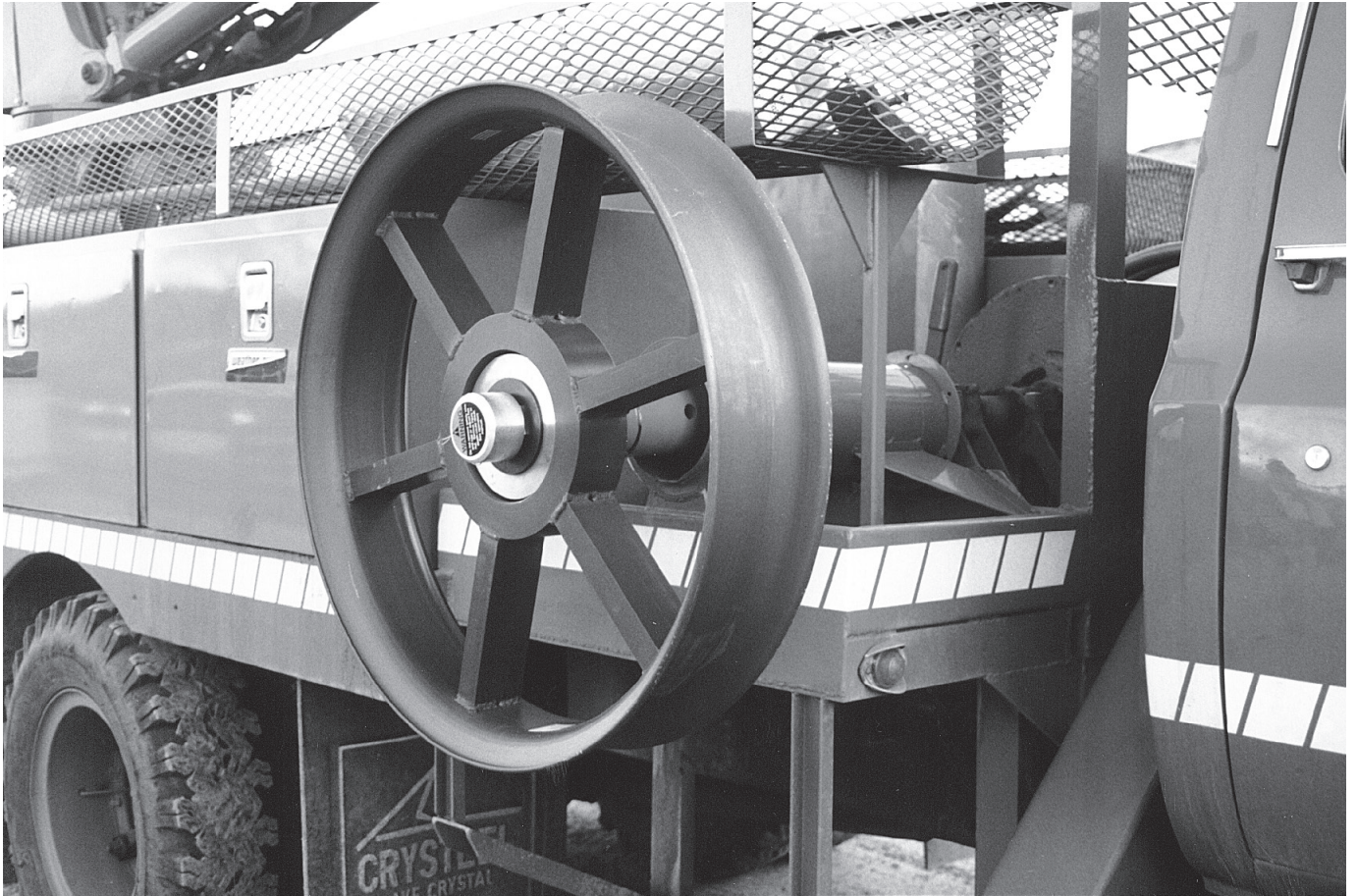


Slip Clutch Capstan



CONDUX

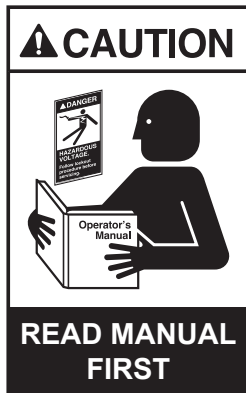
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Important Safety Notice

Read and understand all procedure and safety instructions before using a Condux Slip Clutch Capstan. Observe all safety information on this page and note specific safety requirements as explained by procedures called out in this manual. Failure to follow these instructions could result in serious personal injury or death.

ADVERTENCIA:

Favor de leer y comprender todas las instrucciones de operación y seguridad antes de usar la máquina. Si Ud. no comprende las instrucciones favor de consultarle a su jefe.



Save this user's guide for future reference.



If you have questions on:

SAFETY - OPERATIONS - APPLICATIONS

CALL 1-800-533-2077

General Information

The Condux Slip Clutch Capstan is intended to protect fiber optic or coaxial cable from being over stressed during the pulling operation. When the preset load is reached, an internal clutch will disengage, stopping the capstan from rotating and protecting the cable. Care should be taken so the capstan is not run while slipping for extended periods of time.

