



- INSTALLATION AND MAINTENANCE OF TOP LOADING ARM



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1. INTRODUCTION

Redlands loading arms are versatile arms commonly used at facilities where vehicles are loaded from above.

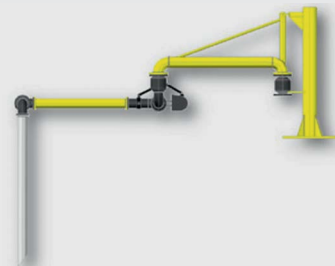
Composed of swivel joints (360° rotation) to provide better mobility and designed to cover a larger sweeping range of compartments, being an excellent choice for loading rail cars and/or tank trucks with several compartments.

2. SPECIFICATION OF REDLANDS LOADING ARMS

There are three (3) standard top loading arm designs supplied by REDLANDS: the B-series, C-series and E-series. Each model type can be specified with a compression spring or a torsion spring, and can be supplied in various diameters, depending on the desired flow rate.

B-Series.

Consists of: Torsion/compression spring set, extension arm (boom), main pipe and drop tube.



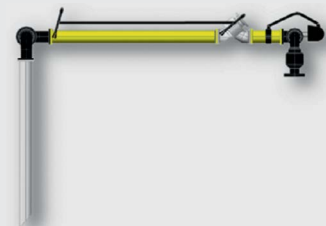
C-Series.

Consists of: Torsion/compression spring set, main pipe, intermediate pipe and drop tube.



E-Series.

Consists of: Torsion/compression spring set, main pipe and drop tube.



3. INSTALLING THE LOADING ARM

This manual encompasses the general instructions for installation and maintenance of REDLANDS loading arms and respective components.

Prior to installing the REDLANDS loading arm, make sure the pipes are clean and free of any fouling, in order to assure smooth operation and long life of the sealing seals and seats, as any debris or dirt can damage them permanently. Because the arm will always work full up to the flow shut-off valve, **it's vitally** important to install a pressure relief system, due to possible thermal expansion of the product.

3.1. Installation procedures

1. Remove the loading arm from the protective wood packaging with the aid of a hoist, forklift, or similar equipment.
2. Connect the ANSI flange of the swivel joint at the base to the corresponding waiting flange of the supply line with its respective sealing gasket, and secure them using cap screws, nuts and washers.
3. Move the arm, checking for balance of the assembly with the torsion spring or compression spring.

NOTE: The spring set is shipped from our factory already preset. If necessary, carry out the adjustment procedure described in items 14 and 17.

4. MAINTENANCE

CAUTION: Before carrying out any maintenance on the arm, make sure it is not pressurized and has no product within it.

5. SWIVEL JOINT MAINTENANCE

5.1. Tools required

- One ¼" Allen wrench.
- One ¾" open-end or box-end wrench.
- One 5/16" open-end or box-end wrench.
- Grease and brush.
- One Vise (if available at the site).



Image 1. Tools for assembly and maintenance.

5.2. Disassembly of the Swivel Joint

1. Attach the swivel joint female body to a bench vise with the nuts of the ball channels facing downward. If a vise is not available, hold it firmly so that it does not move.

2. With a ¾" open-end or box-end wrench, unscrew the top nut with light pressure only enough to loosen the assembly. Unscrew the retaining screws of the ball bearings with a ¼" Allen wrench until the screw and nut come loose from the female body.

3. Slowly rotate the male insert to the left and right, as the ball bearings come out of the set through the hole to empty each raceway. Attention: remove all of the ball bearings carefully. To avoid the risk of losing them, place them in a separate container for easy location when it's time for re-assembly.

4. Remove the male insert from inside the female body and keep the dust guard attached to the channel, so that it is completely removed from within the chamber.

5. Remove the o-ring located on the inner housing of the female body. Separate all the components necessary for re-assembly of the swivel joint.

5.3. Assembly and maintenance of the Swivel Joint

1. Clean the male insert and all the inner housing of the female body, removing the used grease. Flip the female body over with the ball bearing holes facing upward and re-secure it to a vise or tightly hold the swivel joint so it does not move.



Image 1. Clean the inside of the female body housing.



Image 2. Secure the female body to a vise.

2. With a brush, apply new grease around the inner housing of the female body.



Image 3. Apply the grease with a brush.



Image 4. Line the entire housing with grease.

3. Before inserting the o-ring into the female body, stretch it so that fits perfectly onto its seat. The O-ring is very important to seal the swivel joint, because if there are any gaps or it is not seated properly, there may be a risk of leakage.



Image 5. Place the ring into the female body.



Image 6. The o-ring should be adjusted in the female body.

4. If the same ball bearings must be re-used, clean them carefully. We suggest replacing them with new ones. Clean the dust guard, and place it around the appropriate channel of the male insert . See photo below.



Image 7. Clean the dust guard and male insert .



Image 8. Place the dust guard firmly around the male insert.

5. Insert the male insert into the female body and keep the dust guard tightened in the male insert channel so that it completely enters the chamber. Use light pressure with your hands to force the male insert into the female body. Turn the male insert twice clockwise to assure that it is properly inserted into the female body.

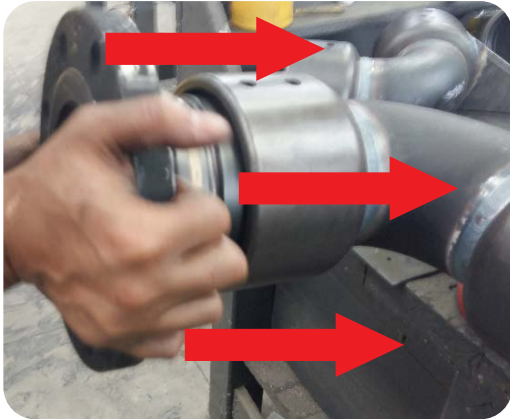


Image 9. Push the male insert forward.



