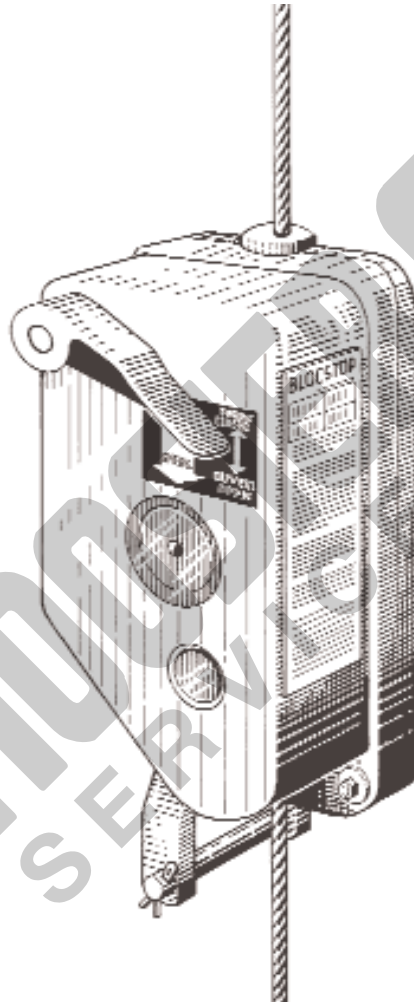


blocstop®

BSO 1020 & BSO 1030



Date: 8/31/05
Version: 1

Service & Maintenance Manual for Overspeed Brake

The Blocstop overspeed device is crucial and MANDATORY for safe operation of the Tirak machine. Therefore, an authorized repair station must service it at least twice per year. The following service recommendations may need to be repeated more frequently depending on the type of work environment.



WARNING



**NEVER OPERATE THE TIRAK WITHOUT A SECONDARY BRAKE!
THE BLOCSTOP SAVES LIVES!**

Explanation of Symbols used in this manual

Symbol	Code Word	Meaning	Possible consequence of non-compliance
	WARNING	IMMEDIATE or possible imminent danger	Fatal or serious injury!
	CAUTION	Possible danger situation	Minor injuries to persons!
	NOTE	Possible danger situation	Damage to equipment or it's surroundings
	N/A	Instruction for documentation in writing (i.e record keeping)	N/A

Tools Required for service and maintenance of Blocstop BSO 1020 & BSO 1030

- Pin punch 5mm
- Allen key 5mm
- Flat screwdriver
- Vise
- 10mm Box wrench
- Special BSO tool (#20887)
- Measuring rod 9mm (#34415)
- or Measuring rod 10mm
- Hammer
- Caliper (micrometer)
- Needle nose pliers
- Needle nose Vise-grips
- 3 ft. 9mm test wire rope (1020)
- or 3 ft. 10mm test wire rope (1030)



TABLE OF CONTENTS: Blocstop BSO 1030

Page

1) SERVICE AND MAINTENANCE

1-1	Blocstop Removal	4
1-2	Clamping Jaw Test	4
1-3	Trigger Speed Check	4
1-4	Disassembly of the Control Compartment	5
1-5	Counterweight Adjustment & Repair	6
1-6	Disassembly & Service of the Jaw Compartment	7
1-7	Jaw, Frame & Cam Removal	9
1-8	Roller Assembly Inspection	11
1-9	Counterweight Assembly Replacement	12
1-10	Reassembly of the Jaw Compartment	12
1-11	Installation of the Roller Assembly	14
1-12	Installation of the Pressure Spring & Guide Tube	16
1-13	Casing Cover Installation	17
1-14	Preliminary Operational Test	17
1-15	Installation of the Counterweight Cover	18
1-16	Final Testing	19



NOTE:

Any part #, position # (pos.) or page #'s shown in "{ }" refer to the Parts List / Drawing in the Spare Parts Lists included at the back of this manual.

2) EXPLODED VIEW AND PARTS LISTS

Parts Lists	20
Exploded View	21

3) TECHNICAL SHEETS

T-235, Checking and Maintenance	22
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1) SERVICE AND MAINTENANCE

1-1 Blocstop Removal

Detach the Blocstop from the hoist by removing the two cotter pins and mounting straps as shown in Figure 101.



1-2 Clamping Jaw Test

- 1) Open the Blocstop and insert the measuring rod (#34415) as shown in Figure 102.



- 2) Close the Blocstop by pressing the orange emergency stop button which clamps the jaws on the measuring rod.
- 3) Try to remove the measuring rod from the Blocstop while the jaws are engaged (Figure 103).

- 4) If you can pull the rod from the Blocstop without twisting and turning, the jaws may require replacement.

1-3 Trigger Speed Check

- 1) Open the Blocstop by pushing down on the handle.
- 2) Insert the 9mm (1020) or 10mm (1030) test wire rope through the entry bushing. Continue until the rope exits the exit bushing.
- 3) Hold the wire rope flush against the top of the Blocstop entry bushing. Alternatively, you can place a piece of tape around the wire rope at its entry to the Blocstop (Figure 104).



Figure 104

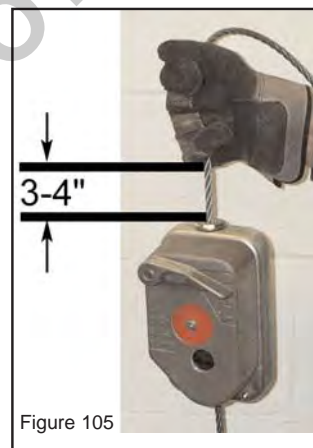


Figure 105

- 4) Release the Blocstop and allow it to free-fall. Measure the distance between the entry bushing and the tape or where your gloved hand held the wire rope. The Blocstop jaws should clamp on the wire rope with a travel distance of 3-4 inches (See Figure 105).



CAUTION



Do not perform this test over your feet!

- 5) If this distance is not 3-4 inches the triggering speed must be adjusted as outlined in Section 1-5.

