MAINTENANCE SCHEDULE, REPAIR PARTS LIST and USER RESPONSIBILITIES

for “Autoloc” Container Lift Spreaders and “Manual” Container Lift Spreaders
P/N SERIES N3100A-100

CAUTION: Read the following manual completely before using the Container Lift Spreaders for the first time.

SCOPE: Covers the complete maintenance schedule for the “Autoloc” and “Manual” Container Lift Spreaders.

REVISION: E
DATE: January 23, 2013
AUTHOR: Bill DiMartino, Vice President, Tandemloc, Inc.

WARNING: Failure to adhere to all of the following instructions could cause severe injury to personnel, damage to the Container Lift Spreaders, ad / or the lifted unit. Tandemloc, Inc. cannot warrant the system against failure, nor be held liable for loss of any kind, if any of the instructions in this manual are ignored, omitted or circumvented. Always wear protective eyewear, headgear, and steel toed shoes or boots when using the Container Lift Spreaders Never place any part of your body under the lifted unit at any time, or the Container Lift Spreaders when not fully supported. Use of the Container Lift Spreaders hereby implies the user fully understands all of these and the following instructions, and assumes all risks and / or liabilities if any instructions contained herein, are not correctly and completely followed.

1.0 MAINTENANCE PROCEDURES AND USER RESPONSIBILITIES

The Container Lift Spreader requires routine maintenance to maintain optimum performance. This procedure should be followed on a regular basis. Recommended maintenance procedures are outlined below along with cycle times. These cycle times are for normal use and should be adjusted if the spreader is used more than a few times a day. The end user should adjust the cycle times for their individual needs and environment, as experience with the unit dictates. **CAUTION: Failure to adequately maintain your spreader as prescribed could cause property damage, injury or death.**

1.1 Prior To Each Use:

1. Visually inspect the entire spreader assembly for signs of wear, damage or incorrect assembly. Correct any problems completely before using. Reference drawing XN31000A for critical inspection points and proper assembly.

2. Inspect for proper lubrication at all points referenced in drawing XN31000A.

3. With the spreader chocked on blocks and the bayonets free to operate, manually operate the gearbox to be certain the linkage system is operating correctly. Reference drawing XN31000A for proper operation of linkage system. Be certain to return the bayonets to the unlocked position (see referenced drawing) prior to actual use.

1.2 Every Six Months:

1. Inspect the entire spreader assembly for signs of corrosion. Repair or replace any corroded parts as necessary.

3. Coat all mated moving parts with liberal amounts of Staplex premium red grease, p/n: SL3190.Reference drawing XN31000A for coated lubrication points.

4. Put Staplex grease in all grease fittings. Reference drawing XN31000A for grease fitting locations.

1.3 Every Twelve Months:

1. Disassemble the bayonets and stress collars (4 places) and inspect the load bearing threads for wear, corrosion or damage. If your spreader was purchased new prior to 10/2005 then use a go –no go gauge for 1.5-12UNF-2A and –2B threads. If your spreader was purchased new in 10/2005 or thereafter please use a go- no go gauge for 1.5-6UNC-2A and -2B threads. If any wear, corrosion or damage is present, replace them prior to any lifting. After inspection: apply Loctite silver grade anti-seize to the threads of the bayonets and stress collars prior to reassembly. It is highly recommended that the mating Bayonet and Stress Collars be kept as matched sets when reassembling. Reference drawing XN31000A for disassembly & assembly details.

2. The entire spreader assembly should be load tested by a qualified testing facility to 1.25 times the WLL specified on the data plate of the spreader. Tandemloc, Inc. provides a load testing service (that includes the bayonet and stress collar inspection from above) as well as offering a complete refurbishing service for your spreader. Call the Tandemloc sales team for pricing and details

3. After load testing: Inspect all load bearing components for signs of wear or damage. Repair or replace parts as necessary. Reference drawing XN31000A for load bearing inspection points.

1.4 Wire Rope Sling Replacement Criteria:

1. Missing or illegible sling identification

2. Broken wires:

   a) a. 10 randomly distributed broken wires in one rope lay, or 5 broken wires in one strand in one rope lay, for strand-laid and single-part slings.

b) 20 broken wires per lay for cable-laid slings.

c) 20 broken wires per braid for six-part braided slings.

d) 40 broken wires per braid for eight-part braided slings.

3. Severe localized abrasion or scraping.

4. Kinking, crushing, birdcaging or any other damage resulting in damage to the rope structure.

5. Evidence of heat damage.

6. End fittings that are cracked, deformed or worn to the extent that the strength of the sling is substantially affected.

7. Severe corrosion of the rope end attachments or fittings.

8. For hooks, removal criteria as stated in ASME B 30.10.

9 Other conditions, including visible damage, that cause doubt as to the continued use of the sling.

Please don't hesitate to call Tandemloc, Inc. with any questions or concerns at 1-800-258-7324.