The Condux Slip Clutch Capstan is available in 30IN (762mm), 42IN (1067mm), or 50IN (1270mm) diameters. Calibrated loads are available from 200 LBS (890 N) to 1000 LBS (4448 N), Consult the Condux Factory, the Condux Catalog or web site (www.condux.com) for more information.

The capstan is designed for use with a $2\frac{7}{16}$ inch (62 mm) diameter, AT&T specification bayonet style power take-off (PTO) shaft. The Slip Clutch Capstan is meant to be used with synthetic pulling ropes or measuring tapes. Do not use steel wire or wire rope on the Slip Clutch Capstan.

!NOTE: Slip clutch brake pad material contains no asbestos.

It is required that the operator be properly trained to use the PTO on the truck before using this product.



Installation Instructions

1. Attach the capstan to the drive shaft by aligning the capstan's slots with the shaft's pins. Push the capstan onto the shaft until it stops, then rotate clockwise until it stops. Pull outward to lock the capstan into position. **Make sure the shaft locking pins are visible through the holes in the capstan hub.**



!CAUTION: HEAVY OBJECT - Use Two Person Lift. The 42IN and 50IN Slip Clutch Capstans are heavy and require two person lift and proper techniques to avoid personal injury.

2. Move the power source with drive shaft and capstan into its final position. The pull line will wrap best on the capstan if the capstan is angled about 10° away from the pull line (figure 1). This will allow the line to walk down the side of the capstan and push the previous wraps to the side.

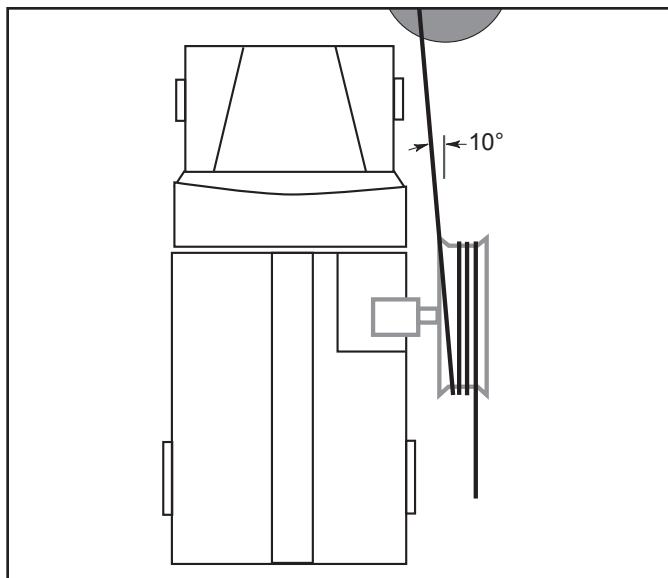


Figure 1. Capstan Positioning

3. Place four or more side-by-side wraps of the pull line around the capstan in the direction of rotation, starting on the inboard side of the capstan. Do not wrap more than one layer of pull line on the capstan.
4. Apply power to the drive shaft and slowly rotate the capstan. Remove any slack or excess pull line before increasing the capstan's speed. Attend the line coming off the capstan to avoid any tangles, and keep some tension on the line so that the capstan grips the pull line.

!NOTE: Prolonged use of the capstan in a stall position (e.g. when the shaft is rotating and the outer sheave is stationary) will result in premature failure of the brake material. Care should be exercised when using the capstan to avoid stalling.

Never wrap the line around your hand, arm, foot or leg, and always be prepared to release the line. Stand at least 3 to 4 feet (0.9 to 1.2 m) away and at a 20° angle from the capstan (figure 2). Wear gloves to avoid rope burns and abrasions.

!NOTE: To avoid damage to the fiber optic cable, always start the pull slowly, and increase speed as the puller and cable stabilize.

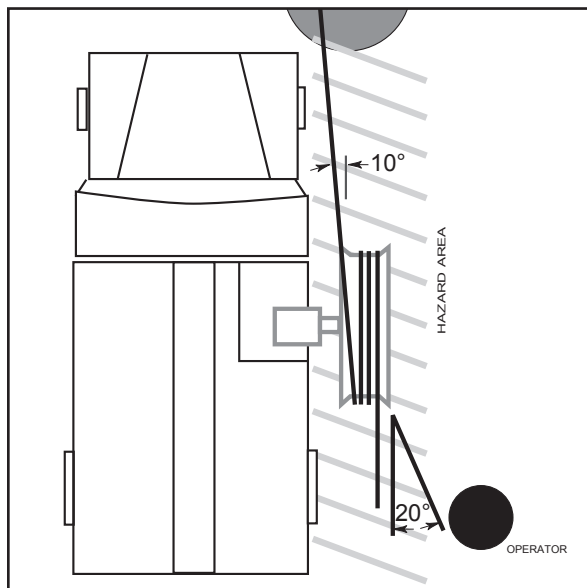


Figure 2. Jobsite Layout



!CAUTION: Stand to side of pull line to prevent injury in case it breaks. Always wear protective equipment: hard hat, safety glasses, safety shoes, and work gloves.