1-4 Disassembly of the Control Compartment

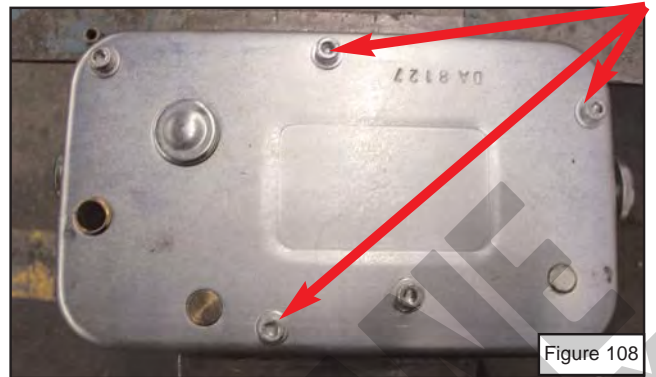
- 1) Before opening the Blocstop, the spring tension must be reduced by pressing the orange emergency stop button (Figure 106).



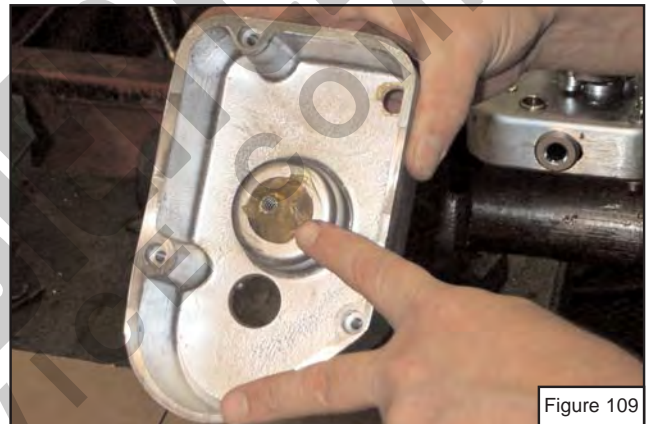
- 2) Inspect the handle {pos. 4, #41855} for wear or damage. Ensure that there is no play between the handle and the shaft {pos. 2, #35147}. It must be tight without play. With a 5mm pin punch, drive out the roll pin {pos. 74, #36786} as shown in Figure 107. Replace any damaged parts.



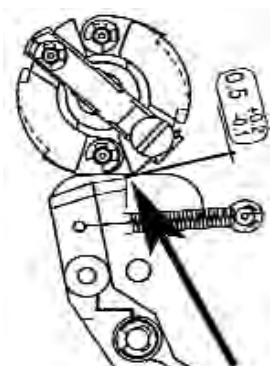
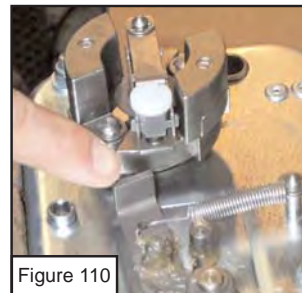
- 3) Remove the (3) M6x60 casing screws {pos. 75, #10166} and washers {pos. 79, #36306} as shown in Figure 108.



- 4) Remove the casing cover {pos. 42, #18267} to inspect the spring {pos. 72, #29446} and cover for wear or damage. The spring should be capable of compressing fully into the brass cone without obstruction (Figure 109).



- 5) Inspect the centrifugal weights and the release lever {pos. 3, #56235} for wear or damage (Figure 110). Slight damage can be filed, but you must inspect the air gap (0.4-0.7mm) between the weights and release lever upon completion (See Figure 111). Replace any non-serviceable parts.



- 6) Inspect the handle release lever {pos. 1, #39967} for wear, play or damage. Also check the shaft of the jaw opening lever {pos. 2, #35147} for bending or damage (See Figure 112). Replace if necessary.

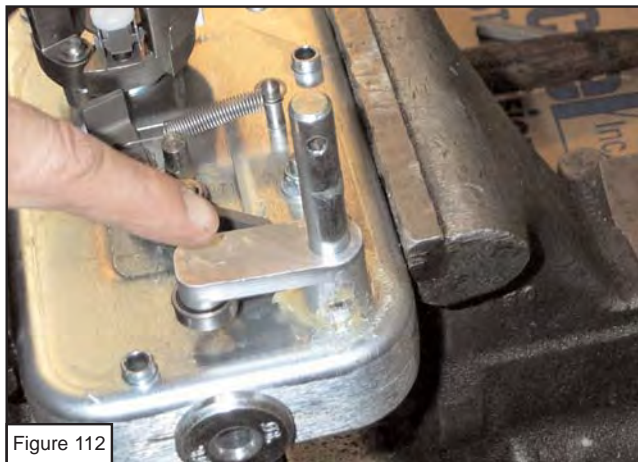


Figure 112

1-5 Counterweight Adjustment & Repair



NOTE:

If no service or repair is required, this section should be omitted

- 1) If a slight adjustment (up to ¼") of triggering speed is required, insert a screwdriver into the white nylon eccentric screw {pos. 19, #36475} on the counterweight system.
- 2) Carefully turn the eccentric screw to increase or decrease the reaction time of the Blocstop. A full revolution in either direction returns the speed to its' initial setting.



NOTE:

4" IS THE IDEAL TRIPPING DISTANCE (approx. 88 fpm).

Faster Tripping Speeds Require a Different Tractel BSO Spring. Please Contact Tractel for Further Information.

If the correct setting cannot be obtained with the eccentric screw, it may be necessary to replace the pressure spring as follows:

- 1) Mark the nylon eccentric screw's {pos. 19, #36475} orientation prior to removal to ease adjustment after repair.

- 2) Begin by removing the white nylon eccentric screw by pulling it vertically with pliers as shown in Figure 113.



Figure 113

- 3) Remove the retaining clip {pos. 63, #33666} as shown in Figure 114. Be careful not to lose it.



Figure 114

- 4) Carefully disassemble the counterweight spring assembly and replace the pressure spring {pos. 62, #47615} (Figures 115 & 116).



Figure 115



Figure 116

If the counterweights need replacement, remove the two retaining clips {pos. 86, #33656} and replace the left {pos. 20, #38807} and right {pos. 25, #38817} counterweights (Figure 117).