Image 10. Turn the male insert clockwise.

6. Before placing the ball bearings into the channel, count them all before inserting them one by one, because none of them can be missing so as not to cause any risk of the swivel joint straddling or locking up. Each channel must contain the right number of ball bearings (**see number of ball bearings per joint type, in item 3. SPARE PARTS**).

The ball bearing channels of the male insert must be aligned to the female body for easier insertion. Slowly turn the male insert the clockwise and counterclockwise, as the ball bearings are being inserted through the hole.



Image 11. Insert the ball bearings into the channel.



Image 12. Turn clockwise and counterclockwise.

7. Place the two screws and the ball bearing retainer with a ¼" Allen wrench holes into the ball bearing holes and screw in clockwise until the screw reach their fitting. Then relieve the screws by loosening them a half-turn and lightly thread the hex nuts with an open-end or box-end wrench to lock the screw in place.

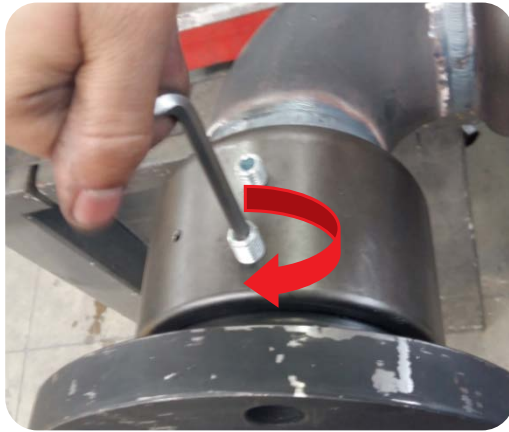


Image 13. Rotate the ball bearing retaining screws clockwise.



Image 14. Turn the nuts onto the bolts to lock them in place.

Note: Don't forget to turn the screws back a half-turn to relieve them before placing the nuts. Otherwise the ball bearing will get stuck and the swivel joint will lock up.

8. Place the grease fitting with a 5/16" open-end or box-end wrench; this is important for lubricating the swivel joint.



Image 15. Place the grease fitting in the hole.



Foto16. Straight grease fitting.

NOTE: For swivel joint models 3640-FE-40 and 3640-FE-30, the ball bearing retaining screws are secured with 1/4" Allen screws that replace the nuts. (Use 1/8" Allen wrench) Additionally, the grease fitting is installed in one of the retaining screws.

6. Spare parts:

DESCRIPTION	1 2/1"	2"	3"	4"	6"	8"
Viton O-Ring	A0018-0715	A0018-0714	A0018-0713	A0018-0717	A0018-0729	A0018-0737
Buna O-Ring – N	A0018-0615	A0018-0614	A0018-0613	A0018-0617	A0018-0629	A0018-0637
Teflon O-Ring	A0018-0815TE	A0018-0820TE	A0018-0830TE	A0018-2317	-	-
Dust Guard	A0019-1003	A0019-1003	A0319-1003	A0319-1003	A0018-0730	A0018-0729

DESCRIPTION	1 2/1"		2"		3"		4"		6"		8"	
	CODE	Qty ball bearings	CODE	Qty ball bearings	CODE	Qty ball bearings	CODE	Qty ball bearings	CODE	Qty ball bearings	CODE	Qty ball bearings
Stainless steel ball bearing	A6020-4101	56	A0020-4101	48	A0020-4101	66	A0020-4101	84	A0020-4105	76	A5120-4103	116
Chrome steel ball bearing	A6020-4001	56	A0020-4001	48	A0020-4001	66	A0020-4001	84	A0020-4006	76	A0020-4003	116

Note: Number of ball bearings per rotation plane, i.e., two raceways.

7. Flow Shut-off 417 “DEAD MAN” Valve

7.1. INTRODUCTION

Used primarily in industrial applications, this valve features two-part construction (body and cap), with a robust appearance and fully reliable under severe working conditions.

8. INSTALLING THE 417 FLOW SHUT-OFF VALVE

When the valve is installed, operate the lever by moving it several times in rapid succession to vent the air trapped in the cylinder. This way, the valve is ready for use.



Image 1. Operate the valve using the lever to vent the air trapped in the cylinder.



Image 2. When the lever is pulled back, the piston opens the passage for the flow.

9. MAINTENANCE OF 417 VALVE

9.1. Tools required.

- 11/16" open-end wrench.
- 3/8" open-end wrench.
- 5/16" Allen wrench.
- Screwdriver.
- Adjustable (crescent) wrench.



Image 1. Tools used for maintenance and adjustment of the 417 valve.

9.2. Maintenance 417 Valve

1. In some cases, the seal of the valve piston gets worn down, causing leakage. To change the valve seal, remove the screws with a 11/16" open-end wrench and remove the cover carefully because it is under pressure from the spring.



Image 3. Remove all the screws of the valve cover.



Image 4. Open the lid carefully.

2. Remove the spring from the valve seat, pulling it out.

3. The valve piston subassembly can be removed by pushing the drive lever forward. (Note: Care should be taken when re-assembling the disc guide, maintaining it perfectly centered.)



Image 5. Move the lever forward and release the piston assembly.



Image 6. Remove the piston subassembly from the valve carefully.

Spring
Piston o-ring
Piston
Piston seal
Piston guide



Image 7. Drive piston.

4. Then remove the three screws from the base of the guide with the 1/4" Allen wrench.



Image 8. Turn the Allen wrench counter-clockwise.

5. Using an 11/16" open-end wrench, unscrew the copper seat counterclockwise, releasing the fork.



Image 9. Pull the guide, separating it from the piston.

6. This way, the piston subassembly will be free to change the seal.



Image 10. Remove the seal to replace it.

