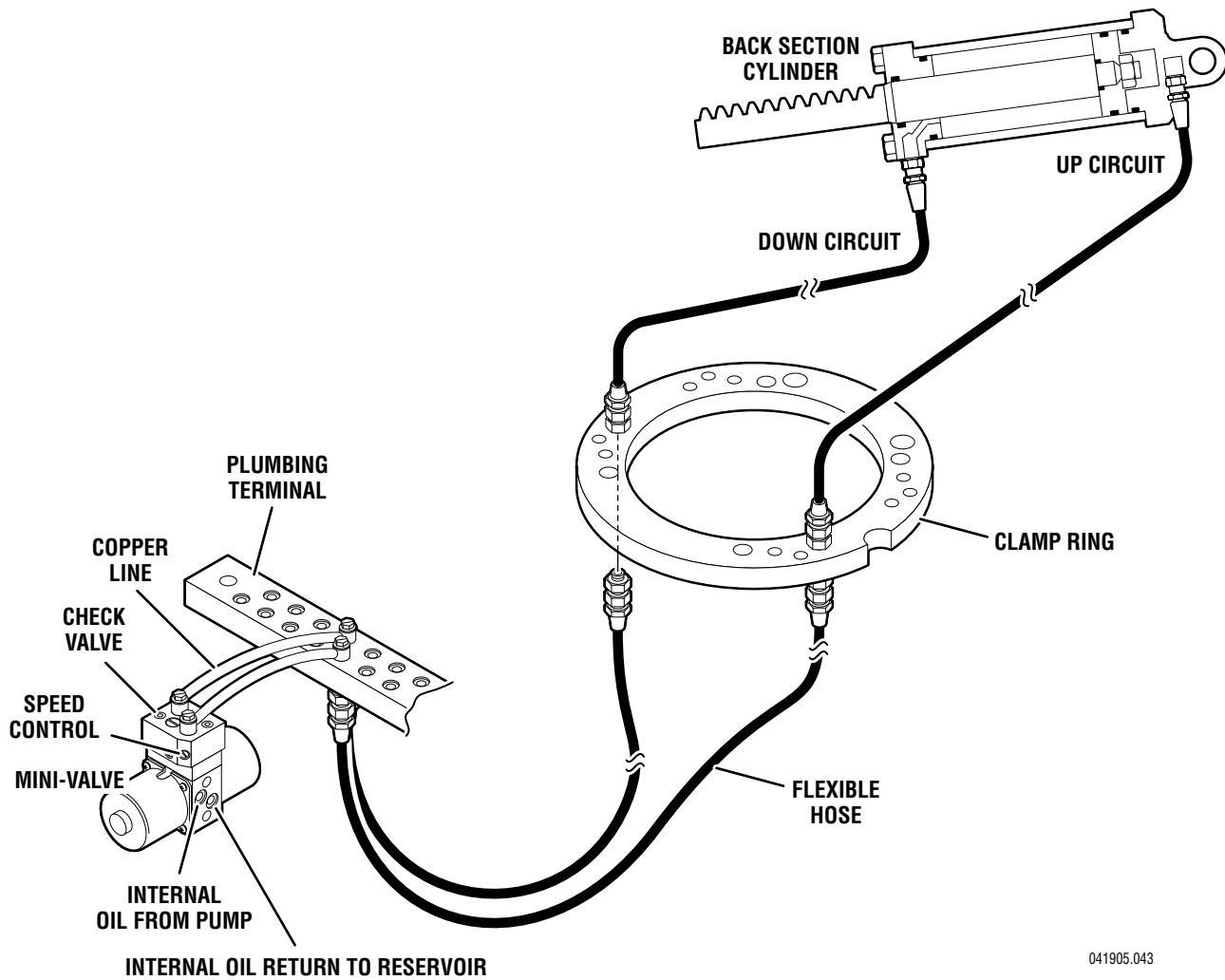
Back Section function moves improperly

**Reason**

- Incorrect Speed Adjustment
- Spool Valve Not Centered
- Bad Check Valves
- Low on Oil
- Pinched Hose
- Defective Mini-Valve
- Pressure Relief Valve Not Set Properly
- Bad Solenoid
- Defective Relay Box or Pendant Control
- Kidney Bridge Raised

Back Section function chatters or loses position

- Defective or Dirty Check Valves
- Oil Leakage in Circuit
- Air Inside Cylinder
- Pinched Hose
- Low on Oil



041905.043

Figure 3-5. Back Section Circuit

### 3-8. LEG SECTION DIAGNOSIS CHART

**Problem**

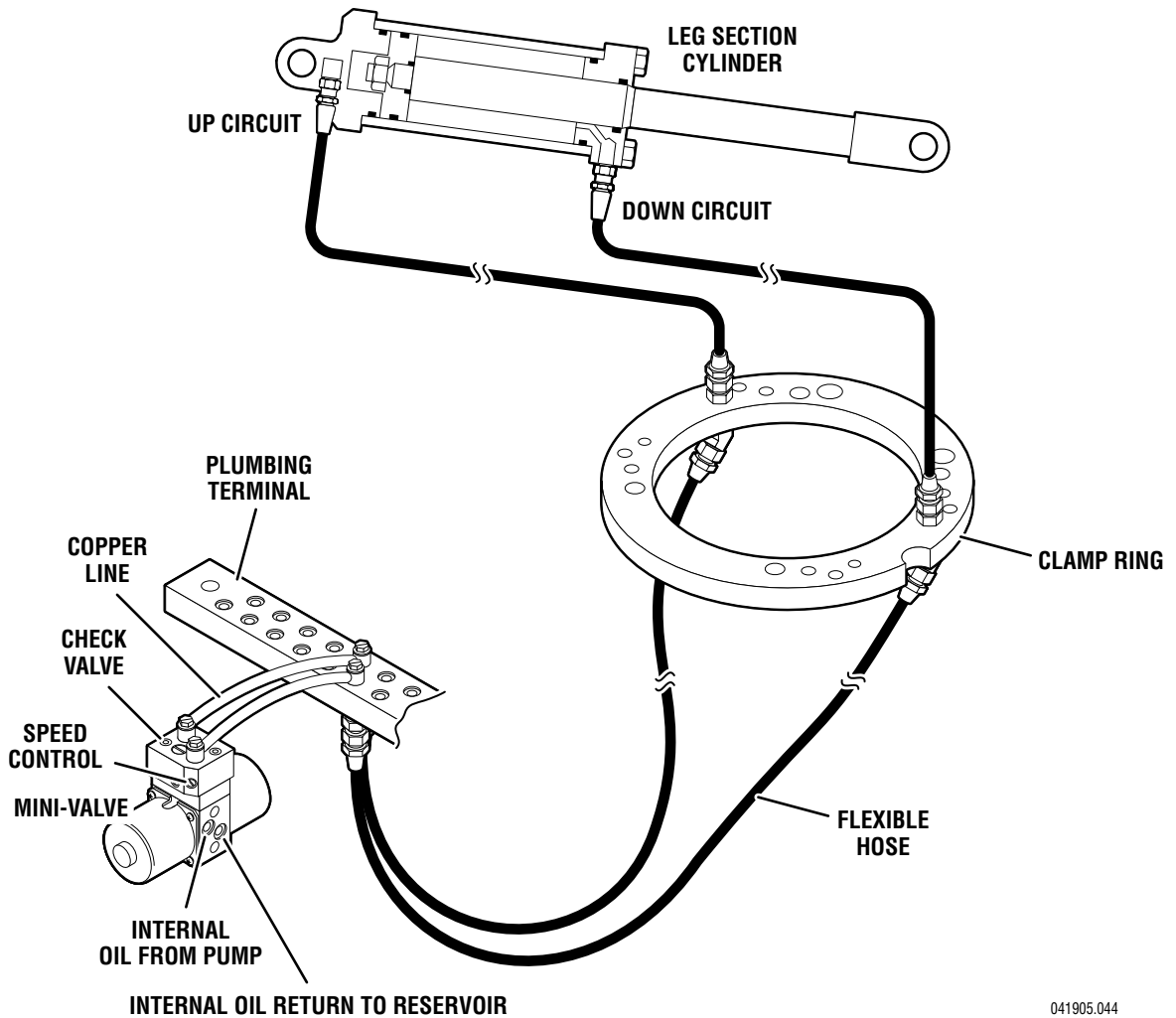
Leg function moves improperly

**Reason**

- Incorrect Speed Adjustment
- Spool Valve Not Centered
- Bad Check Valves
- Low on Oil
- Pinched Hose
- Defective Mini-Valve
- Pressure Relief Valve Not Set Properly
- Bad Solenoid
- Defective Relay Box or Pendant Control

Leg function chatters or loses position

- Defective or Dirty Check Valves
- Oil Leakage in Circuit
- Air Inside Cylinder
- Pinched Hose
- Low on Oil



041905.044

Figure 3-6. Leg Section Circuit

### 3-9. KIDNEY LIFT DIAGNOSIS CHART

**Problem**

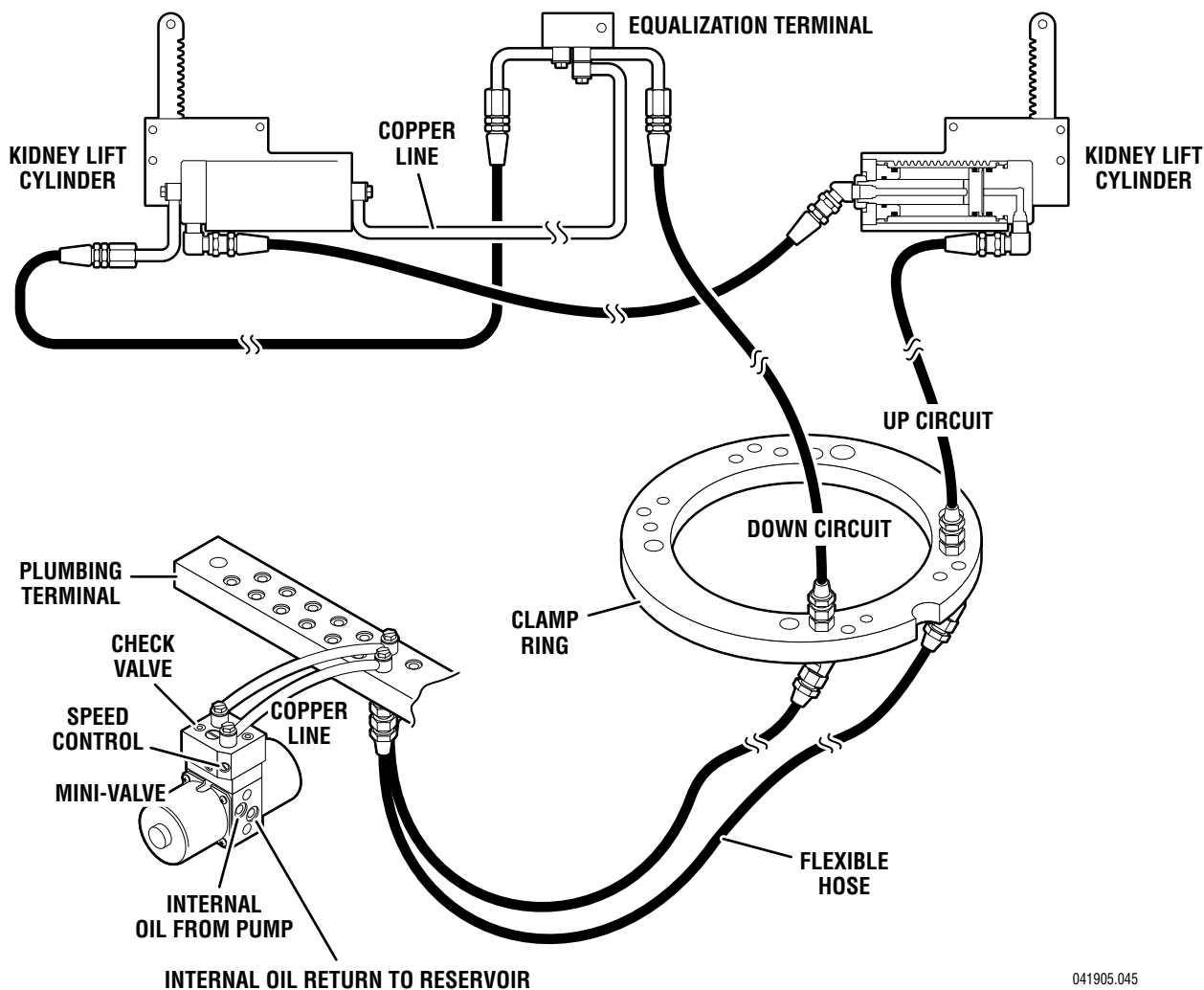
Kidney Lift moves improperly

**Reason**

- Incorrect Speed Adjustment
- Spool Valve Not Centered
- Bad Check Valve
- Low on Oil
- Pinched Hose
- Defective Mini-Valve
- Pressure Relief Valve Not Set Properly
- Bad Solenoid
- Defective Relay Box or Pendant Control

Kidney Lift chatters or loses position

- Defective or Dirty Check Valve
- Oil Leakage in Circuit
- Air Inside Cylinder
- Pinched Hose
- Low on Oil
- Lift Rods Binding



041905.045

Figure 3-7. Kidney Lift Circuit

### 3-10. BRAKE CIRCUIT DIAGNOSIS CHART

**Problem**

Brakes will not set properly

**NOTE**

If brakes have been released with the Emergency Brake Release Valve, brakes will not reset until BRAKE UNLOCK Circuit has been activated.