The items listed on the following pages are available replacement parts from TANDEMLOC, Inc.

2.0 DRAWING XN31000A SHEET 3 BILL OF MATERIALS LIST
LINKAGE DETAIL:

PC NO	Part Number	Description
8	N31022B	DRIVE SHAFT - SHORT; CONTACT ACCOUNT MGR
9	N31022B	DRIVE SHAFT - LONG; CONTACT ACCOUNT MGR
10	L0315AA-1PA	INDICATOR FLAG
13	UPS003816000047	3/8-16 LOCKNUT
14	UCP0009XXXX0125	3/32 X 1.25 COTTER PIN
15	VHB003816000150	BOLT, HEX HEAD, 3/8-16 X 1.5"
16	N3102AA-1PA	TIE ROD ASSEMBLY
17	AA01020A-1PA	CTR. CAM DRIVE
18	UHB005013000250	½-13X2.5 HEX BOLT
19	UPS005013000061	½-13 LOCKNUT
20	UCP0025XXXX0200	¼ X 2 COTTER PIN
21	UWA008101470013	¾ WASHER ANS TYPE A SER N ZP
22*	127514D-6PA	BAYONET, MACHINED (NOT SOLD W/O PC #'s 23, 24, 29, 30, 31 & 32. FOR SPARE PARTS ORDERS PLEASE USE PART #: N3150AA-1PA)
23*	N3107AA-7PA	STRESS COLLAR (NOT SOLD W/O PC #'s 22, 24, 29, 30, 31 & 32. FOR SPARE PARTS ORDERS PLEASE USE PART #: N3150AA-1PA)
24	N31037B-2PA	KEY PLATE
25	127A50A-F00	FIBER WASHER, SPECIAL
26	1275SAA-1ZN	WASHER, SPECIAL, ZINC PLATED
27	12756AA-100	RYERTEX BUSHING
28	7127-51-72P	BAYONET CAM PLATE
29	WHB003816000075	BOLT
30	N3143AA-700	CUSTOM THICK WASHER
31	USL003800550013	LOCKWASHER
32	$LON242	LOCTITE

*** When replacing bayonets and stress collars (PCs 22 & 23), some older model spreaders have a spacer washer (O.D. – 4.00", I.D. – 1.56", THK - .50") which is no longer used.**

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3.0 DRAWING XN31000A SHEET 4 BILL OF MATERIALS LIST
AUTOLOC ACTIVATOR SLING ASSEMBLY

PC NO	Part Number	Description
1	N3105AA	AUTOLOC SLING ASSEMBLY
2	AA01010A-1PA	GEAR BOX ASSEMBLY
3	XWR0019IWRC6X19	ø3/16" WIRE ROPE
4	$CRE1010033	3/16" WIRE ROPE SWAGES
5	$LEE-E250X24SS	SPRING, SPECIAL 1.45 X 24" SS
6	$GUNKL-13-8	½"ALLOY CHAIN

AUTOLOC MAINTENANCE DETAILS (N31000A)