!WARNING: Stay clear of the rotating capstan. Severe personal injury or death could result from entanglement with it or the pull line. Follow these safety precautions:

- Do not wrap the pull line around a hand, arm, foot, or leg.
- Always be ready to release the pull line.



!WARNING: Moving pull lines can entangle. Do not touch the moving line. Serious personal injury or death could result.

Removal Instructions

1. Push inward on the capstan and rotate it counterclockwise.
2. Align the capstan's slots with the shaft's pins and pull off.



!CAUTION: HEAVY OBJECT - Use Two Person Lift. The 42IN and 50IN Slip Clutch Capstans are heavy and require two person lift and proper techniques to avoid personal injury.

3.

3. Clean the capstan and properly store it. Failure to properly store and handle the capstan will result in premature wear and failure.

Capstan Calibration

The calibration of the Slip Clutch Capstan should be verified periodically to ensure proper capstan operation (See Section 4A). Frequency of verification depends on frequency and severity of use.

It is recommended that the Condux Slip Clutch Capstan be recalibrated and repaired at the Condux facility in Mankato, Minnesota. See Section 10B for details on returning the capstan to Condux International for calibration.

If it is not possible to return the capstan back to Condux International for calibration, it can be field calibrated following the instructions in this section (See Section 4B). However, if the capstan is field calibrated, Condux assumes no liability for incorrectly calibrated capstans resulting in damaged cable. If the factory supplied safety wire has been removed, the capstan will be considered to have been field calibrated and all warranties, implied, written or otherwise portrayed are considered null and void.

4.

A. VERIFY THE CAPSTAN CALIBRATION SETTING

1. Set up the capstan on a bayonet shaft as if cable were to be pulled (figure 3).
2. Place a pull line around the capstan. The pull strength of the pull line must exceed the 1,000 pound capacity of the capstan.
3. Attach the pull line to a load indicator such as a Dillon Dynamometer, Available from Condux International (See Section 6).
4. Slowly apply pressure to the capstan to tighten the pull line. Continue to pull slowly until the capstan begins to slip. The value shown on the dynamometer will be the force at which the capstan is calibrated to slip. If the value shown is not the required slipping force, the capstan will have to be recalibrated (See Section 4B).

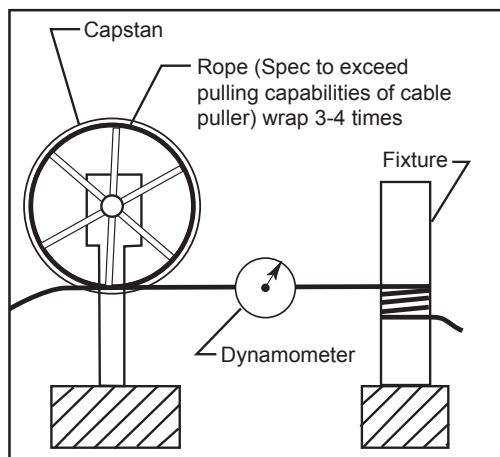


Figure 3. Calibration Verification Setup

B. RECALIBRATION OR CHANGING CALIBRATION SETTING



NOTICE: If the capstan is field calibrated, Condux assumes no liability for incorrectly calibrated capstans resulting in damaged cable. If the factory supplied safety wire has been removed, the capstan will be considered to have been field calibrated and all warranties, implied, written or otherwise portrayed are considered null and void.

If the capstan needs to be recalibrated or if a different load is required, the capstan can be calibrated using the following procedure. **Note: DO NOT USE this procedure to verify calibration** (See Previous Section 4A).

1. Set up the capstan on a bayonet shaft as if cable were to be pulled (figure 3).
2. Place a pull line around the capstan. The pull strength of the pull line must exceed the 1,000 pound capacity of the capstan.
3. Attach the pull line to a load indicator such as a Dillion dynamometer (section 6).
4. Cut the cable lanyard from the capstan cap.
5. Use a punch to remove the $\frac{1}{8}$ inch diameter spring pin from the cap and remove cap.
6. Loosen the two setscrews ($\frac{1}{8}$ inch hex) on the shaft lock nut.
7. Rotate the shaft lock nut counterclockwise with a $2\frac{5}{8}$ " deep well socket (see section 6) until there is no pressure on the compression spring washer.

!NOTE: The two setscrews from step 6 must be loosened before rotating the shaft lock nut.

8. Inspect and replace any worn or broken parts.
9. Hand tighten the lock nut back into contact with the compression spring washer.

!NOTE: Ensure the spring washer is centered on the shaft and has not slipped into the groove in the shaft.

10. Slowly apply pressure to the capstan to tighten the pull line. Continue to pull slowly until the capstan begins to slip. The value shown on the dynamometer will be the force at which the capstan is set to slip.
11. Stop the capstan rotation and remove the load from the capstan. Leave pull line in place.
12. Tighten the shaft lock nut $\frac{1}{4}$ **Turn Only** with socket.
13. Slowly apply pressure to the capstan to tighten the pull line. Continue to pull slowly until the capstan begins to slip. The value shown on the dynamometer will be the force at which the capstan is set to slip.
14. Stop the capstan rotation and remove the load from the capstan. Leave pull line in place.
15. Repeat the tightening and testing until the correct load is indicated on the dynamometer.

