

- INSTALLATION GUIDE
- TORSION SPRING 788
- TORSION SPRING 789
- COMPRESSION SPRING





# TABLE OF CONTENTS

<b>1.</b>	TORSION SPRING 788 & 789	
	<b>1.1.</b> How to adjust torque .....	04
<b>2.</b>	DRAWING OF 788 SPRING .....	08
	<b>2.1.</b> Components of torsion spring 788 assembly .....	09
<b>3.</b>	DRAWING OF 789 SPRING .....	10
	<b>3.1.</b> Components of torsion spring 789 assembly .....	11
<b>4.</b>	COMPRESSION SPRING .....	12
	<b>4.1.</b> Fine tuning adjustment (external) .....	13
	<b>4.2.</b> Primary adjustment (on the internal threaded shaft) .....	13
<b>5.</b>	COMPRESSION SPRING DRAWING .....	15
	<b>5.1.</b> Components of the compression spring subassembly .....	15
<b>6.</b>	CONCLUSION .....	15

# 1. Torsion Spring 788 & 789

The torsion spring assembly has two possible adjustments:

1. The torsion spring that will adjust the force required to lower and raise the arm.
2. The resting position of the main arm, i.e., the angle from the horizontal when not in use.

For safety reasons and ease of handling, we recommend that the adjustment of the loading arm be performed by two people.

## Tools required for torsion spring torsion

- Screwdriver.
- 15/16" Box-end (or open-end) wrench.
- Pipe wrench.
- ¼ " Allen wrench.



Image 3. Tools of the adjusting the torque of the torsion spring.

### 1.1. How to Adjust Torque

1. Remove the cover of the 788/789 assembly. This is done by removing the cover screws with a screwdriver.



Image 1. Unscrew the protective cover.



Image 2. Remove the protective cover.

2. Lower the arm and hold it in place while removing the 4 screws from the damper stop with a ¼" Allen wrench. NOTE: If the arm resting angle is in the desired position, mark the position of the damper stop before removing it.

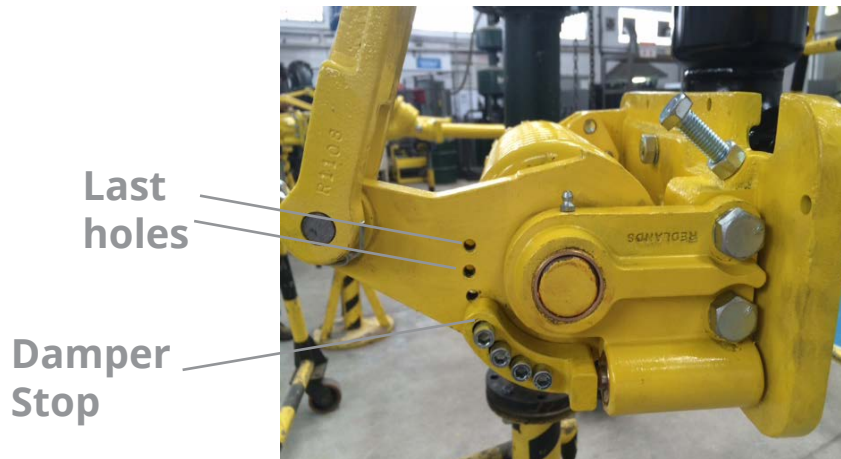


Image 3. Side view of the spring assembly with the damper stop.

3. Return the damper stop on the spring mount to last positions. It's necessary to return of the damper stop to prevent the arm from passing the vertical limit, making it impossible to adjust the spring torque.

4. Raise the arm vertically and keep it in this position. This will take pressure off the torsion spring, allowing it to be adjusted.

