



# **Spring Actuated Level Loader**

**Models QSL**

## GENERAL SAFETY INFORMATION

**⚠ DANGER** *Immediate hazard which will result in severe personal injury or death.*

**⚠ WARNING** *Hazard or unsafe practice which could result in severe personal injury or death.*

**⚠ CAUTION** *Hazard or unsafe practice which could result in minor personal injury or property damage.*

**⚠ WARNING** *The unit must be installed on a firm, nearly-level surface. The frame of the unit must sit firmly on the floor, and the floor must be level. If the frame is not supported correctly, stresses may develop in the frame. The unit may bind or not work easily. The rotating top may not rotate correctly.*

**⚠ WARNING** *When installing the first (orange) spring, use the maintenance pin to support the frame. See Fig. 3. If you do not do this, the frame of the unit may drop suddenly. You may be hurt, or the unit may be damaged.*

**⚠ WARNING** *Have an assistant help when installing the first (orange) spring. The top of the unit is too heavy to lift safely by yourself.*

**⚠ WARNING** *After the springs are installed, if the springs are not seated correctly, or the twist-lock caps are not tightened, the parts may pop loose when the unit is used. You may be hurt, or the load may be damaged.*

**⚠ WARNING** *Never operate the unit if anyone is sitting or riding on the turntable.*

**⚠ WARNING** *Never operate the unit if the load is offcenter. The load may shift, and you may be injured. This can also damage the unit.*

**⚠ WARNING** *As the unit moves, keep away from the “pinch points” where metal parts meet.*

**⚠ WARNING** *Keep the area around the unit clean. Do not allow any dirt, debris, spilled oil, or excess grease to collect. These materials may cause you to slip while the unit is operating, and you may be injured.*

**⚠ WARNING** *Stay clear of the turntable when it is moving. As the pallet turns, a part of the load may rotate around and hit you. Never turn the load when anyone is standing beside the unit.*

**⚠ WARNING** *Do not try to use this unit with damaged or broken pallets. Broken pallets may have boards or nails which hang down below the main part of the pallet. As the pallet is turned, these boards or nails may catch on the frame of the unit. This can cause the pallet to stop turning suddenly, causing the load to shift.*

**⚠ WARNING** *You may be injured, and the unit may be damaged. The boards or nails on the bottom of the pallet should not extend down more than 1/8 inch.*

**⚠ CAUTION** *Do not use this unit with a load greater than the rated capacity. This includes the weight of the payload and the weight of the pallet. If you overload the unit, it may be damaged.*

**⚠ WARNING**

When adding a load to the unit, lower the forks completely before removing the fork lift. If you do not do this, the load may be dropped when you remove the fork lift. The unit or the load may be damaged, or you may be hurt. Figure 7 shows the correct way to load using a fork lift.

**⚠ WARNING**

When removing a load from the unit, lift the load clear of the unit before backing out the fork lift. If you do not do this, the top of the unit may jump up when you remove the fork lift. The unit or the load may be damaged, or you may be hurt. Figure 8 shows the correct way to unload using a fork lift.

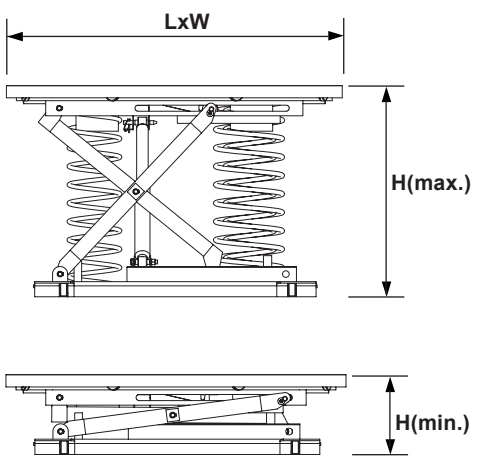
**⚠ WARNING**

Do not move the Spring Actuated Level Loader while it is loaded. This will damage the base frame of the unit. The pockets on the base frame are designed to support an unloaded Spring actuated level loader, but cannot support any extra weight.