**Reason**

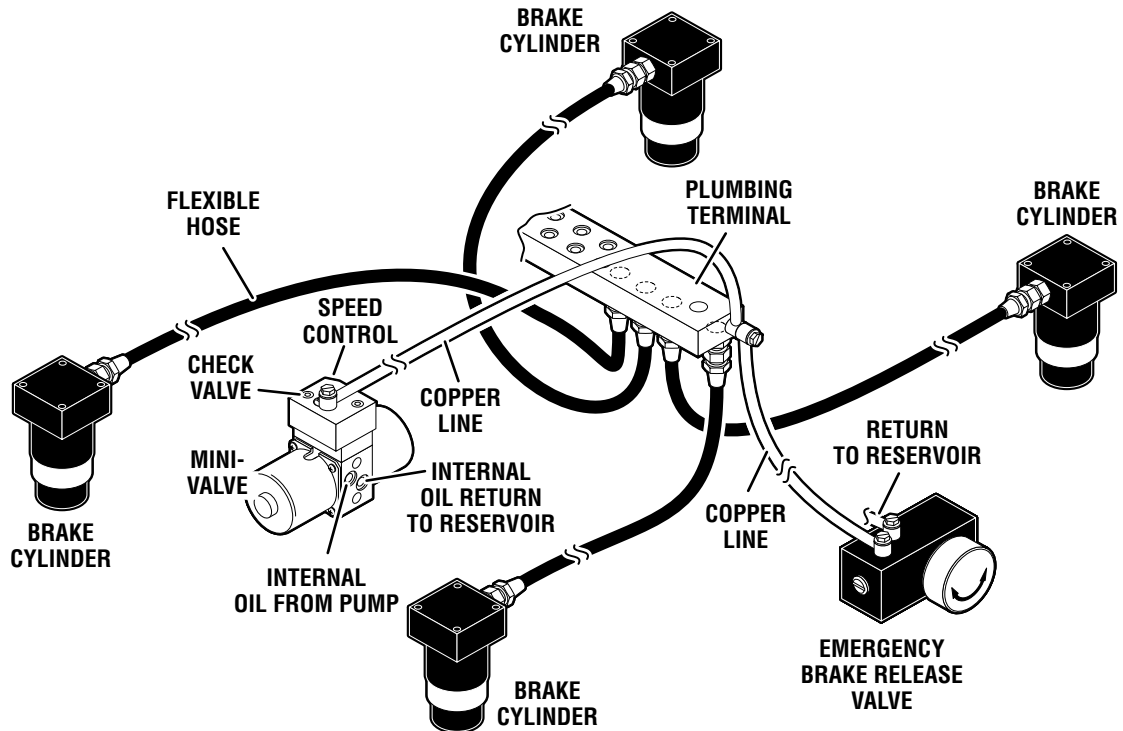
- Emergency Brake Release Valve Open or Defective
- Spool Valve Not Centered
- Bad Check Valve
- Low on Oil
- Pressure Relief Valve Not Set Properly
- Pinched Hose
- Defective Mini-Valve
- Defective Relay Box or Pendant Control

Brakes Will Not Stay Locked

- Emergency Brake Release Valve Open or Defective
- Defective or Dirty Check Valve
- Oil Leakage in Circuit
- Leaking "O" Ring Inside Cylinder

Brakes will not retract properly

- Incorrect Speed Adjustment
- Bad Check Valve
- Spool Valve Not Centered
- Defective Mini-Valve
- Pinched Hose
- Defective Solenoid or Wiring
- Defective Relay Box or Pendant Control
- Defective Brake Cylinder



041905.046

Figure 3-8. Brake System Circuit

### 3-11. Flexible Hose Identification and Placement

The flexible hydraulic hoses used in the table are number coded to aid in the correct placement of the

hoses from the plumbing terminal to their respective hydraulic cylinders. Figure 3-9 shows the correct placement of the flexible hydraulic hoses and their respective number codes.

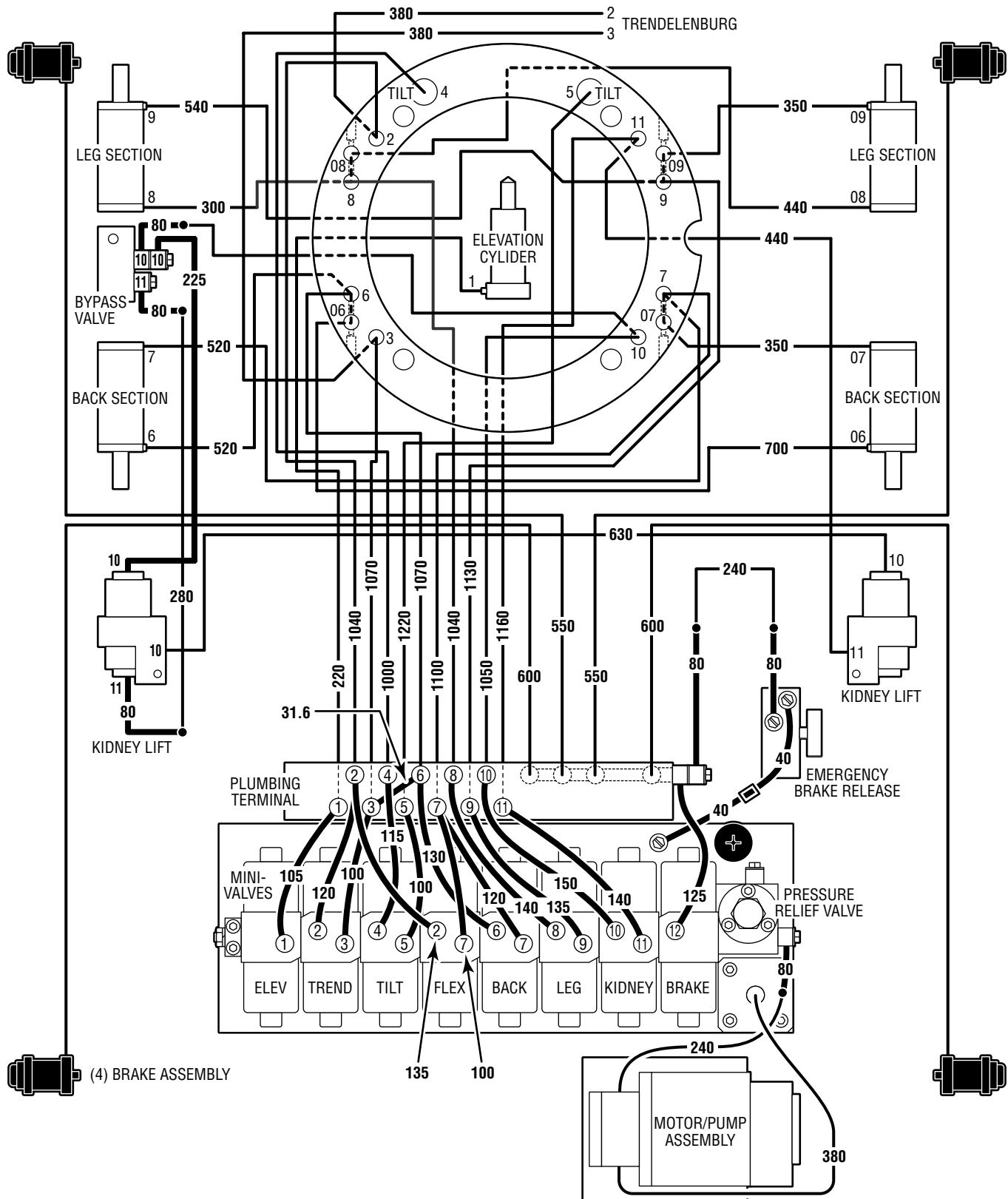


Figure 3-9. Flexible Hoses

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### 3-12. Kidney Lift System

The Kidney Lift cylinders are connected in series so that both cylinders operate simultaneously.

Hydraulic pressure on one side of the lead piston causes the piston to move. The piston movement forces the hydraulic fluid on the other side of the piston through the system to the other cylinder. This simultaneously activates the other piston. A bypass valve is connected to the right cylinder assembly for initial set-up and adjustment of the kidney lift system. Refer to figure 3-9 for valve location. Use the following procedures to bleed or adjust the system if needed.

**a. Bleeding the System** - If the hydraulic lines or cylinders have been disconnected from the kidney lift system for any reason, use the following procedure to bleed the air from the system.

1. Remove the kidney lift top section and begin the procedure with both pistons in the down position (chambers A & C) as shown in figure 3-10.

2. Make sure the bypass valve is closed (valve screw tight) and activate "KIDNEY DOWN". The hydraulic fluid will fill cavity "D" as shown in figure 3-10.

3. Open the bypass valve by loosening the screw in the bottom of the valve and activate "KIDNEY UP". Hydraulic fluid fills cavity "A" and pushes the piston into cavity "B". The open valve allows a path for air to escape from cavity "B" without affecting the piston in "C". See figure 3-11.

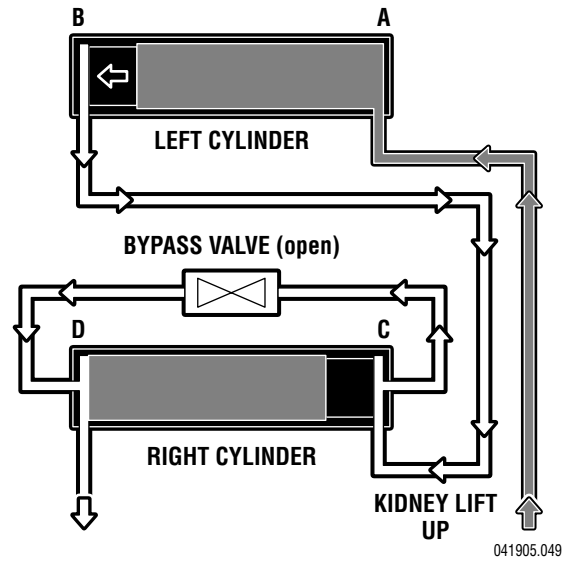


Figure 3-11.

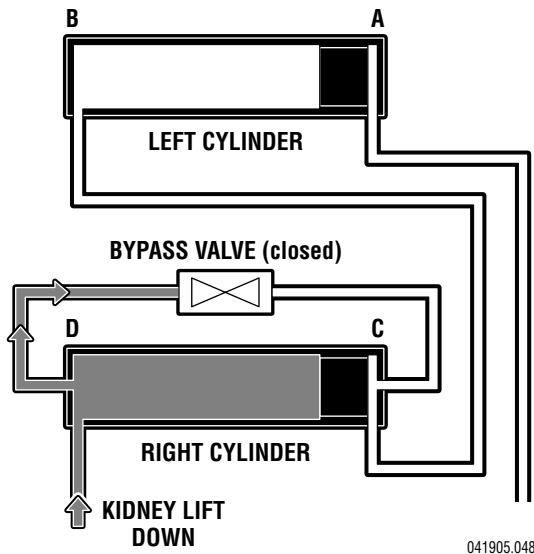
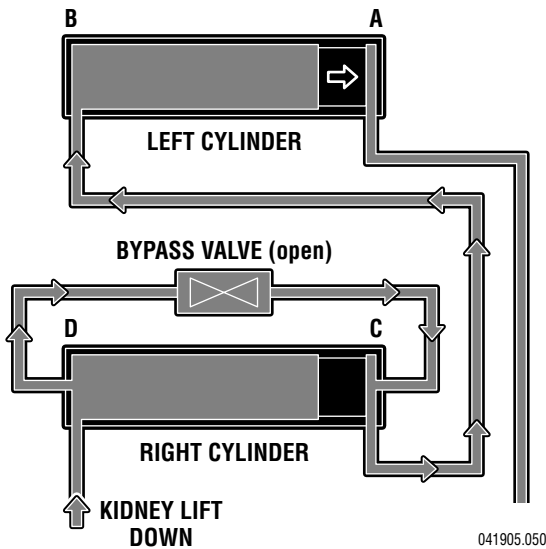


Figure 3-10.