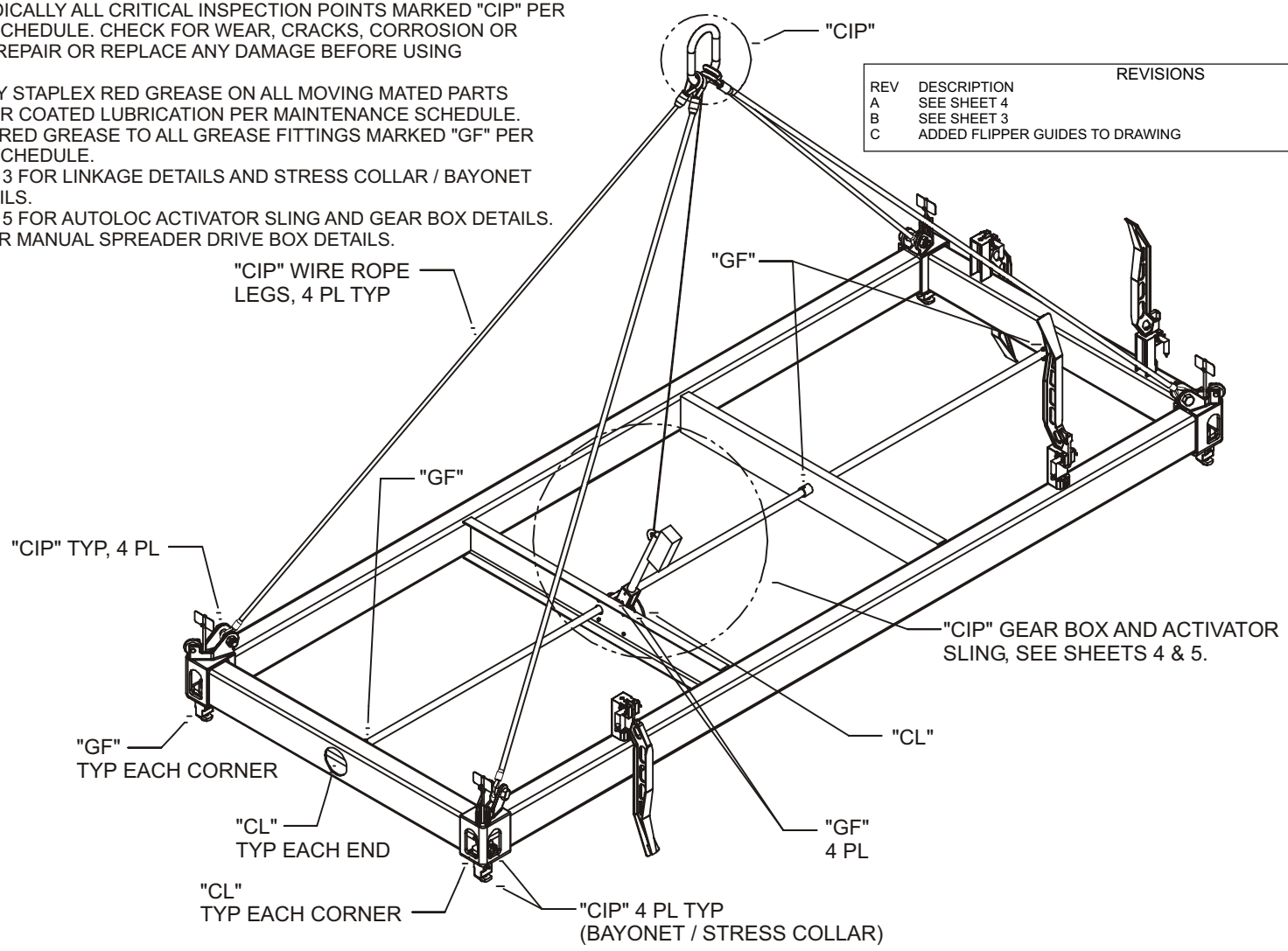
Cage Code: 65059 | Drawing No: XN31000A | Revision: C | Sheet: 1 of 8

NOTES:

1. INSPECT PERIODICALLY ALL CRITICAL INSPECTION POINTS MARKED "CIP" PER MAINTENANCE SCHEDULE. CHECK FOR WEAR, CRACKS, CORROSION OR DEFORMATION. REPAIR OR REPLACE ANY DAMAGE BEFORE USING SPREADER.
2. LIBERALLY APPLY STAPLEX RED GREASE ON ALL MOVING MATED PARTS MARKED "CL" FOR COATED LUBRICATION PER MAINTENANCE SCHEDULE.
3. APPLY STAPLEX RED GREASE TO ALL GREASE FITTINGS MARKED "GF" PER MAINTENANCE SCHEDULE.
4. SEE SHEETS 2 & 3 FOR LINKAGE DETAILS AND STRESS COLLAR / BAYONET ASSEMBLY DETAILS.
5. SEE SHEETS 4 & 5 FOR AUTOLOC ACTIVATOR SLING AND GEAR BOX DETAILS.
6. SEE SHEET 6 FOR MANUAL SPREADER DRIVE BOX DETAILS.

REVISIONS

REV	DESCRIPTION	DATE	APPROVED
A	SEE SHEET 4	12/9/09	DAH
B	SEE SHEET 3	2/7/11	DAH
C	ADDED FLIPPER GUIDES TO DRAWING	6/12/12	DAH



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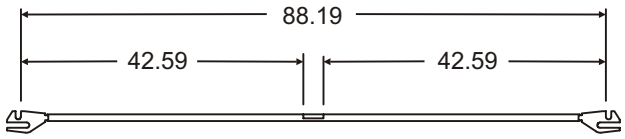
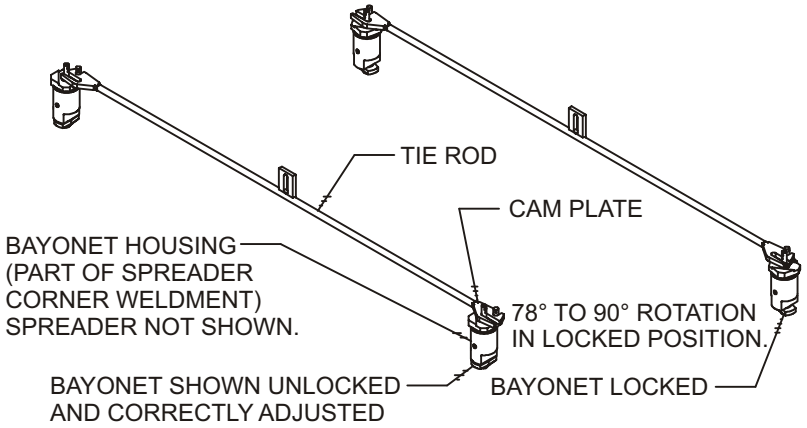
LINKAGE ADJUSTMENT - AUTOLOC