7. Follow the instructions in the opposite order to reassemble the piston subassembly.
(Note: When reassembling the valve, it is recommended to place a new piston o-ring.)

Piston O-ring

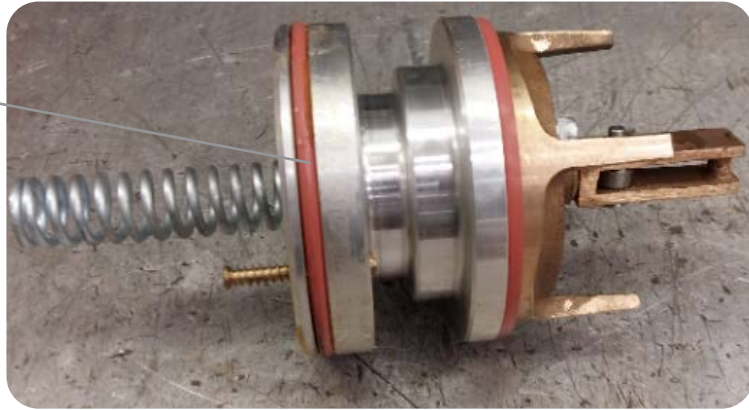


Image 11. Change the o-ring after reassembly.

10. INSTRUCTIONS FOR ADJUSTING THE 417 FLOW SHUT-OFF VALVE

CAUTION: Remove the pressure from the line before starting the adjustment of the closing speed.

10.1. 4-inch Model 417 Valve

1. Remove the valve cover.
2. Using a screwdriver:

A) For a slower flow shut-off, turn the screw clockwise, as shown in the photo below.



Image 12. Clockwise for a slower shut-off.

B) For a faster flow shut-off, turn the needle counter-clockwise.



Image 13. Turn counter-clockwise for a faster shut-off.

10.2. 3-inch Model 417 Valve

1. Remove only the plug using a 1" wrench.
2. Loosen the locknut of the needle.
3. Adjust the closing speed.
4. Re-tighten the locknut.
5. Install the plug again.



Image 14. 3-inch 417 Valve.



Image 15. Plug.

A) For slower flow shut-off, turn the screw clockwise, as shown in the photo below.

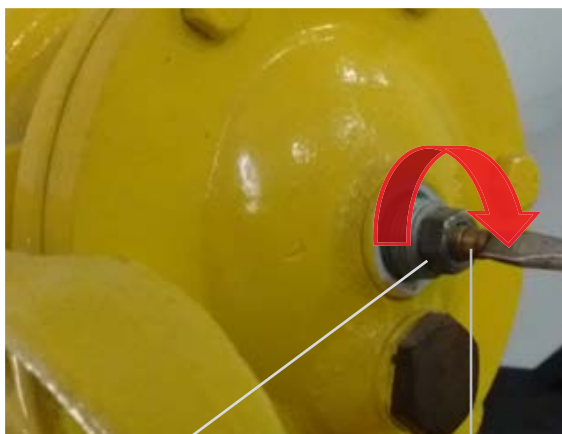


Image 16. Clockwise for a slower shut-off.

B) For a faster flow shut-off, turn the needle counter-clockwise.



Image 17. Turn counter-clockwise for a faster shut-off.

NOTE: The model 417 flow shut-off valves are shipped from our factory with needle unscrewed 1 1/2 turns, approximately in the middle position.

11. Instructions for assembling the remote control (1000-R-3 & 4)

Attach one end of the bar on the valve actuating lever and the other end of the bar on the remote control lever, with 5/16" screw and nut.

Remote control lever



Image 18. Fixed bar on the valve lever up to the remote control lever.

12. VACUUM BREAKER VALVE - 476 SA

The vacuum breaker valve assures a complete and rapid emptying of the product from the pipe, since it is designed to open at ½-ounce vacuum.

If any leaks occur through the vacuum breaker valve fixation screw, unscrew it from the 417 valve with an adjustable wrench, replace the thread sealing tape or use liquid PTFE and reove again screw it back into the valve.