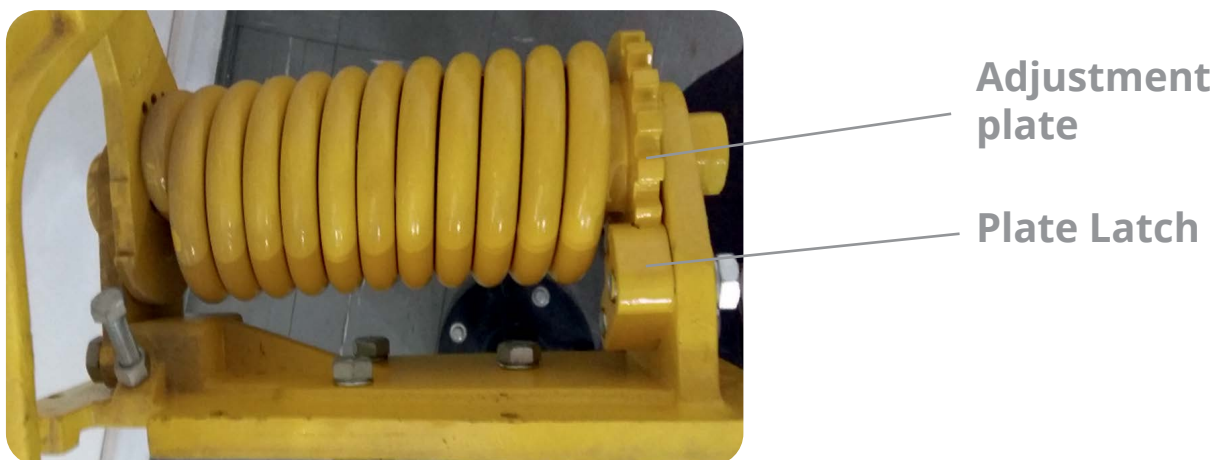


Image 4. Top view of the spring base.



- Arm descent motion limiting screw
- Upper hex head screw
- Lower hex head screw
- Adjustment plate hex screw

Image 5. Side view of the spring base.

5. Then, use a 15/16" open-end or box-end wrench, and loosen the lower and upper screws that secure the latch plate.



Image 6. Loosen the lower screw.



Image 7. Loosen the upper screw.

6. Use a pipe wrench to secure the adjustment plate hex screw. Only a slight effort will be necessary. Remove only the top screw of the plate latch, do not remove the lower screw. It is possible to move the plate latch without removing the lower screw.



Image 8. Fasten the hex screw of the plate with a pipe wrench.



Image 9. Lift the plate latch.

7. For greater torque on spring, turn the hex screw of the adjustment plate clockwise to the desired position. For less torque, turn the hex screw of the adjustment plate counter-clockwise to the desired position. (If the spring assembly is "left", the above procedure is reversed)

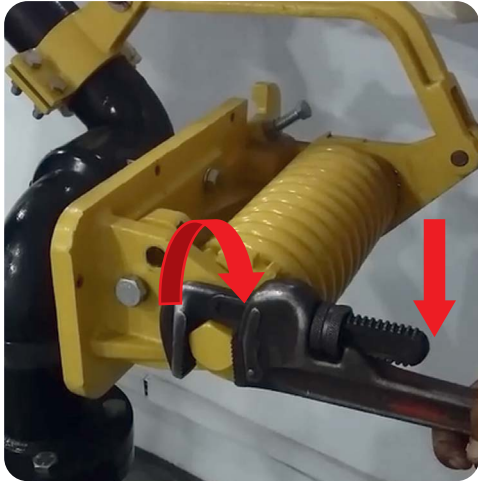


Image 10. For more torque, turn clockwise.

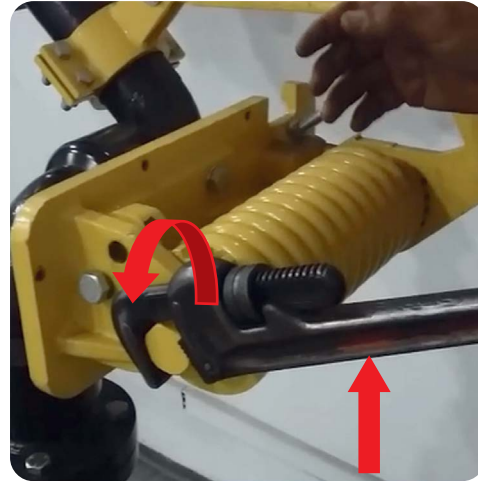


Image 11. For less torque, turn counterclockwise.

8. Holding the hexagonal crew of the adjustment plate, tighten the screws that fasten the plate latch, making sure that the washers are in place.



Image 12. Position the latch on the adjustment plate.