4. Leave the bypass valve open and activate "KIDNEY DOWN". Hydraulic pressure keeps the piston in chamber "C", the hydraulic fluid passes through the bypass valve and fills cavity "B" pushing the piston into cavity "A". See figure 3-12.



**Figure 3-12.**

5. Repeat steps 3 and 4 as needed to remove any remaining air in the system.

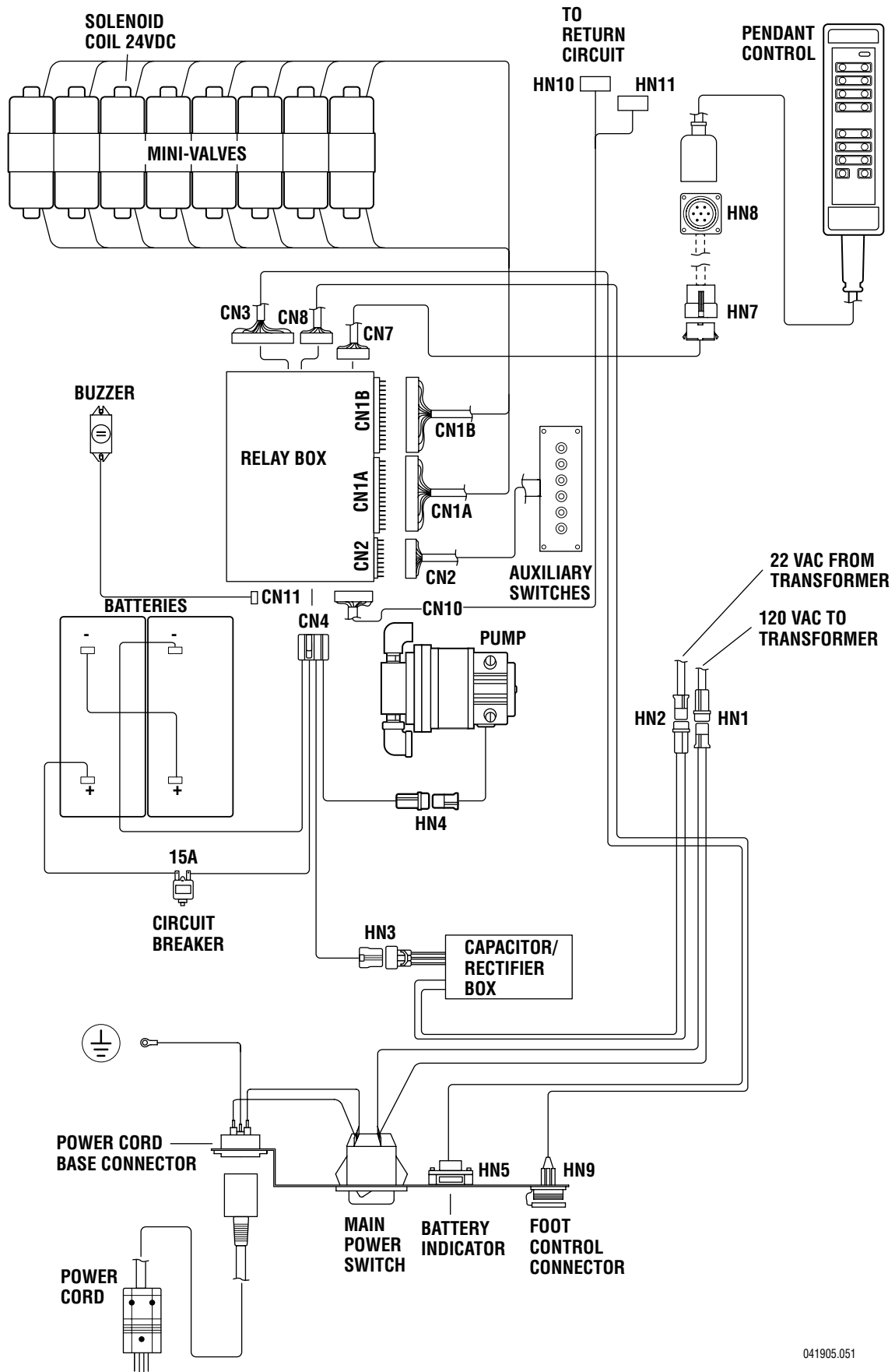
6. With both pistons in the full down position, activate "KIDNEY DOWN" to apply full system pressure and close the bypass valve (tighten the screw).

**b. Cylinder Adjustment** - If either of the kidney lift cylinders reaches the end of the down stroke before the other one, an adjustment is needed. Use the following procedure to adjust the system.

1. If the right side bottoms out before the left side, open the bypass valve and activate "KIDNEY DOWN" to align the cylinders.

2. If the left side bottoms out before the right side, activate "KIDNEY UP" to raise the cylinders. When the cylinders are at the full up position, open the valve and activate "KIDNEY UP" to align the cylinders. Close the valve before lowering the cylinders.

3. When the adjustment is complete, make sure the cylinders are completely down, activate "KIDNEY DOWN" and tighten the valve.



041905.051

Figure 4-1. 6700B Electrical Circuit Block Diagram



**4-1. General**

The complete electrical system (with the exception of the hand-held pendant control and the return circuit micro-switches) is contained within the base of the table. The pump motor and the hydraulic valves are controlled electrically with the pendant control.

The electrically operated functions are as follows:

- ELEVATION - Up and Down
- TRENDELENBURG - Head up and down
- LATERAL TILT - Right and left
- BACK SECTION - Up and Down
- LEG SECTION - Up and Down
- FLEX / REFLEX
- KIDNEY LIFT - Up and down
- LEVEL - Return to level
- BEACH CHAIR
- BRAKE UNLOCK - Brake release

The power requirements are 120 VAC, 60 Hz. The main power on-off switch is an enclosed DPST circuit breaker type and the power cord is a three-wire, fifteen foot long, removable, UL listed cord with a three-prong hospital grade plug.

**4-2. Components**

Refer to figure 4-1 for the relationship of the electrical components.

**a.** Wires, Connectors, Switches, Fuse - These provide the path for the various electrical circuits.

**b.** Relay Box - Contains the step down transformer, full wave rectifier, micro-processor and relay switches. The relay switches are activated by the pendant control signal to the micro-processor and in turn energize the solenoids.

**c.** Hand-Held Pendant Control - Contains circuit board mounted switches and a micro-processor which activate the relay box. Operates on 5 VDC.

**d.** Solenoids - These electrically open and close the hydraulic ports of the mini-valve to direct the fluid to the correct cylinders. They operate on 24 V DC.

**e.** Motor/Pump Assembly - 24 V DC motor with internal thermal protector.

### 5-1. General

The battery table components operate on 24VDC. The internal charging system also incorporates the components to transform the 120VAC input to 24VDC output to the components.

### 5-2. Troubleshooting Notes

The basic operation of each component will be defined along with a figure and an explanation on how to check it out.

Certain defective components could cause the entire table to stop functioning or only one control function to stop. It would depend on what part of the component failed. Other defective components would only cause one control function to stop.

The following defective components could cause all control functions to be affected:

- a. Motor/Pump Assembly
- b. Main Switch Circuit and Wiring
- c. Pendant control

The following defective components could cause all control functions to be affected or only one control function:

- a. Relay Box
- b. Pendant Control
- c. Auxiliary Switches

The component listed below would only affect one control function:

Solenoid

When troubleshooting an electrical circuit, start at the problem and work back to the power source.

### NOTE

- Battery table troubleshooting should begin by switching the operating mode. For example; if a function fails in the AC120V mode, switch to the BATTERY mode. If the function now operates, the problem is probably located between the power cord and the relay box. If the function also fails in battery operation, use the auxiliary switches. If the function now operates, the problem is probably in the pendant control, connectors or wiring from the pendant control to the relay box.

- All connector pins are numbered usually with very small numbers.

### 5-3. Main Switch

The main power supply, 120 VAC, 60 HZ, comes in through the power cord and through the Power Switch. The Power Switch opens both lines when in the "OFF" position. The Power Switch is also a 10 Amp circuit breaker that is used to protect the complete electrical system.

#### a. Main Switch Test

The following test will determine if line voltage is applied to connector HN1, which in turn would supply 120VAC power to the table.

1. Plug the power cord into the 120VAC supply (wall receptacle) and turn the main switch ON.
2. Disconnect connector HN1. See figure 4-1. Leave all other connectors connected.

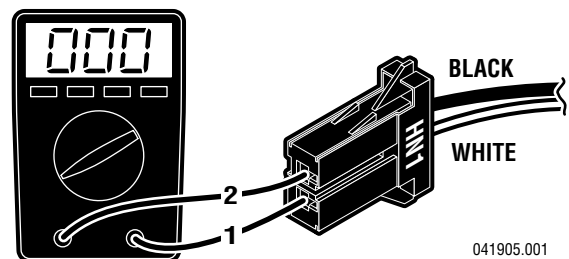


**CAUTION**



Line voltage (120 VAC) will be measured in this test. Do not touch uninsulated connector pins or meter test leads.

3. Use an AC voltmeter capable of measuring 120 VAC and measure the voltage between pins 1 and 2 (black and white wires) located in connector HN1. See figure 5-1. You should receive line voltage 120 VAC.



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**Figure 5-1. Connector HN1 Test**

## b. Test Results

If the correct voltage is obtained, everything is good up to this point and the problem would have to be in another area. If you do not receive the correct measurements, the problem would have to be in the wires, Power Switch, Power Cord, or main electrical Power Cord connector (3 pin twist lock connector).

Check the continuity from the power cord base connector, through the switch and wiring to connector HN1. Remove the power cord, disconnect HN1 (black and white wires), and test as shown in figure 5-2.

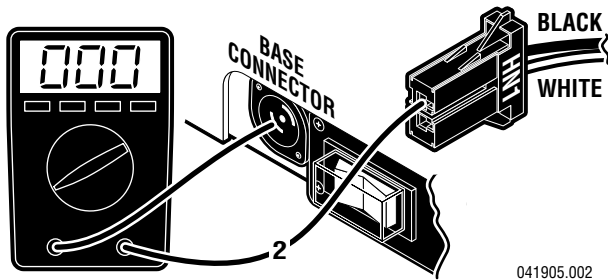


Figure 5-2. Base Connector to HN1 Continuity Test

## 5-4. Batteries

The BATTERY operating mode is powered by two 12 volt batteries connected in series to provide the 24 volt operating power.

The battery system voltage should be 24VDC at a range of 22VDC to 26VDC. If the battery charge level falls below 23.5 volts the BATTERY operation indicator on the pendant control will blink indicating that the batteries require recharging. The built-in charging system automatically keeps the batteries at the proper charge level when the AC120V operating mode is ON. The charging system will operate while the table is being operated in the AC120V mode.

## a. Battery System Test

1. Disconnect the main power cord and using a DC voltmeter, test each individual battery at its terminals. Meter should read 12VDC  $\pm$  1V.

2. To accurately test the batteries, they must be tested under a full load. Disconnect the main power cord and make sure all other connectors are connected.

3. Turn BATTERY power ON and elevate the table to its full up position.

4. Continue to press the TABLE UP button on the pendant control so that the pump motor continues to run and using a DC voltmeter, check the voltage drop of each battery individually. See figure 5-3.

5. Meter should read 12VDC  $\pm$  1VDC.

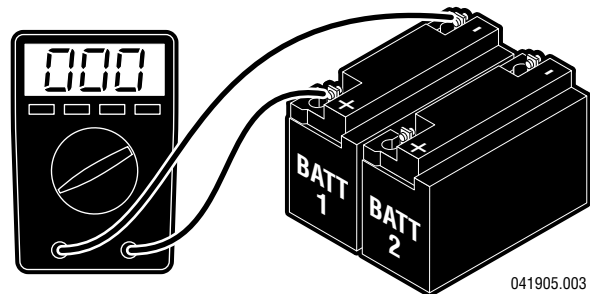


Figure 5-3.

## b. Test Results

A reading of 11 volts or below indicates the battery needs charging.