Cage Code: 65059 | Drawing No: XN31000A | Revision: C | Sheet: 2 of 8

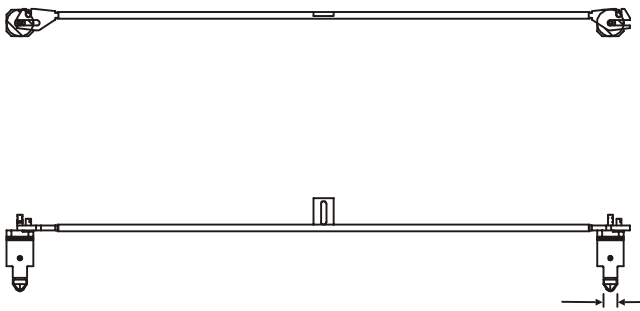


STEP A: PRESET TIE-ROD AND CAM PLATES TO DIMENSIONS SHOWN



STEP C: ACTUATE THE GEARBOX ARM (BE SURE BAYONETS ARE FREE TO ROTATE) TWICE TO FIRST LOCK AND THEN UNLOCK THE BAYONETS. THE BAYONETS SHOULD NOT PROTRUDE FROM THE SIDES OF THE BAYONET HOUSING. ADJUST CAM PLATES IN OR OUT BY SCREWING THEM INTO OR OUT OF THE TIE-ROD UNTIL BAYONETS DO NOT PROTRUDE. CONTINUE TO ACTUATE THE GEAR BOX ARM TWICE AND ADJUST UNTIL THE BAYONETS CONSISTANTLY DO NOT PROTRUDE IN THE UNLOCKED POSITION. DO NOT ADJUST FOR 90° LOCKED POSITION. 78° LOCKED POSITION IS ALL THAT IS REQUIRED FOR FULL STRENGTH OF BAYONET.

STEP D: AFTER FINAL ADJUSTMENT, REPLACE ALL HARDWARE, GREASE ALL MOVING PARTS AND BEND COTTER PINS. REFER TO SHEET 3.



STEP B: ASSEMBLE TIE-ROD/CAM PLATE ASS'Y (FROM STEP 1) INTO THE SPREADER WITH BAYONETS IN UNLOCKED POSITION AS SHOWN. DO NOT PUT IN COTTER PINS. REFER TO SHEET 3 FOR ASSEMBLY DETAILS OF LINKAGE.