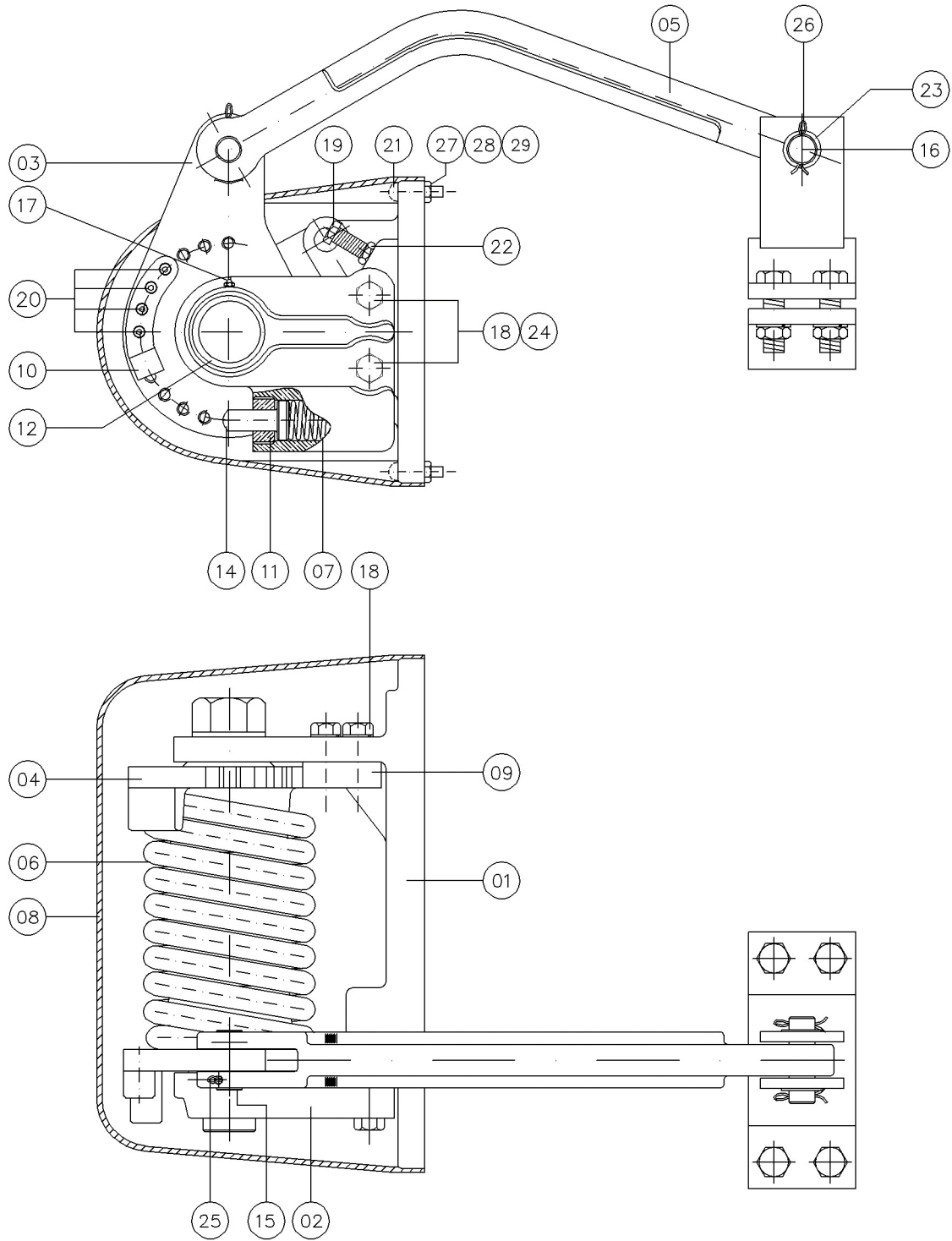
Image 13. Place the screws .

9. Remove the four (4) screws form the damper stop with a ¼" Allen wrench and return the damper stop to the marked or desired position.