!NOTE: If the desired load is exceeded, the calibration procedure must be re-started beginning at step 7. Do not try to simply loosen the nut partially. The nut must be completely loosed and tightened in $\frac{1}{4}$ rotation increments or less.

16. When the capstan is calibrated to the desired load, tighten the two setscrews in the shaft locking nut, replace the capstan cap, lining up the roll pin holes. Drive the roll pin through the capstan cap and shaft.

17. Perform a final calibration check before removing capstan from shaft and storing.

Troubleshooting Guide

5.

<p>PROBLEM: Pull line will not stay on the capstan.</p>	<p>SOLUTION:</p> <ul style="list-style-type: none"> • Capstan is not properly aligned with the pull line. The pull line must be placed around the capstan at a slight angle to the edge of the capstan (see section 2.2).
<p>Capstan will not fit on the PTO shaft.</p>	<ul style="list-style-type: none"> • PTO Shaft is not a 2$\frac{7}{16}$" (62 mm) diameter, AT&T specification bayonet style shaft. Capstan will only fit this type of shaft. • The posts on the shaft must line up with the grooves on the capstan (see section 2.1). • Apply an anti-seize compound to the ID of the capstan and the OD of the puller shaft.
<p>Capstan does not stop rotating when factory set limit is reached.</p>	<ul style="list-style-type: none"> • If safety wire has been cut, capstan may be out of calibration. Check calibration and recalibrate if necessary. (See Section 4B). • Slip clutch brake material may be frozen in place. Inspect and replace brake pads if necessary. Check calibration and recalibrate if necessary. (See Section 4B).
<p>Capstan stops rotating before reaching factory set limits.</p>	<ul style="list-style-type: none"> • If safety wire has been cut, capstan may be out of calibration. Check calibration and recalibrate if necessary. • Capstan calibration may have changed due to wear of the brake pad material. Check calibration and recalibrate if necessary. Replace brake pads if necessary.

Accessory Parts

Condux Part

Dillon 1000 LB (4400 N) Dynamometer (for calibration)	02261000
2 $\frac{5}{8}$ IN Deep Well Socket, 1IN Drive (for calibration)	02281400

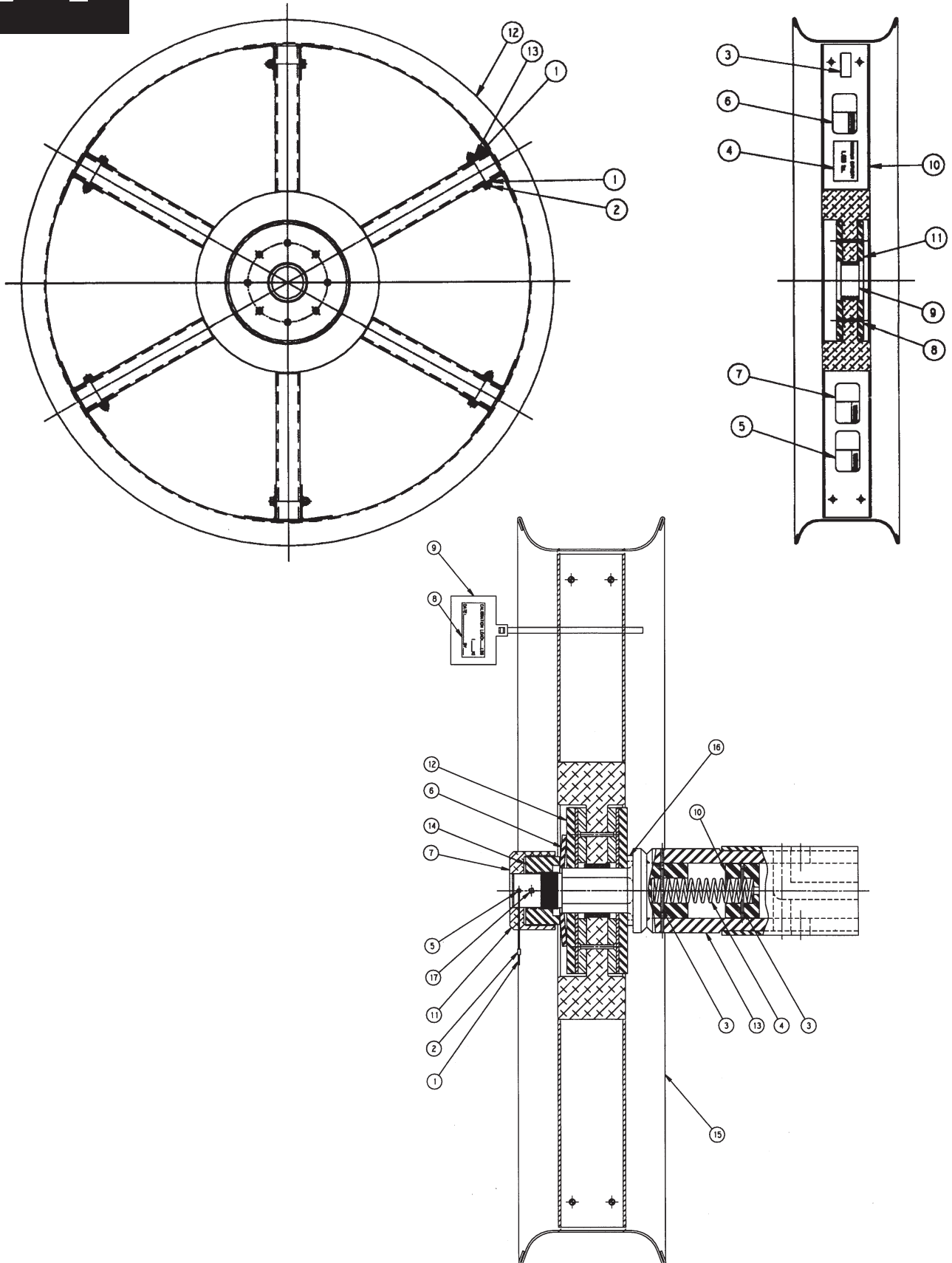
6.