REVISIONS

REV	DESCRIPTION	DATE	APPROVED
A	SEE SHEET 4	12/9/09	DAH
B	SEE SHEET 3	2/7/11	DAH
C	SEE OTHER SHEETS	6/12/12	DAH

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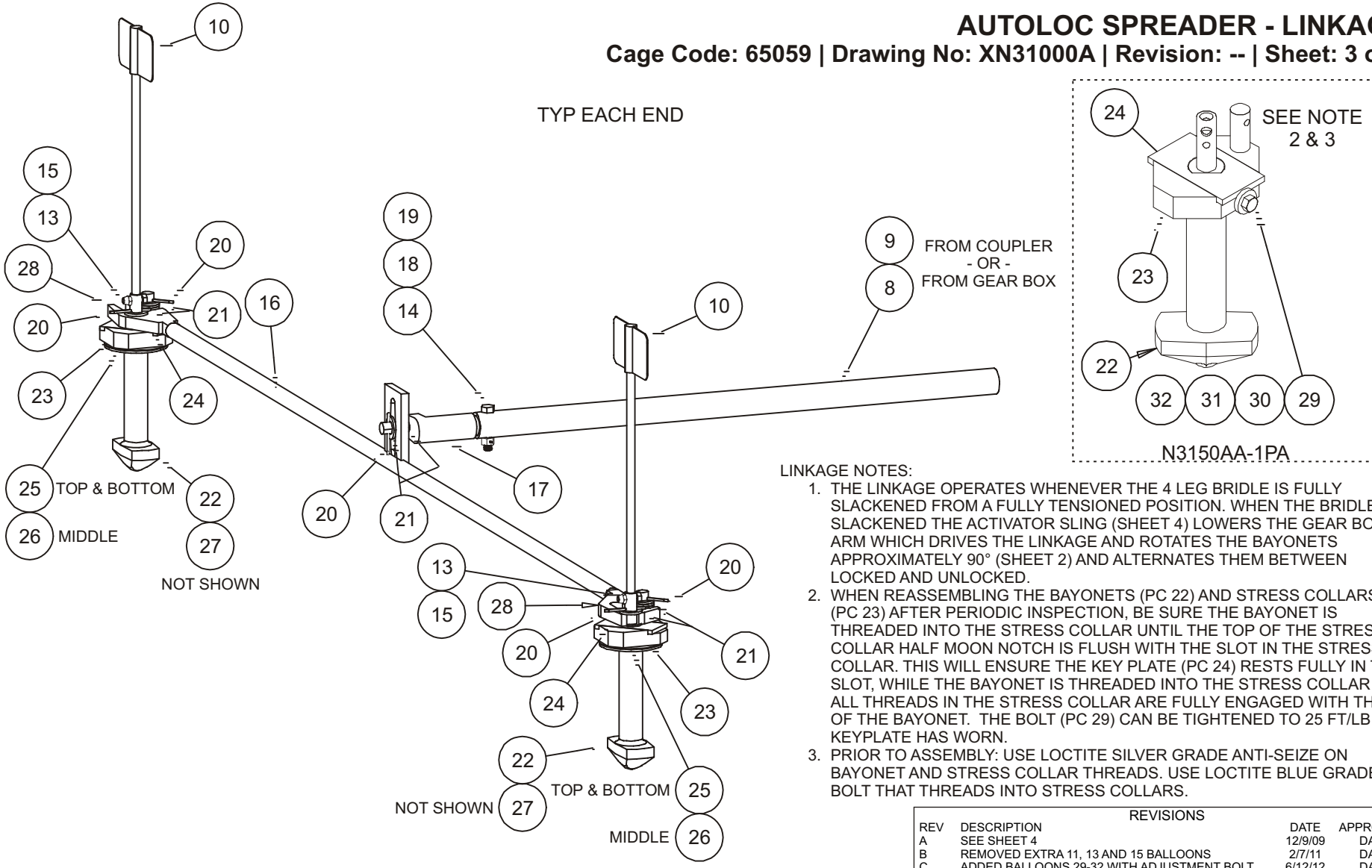
AUTOLOC SPREADER - LINKAGE

Cage Code: 65059 | Drawing No: XN31000A | Revision: -- | Sheet: 3 of 8



LINKAGE NOTES:

1. THE LINKAGE OPERATES WHENEVER THE 4 LEG BRIDLE IS FULLY SLACKENED FROM A FULLY TENSIONED POSITION. WHEN THE BRIDLE IS SLACKENED THE ACTIVATOR SLING (SHEET 4) LOWERS THE GEAR BOX ARM WHICH DRIVES THE LINKAGE AND ROTATES THE BAYONETS APPROXIMATELY 90° (SHEET 2) AND ALTERNATES THEM BETWEEN LOCKED AND UNLOCKED.
2. WHEN REASSEMBLING THE BAYONETS (PC 22) AND STRESS COLLARS (PC 23) AFTER PERIODIC INSPECTION, BE SURE THE BAYONET IS THREADED INTO THE STRESS COLLAR UNTIL THE TOP OF THE STRESS COLLAR HALF MOON NOTCH IS FLUSH WITH THE SLOT IN THE STRESS COLLAR. THIS WILL ENSURE THE KEY PLATE (PC 24) RESTS FULLY IN THE SLOT, WHILE THE BAYONET IS THREADED INTO THE STRESS COLLAR SO ALL THREADS IN THE STRESS COLLAR ARE FULLY ENGAGED WITH THAT OF THE BAYONET. THE BOLT (PC 29) CAN BE TIGHTENED TO 25 FT/LB IF KEYPLATE HAS WORN.
3. PRIOR TO ASSEMBLY: USE LOCTITE SILVER GRADE ANTI-SEIZE ON BAYONET AND STRESS COLLAR THREADS. USE LOCTITE BLUE GRADE ON BOLT THAT THREADS INTO STRESS COLLARS.

REVISIONS

REV	DESCRIPTION	DATE	APPROVED
A	SEE SHEET 4	12/9/09	DAH
B	REMOVED EXTRA 11, 13 AND 15 BALLOONS	2/7/11	DAH
C	ADDED BALLOONS 29-32 WITH ADJUSTMENT BOLT	6/12/12	DAH