10. Return the arm to the rest position and test it. Repeat the procedure if the need has not been met.

11. Re-install the spring assembly cover with the respective screws.

## 2. Drawing of the 788 Spring

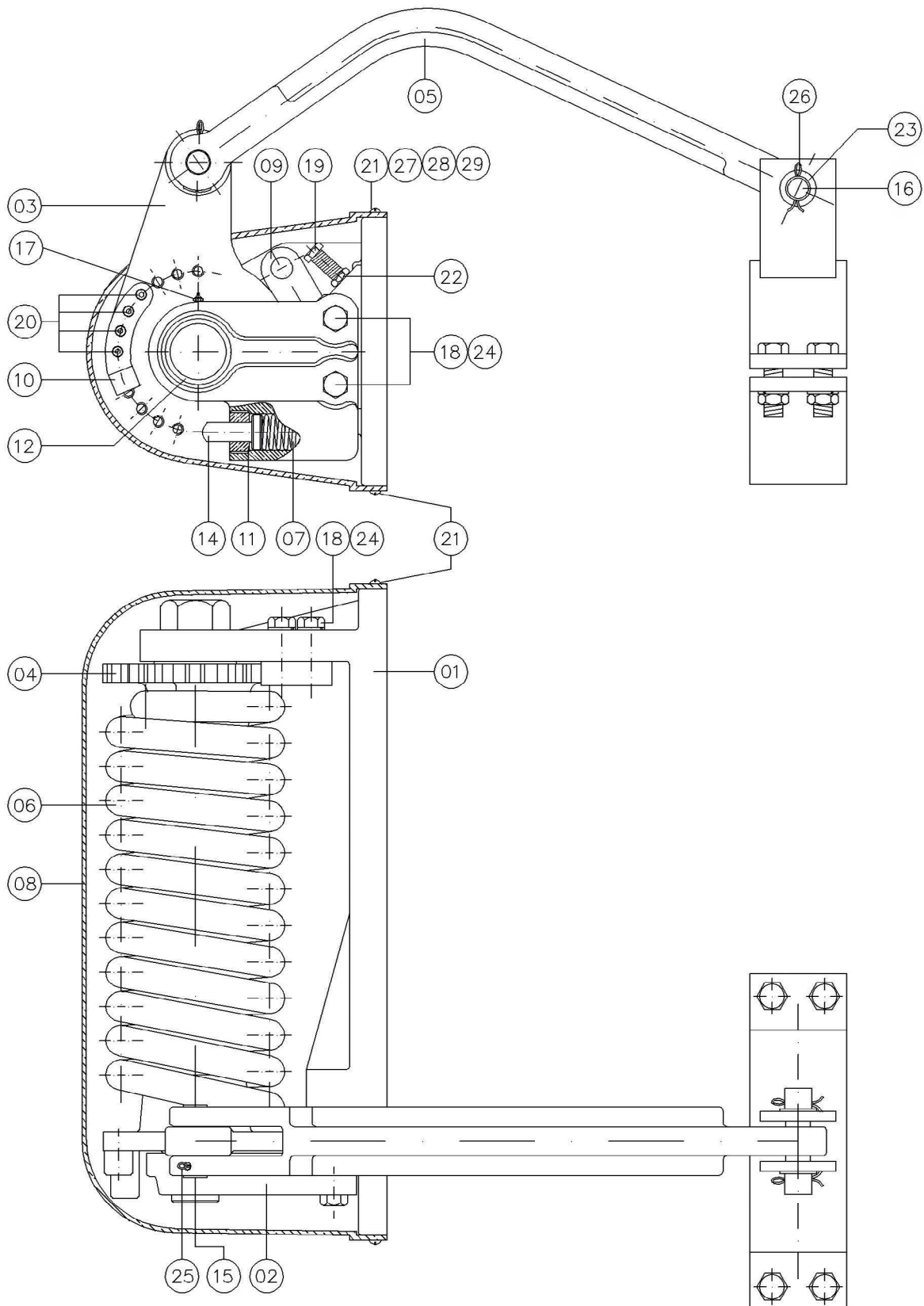




## 2.1. Components of torsion spring 788 assembly

ÍTEM	QTY.	CODE	DESCRIPTION
01	01	A0525-5301	SPRING ASSEMBLY BASE
02	01	A0510-5302	SIDE SUPPORT
03	01	A0510-5301	SPRING MOUNT
04	01	A0534-5301	SPRING ADJUSTMENT PLATE
05	01	A0507-5301	LEVER
06	01	A0501-0401	MAIN SPRING
07	01	A0501-0402	DAMPER SPRING
08	01	A0536-0101	SPRING ASSEMBLY COVER
09	01	A0535-5301	PLATE LOCK
10	01	A0526-5301	DAMPER STOP
11	01	A0514-0507	DAMPER PLUG
12	01	A0523-0203	SIDE SUPPORT BUSHING
14	01	A0509-4110	DAMPER PIN
15	01	A0509-0409	CONNECTING PIN (LEVER - SUPPORT)
16	01	A0509-0411	COUPLING PIN (LEVER - CLAMP)
17	01	A0031-0401	GREASE FITTING 1/4" UNF
18	04	A0003-0416	HEX-HEAD CAP SCREW 5/8" x 2" W
19	01	A0003-0409	HEX-HEAD CAP SCREW 1/2" x 2.1/2" W
20	04	A0203-0407	ALLEN SCREW W /HEAD 5/16" x 1" W
21	06	A0003-0427	SLOTTED SCREW 1/4" x 1.1/2" W
22	01	A0004-0405	HEX NUT 1/2" W
23	02	A0505-0451	FLAT WASHER 5/8" x 13/8" x 1/16"
24	04	A0005-0401	LOCK WASHER 5/8"
25	01	A0508-0403	COTTER PIN 3/16" x 2.1/4"
26	02	A0508-0402	COTTER PIN 1/8" x 1.1/4"
27	06	A5104-0415	HEX NUT 1/4"
28	06	A0005-0402	LOCK WASHER 1/4"
29	06	A0005-0468	FLAT WASHER 8 X 16 X 2.4

### 3. Drawing of the 789 Spring



### 3.1. Components of torsion spring 789 assembly

ÍTEM	QTY.	CODE	DESCRIPTION