Appendix

7.

A. CAPSTAN DRAWING

Condux 30" Slip Clutch Capstan
08760030



B. PARTS LIST

**Condux 30" Slip Clutch Capstan
08760030**

ITEM	PART NO.	DESCRIPTION	QTY
1	02102001	FLATWSHR 0.25 TYPE A-NARR ST CZ	24
2	02197600	CAPSRW 0.25-20X2.25 HHSTGR5 CZ	12
3	02246400	LABEL, CALIBRATION	1
4	02264400	LABEL, MAX CAPACITY 1,000 LBS	1
5	02269607	LABEL, WARNING-READ MAN 1.5X4.5	1
6	02269610	LABEL, WARNING-CBLE TENSN 1.5X3.0	1
7	02269617	LABEL, WARNING-CPSTN PNCH 1.5X3.0	1
8	02269618	MACSRW #10-32X0.62 SF BR	16
9	02269640	BEARING, SLV 2.003-2.379-1.125	1
10	08760010	RING, MOUNT (WELD) 30" SLIP CLTCH	1
11	08760012	PLATE, CLUTCH (INNER)-SLIP CLUTCH	2
12	08760016	CAPSTAN, 30" WELD-SLIP CLUTCH	1
13	12013700	NUT 0.25-20 NYLOC ST GR2 CZ	12