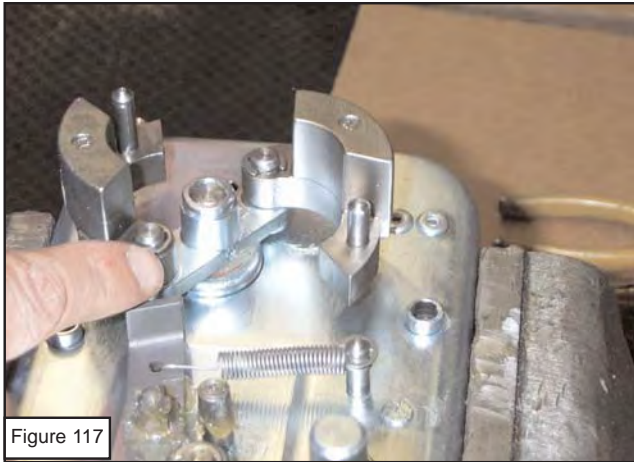
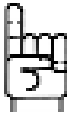


Figure 117

- 5) Reassemble in the reverse order being certain all retaining clips are properly seated.



NOTE:

After completion of the service, the triggering speed must be checked several times as outlined in Sec. 6-1.4

1-6 Disassembly and Service of the Jaw Compartment

- 1) Install the Blocstop in the vise so the casing is facing upward as shown. Remove the (2) M6x50 casing screws {pos. 68, #12016} and nyloc nuts {pos. 76, #7996} (Figure 118).



Figure 118

- 2) Carefully pry the casing cover open as shown in Figure 119.



CAUTION



Extreme caution must be used when opening the cover as it contains springs under tension. Most importantly, ensure nobody is in the direction of the exit bushing.



Figure 119

- 3) Remove the spring guide tube {pos. 53, #36375} and pressure spring {pos. 80, #29396} (Figure 120). Be careful not to lose the washer {pos. 84, #7836} at the end of the tube.

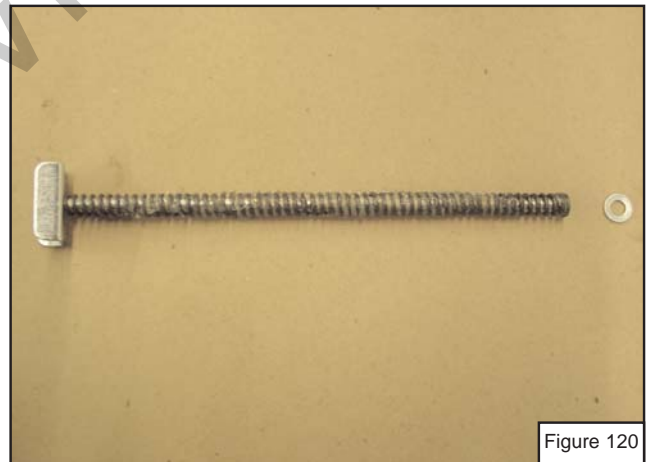


Figure 120

- 4) Remove the bearing {pos. 69, #10186} and its' attached cover {pos. 31, #36525} as shown in Figure 121 on the next page.



Figure 121

- 5) Remove the (3) center bushings {pos. 55, #38565} and (2) distance bushings {pos. 52, #36425} as shown in Figure 122.



Figure 122



NOTE:

The centering bushings have a long side which serves as a guide for the casing cover {pos. 42, #18267} (See Figure 123).



Figure 123



NOTE:

Prior to the removal of the adjusting washers {pos. 11, #9826}, verify that no washers are stuck by grease to the casing cover as shown in Figure 124.



Figure 124

- 6) There should be (1) washer (#9826, Pos. 11) on the top of each axle, for a total of 3 (Figure 125).



NOTE:

The adjusting washers are CRITICAL to the proper operation of the Blocstop and must be present!



Figure 125

- 7) Remove the entry {pos. 12, #36415} and exit {pos. 13, #33685} bushings and inspect for wear Figure 126. Excessive wear indicates incorrect rigging practices and should be addressed with those persons responsible.



Figure 126

1-7 Jaw, Frame and Cam Removal

- 1) Remove the top front {pos.8, #36235} and rear {pos. 5, #825} cams paying attention to their orientation (Figures 127 & 128). Ensure that you remove both top adjusting washers {pos. 11, #9826}. Clean and replace if necessary.



Figure 127



Figure 128



NOTE:

The cams are installed correctly if you can see an "S" in them. See Figures 129-132

Correct

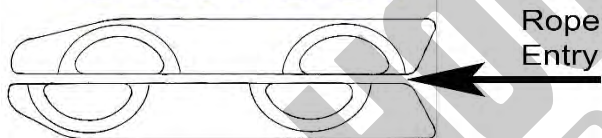


Figure 129



Figure 130



Figure 131



Figure 132



NOTE:

Occasionally the washers stick to the cams and frames upon removal.

- 2) Remove the spring guide bolt (Figure 133).



Figure 133

- 3) Disassemble the (2) anchor frames {pos. 28, #36205} and (2) jaw frames {pos. 28, #36205}. See Figure 134. The washers may still be stuck to the frames after removal. Clean and replace if necessary.



Figure 134

- 4) Remove the upper {pos. 6, #36245 (BSO 1020) or #45375 (BSO 1030)} and lower {pos. 7, #36255 (BSO 1020) or #45385 (BSO1030)} jaws, paying attention to their orientation (Figure 135). The dovetail is on the entry side of the unit and help guide the wire rope into the system correctly. Clean the jaws thoroughly.



- 6) Remove the (3) axles {pos. 09, #36365} and (1) anchor axle {pos. 56, #36225}. See Figure 137. Unlike the centering bushings {pos. 55, #38565}, the axles can be installed with either end facing down.



- 7) Remove the lower cams {pos.8, #36235} & {pos. 5, #825} and adjusting washers {pos. 11, #9826}. See Figure 138.



NOTE:

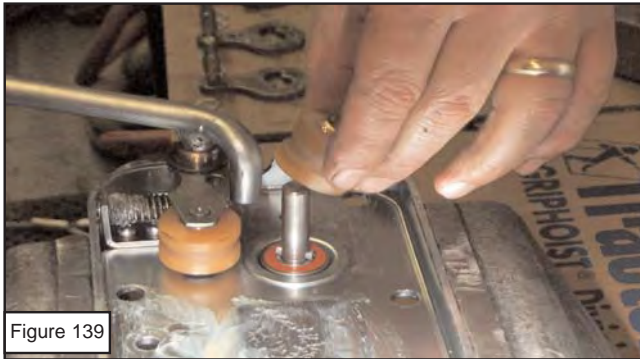
Replacement of the jaws can be accomplished at this time if they failed the measurement test of Sec. 6-1.3 due to wear.