01	01	A0525-5304	SPRING ASSEMBLY BASE
02	01	A0510-5304	SIDE SUPPORT
03	01	A0510-5303	SPRING MOUNT
04	01	A0534-5302	SPRING ADJUSTMENT PLATE
05	01	A0507-5304	LEVER
06	01	VIDE NOTA	MAIN SPRING
07	01	A0501-0402	DAMPER SPRING
08	01	A0536-1910	SPRING ASSEMBLY COVER
09	01	A0535-5301	PLATE LOCK
10	01	A0526-5301	DAMPER STOP
11	01	A0514-0507	DAMPER PLUG
12	01	A0523-0203	SIDE SUPPORT BUSHING
14	01	A0509-4110	DAMPER PIN
15	01	A0509-0414	CONNECTING PIN (LEVER - SUPPORT)
16	01	A0509-0408	COUPLING PIN (LEVER - CLAMP)
17	01	A0031-0401	GREASE FITTING 1/4" UNF
18	04	A0003-0416	HEX-HEAD CAP SCREW 5/8"x 2" W
19	01	A0003-0415	HEX-HEAD CAP SCREW 1/2" x 2.1/2" W
20	04	A0203-0407	ALLEN SCREW W/HEAD 5/16" x 1" W
21	06	A0003-0427	SLOTTED ROUND-HEAD SCREW 1/4" , W X 1.1/2
22	01	A0004-0405	HEX NUT 1/2" W
23	02	A0505-0451	FLAT WASHER 5/8" x 1.3/8" x 1/16"
24	04	A0005-0401	LOCK WASHER 5/8"
25	01	A0508-0403	COTTER PIN 3/16" x 2.1/4"
26	02	A0508-0402	COTTER PIN 1/8" x 1.1/4"
27	06	A5104-0415	HEX NUT 1/4" W
28	06	A0005-0402	LOCK WASHER 1/4"
29	06	A0Q05-0468	FLAT WASHER 8 X 16 X 2 4

## 4. Compression spring



### Tools required for compression spring adjustment:

- 1.1/4" - 31,75mm x 500mm lug wrench, a ratchet with 1 1/8" socket, or a 1 1/8" spark plug wrench or Redlands special tool item number FERR-COMP (see option below)
- 9/16" socket wrench
- 15/16" star type, combined or fixed wrench
- Rubber hammer