**SPECIFICATIONS**

	<b>QSL</b>
Load Capacity (lbs)	400 to 4400 lbs., depending on springs
Load Size (inch)	50x50x72
Length (inch) L	45 1/4
Width (base frame) (inch) W	36 3/4
Compressed height (inch) H(min.)	9 1/2
Extended height (inch) H(max.)	27 3/4
Rotating ring, outside diameter (inch) D	43 5/8
Rotating ring, inside diameter (inch)	40 5/8
Net weight (lbs)	300 to 400 lbs., depending on springs

**Note: The unit can compensate for a slightly slopping floor (up to 1:25) but the surface must be smooth and solid.**

**DIMENSIONS**

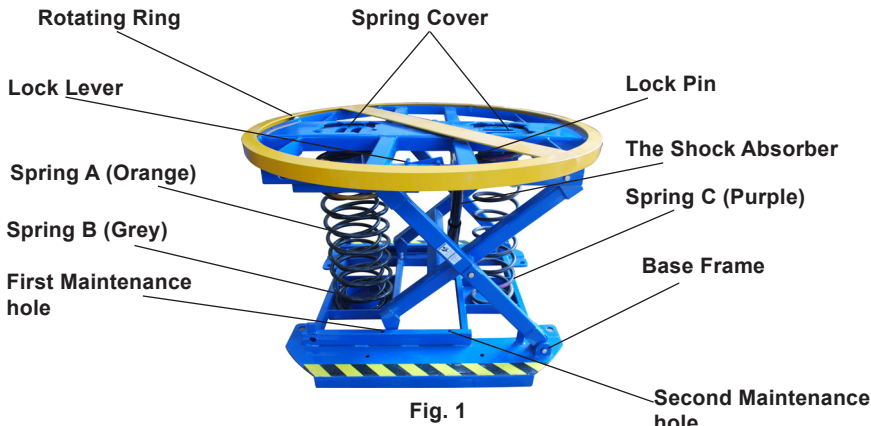


Fig. 1

## INSTALLATION INSTRUCTION

### UNPACKING THE UNIT

1. Before you start to install the unit, check for local codes and ordinances which may apply. It is your responsibility to obtain any necessary permits.
2. Please read all of these instructions carefully. Be sure to read and understand all of the warnings.
3. Inspect the shipping pallet carefully for any damage which may have affected the unit. If you see signs of damage, tell the trucker. Also make a note of this on the shipping papers which you are asked to sign.
4. Choose the place where you want to mount the unit. It is very important that the PalletPal be set up on a smooth and flat surface. Check the floor surface carefully and make sure that it is free of all loose debris and dirt. Using optional adjustable feet, the unit can compensate for a slightly sloping floor (1:25), but the surface must be smooth and solid.
5. Position the Spring actuated level loader beside the point where the unit will be set up.

### **CAUTION**

*The unit must be installed on a smooth flat surface. If the floor is not flat, this can create stresses in the frame of the unit. The unit may not work properly, or parts of the unit may wear more quickly than they should. You may be hurt or the load may be damaged.*

### Table 1 - Spring selection chart

Table 1 – Find the correct spring combination

Height of loaded pallet in inches (load and pallet)	Weight of loaded pallet in lbs. (load and pallet)										
	0-400	400-800	800-1200	1200-1600	1600-2000	2000-2400	2400-2800	2800-3200	3200-3600	3600-4000	4000-4400
58-60"			1	1	1	1	2	2	2	3	3
56-58"				1	1	1	2	2	2	3	3
54-56"				1	1	1	2	2	2	3	3
52-54"		1	1	1	1	2	2	2	3	3	3
50-52"		1	1	1	1	2	2	2	3	3	4
48-50"		1	1	1	1	2	2	2	3	3	4
46-48"		1	1	1	1	2	2	3	3	3	4
44-46"		1	1	1	2	2	3	3	3	4	4
42-44"		1	1	2	2	2	3	3	4	4	4
40-42"		1	1	2	2	3	3	3	4	4	4
38-40"		1	1	2	2	3	3	4	4	4	4
36-38"		1	1	2	2	3	4	4	4	4	4
34-36"	1	1	2	2	3	3	4	4	4	4	
32-34"	1	1	2	3	3	4	4	4	4		
30-32"	1	1	2	3	3	4	4	4	4		