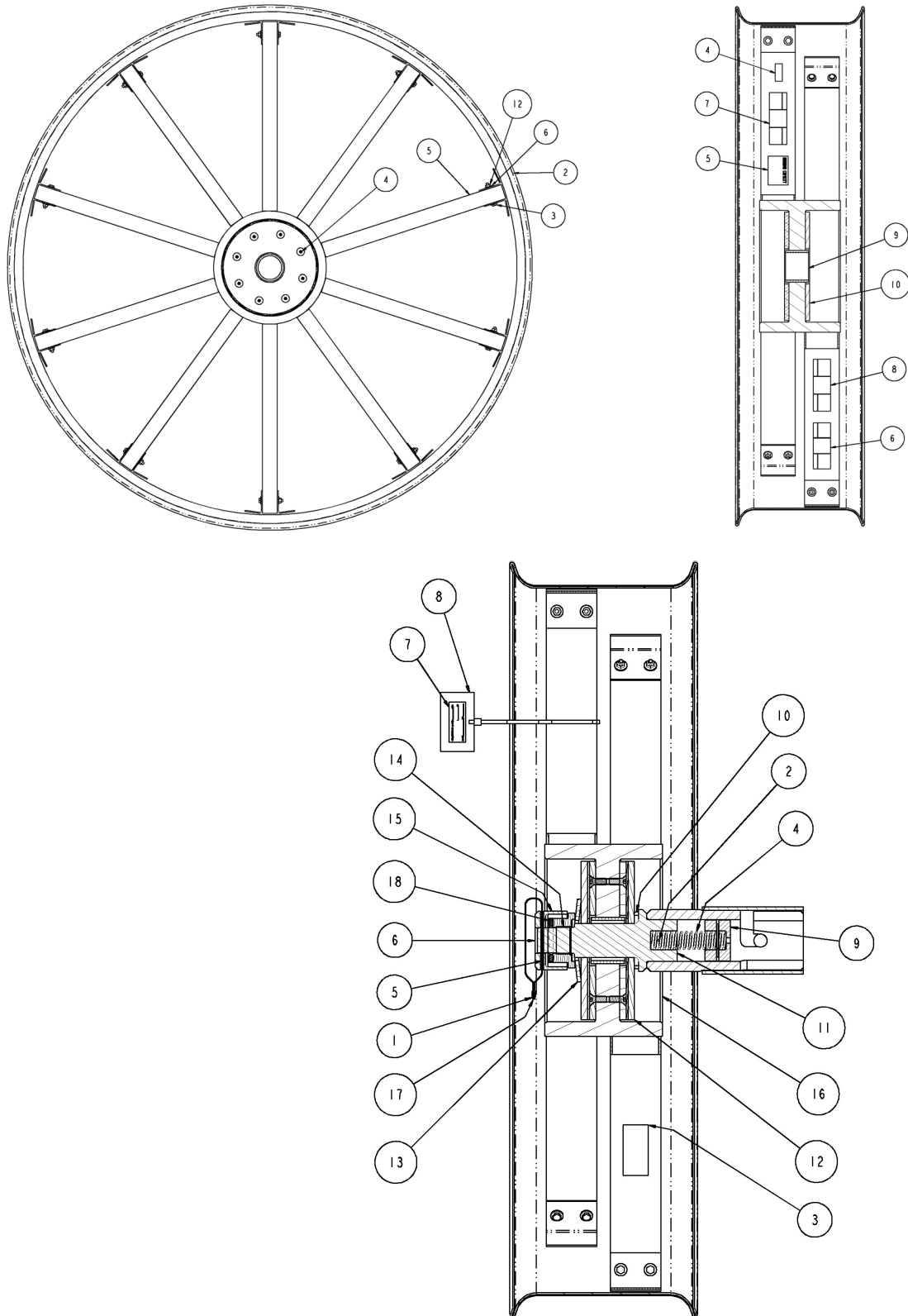
ITEM	PART NO.	DESCRIPTION	QTY
1	00209800	CABLE .048-7X7 GAL AIRCRAFT ST	1 FT
2	02211300	CRIMPING SLEEVE .048 COPPER	1
3	02251800	PIN, SPRING-SLOTTED .125-2.000	2
4	02260500	SPRING, COMPRESS .120-1.095-4.50	1
5	02269641	PIN, SPRING-SLOTTED .156-2.500	1
6	02269642	WASHER, BELLEVILLE 2.010-4.920	1
7	02269644	LABEL, WARN-RMVE SFTY WIRE 2.8"	1
8	02269759	LABEL, CALIBRATION LOAD	1
9	02269761	TIE, MARKER-18 IN-HEAVY DUTY	1
10	08675108	CAP, SPRING-CAPSTAN-FO PULLER	1
11	08760001	CAP, END (SHAFT)-SLIP CLUTCH	1
12	08760003	PLATE, FRICTION ASSY-SLIP CLUTCH	2
13	08760008	SHAFT, CAPSTAN HUB (WELD)	1
14	08760009	NUT, LOCK (SHAFT)-SLIP CLUTCH	1
15	08760011	CAPSTAN, 30" BODY ASSY	1
16	08760014	RING, SPACER-SLIP CLUTCH	1
17	12023300	SETSCREW, .250-20-.50-HXSO-PL	2

Appendix

8.

A. CAPSTAN DRAWING

Condux 42" Slip Clutch Capstan
08760040



B. PARTS LIST

**Condux 42" Slip Clutch Capstan
08760040**

ITEM	PART NO.	DESCRIPTION	QTY
1	02102000	FLATWSHR 0.25 TYPEA-WIDE ST CZ	40
2	02182301	CAPSRW 0.37-16X1.00 CSSTALY CZ	16
3	02197600	CAPSRW 0.25-20X2.25 HHSTGR5 CZ	20
4	02246400	LABEL, CALIBRATION	1
5	02264400	LABEL, MAX CAPACITY 1000 LBS	1
6	02269607	LABEL,WARNING-READ MAN 1.5X4.5	1
7	02269610	LABEL,WARNING-CBLE TEN 1.5X4.5	1
8	02269617	LABEL,WARNING-CPSTN 1.5X4.5	1
9	08760036	BEARING,SLV 2.379-2.753-2.00	1
10	08760037	PLATE,50-42 CLUTCH(INNER)-SLIP	2
11	08760052	CAPSTAN,WELD 42" X 8" SLIP	1
12	08760054	BODY,CAP 42X8 (WELD) SLIP CLTH	1
13	12006100	NUT 0.25-20 HEX ST GR2 CZ	20