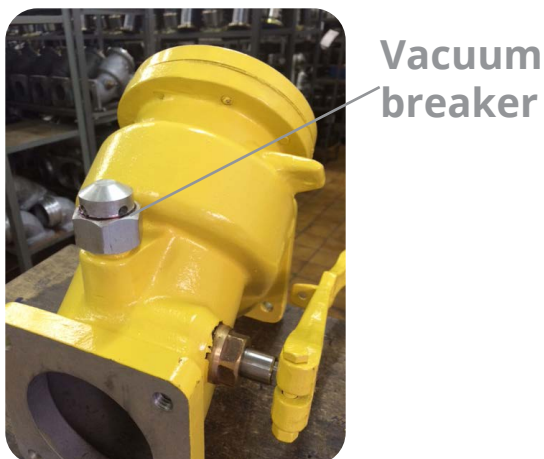


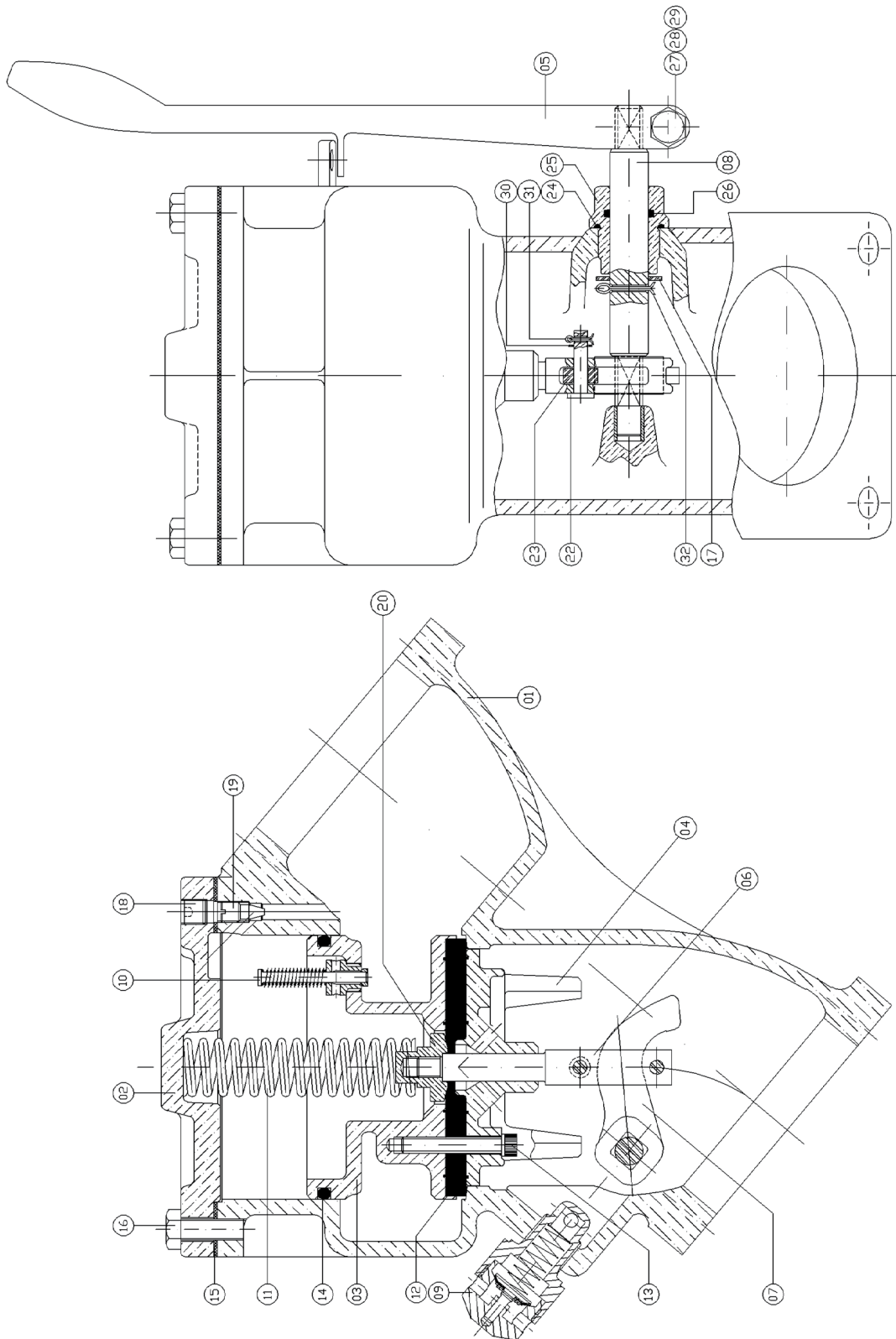
Image 19. Vacuum breaker valve installed.



Image 20. vacuum breaker.