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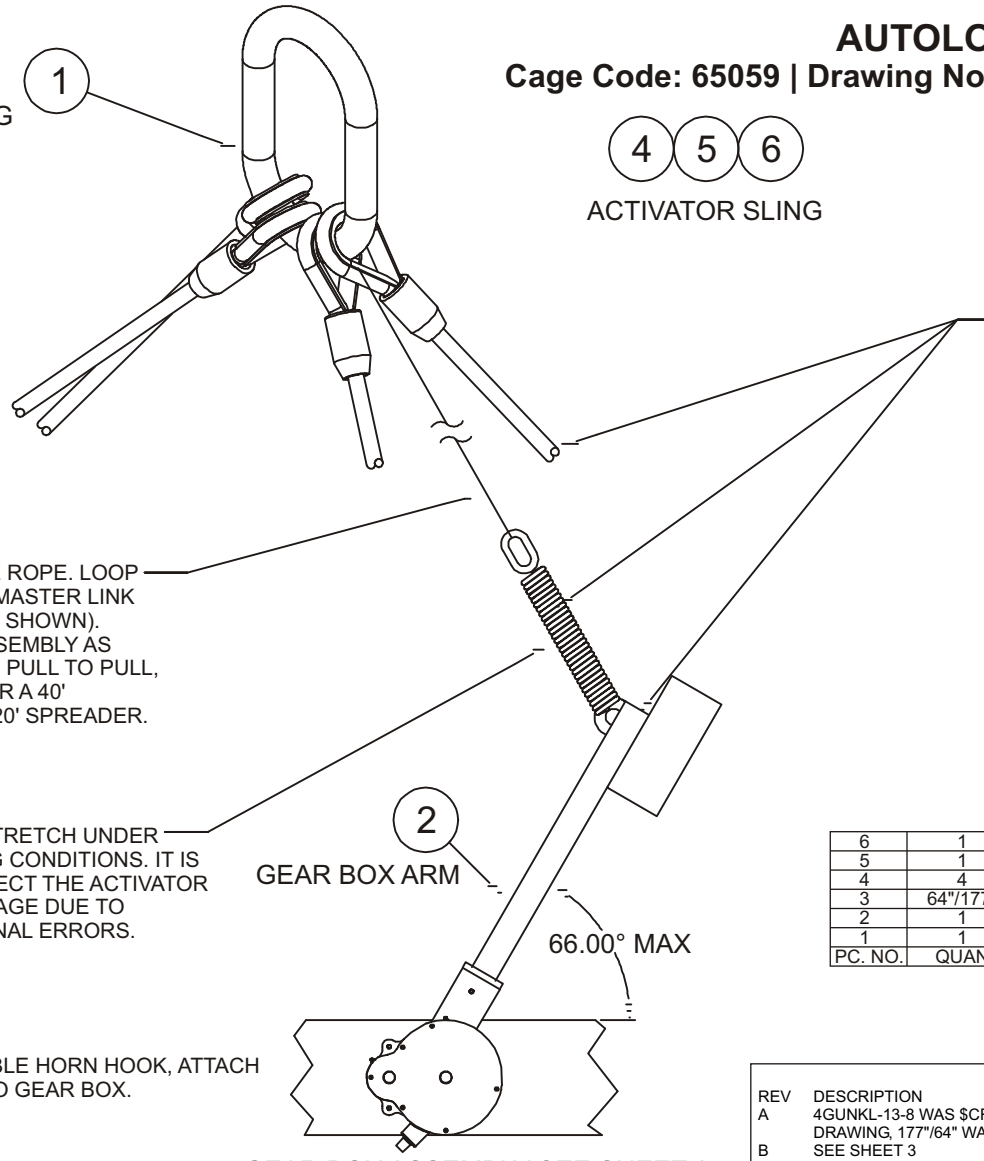
AUTOLOC ACTIVATOR SLING ASSEMBLY

Cage Code: 65059 | Drawing No: XN31000A | Revision: -- | Sheet: 4 of 8



WITH BOTH LIFTING SLING AND ACTIVATOR SLING TIGHT, THE GEAR BOX ARM SHOULD BE AT AN ANGLE OF APPROXIMATELY 66°. AN AUDIBLE "CLICK" SIGNALS THAT THE PAWL HAS ENGAGED THE NEXT TOOTH IN THE GEAR BOX. ADJUST THE ACTIVATOR SLING LENGTH TO ACHIEVE THIS "CLICK".

AFTER ASSEMBLY: RAISE AND LOWER THE LIFTING SLING EIGHT (8) TIMES AND OBSERVE THAT THE FLAGS AT EACH CORNER OF THE SPREADER TURN EACH TIME THE ACTIVATOR SLING IS FULLY SLACKENED (AFTER FULLY TENSIONING THE LIFTING SLING).

USE 3/16" OR 1/4" DIA. WIRE ROPE. LOOP EACH END (HARDWIRE TO MASTER LINK AND SPRING LINK (PC 6) AS SHOWN). DETERMINE LENGTH AT ASSEMBLY AS SHOWN. LENGTH OF ROPE, PULL TO PULL, IS APPROXIMATELY 177" FOR A 40' SPREADER AND 64" FOR A 20' SPREADER.