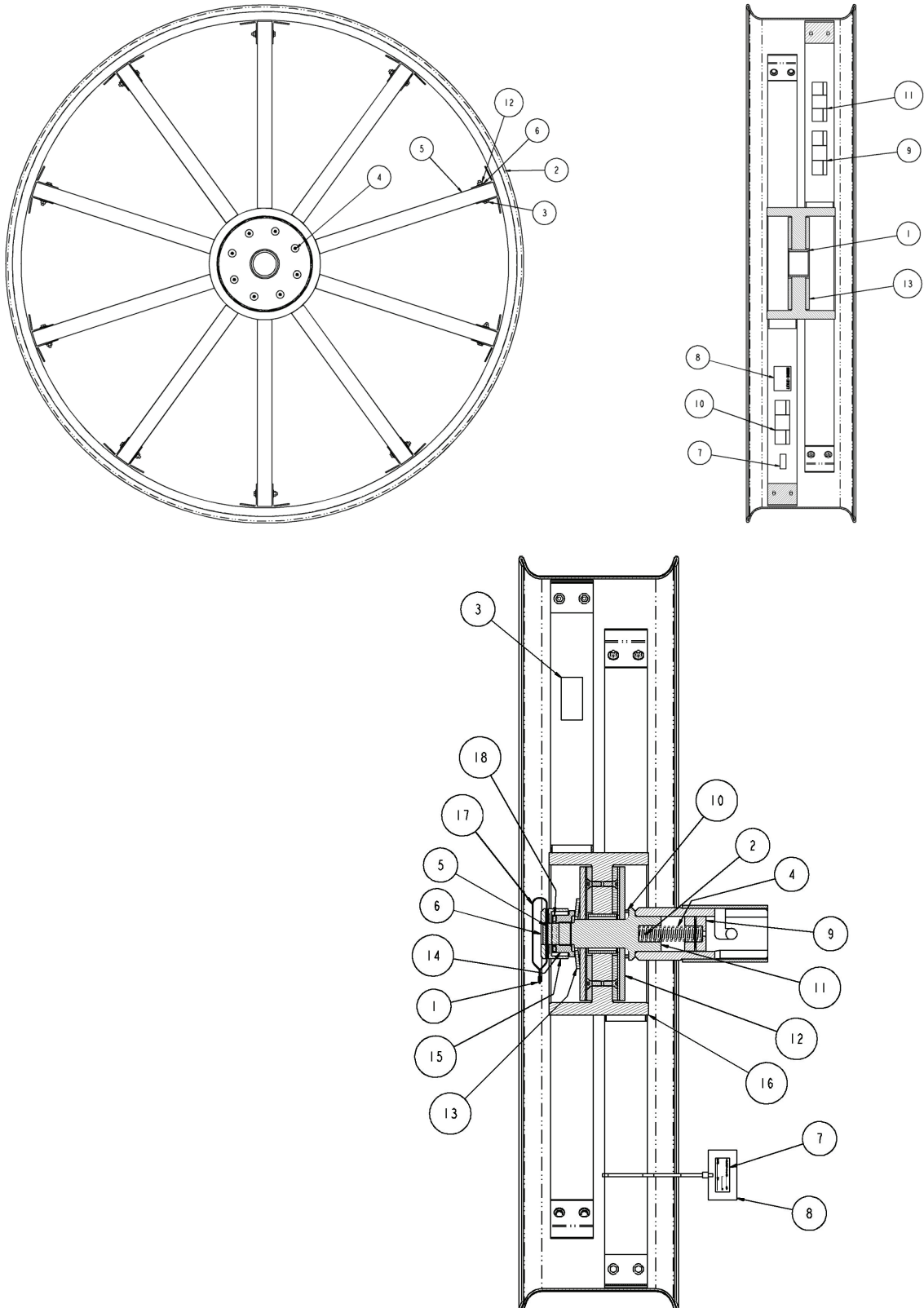
ITEM	PART NO.	DESCRIPTION	QTY
1	02211300	CRIMPING SLEEVE .048 COPPER	1
2	02251800	PIN,SPRING-SLOTTED .125-2.000	2
3	02256400	LABEL,SERIAL NUMBER 1.50 X3.00	1
4	02260500	SPRING,COMPRSS .135-1.095-4.50	1
5	02269641	PIN,SPRING-SLOTTED .156-2.500	1
6	02269644	LABEL,WARN-RMVE SFTY WIRE 2.8"	1
7	02269759	LABEL, CALIBRATION LOAD	1
8	02269761	TIE,MARKER-18 IN-HEAVY DUTY	1
9	08675108	CAP,SPRING-CAPSTAN-FO PULLER	1
10	08760032	RING, SPACER-SLIP CLTCH 50-42"	1
11	08760033	SHAFT,50-42 CAPSTAN HUB (WELD)	1
12	08760035	PLATE,50-42 FRICTN ASSY- CLTCH	2
13	08760043	WASHER,BELLEVILLE 2.40-4.92	1
14	08760044	NUT,LOCK (SHAFT) 50-42" CLUTCH	1
15	08760045	CAP,END (SHAFT) 50-40"S CLUTCH	1
16	08760046	CAPSTAN, 50 IN SLIP BODY ASSY	1
17	08760055	CABLE .048-7X7-1' GAL ARCFT ST	1
18	12023300	SETSCREW, .250-20- .50-HXSO-SC	2

Appendix

9.