Spark Plug 1.1/4"



9/16" socket wrench

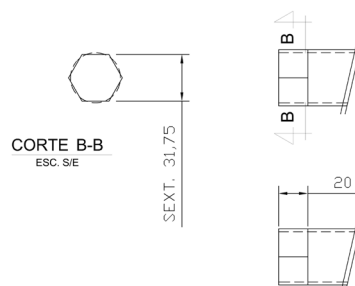


15/16" star type wrench



Rubber Hammer

### OPTION - Redlands compression spring adjustment tool, model FERR-COMP

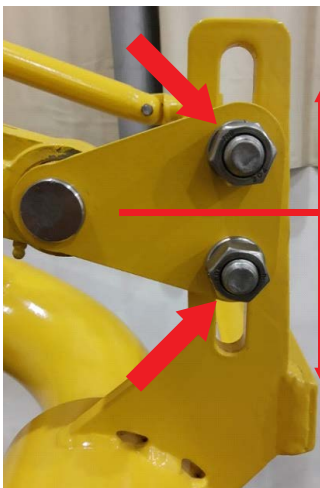


**Attention:** Before any fine or primary adjustment procedure, bottom loading arms must be installed and filled with product to check the height of the coupler and the equipment's maneuverability. This arm model is pre-adjusted at the factory considering the weight of the product. In this way, if the equipment is empty, any previous adjustment will not promote any gain in the efficiency of the arm.

## 4.1. Fine tuning adjustment (external)

Fine adjustment of the upward action of the compression spring. This adjustment must be carried out if necessary in the first operation or when the arm starts to work with a product of different density from the original product.

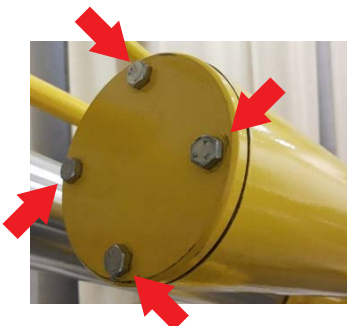
1) Lift the loading arm so as to relieve spring compression, preferably with the help of a hoist, or a second person.



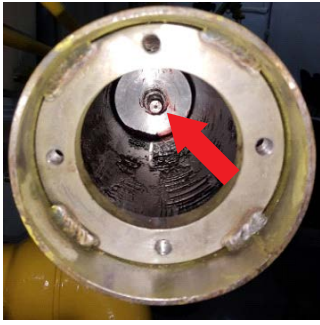
2) Using the 15/16" star / combined or fixed wrench, loosen the 2 nuts (item 14 in the drawing). Attention, do not remove the nuts, just loosen them. The nuts should only be removed if this service is being carried out with the arm resting on the maintenance bench.

3) To increase the upward action of the spring, move the terminal subassembly up using the rubber mallet or similar tool, to decrease the upward action, move the terminal subassembly down;

## 4.2 Primary adjustment (on the internal threaded shaft)

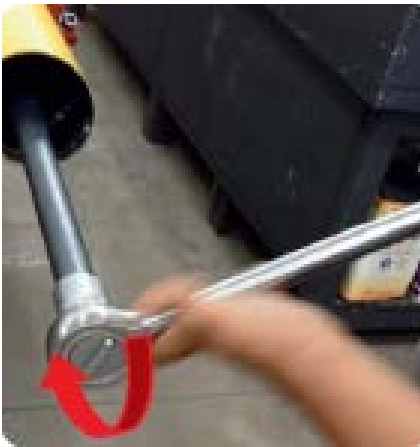


1) Remove the four screws from the top cylinder cover with a 9/16" socket wrench, and you can then remove it to access the threaded shaft, nut / locknut

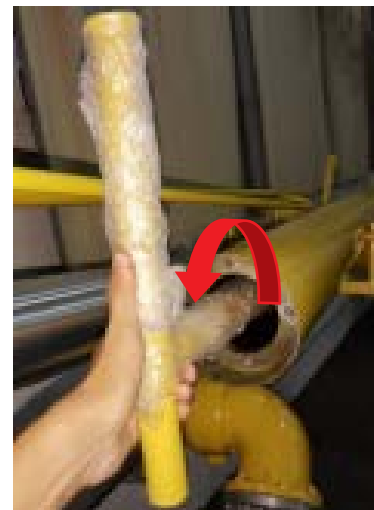


2) Using the special Redlands adjustment tool (FERR-COMP) or 1.1/4" X 500mm spark plug wrench, remove the lock nut completely from the threaded shaft.