13. COMPONENTS OF THE 417 FLOW SHUT-OFF VALVE

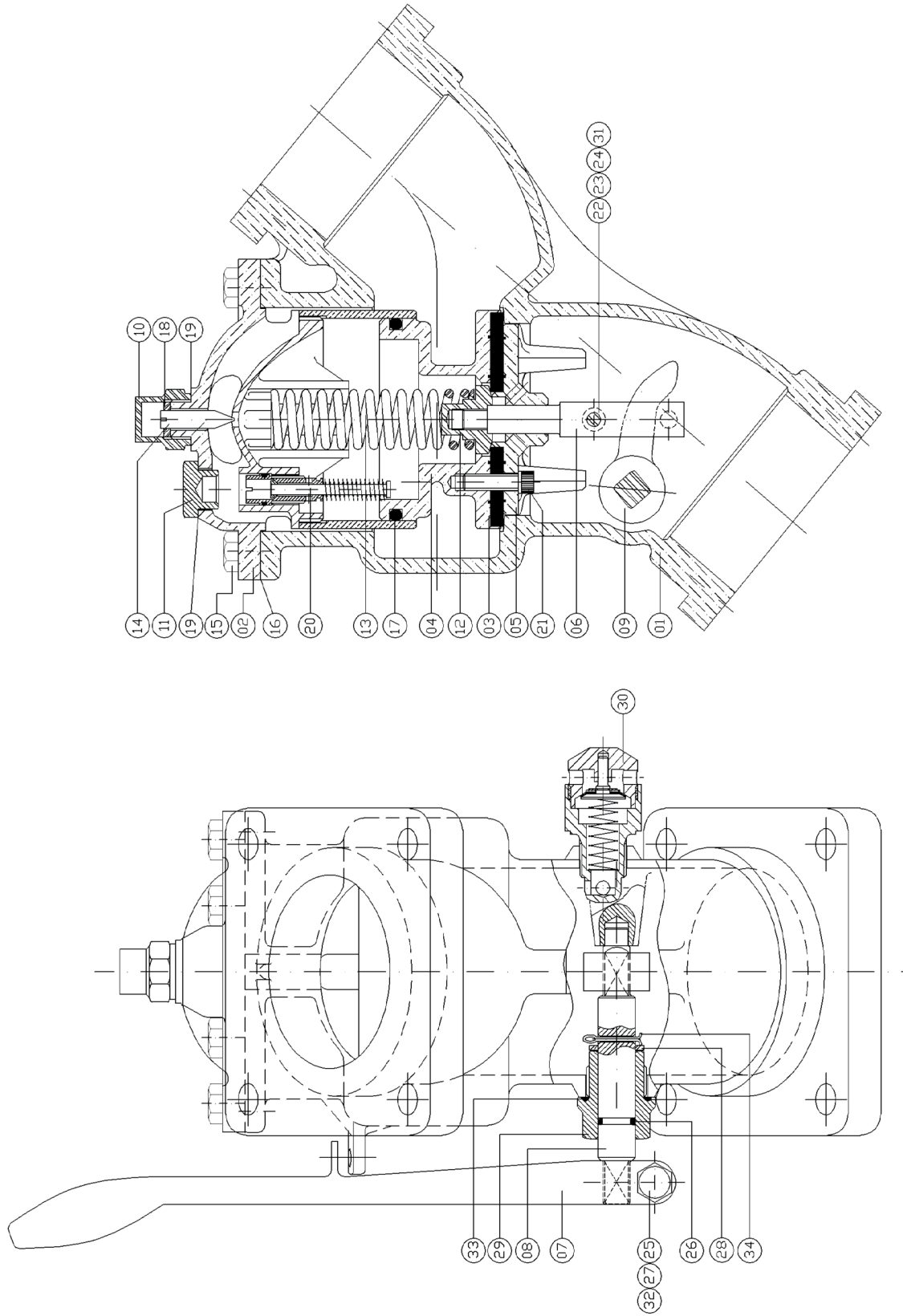
13.1. 4-inche 417 Valve



Components of the 417 flow shut-off valve (4")

ITEM	QTY	CODE	DESCRIPTION
1	1	A0222-0145	417 VALVE BODY
2	1	A0236-0155	417 VALVE COVER
3	1	A0242-0110	VALVE PISTON
4	1	A0216-0227	PISTON GUIDE
5	1	A0007-5302	LEVER
6	1	A0215-0202	LEVER FORK
7	1	A0206-5303	STROKE ARM
8	1	A0243-4150	LEVER SHAFT
9	1	476-SA	VACUUM BREAKER SET
10	1	S0051-0501	RELIEF VALVE SET
11	1	A0201-0405	PISTON SPRING
12	1	A0233-0718	VALVE SEAL
13	3	A0203-0469	ALLEN SCREW WITH 5/6" HEAD x 1.1/2"
14	1	A0018-0717	PISTON RING
15	1	A0217-1229	COVER GASKET
16	8	A0003-0465	HEX HEAD SCREW 3/8" W x 1.1/4"
17	1	A0205-4153	THRUST WASHER
18	1	A0014-0309	PLUG 1/4" NPT
19	1	A0238-0503	ADJUSTMENT NEEDLE
20	1	A0227-0201	VALVE SEAT
21	1	A0223-0204	GUIDE SLEEVE
22	1	A0209-4112	FIXED PIN OF THE ROLLER
23	1	A0240-4101	PIN ROLLER
24	1	A0018-0703	O'RING
25	1	A0223-0202	LEVER SLEEVE
26	1	A0218-0770	SHAFT O-RING
27	1	A0003-0408	HEX HEAD SCREW 5/16" W x 2"
28	1	A0005-0406	LOCK WASHER 5/16"
29	1	A0004-0404	NUT 5/16" W
30	1	A0205-4152	FLAT WASHER
31	1	A0008-4127	PIN COTTER PIN
32	1	A0208-4105	SHAFT COTTER PIN

13.2. 3-inch 417 Valve



Components of the 417 flow shut-off valve (3")

ITEM	QTY	CODE	DESCRIPTION
1	1	A0222-0102	VALVE BODY 417-L-3"
2	1	A0236-0102	VALVE COVER 417-3"
3	1	A0233-0701	VITON SEAL
4	1	A0242-0101	VALVE PISTON-3"
5	1	A0216-0201	VALVE GUIDE 417-3"
6	1	A0215-0201	VALVE FORK
7	1	A0007-5302	REMOTE CONTROL LEVER
8	1	A0243-4101	410 STAINLESS STEEL LEVER SHAFT
9	1	A0206-5302	CURSOR ARM 417-3"
10	1	A0213-0501	PLUG WITH INSIDE THREAD
11	1	A0213-0502	CAP WITH OUTSIDE THREAD
12	1	A0227-0201	VALVE SEAT
13	1	A0201-0403	PISTON SPRING 417-3"
14	1	A0238-0501	VALVE NEEDLE
15	6	A0003-0406	HEX HEAD SCREW 3/8" W x 1
16	1	A0217-1249	VALVE COVER GASKET 417-3"
17	1	A0018-0708	PISTON O-RING
18	1	A0004-0403	HEX NUT 5/16" UNF
19	2	A0217-0801	VALVE PLUG GASKETS 417-3"
20	1	20401	RELIEF VALVE SET
21	3	A0203-0407	ALLEN SCREW WITH 5/6 " HEAD x 1"
22	1	A0240-4101	PIN ROLLER
23	1	A0209-4112	FIXED PIN OF THE ROLLER
24	1	A0205-4152	FLAT WASHER
25	1	A0003-0408	HEX HEAD SCREW 5/16" W x 2"
26	1	A0018-0701	SEALING ASSEMBLY RING
27	1	A0005-0406	LOCK WASHER 5/16"
28	1	A0205-4153	THRUST WASHER
29	1	A0223-0201	LEVER SLEEVE
30	1	476-SA	VACUUM BREAKER
31	1	A0008-4127	COTTER PIN 3/32" x 1/2"
32	1	A0004-0404	HEX NUT 5/16" W
33	1	A0018-0703	RING WITH LEVER SLEEVE
34	1	A0208-4105	417 COTTER PIN
35	1	A0246-0501	VALVE SKIRT

14. 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.

14.1. Tools required for torsion spring

- 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.

14.2. 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.