A. CAPSTAN DRAWING

Condux 50" Slip Clutch Capstan
08760050



B. PARTS LIST

**Condux 50" Slip Clutch Capstan
08760050**

ITEM	PART NO.	DESCRIPTION	QTY
1	08760036	BEARING,SLV 2.379-2.753-2.00	1
2	08760053	BODY,CAP 50X8 (WELD) SLIP CLTH	1
3	02197600	CAPSRW 0.25-20X2.25 HHSTGR5 CZ	20
4	02182301	CAPSRW 0.37-16X1.00 CSSTALY CZ	16
5	08760047	CAPSTAN,WELD 50" X 8" SLIP	1
6	02102000	FLATWSHR 0.25 TYPEA-WIDE ST CZ	40
7	02246400	LABEL, CALIBRATION	1
8	02264400	LABEL, MAX CAPACITY 1000 LBS	1
9	02269617	LABEL,WARNING-CPSTN 1.5X4.5	1
10	02269610	LABEL,WARNING-CBLE TEN 1.5X4.5	1
11	02269607	LABEL,WARNING-READ MAN 1.5X4.5	1
12	12006100	NUT 0.25-20 HEX ST GR2 CZ	20
13	08760037	PLATE,50-42 CLUTCH(INNER)-SLIP	2

ITEM	PART NO.	DESCRIPTION	QTY
1	02211300	CRIMPING SLEEVE .048 COPPER	1
2	02251800	PIN,SPRING-SLOTTED .125-2.000	2
3	02256400	LABEL,SERIAL NUMBER 1.50 X3.00	1
4	02260500	SPRING,COMPRSS .135-1.095-4.50	1
5	02269641	PIN,SPRING-SLOTTED .156-2.500	1
6	02269644	LABEL,WARN-RMVE SFTY WIRE 2.8"	1
7	02269759	LABEL, CALIBRATION LOAD	1
8	02269761	TIE,MARKER-18 IN-HEAVY DUTY	1
9	08675108	CAP,SPRING-CAPSTAN-FO PULLER	1
10	08760032	RING, SPACER-SLIP CLTCH 50-42"	1
11	08760033	SHAFT,50-42 CAPSTAN HUB (WELD)	1
12	08760035	PLATE,50-42 FRICTN ASSY- CLTCH	2
13	08760043	WASHER,BELLEVILLE 2.40-4.92	1
14	08760044	NUT,LOCK (SHAFT) 50-42" CLUTCH	1
15	08760045	CAP,END (SHAFT) 50-40"S CLUTCH	1
16	08760046	CAPSTAN, 50 IN SLIP BODY ASSY	1
17	08760055	CABLE .048-7X7-1' GAL ARCFT ST	1
18	12023300	SETSCREW, .250-20- .50-HXSO-SC	2

Notes

Warranty Information

10.

A. FACTORY ASSISTANCE

Condux International can provide further advise regarding any problems with the installation, service, assembly, or disassembly of the Slip Clutch Capstan. Call toll free at 1-800-533-2077 (USA and Canada) or 1-507-387-6576 and ask for assistance. The Slip Clutch Capstan can be returned to the factory at any time for service or repair; however, a Return Material Authorization (RMA) must be obtained from Condux before shipping. Condux will not accept returned items without an RMA.

B. CAPSTAN CALIBRATION

NOTE: Calibrate the Condux Slip Clutch Capstan regularly to ensure its accuracy. If the calibration procedures specified in section 4 are not possible at the operator's location, we recommend returning the Slip Clutch Capstan to Condux International at least once a year for verification or calibration at the factory.

To return the Slip Clutch Capstan to Condux International for verification or calibration, call Condux customer service for a Return Material Authorization (RMA). Ship the RMA form along with the Slip Clutch Capstan to Condux International. We will calibrate and ship the Slip Clutch Capstan back out within 48 hours of receipt. There is a nominal charge for this calibration.

C. LIMITED WARRANTY

Condux International, Inc. extends the following warranty to the original purchaser of these goods for use, subject to the qualifications indicated:

Condux International, Incorporated warrants to the original purchaser for use that the goods or any component thereof manufactured by Condux International will be free from defects in workmanship for a period of one year from the date of purchase, provided such goods are installed, maintained, and used in accordance with Condux's written instructions.

Components not manufactured by Condux International but used within the assembly provided by Condux International are subject to the warranty period as specified by the individual manufacturer of said component, provided such goods are installed, maintained, and used in accordance with Condux's and the original manufacturer's written instructions.

Condux's sole liability and the purchaser's sole remedy for a failure of goods under this limited warranty, and for any and all claims arising out of the purchase and use of the goods, shall be limited to the repair or replacement of the goods that do not conform to this warranty.

To obtain repair or replacement service under the limited warranty, the purchaser must contact the factory for a Return Material Authorization (RMA). Once obtained, send the RMA along with the defective part or goods, transportation prepaid, to:

Condux International, Inc.
145 Kingswood Drive
Mankato, MN 56002 USA

THERE ARE NO EXPRESS WARRANTIES COVERING THESE GOODS OTHER THAN AS SET FORTH ABOVE. THE IMPLIED WARRANTIES OR MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED IN DURATION TO ONE YEAR FROM DATE OF PURCHASE.

CONDUX ASSUMES NO LIABILITY IN CONNECTION WITH THE INSTALLATION OR USE OF THIS PRODUCT, EXCEPT AS STATED IN THIS LIMITED WARRANTY. CONDUX WILL IN NO EVENT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.



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C E R T I F I E D

Condux International, Inc.

P.O. Box 247 • 145 Kingswood Drive, Mankato, MN 56002-0247 USA

1-507-387-6576 • 1-800-533-2077 • FAX 1-507-387-1442

Internet: <http://www.condux.com>

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