After batteries have been fully charged, repeat the full load test. If either battery's voltage drops below 11VDC it should be replaced.

## 5-5. Capacitor / Rectifier / AC120V Transformer

The Capacitor / Rectifier Unit contains the battery charging system as well as the components for AC120V operation (except the transformer).

### a. Transformer Test

1. Confirm 120VAC input at HN1 using Main Switch test in 5-3a.
2. Connect HN1, disconnect HN2 (brown and red wires) and using an AC voltmeter, test the transformer output at HN2. See figure 5-4.
3. Meter should read 22VAC.

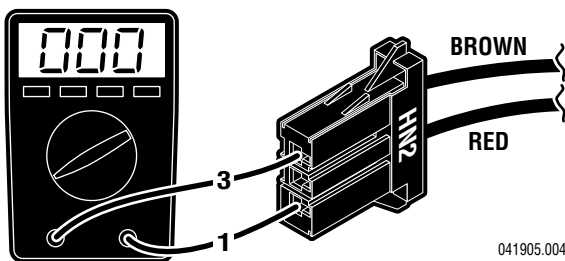


Figure 5-4. Connector HN2 Test

### b. Test Results

If the correct voltage is obtained, everything is good up to this point and the problem would have to be in another area. If you do not receive the correct measurements, the problem may be in the wires, connectors, or transformer. The transformer is located in the rear of the base under the stainless steel base cover. The stainless steel cover will have to be disconnected and lifted from the base for access to the transformer for further testing.

### c. Capacitor / Rectifier Unit Test

1. Make sure all connectors are connected, connect the power cord and turn AC120V operation ON. Test connectors HN2 and HN3 using a voltmeter. See figure 5-5.

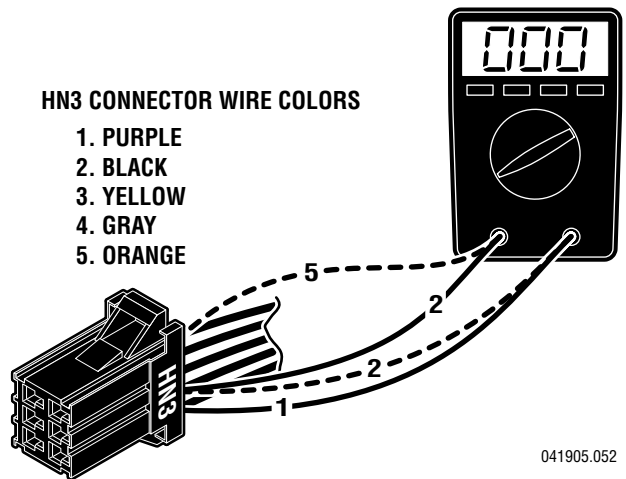
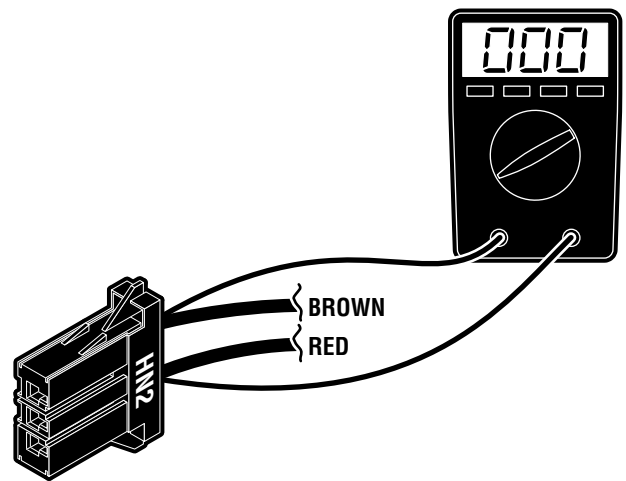


Figure 5-5. Connector HN3

2. Test connector HN2 at pins 1 (red) and 3 (brown). Meter should read AC23V.
3. Test connector HN3 at pins 1 (purple) and 2 (black, ground). Meter should read DC30V.
4. Test connector HN3 at pins 5 (orange) and 2 (black, ground). Meter should read DC27V.

### d. Test Results

If you do not receive the correct readings, the connectors, wires, or the Capacitor/Rectifier Unit may be defective.

**NOTE**

Normal charging time for a fully discharged battery is approximately 8 hours.

**e. Charging Indicator Test**

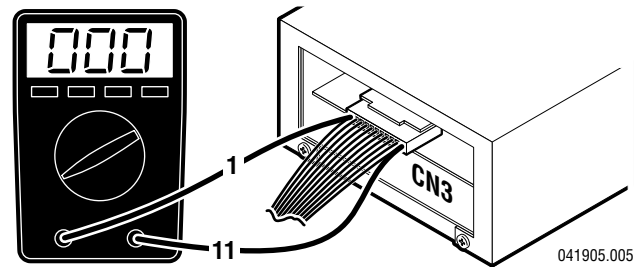
Charging Indicator contains 10 LEDs, 3 red, 4 yellow and 3 green.

All Indicators illuminated indicates full charge. Indicators flash when charging is in process. The following list shows the battery charge level as indicated by the lighted LED's:

3 green	100% -Fully charged
2 green	89%
1 green	78%
4 yellow	67%
3 yellow	56%
2 yellow	45% -Needs Charging (BATT indicator on pendant will flash)
1 yellow	34% -Needs Charging
3 red	23% -Needs Charging (poor performance)
2 red	12% -Needs Charging (intermittent performance)
1 red	1% -Needs Charging (inoperable)

Main Power Switch must be ON and power cord attached and plugged into outlet for charging system to operate.

Test output from relay box at CN3 pin 11 common and pin 1 (lowest charge) meter should read approx. 1.8 VDC. See figure 5-6.



**Figure 5-6**

**5-6. Pendant Control**

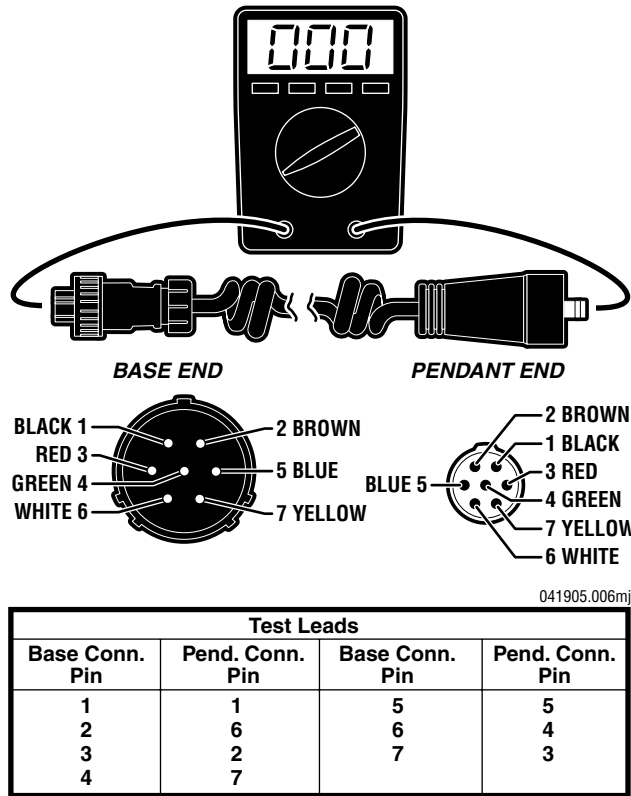
The Pendant Control is part of the solid state, multiplex, logic control system. The pendant control contains illuminated, circuit board mounted switches and a micro processor. The encoded output from the pendant control is serial bit stream logic.

The output signal is transmitted to the micro processors in the relay box where the logic is decoded and the appropriate relays for the selected function are activated.

Pendant Control troubleshooting should begin by switching the operating mode of the table. For example; if a function fails when operating the table in the AC120V mode, switch to the BATTERY mode. If the function now operates, the problem is not the pendant control and probably is a problem located between the power cord and the relay box. If the function also fails when in battery operation, use the auxiliary switches to operate the function. If the function now operates, the problem is probably in the pendant control, connectors or wiring from the pendant control to the relay box.

**a. Pendant Control Test**

There are some serviceable components within the Pendant Control. The cord is detachable and can be tested for continuity between the pins on the connectors. Use the following procedure to test the pendant control cord. See figure 5-7.



**Figure 5-7. Pendant Control Test**

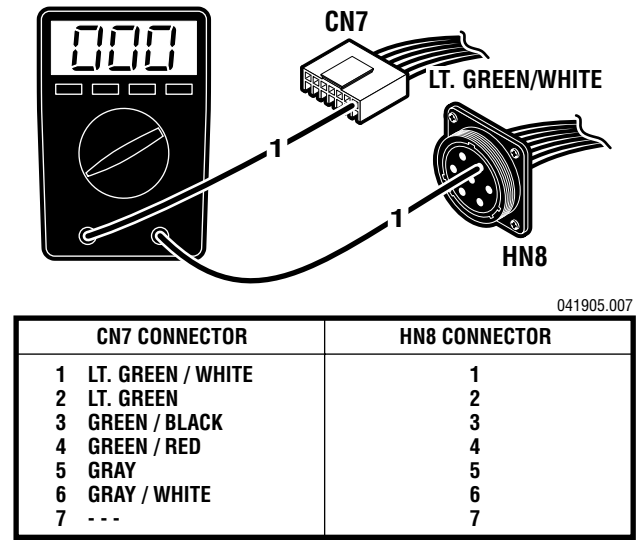
Disconnect the cord from the table connector and from the pendant control connector and using an ohmmeter, test the continuity between the corresponding pins in the connectors.

**b. Test Results**

If you do not receive the correct readings, the wiring or connector pins may be faulty.

**c. Table Connector HN8 Test**

If correct readings are received, test the wiring from the table connector to connector CN7 at the Relay Box. Disconnect connector CN7 from the Relay Box and using an ohmmeter, test the continuity between the corresponding pins in connectors CN7 and the table connector HN8. See figure 5-8.



**Figure 5-8. Table Connector Continuity Test**

**d. Test Results**

If the correct readings are not obtained, test the wiring from the table connector HN8 to connector HN7 (located under the Trendelenburg cylinder cover) and from connector CN7 to HN7. Disconnect connector HN7 and using an ohmmeter, test the continuity between the corresponding pins in connectors HN7 to CN7 and HN7 to HN8. Refer to figure 5-8.

If the correct readings are obtained, this part of the circuit is okay and the problem may be the Pendant Control or the Relay Box. Contact SKYTRON if all tests performed indicate that the problem is located in the Pendant Control.

### 5-7. Auxiliary Switches

The following tests will determine if the auxiliary switches are functioning properly.

#### a. Switch Test

Disconnect connector CN2 at the Relay Box and using an ohmmeter check for continuity at the connector pins (pin 1A common) while activating the appropriate switch. See figure 5-9. Meter should read 0 ohms.

#### b. Test Results

If proper meter readings are not received, test the individual switches as necessary. Using an ohmmeter, test the operation of an individual switch with the (+) test lead at the center terminal of the switch and the (-) test lead at the terminal opposite the direction of the switch actuation. Refer to figure 5-10. Meter should read 0 ohms. If the switches check out, the problem would have to be in the wires, the switch circuit board or connector CN2.