- 5) The jaws of the Blocstop are heat treated and stamped with the correct wire rope diameter. Ensure that the markings correspond to the wire rope you are using (Figure 136). If replacement jaws are being installed, ensure they correspond as well. For example, BSO10 indicates a special 10mm dia.



1-8 Roller Assembly Inspection

- 1) The pressure roller {pos. 48, #18287} usually dislodges when removing the top casing cover. If necessary, use the Blocstop tool {#20887} to remove it along with the driving roller {pos. 50, #18237} (Figure 139).



- 2) Remove the (2) adjusting washers {pos. 11, #9826} as shown in Figure 140.



- 3) Inspect both rollers for excessive wear or flat spots (See Figure 141). Even if they show no visible wear the inside of the groove must still be measured with a caliper. The nominal diameter is 27mm. If the diameter is less than 25mm (1") the rollers must be replaced. If one roller needs replacement, they both must be replaced.

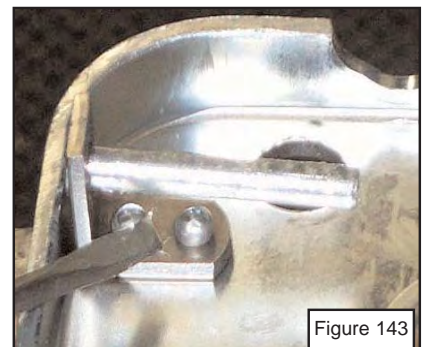


- 4) Inspect the pressure spring {pos. 58, #37235}, spacer {pos. 70, #38555} and guide tube {pos. 59, #36296} for damage or wear (See Figures 142 & 143).



NOTE:

If the guide tube is worn and the end of it has mushroomed, it must be replaced to prevent interference with the roller.



1-9 Counterweight Assembly Replacement

If the bearing or counterweight assembly needs replacement:



Figure 144

- 1) Remove the roll pin {pos. 77, #29466} at the base of the centering axle {pos. 46, #58015} (See Figure 144).
- 2) Carefully remove the complete assembly from the middle casing cover.
- 3) Exchange the bearing {pos. 18, #36515} as needed.
- 4) Reinstall the assembly and roll pin.

1-10 Reassembly of the Jaw Compartment

- 1) Clean all parts with mineral spirits.
- 2) Replace any defective parts.
- 3) Lightly grease the casing cover with wheel bearing or white lithium grease (Figure 145).



Figure 145



CAUTION



Never use a graphite or molybdenum disulphide grease in the Blocstop or Tirak

- 4) Grease and install the lower cams. Ensure the adjusting washers (Pos. 11, #9826) & axles (Pos. 09, #36365) are in place (Figure 146).



Figure 146

- 5) Grease and install the jaws. Ensure that the dovetail is towards the jaw opening lever as shown in Figure 147.



Figure 147

- 6) Grease and install the spring axle on top of the bottom actuating cam {pos. 10, #36395} (Figure 148).

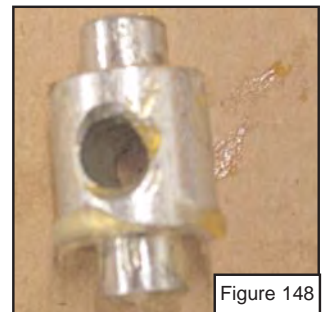


Figure 148

- 7) Install the lower anchor frame {pos. 28, #36205}. Place the remaining axle {pos. 09, #36365} through the hole nearest the rounded edge. Now install the anchor axle {pos. 56, #36225} through the other hole, and then through an adjusting washer {pos. 11, #9826}. (Figure 149). Make sure the anchor axle is properly seated in the BSO casing.

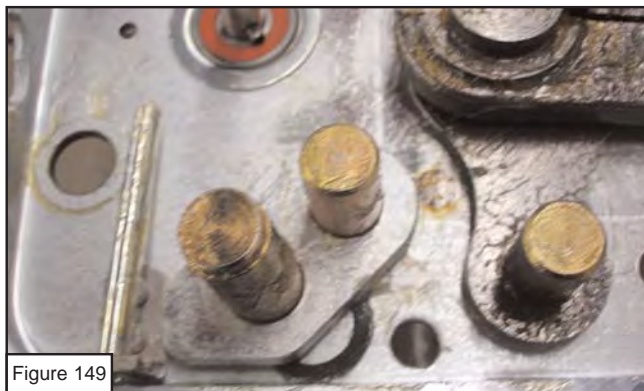


Figure 149

- 9) Install the upper jaw frame {pos. 57, #36215}. The frame must be installed exactly as shown in Figure 151.

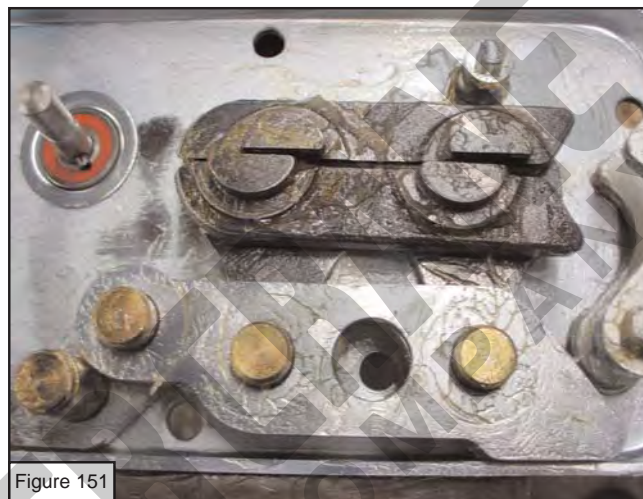


Figure 151

- 8) Install the lower jaw frame {pos. 57, #36215}. The frame must be installed exactly as shown in Figure 147. Make sure all axles slide through the corresponding holes. Now place an adjusting washer on top of the axles resting in the jaw frame. See Figure 150.



Figure 150

- 10) Install the upper anchor frame {pos. 28, #36205}. The frame must be installed exactly as shown in Figure 149.



Figure 152

- 11) Grease and install the upper cams. Ensure that the letter "S" is present when looking at the jaws (Figure 153).