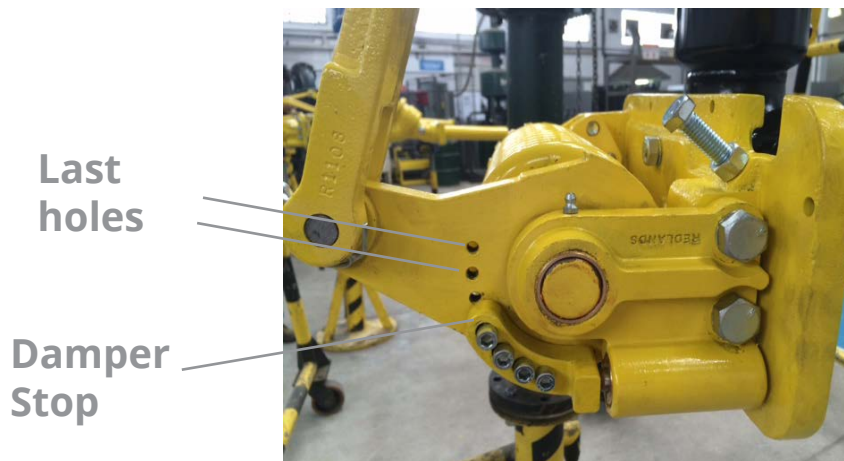


Image 3. Side view of the spring assembly with the damper stop.

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.

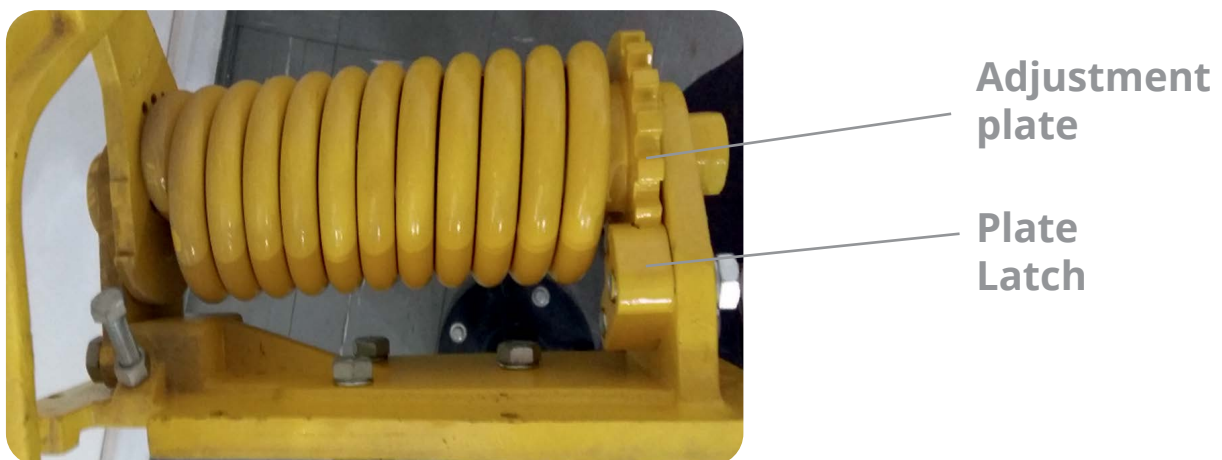


Image 4. Top view of the spring base.



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)

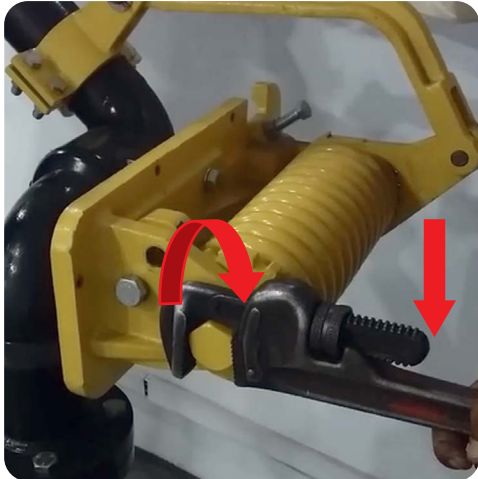


Image 10. For more torque, turn clockwise.



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.



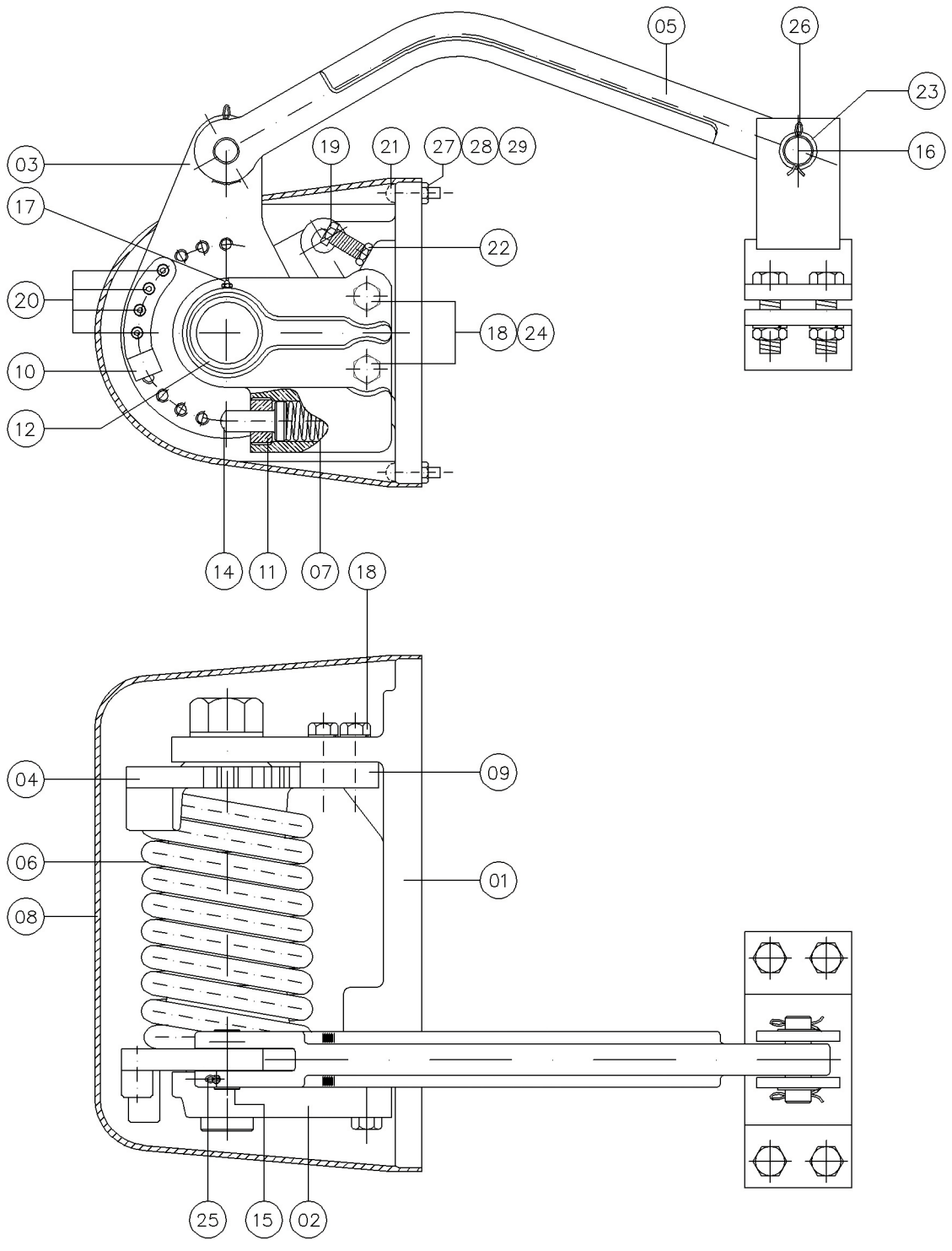
Image 13. Place the screws .