**Step 1**

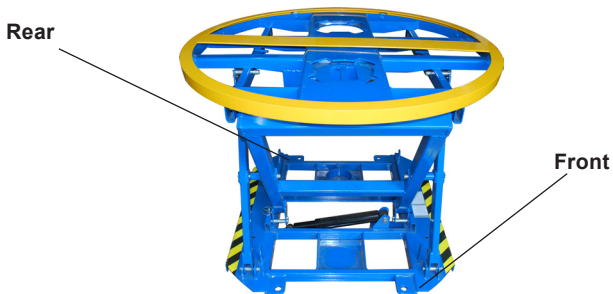
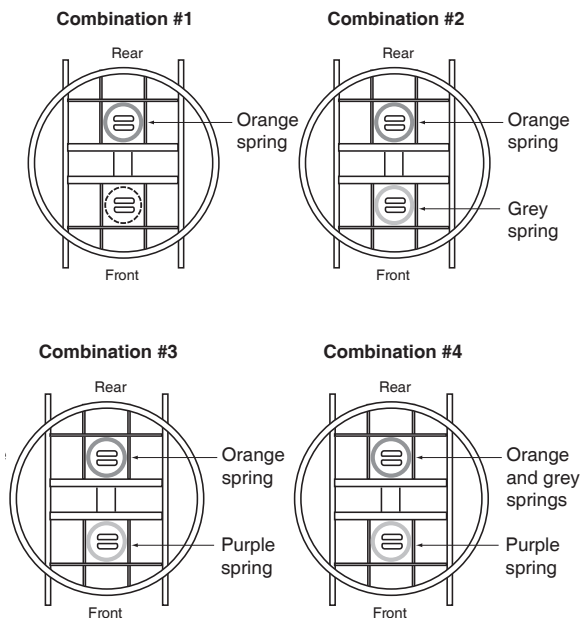
- Using Table 1, find the correct spring combination.
- "Spring actuated level loader height" includes the height of the pallet plus a full load, in inches.
- "Weight" includes the weight of the load and the pallet, in pounds.

**Step 2**

- In Table 2 find the springs included in the combination.

**Table 2 – Spring combination**

Range	Springs included
1	1 orange
2	1 orange and 1 gray
3	1 orange and 1 purple
4	1 orange, 1 gray and 1 purple

**Fig. 2****Fig. 3**

## INSTALLING THE SPRINGS

1. The frame of the unit can handle loads of up to 4400 lbs. In order to adapt the unit for different pallet loads, the springs are changed. The springs are chosen to match the weight and height of a fully loaded pallet. A unit may have one to three springs. Each time the pallet weight or pallet height is changed, the springs may also need to be changed. Table 1 and Table 2 on page 3 and page 4 show how the springs are selected. Each spring is color-coded with paint mark at one end. Spring actuated level loader unit will always have at least one spring. This spring has an orange mark, and is larger in diameter than the others. This large spring is always placed near the rear of the unit. Figure 2 shows the position of the first spring, and any additional springs which may be needed.
2. Double-check to be sure you have the correct springs. Calculate the weight of a fully-loaded pallet, including the pallet itself. Measure the height of a fullyloaded pallet. Refer to Table 1 and Table 2, and see that you have the correct springs for your application.
3. The unit is shipped without springs installed. The installation of the first spring requires two people.
4. Cut the cable ties and you can lift the rotating ring away from the top frame.
5. The shock absorber is attached to the frame of the unit with a lock pin, and this is held in place by a linch pin. During maintenance, the lock pin is used to insert maintenance hole to hold the table frame in the raised position, Fig 1. Take a look at the mechanism and note the positions of the parts.
6. With the help of an assistant, lift the top part of the frame as far as it will go. Insert the maintenance pin into the lower roller guide.