Figure 153

- 12) Install the adjusting washers (Pos. 11, #9826) on the axles (See Figure 154).



Figure 154

- 13) Install the (3) centering bushings and (2) distance bushings (Figure 155). Ensure the longer shoulders are pointed down (Figure 156).



Figure 155



Figure 156

1-11 Installation of the Roller Assembly



NOTE:

To aid this procedure, please reference the following technical sheet (T-235, Page 22).

- 1) Install the (2) adjusting washers {pos. 11, #9826} on the top and bottom of the pressing roller {pos. 48, #18287} (See Figure 157).



Figure 157



NOTE:

After installation of the rollery assembly, the notch should be away from the spring (on a BSO 500 for 9 mm (3/8")). See Figure 158.

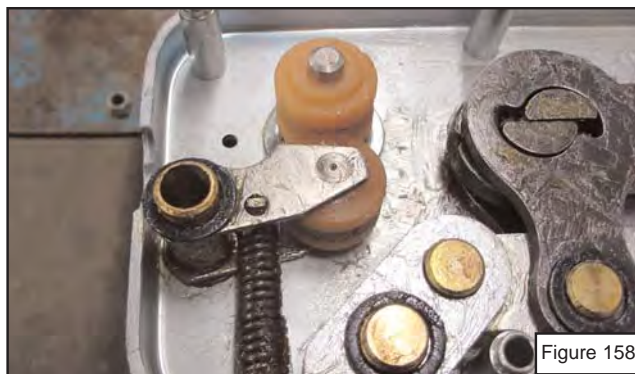


Figure 158

**NOTE:**

This procedure is much easier if the 2-piece Blocstop tool (#20887) is used. This tool is available from Tractel Inc.

- 3) Install the BSO tool pin into the hole of the pressing roller and into the spring guide tube {pos. 59, #36296} as shown in Figure 159.



Figure 159

- 4) Slide the spacer {pos. 70, #38555} then spring {pos. 58, #37235} around the guide tube (Figure 160).



Figure 160

- 5) Install the BSO tool as shown in Figure 161. Apply pressure with your index finger and thumb on the BSO tool.



Figure 161

- 7) Slowly and evenly, draw the tool and pressure roller towards the spring (see Figure 162). Keep the tool level. It will go into the correct position without a struggle after a little practice.

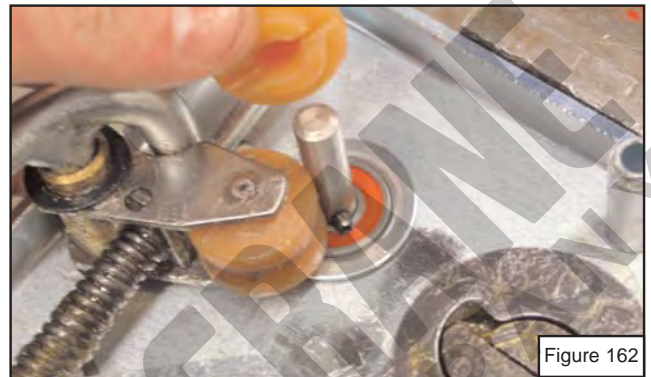


Figure 162

- 8) After the brass bushing of the pressure roller is properly seated, turn the handle and hold.
- 9) Tilt the tool slightly down and remove the pin. Remember to keep the BSO tool twisted
- 10) Install the driving roller, being sure it is properly seated on the roll pin {pos. 77, #29466}.
- 11) Gently release pressure on the BSO tool until the rollers meet. Once all the pressure is released the tool can be carefully removed. Inspect the roller system assembly (Figure 163).



Figure 163

1-12 Installation of the Pressure Spring & Guide Tube



CAUTION



Always wear proper eye protection!



NOTE:

Use the following procedure to help keep the pressure spring assembly in place during reassembly:

- a) Install a casing screw {pos. 68, #12016} through the distance tube {pos. 52, #36425} as shown in Figure 164. Do not place a washer between the screw head and distance tube.

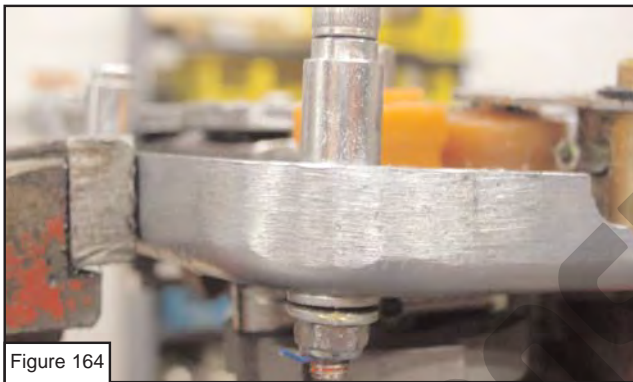


Figure 164

- b) Place (2) washers {pos. 79, 36306} on the underside of the casing.
- c) Loosely install a nyloc nut {pos. 76, #7996} on the underside.



NOTE:

The screw will be removed after the cover is installed (see next Sec.) and replaced with the proper washer configuration. This step helps keep the distance tube from rolling and accidentally release the spring assembly.

- 1) Install the spring {pos. 80, #29396} on the guide tube {pos.53, #36375}.
- 2) Wrap a rag around the spring and compress by hand.
- 3) Carefully clamp the tube with a pair of needle nose clamping pliers to hold the spring compressed about 2-3" (Figure 165).



Figure 165

- 4) Install the spring washer {pos. 84, #7836} on the end of the tube.
- 5) Install the complete assembly into the spring bolt guide {pos. 10, #36395} (Figure 166).

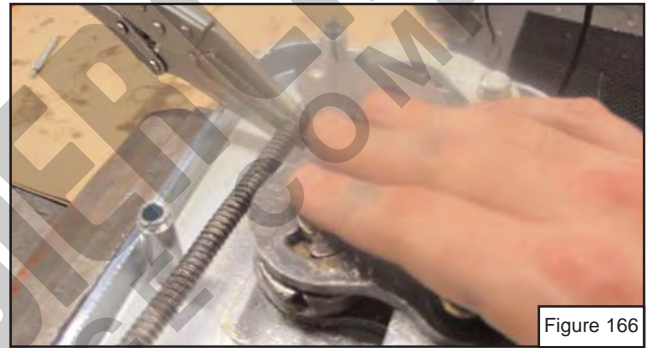


Figure 166

- 6) Push back on the jaw assembly towards the spring to limit the amount of spring travel when released.
- 7) Apply pressure to the top cams to prevent parts from jumping out of position and release the Vise-Grips.
- 8) Install the bearing {pos. 69, #10186} and bearing cover {pos. 31, #36525} as shown in Figure 167.