SPRING WILL NOT STRETCH UNDER NORMAL OPERATING CONDITIONS. IT IS PROVIDED TO PROTECT THE ACTIVATOR SLING FROM BREAKAGE DUE TO VARIOUS OPERATIONAL ERRORS.

NOTE:
IF USING A SLING FOR DOUBLE HORN HOOK, ATTACH CABLE TO RING CLOSEST TO GEAR BOX.

LIST OF MATERIALS

PC. NO.	QUAN	PART NO. AND DESCRIPTION
6	1	$GUNKL-13-8 ½"ALLOY CHAIN
5	1	$LEE-E250X24SS SPRING, SPECIAL 1.45 X 24" SS
4	4	$CRE1010033 3/16" WIRE ROPE SWAGES
3	64"/177"	XWR0019IWRC6X19 ø3/16" WIRE ROPE
2	1	AA01010A-1PA, GEAR BOX ASSEMBLY
1	1	N3105AA, AUTOLOC SLING ASSEMBLY

REVISIONS

REV	DESCRIPTION	DATE	APPROVED
A	4GUNKL-13-8 WAS $CRE275552, 3/16" WAS 3/16" OR 1/4", UPDATED GEAR BOX DRAWING, 177"/64" WAS 177"	12/9/09	DAH
B	SEE SHEET 3	2/7/11	DAH
C	REMOVED SHACKLES AROUND MASTER LINK	6/12/12	DAH

To avoid lifter failure, potential death and property damage, never exceed WLL (Working Load Limit)

Dimensions are subject to manufacturing tolerance and change.

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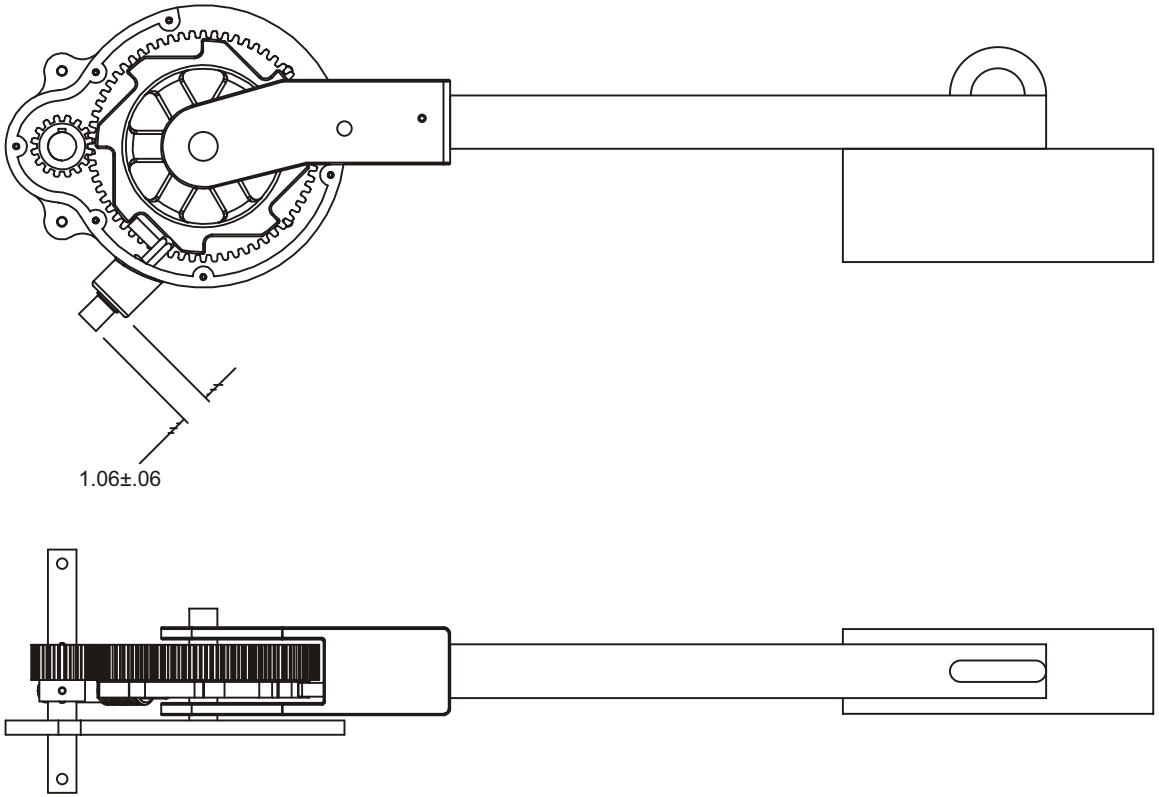
GEAR BOX ASS'Y