### **⚠ WARNING**

*The maintenace pin is designed to hold the frame of the unit in a raised position while you insert the first spring. If you do not use the pin, it may be unsafe to insert the spring. The frame of the unit may drop suddenly and you may be hurt.*

## UNPACKING STATE

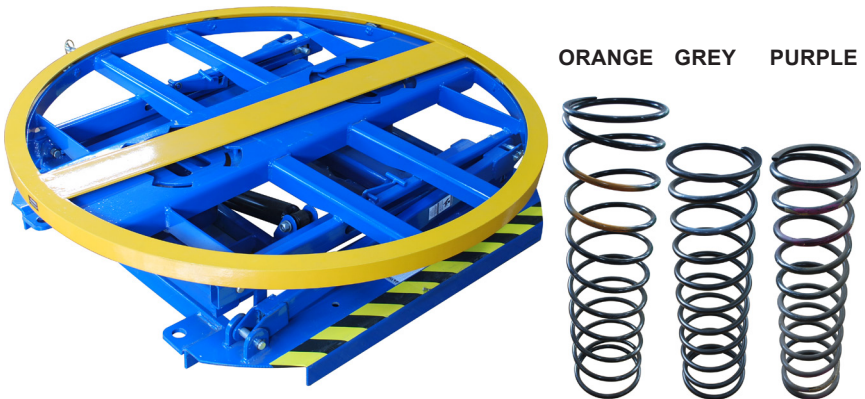


Fig. 4

**COMBINATION #1:****INSTALLING THE FIRST (ORANGE) SPRING****Step 1****Step 1**

**Step 1:** Pull off the lock pin for use.

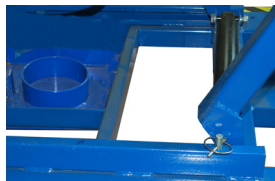
**Step 2****Step 2****Step 2-2****Step 2-3**

**Step 2:** Take out the spring cover.

**Step 3****Step 3****Step 3-2****Step 3:**

3-1. Two people raise the platform.

3-2. Insert the lock pin into the first maintenance hole to hold the platform.

**Step 4****Step 4-1****Step 4-2****Step 4:**

4-1. Two people raise the each side lock lever, and then continue to raise the platform, till the scissor roller pass the second maintenance hole.

4-2. Pull out the lock pin from the first maintenanc hole and insert into the second maintenance hole to hold the platform.

Step 5



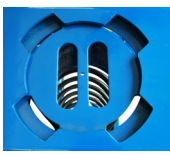
Step 5-1



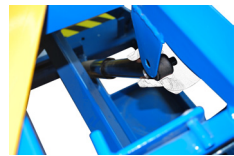
Step 5-2



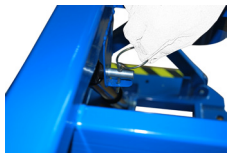
Step 5-3



Step 5-4



Step 5-5



Step 5-6

Step 5:

- 5-1. Put the orange spring to the fixed tube in the rear base just as the picture 5-1.
- 5-2. Compress the spring to slide into the position through the steel slope.
- 5-3. Continue to push the spring to the vertical position.
- 5-4. Put the spring cover to lock the spring.
- 5-5. Take out the lock pin from the second maintenance hole. Draw the shock absorber to assemble it.
- 5-6. Inset the lock ping to fix the shock absorber and lock it.

**COMBINATION #2: (BASED ON THE COMBINATION #1)**

**INSTALLING THE GREY SPRING (CONTINUE)**

Step 1



Step 1-1



Step 1-2



Step 1-3

Step 1: Take out the spring cover.

Step 2



Step 2

Step 2: Put the grey spring through the (empty) spring hole.