3) Using the same FERR-COMP tool, to increase the upward action (make the arm lighter to raise, but more difficult to lower), turn the main adjustment nut clockwise.



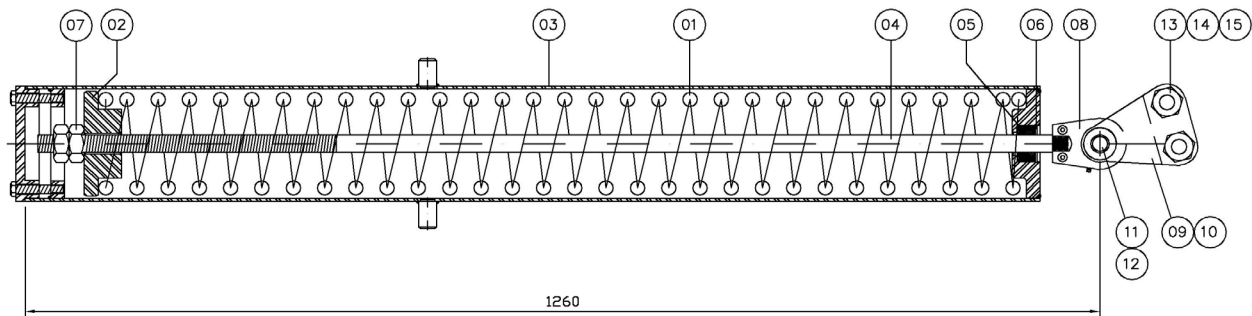
4) To decrease the upward action (make the arm heavier to rise, but easier to lower), turn the main adjustment nut counter-clockwise.



5) When the operation is complete and the arm is balanced, screw the lock nut again, locking the system in the ideal position.

6) Put the cylinder cover back on and tighten the four fixing screws on the cylinder.

## 5. Compression spring drawing



### 5.1 Components of the Compression Spring subassembly.

15	02	5/8" PRESSURE WASHER	A0005-0401	A. CARB. BICHROMATED
14	02	5/8" W HEX. NUT	A0004-0409	A. CARB. BICHROMATED
13	02	5/8" W X 3" HEX. SCREW	A0003-0410	A. CARB. BICHROMATED
12	02	RENO ELASTIC RING REF. (501.020)	A0065-0402	CARBON STEEL
11	01	ROTULAR TERMINAL PIN	A0509-0401	A. CARB. BICHROMATED
10	02	FORK SPACER	A0537-0401	CARBON STEEL
09	02	ROTULAR TERMINAL FORK	A0515-0404	CARBON STEEL
08	01	LABEL TERMINAL Ø25MM x M20	GIHNRK25-LO	-- XX --
07	02	HEX. NUT WITH TRAPEZOIDAL THREAD 20 x 4	A0004-0425	CARBON STEEL
06	01	ELASTIC RING	A5865-0412	CARBON STEEL
05	01	FORK BUSHING	A0523-2104	NYLON
04	01	COMPRESSION SPRING CYLINDER AXIS FOR ROTULAR TERMINAL	A0543-4111	STAINLESS STEEL
03	01	SPRING CYLINDER SUB-ASSEMBLY	S0580-0431	CARBON STEEL
02	01	SPRING GUIDE BUSHING	A0523-0401	CARBON STEEL
01	01	COMPRESSION SPRING øext. 115 x øwire 16 x length 1100	A0501-0431	CARBON STEEL
ITEM	QTY.	DESCRIPTION	CODE	MATERIAL

## 6. CONCLUSION

Redlands has been ISO 9001 certified since September 2002. This certification represents the service commitment we make to all our customers and employees, and establishes our leading position in this market segment.

Thank you for purchasing Redlands equipment.

For any clarifications or further information, please contact our engineering and technical assistance.



**REDLANDS**  
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