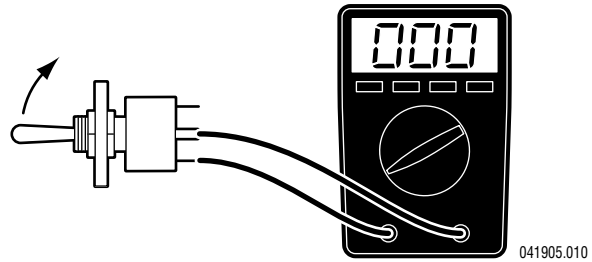
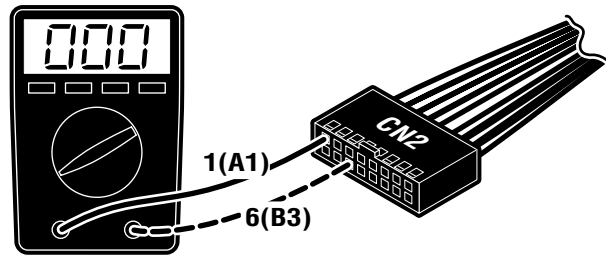
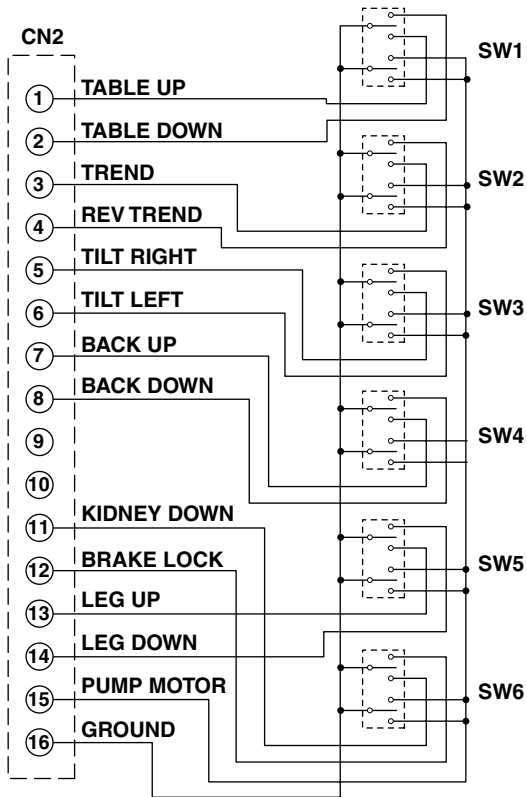


Figure 5-10. Auxiliary Switch Test



PIN NO	COLOR	PIN NO	COLOR
1 (A1)	Red	9 (A5)	--
2 (B1)	Green / White	10 (B5)	--
3 (A2)	Brown	11 (A6)	Black
4 (B2)	Yellow	12 (B6)	Blue / White
5 (A3)	Orange	13 (A7)	Gray
6 (B3)	Green	14 (B7)	Yellow / White
7 (A4)	Brown / White	15 (A8)	Red / White
8 (B4)	Blue	16 (B8)	Orange / White

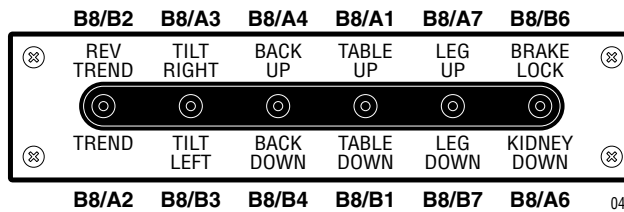


Figure 5-9. Auxiliary Switch Connector CN2

### 5-8. Relay Box

The power supply is directly connected to the relay contacts. When these contacts are closed, 24 volts is supplied to the solenoids which are mounted on the hydraulic mini-valves. One relay is used to supply power to the pump/motor and is always activated no matter what control function is selected. The brake locking circuit relay is also activated when any control function other than BRAKE UNLOCK is *initially* selected.

Also, inside the relay box is a step-down transformer and full-wave rectifier which decreases the voltage to 5-6 volts. This low voltage potential controls the relays by the use of the hand-held pendant control buttons. Basically the relays enable a 5-6 volt potential to control the 24 volt circuit.

The following tests will determine if the relay box is functioning correctly.

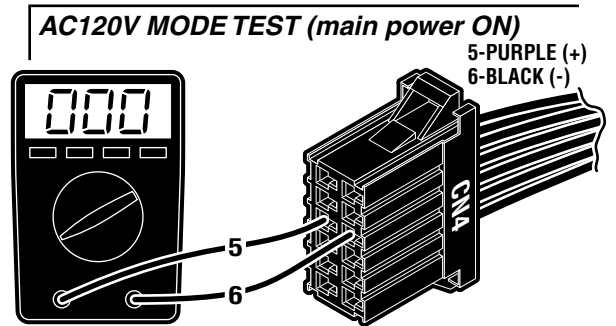
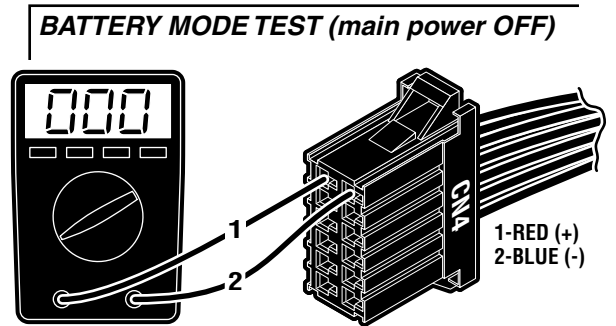
#### a. Checking Relay Box Input Power

1. Connect power cord to table. Plug the power cord into the 120VAC supply (wall receptacle). Disconnect connector CN4, leave all other connectors connected.

2. Using a DC voltmeter, test input power for both the BATTERY and AC120V operating modes. See figure 5-11. Meter should read approximately 24 -28 volts.

#### b. Test Results:

If you do not receive the correct meter readings, the problem is in the input wiring, connectors or components. If the correct readings are obtained, proceed to the next step.



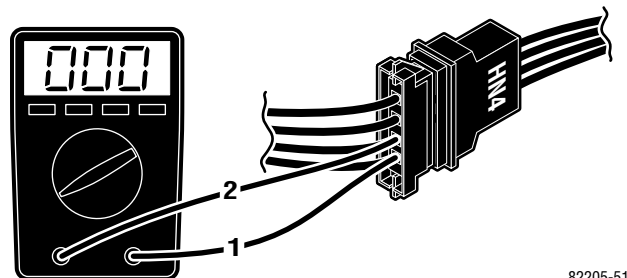
CONNECTOR CN4 COLOR CODE	
1 RED	7 WHITE
2 BLUE	8 WHITE
3 RED	9 YELLOW
4 BLACK	10 GRAY
5 PURPLE	11 ORANGE
6 BLACK	12 ---

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Figure 5-11. Relay Box Input

#### c. Checking Output to Pump

1. Make sure all connectors are connected and activate the AC120V operating mode. See figure 5-12.



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Figure 5-12. Output to Pump

2. Test HN4 at pin 1(+) and pin 2(-) with a DC voltmeter. Meter should read approximately 24-28 volts when any function button is activated. If no voltage is present, use an ohmmeter to test the continuity from HN4 to CN4 (red and black wires).



### d. Checking Output to Solenoids

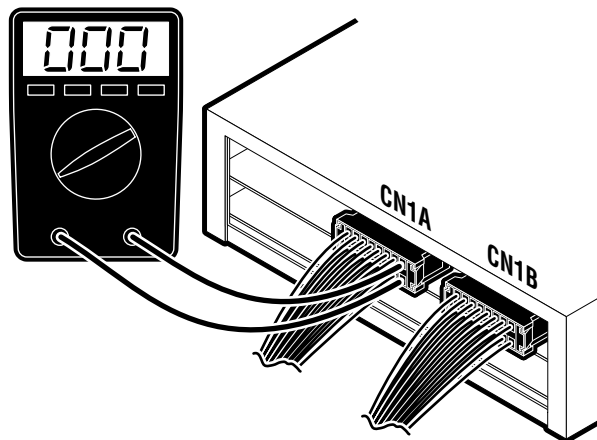
This test checks the voltage that is used to energize the solenoids.

1. Activate either BATTERY or AC120V operating mode.

#### NOTE

- The Brake Lock function is activated by pressing any function button (except BRAKE UNLOCK). A timer in the Relay Box allows continuous output for about 7 seconds. If the brakes are already locked, no output is provided.

- The BRAKE UNLOCK button activates another timer in the relay box which allows continuous output for the brake release function for approximately 7 seconds. If the brakes are already released (using the BRAKE UNLOCK button) no output is provided.



CN1A CONNECTOR		CN1B CONNECTOR	
FUNCTION	PINS	FUNCTION	PINS
Table Up	1 - 2	Back Up	1 - 2
Table Down	3 - 4	Back Down	3 - 4
Trendelenburg	5 - 6	Kidney Down	9 - 10
Reverse Trend.	7 - 8	Kidney Up	11 - 12
Tilt Right	9 - 10	Leg Up	13 - 14
Tilt Left	11 - 12	Leg Down	15 - 16
Reflex	13 - 14	Brake Set	17 - 18
Flex	15 - 16	Brake Unlock	19 - 20

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Figure 5-13. Solenoid Output Connectors

2. Test connectors CN1A and CN1B from the back while attached to the relay box. All connectors should be connected.

3. Activate each of the pendant control buttons and measure the output voltage for the corresponding connector pins with a DC voltmeter. See figure 5-13. Meter should read 24 volts.

### e. Test Results:

If you do not receive the correct meter readings, the relay box is defective and should be replaced.

#### NOTE

- Before deciding the relay box is defective, check the wires and pins in the connector blocks to make sure they are not loose or making a bad connection with their mate.
- If the battery power is ON and no table functions have been activated for 3 hours, the power off circuit will interrupt the battery power.

### f. Checking Output to Pendant Control

The output to the Pendant Control can not be tested without specialized equipment. If all tests have been conducted and it appears that the Relay Box is faulty, contact SKYTRON.

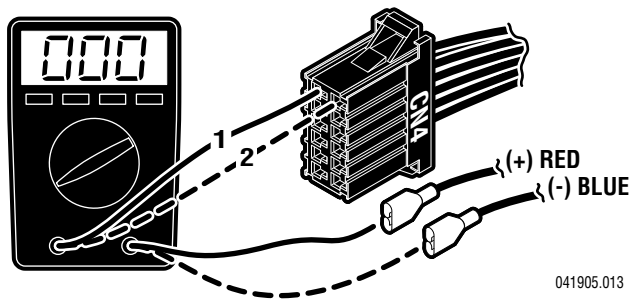
### 5-9. Main Wire Harness Continuity Tests

If correct meter readings are not received in tests between components, before replacing the components, test the Main Wire Harness to be sure all connectors and wires are making a good connection.

#### a. CN4 to Batteries Test

1. Disconnect connectors CN4 and the (+) and (-) connectors from the batteries. Leave all other connectors connected.

2. Using an ohmmeter, test for continuity between pin 1 of CN4 and battery (+) connector. Also test between pin 2 of CN4 and battery (-) connector. See figure 5-14.



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Figure 5-14.

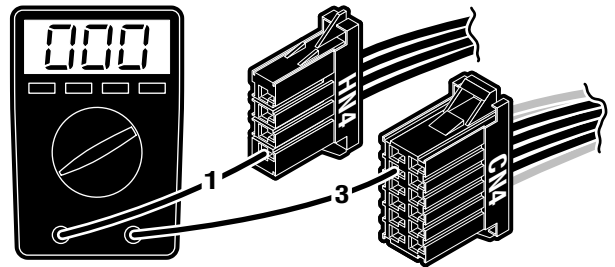
#### NOTE

The 15 amp battery protection circuit breaker is in the line between CN4 pin 1 and the battery connector. Test the continuity of the circuit breaker if correct meter reading is not received.

#### b. CN4 to Pump Test

1. Disconnect connectors CN4 and HN4. Leave all other connectors connected.

2. Using an ohmmeter, test for continuity between the pins of CN4 and pins on HN4. See figure 5-15.



WIRE COLOR / PIN NUMBER CODES		
HN4		CN4
1	RED	3
2	BLACK	4
3	WHITE	7
4	WHITE	8

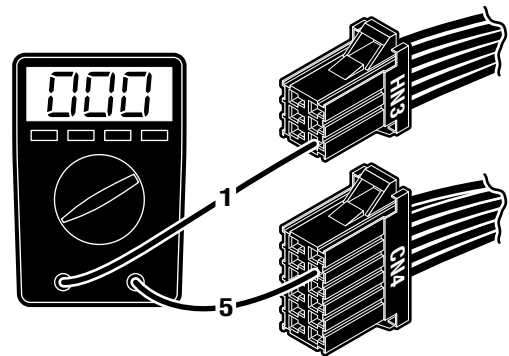
041905.014

Figure 5-15.

#### c. CN4 to Capacitor / Rectifier Unit Test

1. Disconnect connectors CN4, and HN3. Leave all other connectors connected.

2. Using an ohmmeter, test for continuity between pins of CN4, and HN3. See figure 5-16.



PIN TEST COMBINATIONS		
HN3		CN4
1	-	5
2	-	6
3	-	9
4	-	10
5	-	11

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Figure 5-16. CN4 and HN3

**5-10. Solenoids**

The solenoids are energized by 24 volt potential that is controlled by the relay box. The solenoid windings are protected from excessive heat by an internal thermal fuse that will open after approx. 7 minutes of continuous operation. The solenoid must be replaced if the internal thermal fuse has been blown. The solenoids are mounted directly on either side of the hydraulic mini-valves and push the spool valve in one direction or the other depending upon which solenoid is activated.

**a. Solenoid Test**

The resistance of the solenoid coil can be checked out using an ohmmeter R x 1 scale.