**Step 3**

Step 3-1



Step 3-2

**Step 3:** Put the spring cover to lock the spring.

**COMBINATION #3: (BASED ON THE COMBINATION #1)****INSTALLING THE PURPLE SPRING (CONTINUE)****Step 1**

Step 1-1

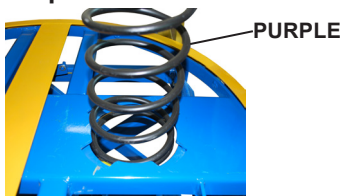


Step 1-2



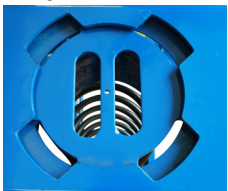
Step 1-3

**Step 1:** Take out the spring cover.

**Step 2**

Step 2

**Step 2:** Put the purple spring through the (empty) spring hole.

**Step 3**

Step 3-1



Step 3-2

**Step 3:** Put the spring cover to lock the spring.

**COMBINATION #4: (BASED ON THE COMBINATION #1 & #3)**

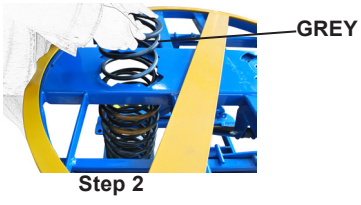
**INSTALLING THE GREY SPRING (CONTINUE)**

**Step 1**



**Step 1:** Take out the spring cover.

**Step 2**



**Step 2:** Insert the grey spring into the inner of the orange spring.

**Step 3**

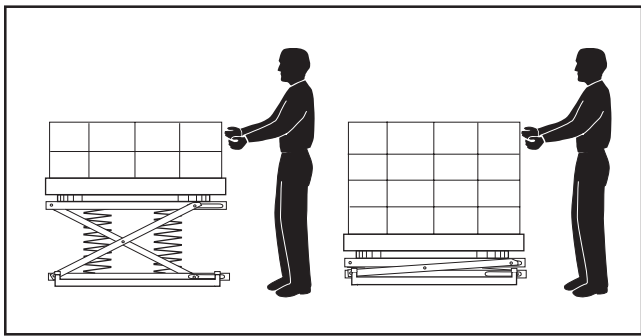
**Step 3:** Put the spring cover to lock the spring.



**OPERATING INSTRUCTIONS**

**Loading Manually**

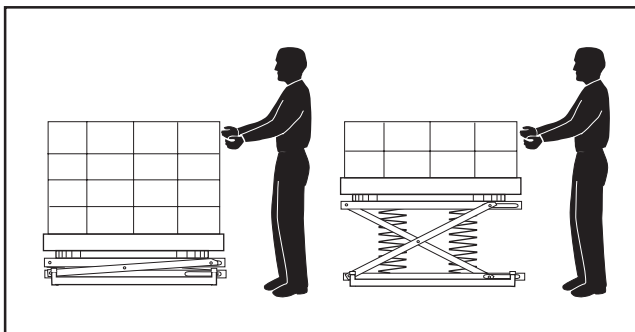
Add boxes or parts until the pallet is full. The unit will gradually lower the pallet until it reaches the bottom. See Fig. 5



**Fig. 5**

## **Removing Loads Manually**

Remove boxes or parts until the pallet is empty. The unit will gradually raise the pallet. See Fig. 6.



**Fig. 6**

## **Operating Safety - Manual Use**

1. Do not use this unit with a load greater than the rated load. This includes the weight of the payload and the weight of the pallet. If you overload the unit, it may be damaged. Table 1 on page 6 shows how to be sure you have the correct springs for your application.
2. Never push the load off of the side of the unit. If you do this, the frame of the unit may jump upward.
3. Never use the unit when anyone is sitting or riding on the turntable.
4. Do not try to use this unit with damaged or broken pallets. Broken pallets may have boards or nails which hang down below the main part of the pallet. As the pallet is turned, these boards or nails may catch on the frame. The pallet may stop turning suddenly and this can cause the load to shift. You may be injured and the unit may be damaged. If the boards or nails on the bottom of the pallet extend down more than 1/8 inch, they will interfere with the turning action.
5. Stay clear of the turntable when it is moving. As the pallet turns, a part of the load may rotate around and hit you.
6. Keep the area around the unit clean. Do not allow any dirt, debris, spilled oil, or excess grease to collect. These materials may cause you to slip while the unit is operating and you may be injured.

### **Loading with a Fork Lift**

1. Place the load on the lift, then lower the fork lift. Before removing the load, be sure the unit is carrying the weight, not the fork lift. See Fig. 7. Lower the load until the springs on the PalletPal are fully compressed. Be sure the forks on the lift are clear of the inside of the pallet.
2. Be sure the load is centered on the unit.