Figure 167

1-13 Casing Cover Installation

- 1) Lightly grease the cover {pos. 47, #36685} and install on the main body (Figure 168).



Figure 168

- 2) Use a punch or scribe to align the cover as shown in Figure 169.



Figure 170

- 3) Install the (2) casing bolts {pos. 68, #12016} with washers {pos. 79, 36306} and nyloc nuts {pos. 76, #7996} as shown in Figure 171.



NOTE:

You may need to remove the screw installed in step 1 of the previous section



Figure 171



NOTE:

Do not over tighten the nuts. This may prevent the Blocstop from operating correctly due to compression of the internal components (Figure 172).



Figure 172

1-14 Preliminary Operational Test

- 1) Before installing the outer casing cover, open the Blocstop jaws and insert the test rope to test the unit's operation
- 2) Pull the wire rope quickly. The Blocstop should activate and you should be unable to pull the rope out.
- 3) Reset the Blocstop.
- 4) Check that the wire rope moves smoothly through the Blocstop (Figure 173).



Figure 173

1.15 Installation of the Counterweight Cover

- 1) Install the cover as shown. Ensure to align the (3) bushings {pos. 55, #38565} and the spring {pos. 72, #29446} (Figure 174).



WARNING



Damage may occur to the spring if the cover is not installed evenly



Figure 174

- 2) After the cover is on and before the screws are installed, open the Blocstop and push the orange emergency stop button (Figure 175). The Blocstop should trip. If not, remove the cover and try installing it again. If this doesn't work, the spring {pos. 72, #29446} may be damaged.



Figure 175

- 3) Install the (3) casing screws {pos. 75, #10166}. Do not over tighten.
- 4) Install the handle {pos. 4, #41855} and roll pin {pos. 74, #36786} as shown in Figure 176).



Figure 176

1.16 Final Testing



NOTE:

The following tests must be performed if any inspection or repair is performed on the Blocstop.

- 1) Perform the Trigger Speed Testing procedure outline in Section 1.4 (Figure 177). The Blocstop must lock within 4" on the wire rope. REPEAT THIS TEST AT LEAST 3 TIMES!