1. Disconnect connectors CN1A and CN1B. Measure the resistance between the two pins at the connector for the solenoid in question as shown in figure 5-17. Polarity of meter leads is not important.

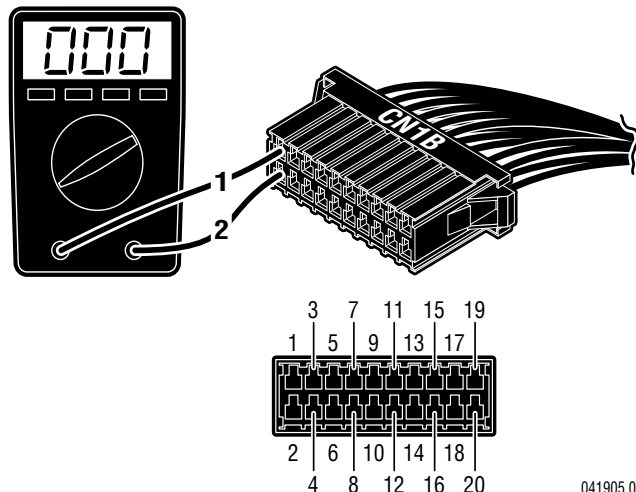
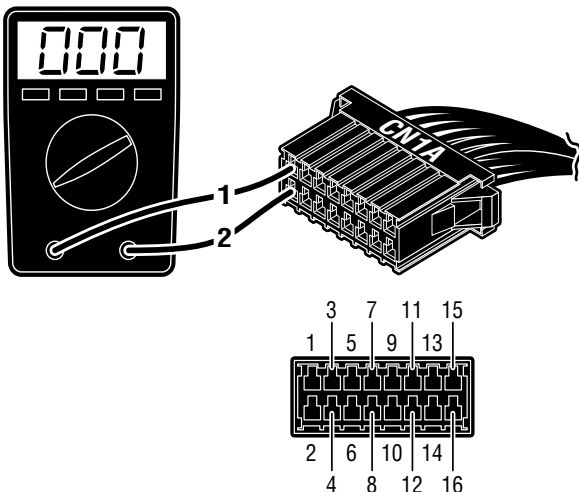
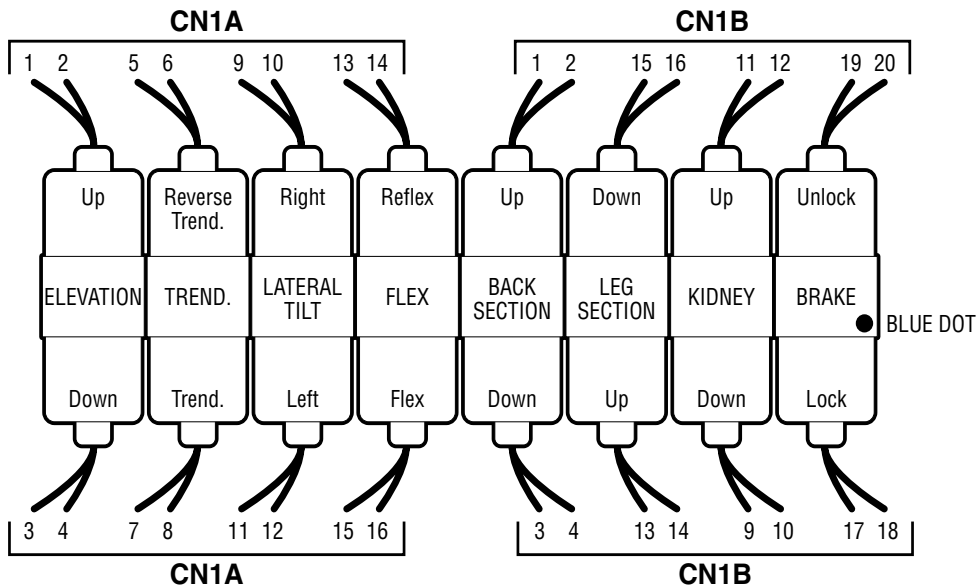
2. The meter should read approximately 16 ohms at room temperature.

3. Measure the resistance between either pin and ground.

4. Meter should read infinity.

**b. Test Results:**

If the solenoid does not check out with the meter, it is more than likely defective and must be replaced.



**Figure 5-17. Solenoid Test**

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**NOTE**

Whenever there are several components of the same type, a defective unit can also be detected by substituting a known good unit or wire connector. In some cases this may be faster than using a multi-meter.

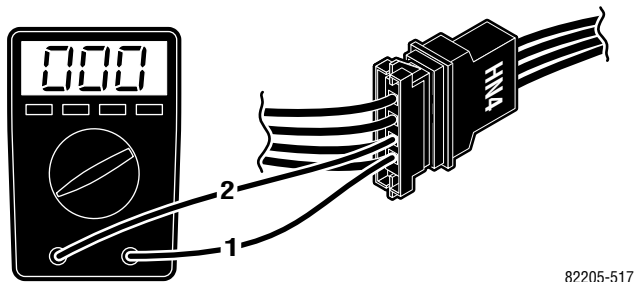
**5-11. Motor/Pump Assembly**

The hydraulic pump motor is a thermally protected 24 volt DC electric motor. The oil pump unit is attached to the bottom of the motor and is a gear type displacement pump with a pumping capacity of .4 liter per min. The Motor/Pump Assembly is mounted on insulators in the base of the table.

**a. Motor/Pump Test**

1. Make sure all connectors are connected and activate the AC120V operating mode. See figure 5-18.

2. Test HN4 at pin 1(+) and pin 2(-) with a DC voltmeter. Meter should read approximately 24-28 volts when any function button is activated. If no voltage is present, use an ohmmeter to test the continuity from HN4 to CN4 (red and black wires).



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**Figure 5-18. Motor Input Voltage****NOTE**

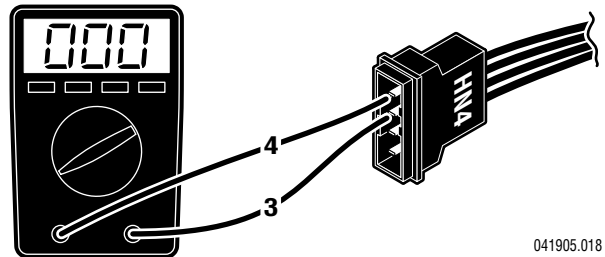
If the pump has been activated continuously for 1-1/2 to 2 minutes, the thermal relay will interrupt the power to the pump.

**b. Thermal Protector Test**

The Thermal Protector is built in to the pump motor and is used to interrupt the current flow to the pump motor to protect it from possible damage due to overheating.

1. Turn OFF both BATTERY and AC120V operating modes.

2. Use an ohmmeter to test for continuity between terminals 3 and 4 on the connector HN4. See figure 5-19.



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**Figure 5-19. Thermal Protector**

3. The Thermal Relay should reset itself after approximately one minute.

4. The Thermal Relay should activate after 1-1/2 to 2 minutes of continuous pump operation.

**c. Motor Resistance Test**

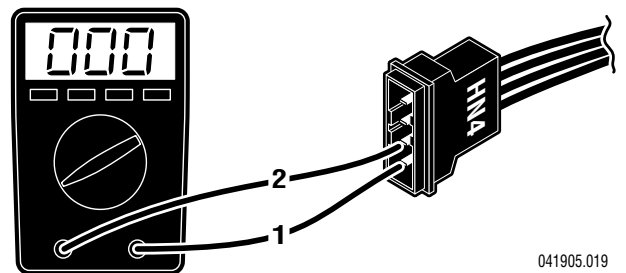
The motor can be statically checked for resistance using an ohmmeter. This test is not 100% accurate because you are checking the motor with very low voltage from the meter and without any load.

1. Using an ohmmeter R x 1 scale, measure the resistance between the pins 1 and 2 of HN4. See figure 5-20.

2. The meter should read 1 to 2 ohms at room temperature.

3. Measure the resistance between either pin and ground.

4. Meter should read infinity.



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**Figure 5-20. Motor Connector HN4****d. Test Results:**

If you do not receive the correct meter readings, the motor or wiring is defective.

### 5-12. Return-to-Level / Positioning Inhibit Micro-Switches.

The return-to-level feature is activated by a single button on the pendant control and automatically levels the major table functions, lateral tilt, Trendelenburg, back section, and leg section.

The kidney lift has a back section-up inhibit switch to prevent the table back section from damaging the kidney lift when the lift is raised. The back section still has the capability to be lowered, but will not raise above horizontal until the kidney lift is completely down. If the back section is raised above horizontal, the system will not allow the kidney lift to be raised. An audible alarm will sound if the kidney lift inhibit switch is activated and either function is activated - raising back section when Kidney lift is up or raising kidney bridge when back section is above horizontal.

The lateral tilt and Trendelenburg positioning functions incorporate a safety interlock system which limits the positioning capabilities. Lateral tilt positioning is limited to 20° if Trendelenburg positioning

exceeds 20°. Likewise, Trendelenburg positioning is limited to 20° if lateral tilt positioning exceeds 20°. An audible alarm will sound if the positioning maximums are achieved.

The return-to-level / positioning inhibit system consists of 12 micro-switches, 3 electrical connectors, and the related wiring. The micro-switches are mounted on or adjacent to the function they control and are wired for normally open or normally closed operation. The micro-switches are either cam or lever actuated and can be adjusted at the individual switch mounting brackets.

The micro-switches operate on low voltage, and control the function circuits (pump/motor and appropriate solenoid valves) when activated by the pendant control LEVEL button.

The micro-switches are wired to the relay box through a riser cord and to the 26 pin connector CN10. See figure 5-21 for switch location and identification.

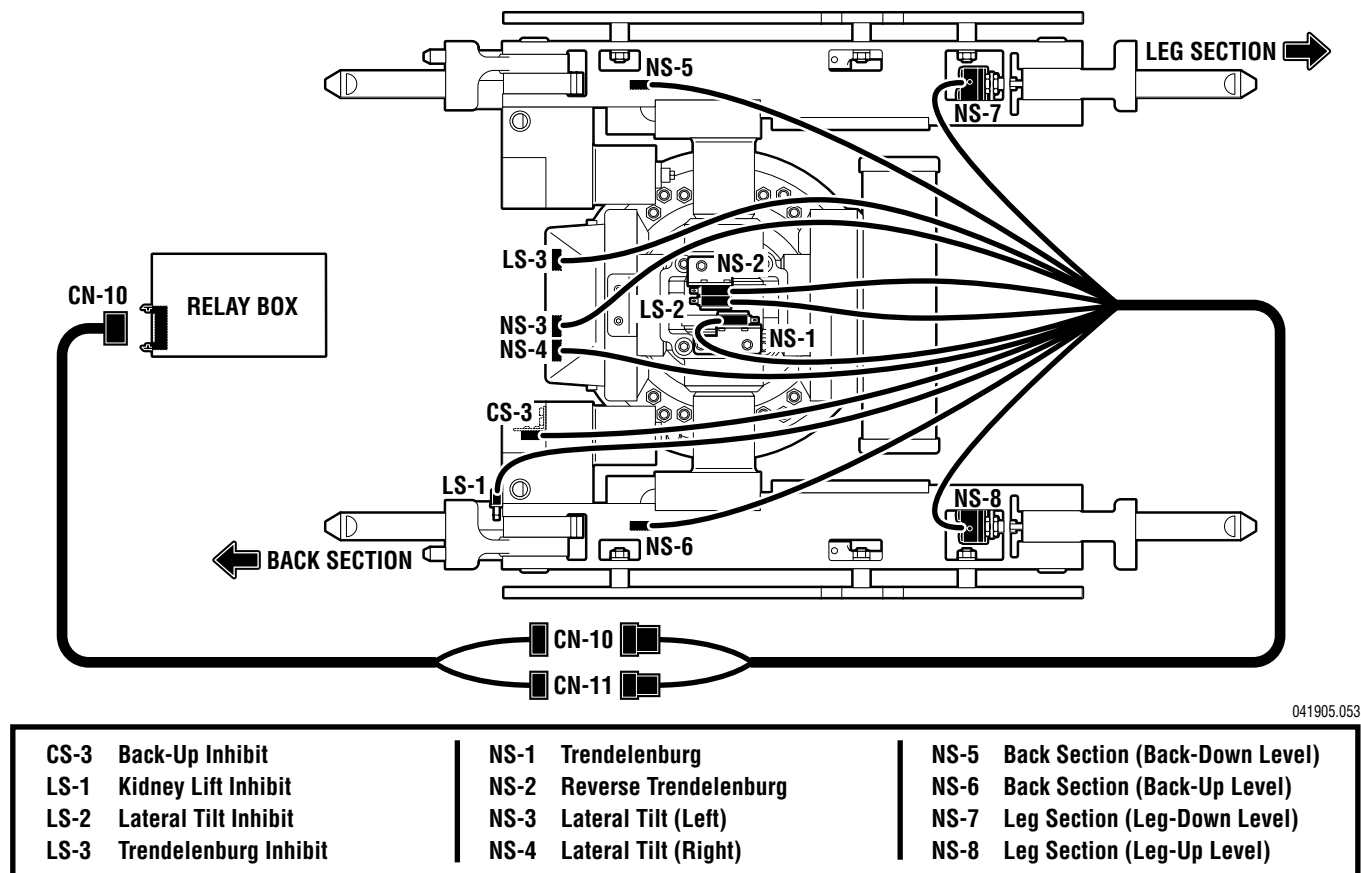


Figure 5-21.