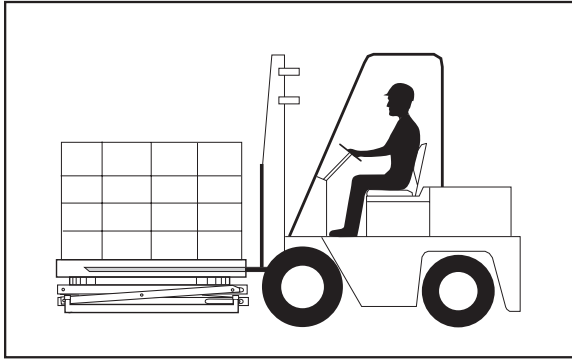


Fig. 7

**⚠ WARNING** *If you skip these steps, the load may drop suddenly when you remove the fork lift. You may be hurt or the unit or load may be damaged.*

**⚠ WARNING** *Never drop the load on the turntable. If you do this while the turntable is moving, the load may shift. You may be injured or the unit may be damaged. If you drop the load while the turntable is stopped, the unit may be damaged.*

**⚠ WARNING** *If the load is off-center, it may shift when the turntable is turned. You may be hurt or the unit or load may be damaged.*

### **Unloading with a Fork Lift**

Insert the forks into the pallet, and lift the pallet clear of the top of the unit. See Fig. 8. Raise the pallet until the springs on the PalletPal are fully extended. Be sure the pallet clears the top of the turntable before you move the fork lift.

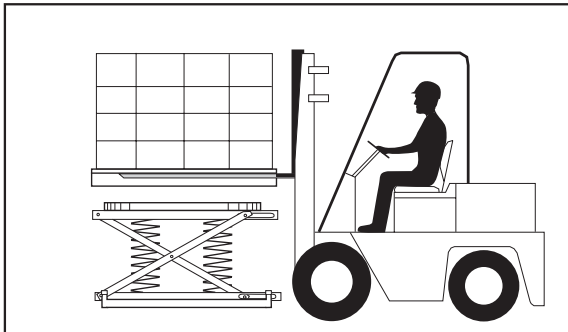


Fig. 8

**WARNING**

*If you skip these steps, the unit may jump up suddenly when you remove the pallet. You may be hurt or the unit or load may be damaged.*

**Moving the Spring Actuated Level Loader****CAUTION**

*Do not move the Pallet Pal while it is loaded. This will damage the base frame of the unit. The pockets on the base frame are designed to support an unloaded PalletPal, but cannot support any extra weight.*

1. Remove any load from the top of the Spring Actuated Level Loader.
2. Insert the forks into the pockets in the base frame. See Fig. 9.

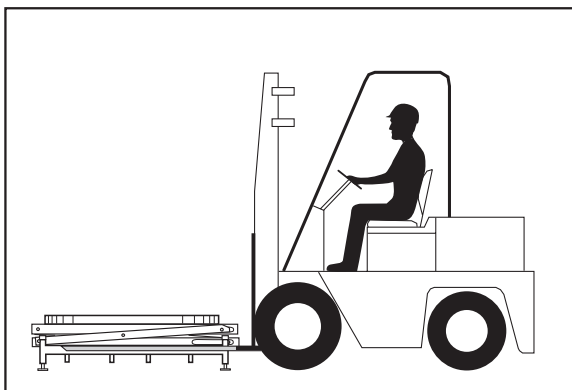


Fig. 9

**TROUBLE SHOOTING**

Trouble	Cause	Remedy
The unit lowers too easily (too early).	The springs may be too weak for the load.	Check the spring ratings. See table 1.
The unit lowers too hard (too late).	The springs may be too strong for the load.	Check the spring ratings. See table 1.
The top of the unit rotates away from you.	The frame of the unit may not be level.	Move the unit to a level surface or install the optional adjusting feet.
The top of the unit bounces.	The shock absorber may be damaged.	Check for leaks or dents. Replace if damaged.
Excessive "rumble" when unit operates.	Wear or lack of lubrication to bearings under turntable.	Remove turntable, replace bearings.
Wear on underside of turntable.	Normal condition caused by wear-hardening of metal.	No repair necessary.