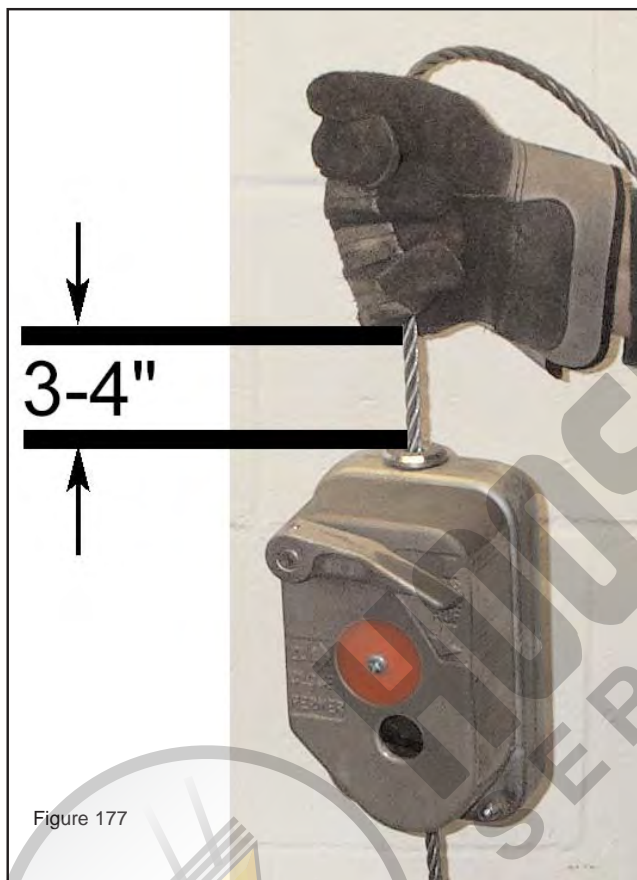


Figure 177

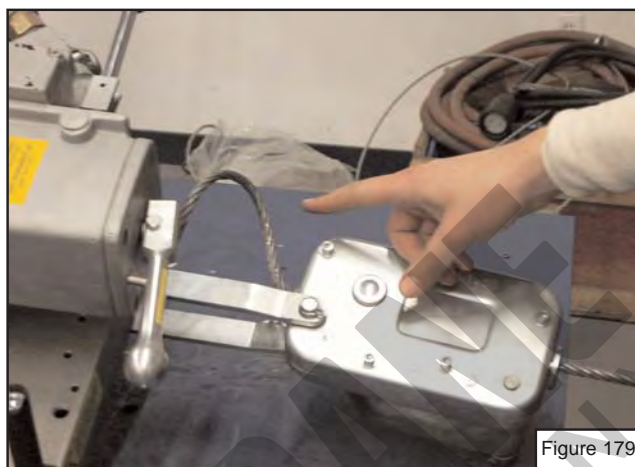


Figure 179

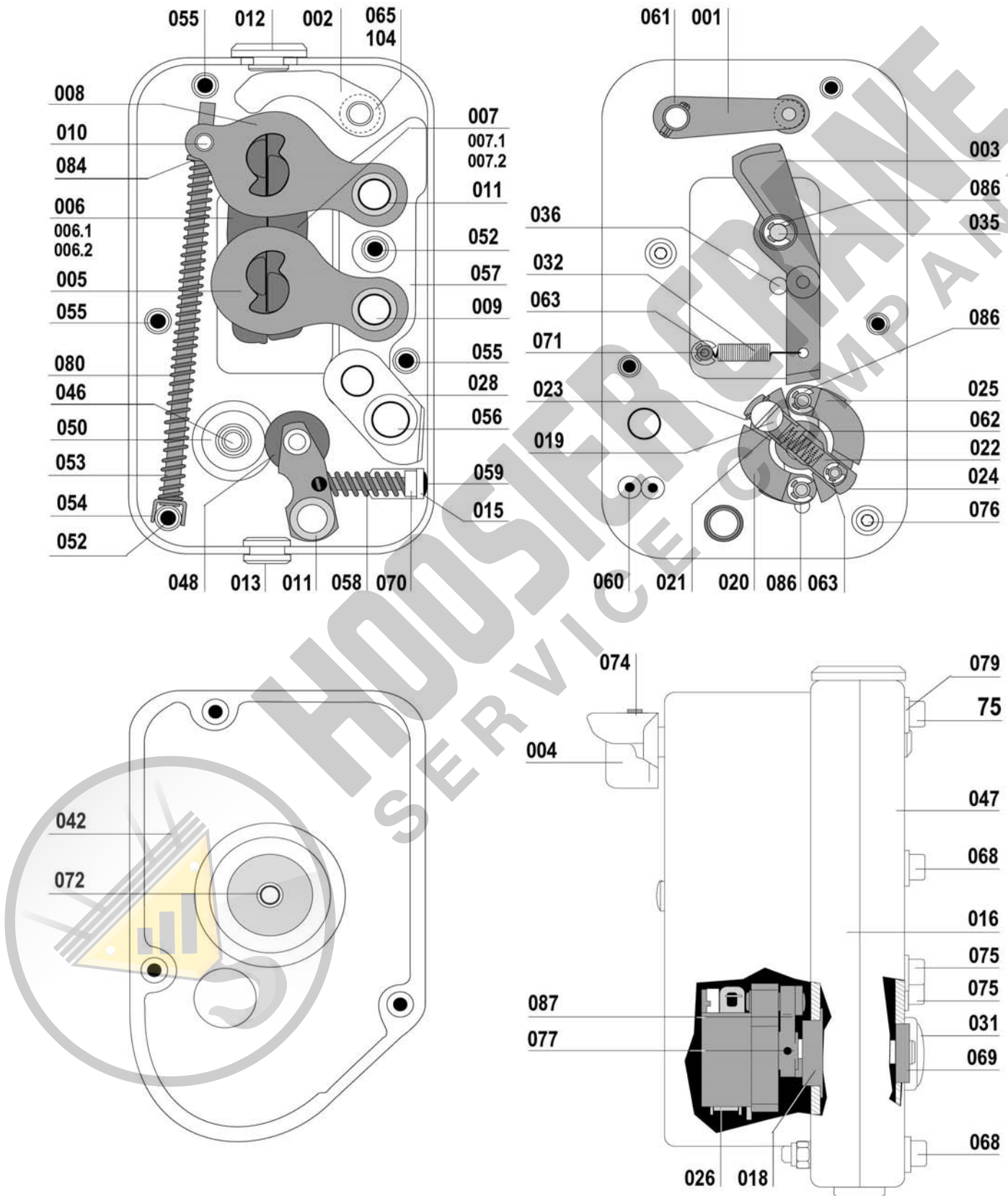
- c) Press the emergency stop button on the Blocstop.
- d) Press the down button on the hoist until the wire rope begins to accumulate between the hoist and Blocstop.
- e) Ensure the Blocstop holds the load securely
- f) Press the up button on the hoist until the load raises a couple of inches.
- g) Reset the Blocstop.
- h) Lower the load.

- 2) Install the Blocstop on the Tirak and perform an operational check.
- 3) Load test the Blocstop by (Figure 178):
 - a) Placing the Tirak & Blocstop on the test bench.
 - b) Lift 125% the rated capacity of the hoist a couple of inches.

Spare Parts	BSO 1020 & 1030 Overspeed Safety Brake for 9 or 10mm Wire Rope		Drawing No	E-3058
			Edition	US-1
			Date	1/05
			Page	1 / 2

Position	Part #	Qty.	Description	Specifications	List Price
--		1	Part#39967-BSO1020 (9mm) OR Part#23209-BSO1030 (10mm)		
001	39967	1	RELEASE LEVER CPL.		
002	35147	1	JAW OPENING LEVER CPL.		
003	56345	1	Release lever BSO1020		
004	41855	1	BSO HANDLE		
005	825	2	Cam BSO1020		
006	36245	1	Upper Jaw BSO1020 9mm OR Part#45375 for Upper Jaw BSO1030 10mm		
007	36255	1	Lower Jaw BSO1020 9mm OR Part#45385 for Lower Jaw BSO1030 10mm		
008	36235	2	CAM		
009	36365	3	AXLE		
010	36395	1	SPRING AXLE BSO		
011	9826	10	Adjusting washer	17x24x1.5	
012	36415	1	BUSHING BSO		
013	33685	1	Wire rope guide bushing BSO		
015	36605	1	Angle for BSO spring		
016	22207	1	BSO1020 right cover complete with Pos. 15 and Pos. 59		
018	36515	1	Inside bearing BSO		
019	36475	1	Adjuster		
020	38807	1	Centrifugal weight (left) BSO500		
021	36335	1	MOVABLE STIRRUP		
022	36345	1	FIXED STIRRUP		
023	36355	1	STIRRUP PLATE		
024	36585	1	BALANCING ROD		
025	38817	1	Centrifugal weight (right) BSO500		
026	36575	1	SPACER		
028	36205	2	ANCHOR FRAME		
031	36525	1	OUTSIDE BEARING		
032	12605	1	SPRING		
035	56245	1	Cam for release lever BSO500		
036	36555	1	GUIDE AXLE		
042	18267	1	COVER COMPLETE		
046	58015	1	CENTERING AXLE		
047	36685	1	COVER		
048	18287	1	PRESSING ROLLER COMPLETE	25mm min. diameter	
050	18237	1	DRIVING ROLLER	25mm min. diameter	
052	36425	2	SPACER		
053	36375	1	SPRING GUIDE TUBE		
054	10555	1	SPRING STIRRUP		
055	38565	3	Spacer		
056	36225	1	ANCHOR AXLE		
057	36215	2	JAW FRAME		
058	37235	1	SPRING	DIN 2076-C	
059	36296	1	SPRING GUIDE TUBE DIA.6X1X60	6x1x60	
060	9986	2	RIVET POP DIA.4,8X14,4 ALU	1.8x14.4	
061	49636	1	CLAMPING SLEEVE 5X20 DIN 7344	5x20	
062	47615	1	SPRING FOR BSO - For custom speed springs call Tractel		
063	33666	2	RETAINING WASHER 5 DIN 6799	A5	
065	9816	1	WASHER 13 X 19 X 1 DIN 988	13x19x1	
068	12016	2	SOCKET HEAD CAP SCREW M 6X50 DIN 912	M6x50	
069	10186	2	Ball bearing 6000-2RS1	10/26x8	
070	38555	1	SPACER		
071	37345	1	Fixed stirrup axle BSO		
072	29446	1	SPRING 0,63X7,27X31		
074	36786	1	ROLL PIN DIA.5X32 DIN 1481	5x30	
075	10166	3	CAP SCREW M6X60 DIN 912-8.8	M6x60	
076	7996	2	Nyloc nut	M6	
077	29466	2	ROLL PIN 4X16 DIN 7344	4x16	
079	36306	7	WASHER A 6,5X14X1,6 DIN 6902	A6.5	
080	29396	1	JAW SPRING 1,4X7,8X195		
084	7836	1	WASHER	A6	
086	33656	3	RETAINING WASHER 6 DIN 6799	A6	
087	33977	1	Plate for centrifugal weights		
104	10376	1	WASHER	13/19x0.5	
(105)*	27105	1	SIGHT GLASS		