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.

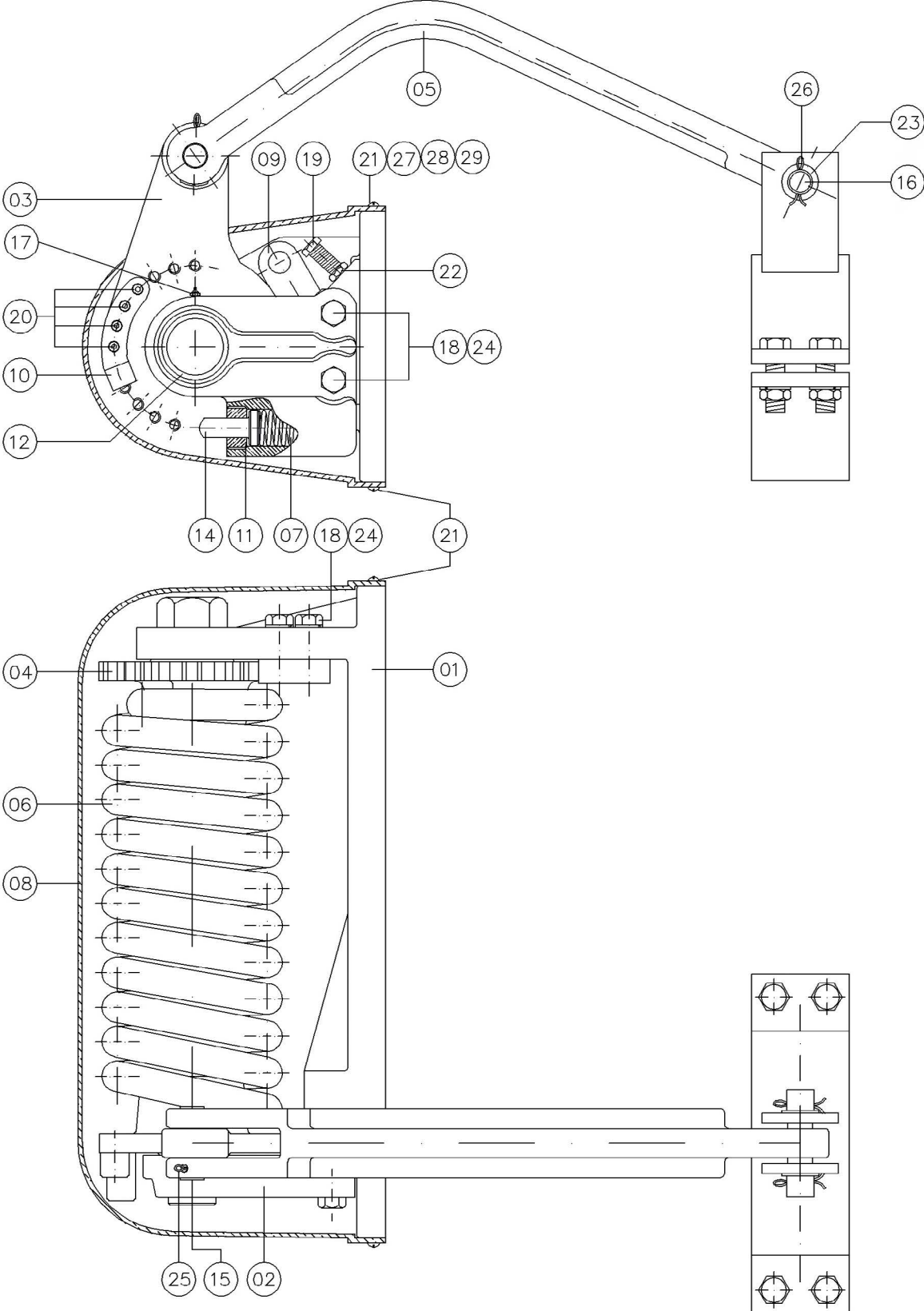
15. Drawing of the 788 Spring



15.1. 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

16. Drawing of the 789 Spring



16.1. 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

17. 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

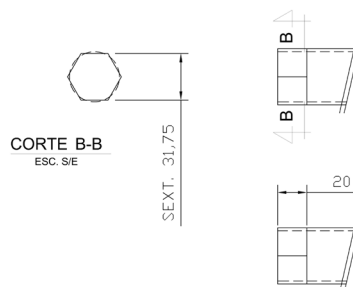


15/16" star type wrench



Rubber Hammer

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

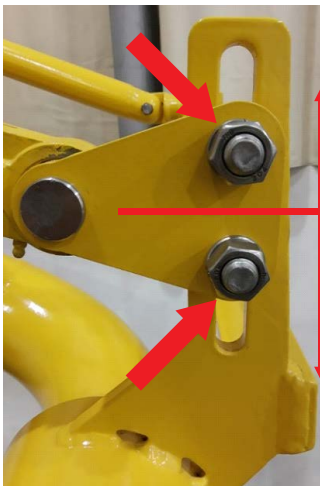


Attention: Before any fine or primary adjustment procedure, bottom loading arms must be installed and filled with product to check the height of the coupler and the equipment's maneuverability. This arm model is pre-adjusted at the factory considering the weight of the product. In this way, if the equipment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

17.1. 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.

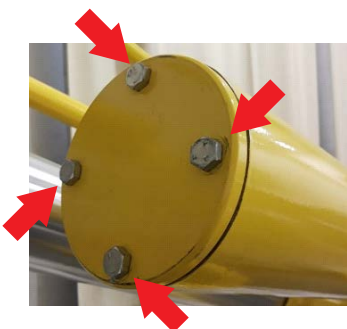
1) Lift the loading arm so as to relieve spring compression, preferably with the help of a hoist, or a second person.