### 5-13. Troubleshooting

If a problem is suspected in the return / positioning circuits, disconnect the connector CN10 from the Relay Box to eliminate the circuits. Ensure that all table functions operate properly using the Pendant Control. If the functions do not work properly using the Pendant Control, refer to the appropriate test section and make all needed repairs before working on the return circuits.

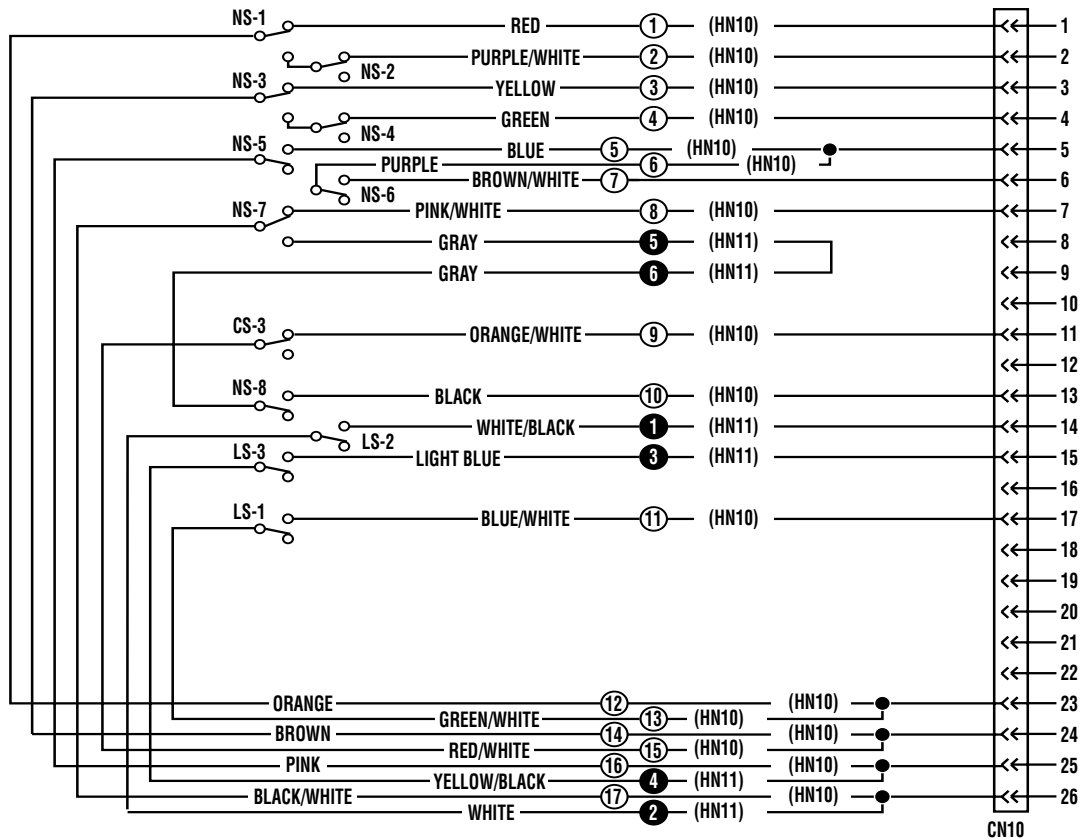
All of the micro-switches are connected to the relay box via a wiring harness and the micro-switch riser cord using connectors CN10, HN10 and HN11. Connectors HN10 and HN11 are located under the slider shroud in the same area as the hydraulic hoses. Connector CN10 plugs into the relay box and is the most convenient location to make circuit continuity checks. See figure 5-22 for connector pin locations.

**NOTE**

It is normal for the back section to move up if the LEVEL button is pushed when connector CN10 is disconnected from the relay box.

**NOTE**

Wire colors may vary, however, connection from indicated pins on HN11 to pins on CN10 remain the same.



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Figure 5-22. Return Micro-Switch Test

**a. Switch Test**

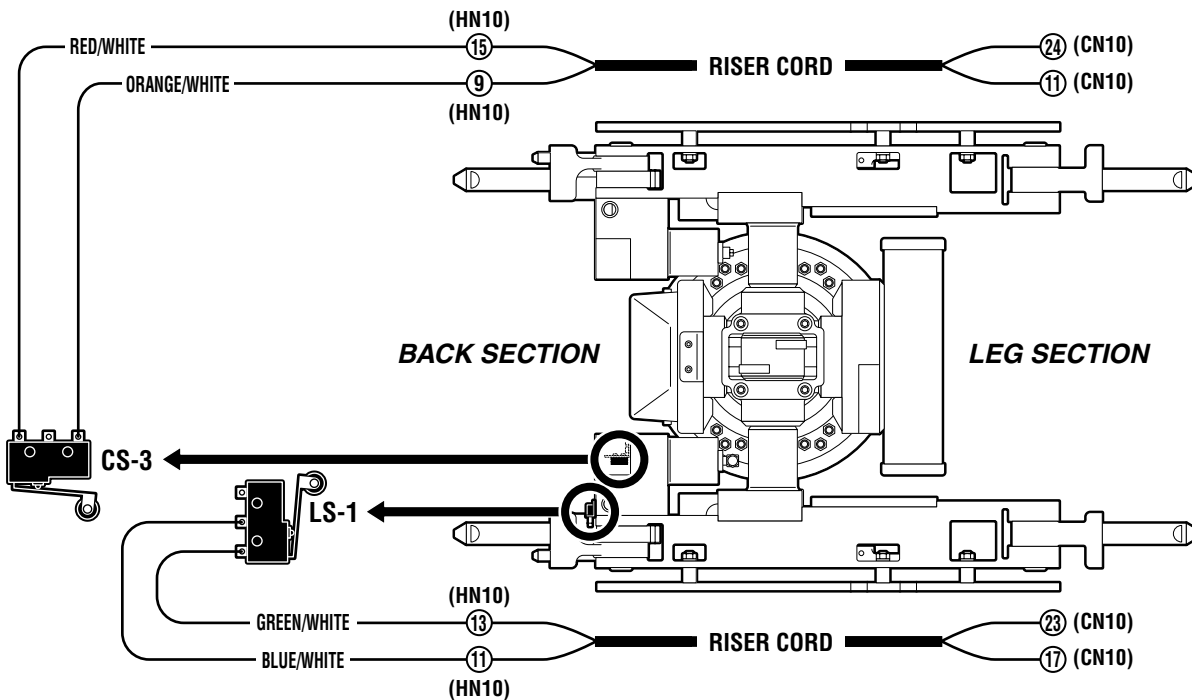
Turn Main Power ON, lock the table brakes, and place the table top sections in a level position with the Kidney Lift down. Disconnect connector CN10 from the relay box and using an ohmmeter, test the wiring and switch operation at the appropriate pin numbers for the micro-switch in question as shown in figures 5-23 through 5-27.

**NOTE**

If you do not receive the proper continuity results at connector CN10 it does not necessarily mean the micro-switch is defective. There could be a problem with the riser cord between connectors CN10, HN10 and HN11, or in the wiring from the switch to connector. Further tests will have to be made to determine the exact problem.

**NOTE**

Be sure to isolate the circuit when making continuity checks.



**When Kidney Lift is UP,  
Back Section Can Not go above horizontal.**

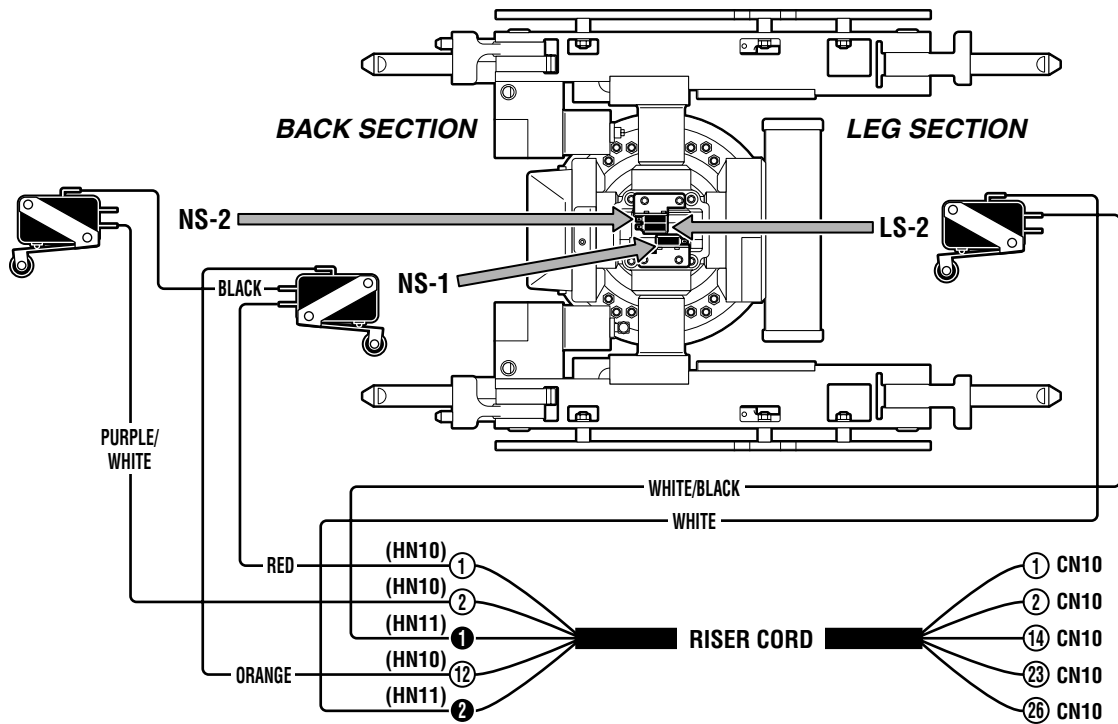
CS-3 BACK UP INHIBIT - TEST AT PINS 11 & 24		
Table Position	Switch Position	Meter Reading
Kidney Lift Down	Open	Infinity
Kidney Lift Up	Closed	0

**When Back Section is UP, Kidney Lift Can Not go up.**

LS-1 BACK UP LIMIT - TEST AT PINS 17 & 23		
Table Position	Switch Position	Meter Reading
Back < 90°	Open	Infinity
Back at 90°	Closed	0

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**Figure 5-23. Back Up Inhibit Switch**



**When table is in Trendelenburg Position, NS-1 brings the top back to level.**

NS-1 TRENDELENBURG - TEST PINS 1 & 23		
Table Position	Switch Position	Meter Reading
Level	Open	Infinity
Reverse Trendelenburg	Open	Infinity
Trendelenburg	Closed	0

**When table is in Reverse Trendelenburg Position, NS-2 brings the top back to level.**

NS-2 REVERSE TRENDELENBURG - TEST PINS 2 & 23		
Table Position	Switch Position	Meter Reading
Level	Open	Infinity
Reverse Trendelenburg	Closed	0
Trendelenburg	Open	Infinity