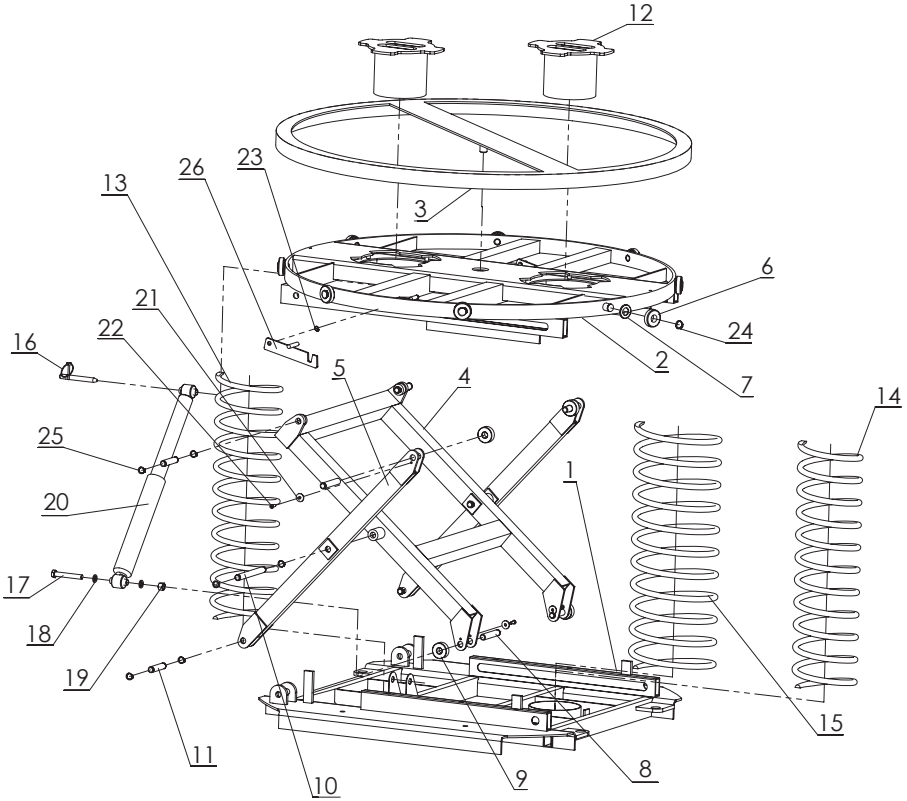
# MAINTENANCE

## Routine Periodic Maintenance


Every 30 days -

- Apply grease or heavy oil to the pivot shafts.
- Check for loose hardware and signs of excessive wear, especially #8 shaft and #9 roller which get worn out over time. Check the shock absorber for signs of leakage.
- Check to be sure that the unit is placed on a firm level surface. If the optional feet are installed, be sure that all four feet are touching the floor and are locked in position.

## REPAIR PARTS ILLUSTRATION



## REPAIR PARTS LIST

Ref. No.	Description	Part Number:	Qty.
1	Base Frame		1
2	Platform Frame		1
3	Turning Plate		1
4	Scissor Frame Inner		1
5	Scissor Frame Outer		2
6	Bearing		8
7	Washer 20		8
8	Shaft $\Phi$ 16x90		4
9	Roller		4
10	Shaft $\Phi$ 16x154		2
11	Shaft $\Phi$ 16x77		4
12	Cover		2
13	Spring $\Phi$ 13.5x670		1
14	Spring $\Phi$ 15x675		1
15	Spring $\Phi$ 15x900		1
16	Lock Pin		1
17	Bolt M12		1
18	Washer 12		2
19	Nut M12		1
20	The Shock Absorber		1
21	Washer 6		4
22	Hexagon-Screw M6x16		4
23	Clip 10		2
24	Clip 20		8
25	Clip 16		12
26	Lock Lever		2

GETTING STARTED

SAFETY /  
SPECIFICATIONS

ASSEMBLY /  
INSTALLATION

OPERATION

TROUBLESHOOTING

MAINTENANCE /  
REPAIR