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;

17.2 Primary adjustment (on the internal threaded shaft)

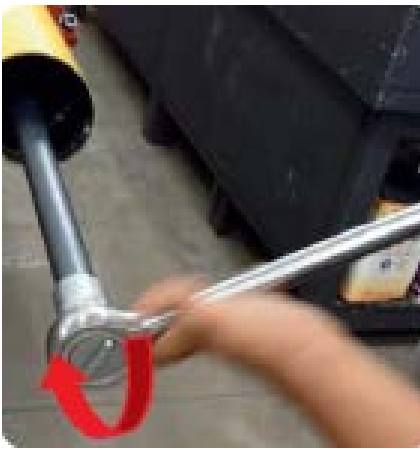


1) Remove the four screws from the top cylinder cover with a 9/16" socket wrench, and you can then remove it to access the threaded shaft, nut / locknut

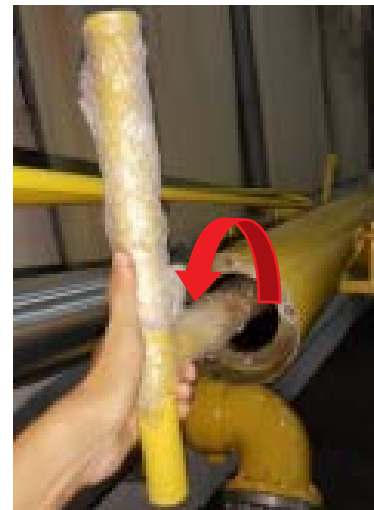
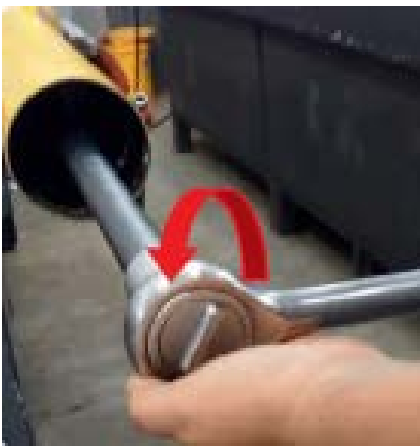


2) Using the special Redlands adjustment tool (FERR-COMP) or 1.1/4" X 500mm spark plug wrench, remove the lock nut completely from the threaded shaft.

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.



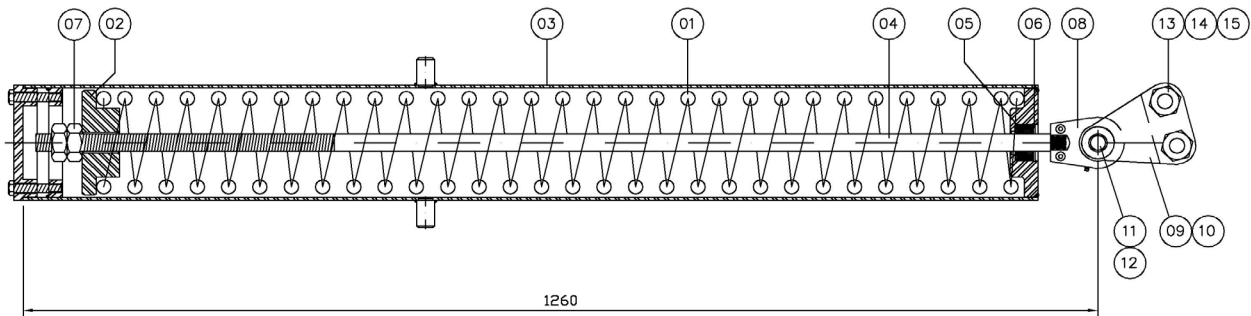
4) To decrease the upward action (make the arm heavier to rise, but easier to lower), turn the main adjustment nut counter-clockwise.



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.

18. Compression spring drawing



18.1 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 $\phi_{ext.}$ 115 x ϕ_{wire} 16 x length 1100	A0501-0431	CARBON STEEL
ITEM	QTY.	DESCRIPTION	CODE	MATERIAL

19. 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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