Spare Parts	BSO 1020 & BSO 1030 Overspeed Safety Brake for 9 or 10mm Wire Rope	Drawing No	E-3058
		Edition	US-1
		Date	1/05
		Page	2 / 2



5. CHECKING AND MAINTENANCE

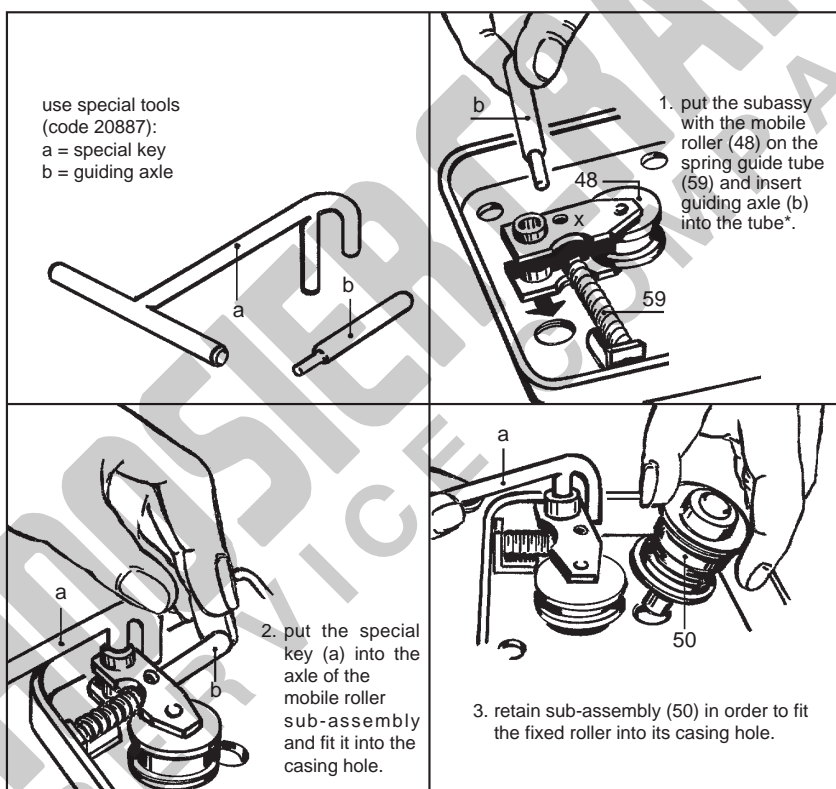
5.1. Checking the BLOCSTOP overspeed function

If the BLOCSTOP is released, its operation can be checked as follows:

- Insert the wire rope from the top (control lever) and push until it comes out of the unit.
- Hold the wire rope above the BLOCSTOP. Allow it to free fall. The jaws should operate and lock onto the wire rope with a travel of less than 10 cm (four inches).
- Repeat this check a minimum of three times.

5.2. Periodic inspection and Maintenance

- Regularly (at least once a year or after 200 hours of operation) the OVERSPEED BLOCSTOP must be cleaned and generally checked by an authorized repairer.
- **Every year** change the roller (items 48 and 50) proceeding as follows:



***Caution:** For BSO 500 series the marking(x) must be on the spring side (as shown in the drawing); for BSO 1000 series the marking (x) must be on the other side towards the fixed roller (50).

5.3. Control of the jaws

Although the wear of the clamping jaws of the OVERSPEED BLOCSTOP is minimal, they must be regularly checked by means of a rod with specified diameter:

for	BSO 500/1000	6 mm
	BSO 510	4 mm
	BSO 520/1020	7 mm

If the rod is not held by the clamping jaws, they must be replaced by an authorized repairer.

Use only special clamping jaws, marked with "BSO".

5.4. Control of the wire rope

If the **wire rope diameter** has reduced by 10% of the rated diameter, the wire rope must be replaced.

- Ø 5.8 for wire rope 6.5 mm
- Ø 7.5 for wire rope 8.3 mm
- Ø 8.5 for wire rope 9.5 mm
- Ø 9 for wire rope 10.2 mm

Never use damaged wire ropes.

HOOSIER CRANE
SERVICE COMPANY



TRACTEL Inc.
GRIPHOIST Division
Main Office:
110, Shawmut Road
Canton, MA 02021
Tel: 800-421-0246
Fax: 781-828 3642
griphoist.usa@tractel.com

TRACTEL LTD
GRIPHOIST Division
11020 Mirabeau St
Anjou QUEBEC, H1J 2S3
Tel. +1 (514) 493 3332
Fax. +1 (514) 493 3342
griphoist.canada@tractel.com

TRACTEL Inc.
GRIPHOIST Division
Branch Office:
315 Cloverleaf Dr. Building E
Baldwin Park, CA 91706
Tel. +1 (626) 937 6727
Fax. +1 (626) 937 6730
griphoist.usa@tractel.com