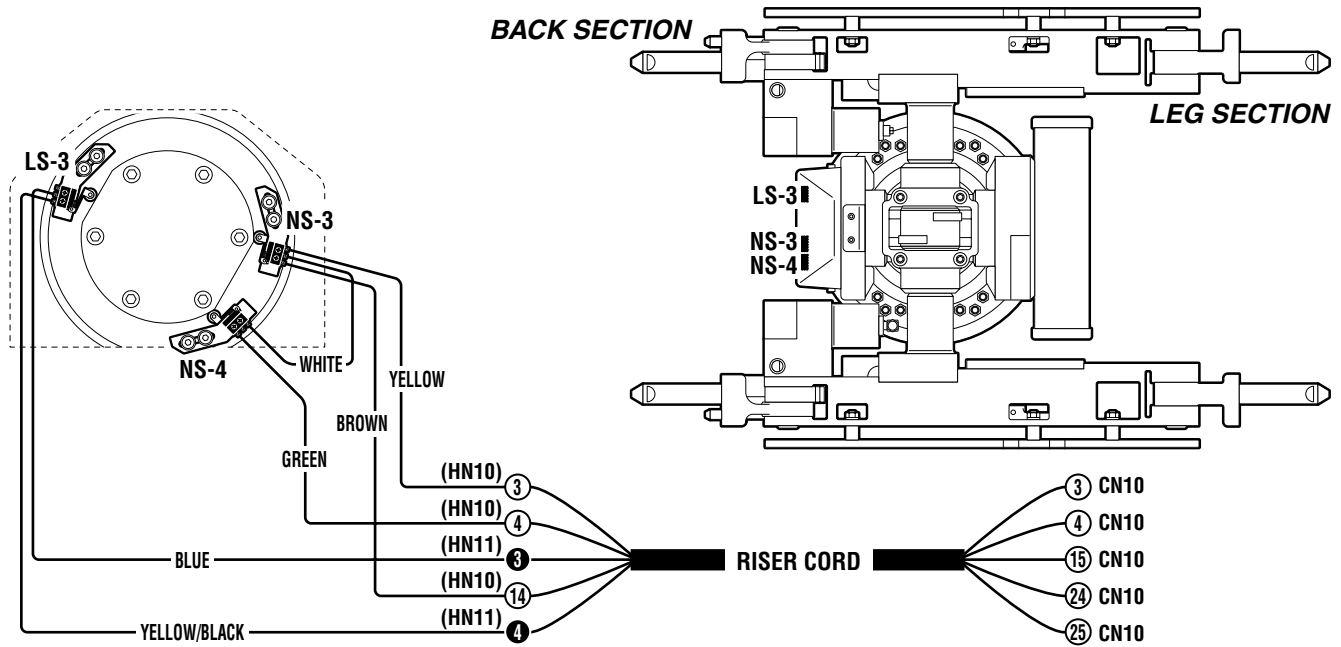
**When table is in Trendelenburg Position, more than 20°, Tilt is limited to 20°.**

LS-2 TILT INHIBIT - TEST PINS 14 & 26		
Table Position	Switch Position	Meter Reading
Trendelenburg < 20°	Open	Infinity
Trendelenburg > 20°	Closed	0

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**Figure 5-24. Trendelenburg Return Switches**





**When table is in Tilt Position more than 20°, Trendelenburg is limited to 20°.**

LS-3 LATERAL TILT LIMIT - TEST PINS 15 & 25		
Table Position	Switch Position	Meter Reading
Level	Open	Infinity
Tilt-Right	Closed	0
Tilt-Left	Closed	0

**When table is in Tilt-Left Position, NS-3 brings the top back to level.**

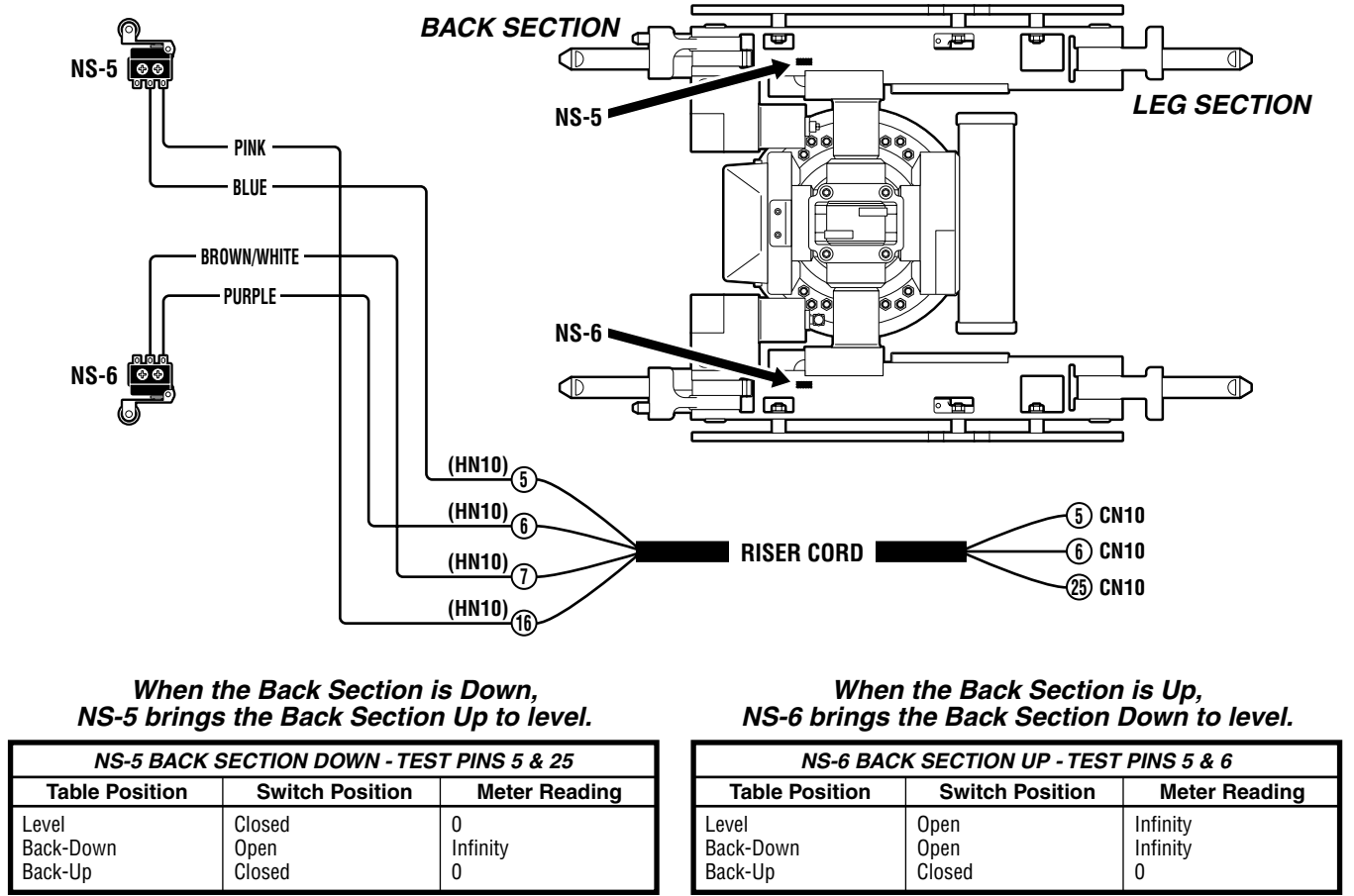
**When table is in Tilt-Right Position, NS-4 brings the top back to level.**

NS-3 LATERAL TILT-LEFT - TEST PINS 3 & 24		
Table Position	Switch Position	Meter Reading
Level	Open	Infinity
Tilt-Right	Open	Infinity
Tilt-Left	Closed	0

NS-4 LATERAL TILT-RIGHT - TEST PINS 4 & 24		
Table Position	Switch Position	Meter Reading
Level	Open	Infinity
Tilt-Right	Closed	0
Tilt-Left	Open	Infinity

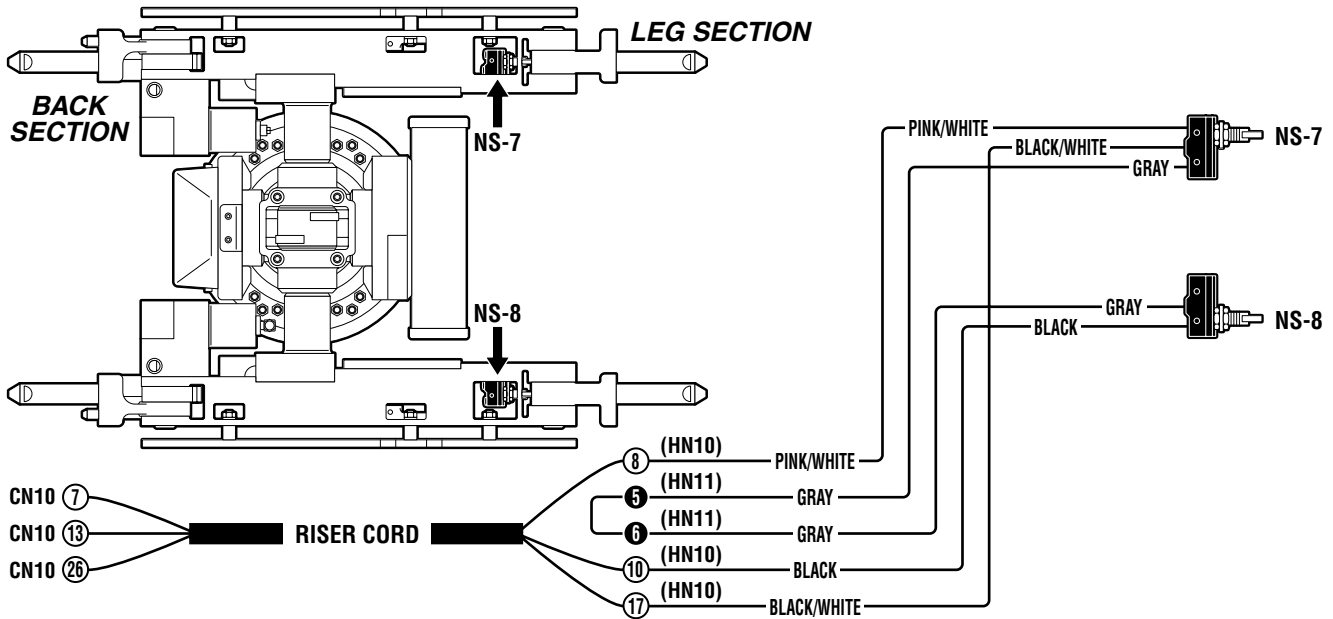
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**Figure 5-25. Lateral Tilt Return Switches**



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Figure 5-26. Back Section Return Switches



*When the Leg Section is Down,  
NS-7 brings the Leg Section Up to level.*

*When the Leg Section is Up,  
NS-8 brings the Leg Section Down to level.*

NS-7 LEG SECTION DOWN - TEST PINS 7 & 26		
Table Position	Switch Position	Meter Reading
Level	Open	Infinity
Leg-Down	Closed	0

NS-8 LEG SECTION UP - TEST PINS 7 & 13		
Table Position	Switch Position	Meter Reading
Level	Open	Infinity
Leg-Down	Open	Infinity

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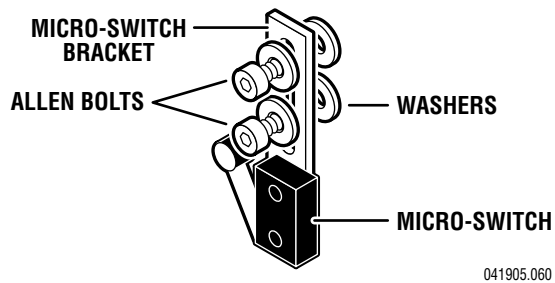
**Figure 5-27. Leg Section Return Switches**

## b. Switch Adjustment.

If proper readings are not obtained during test or if table does not properly return to level, use the following procedure to adjust the switches.

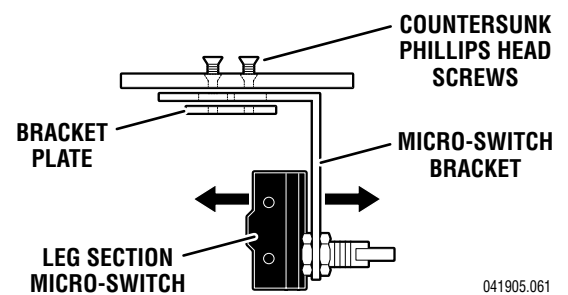
1. Apply table brakes and (using a level) level the table top using the TRENDELENBURG and LATERAL-TILT function buttons on the pendant control.

2. For all switches except the Leg Section switches, carefully loosen the allen bolts securing the switch bracket and adjust the switches as needed. See figure 5-28.



**Figure 5-28. Micro-Switch Adjustment**

3. To adjust the Leg Section switches remove seat section top, loosen the 2 phillips head screws securing bracket, adjust the switch, tighten the screws and replace the seat section top. See figure 5-29.



**Figure 5-29. Leg Section Micro-Switch Adjustment.**





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