Cage Code: 65059 | Drawing No: XN31000A | Revision: C | Sheet: 5 of 8



WASHERS AS REQUIRED
TO FILL LOOSELY, AND
ALIGN PC 50 WITH PC 30

NOTES:

1. AA01010A-1PA, GEAR BOX ASS'Y
2. FINISH: SANDBLAST AND PRIME
3. GREASE ALL MOVING PARTS

REVISIONS

REV	DESCRIPTION	DATE	APPROVED
A	SEE SHEET 4	12/9/09	DAH
B	SEE SHEET 3	2/7/11	DAH
C	SEE OTHER SHEETS	6/12/12	DAH

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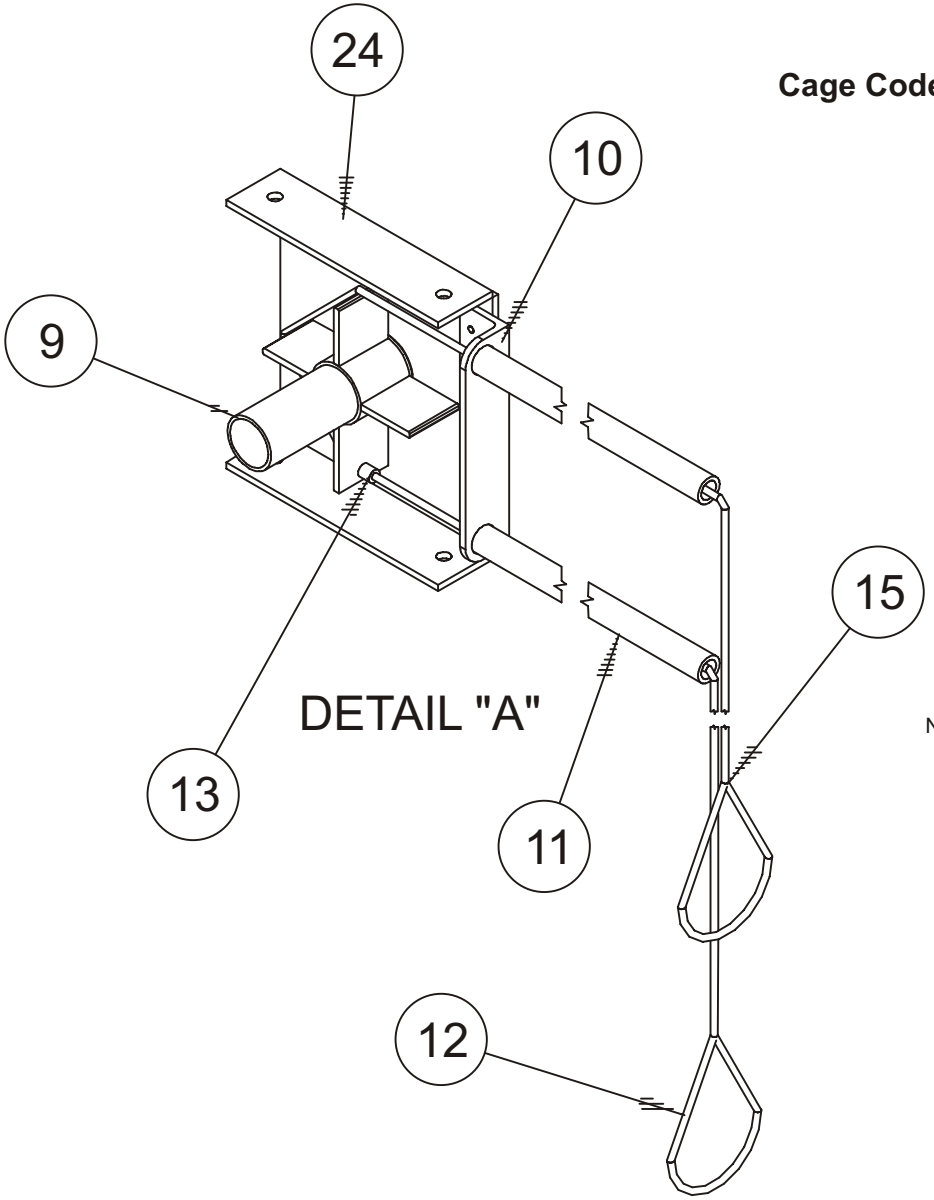
MANUAL LINKAGE DRIVE

Cage Code: 65059 | Drawing No: XN31000A | Revision: C | Sheet: 6 of 8



NOTES:

1. ON MANUAL SPREADERS, THE DRIVE BOX SHOWN REPLACES THE GEAR BOX SHOWN ON SHEET 5.
2. THERE IS NO ACTIVATOR SLING WIRE. ACTUATION IS PERFORMED BY PULLING THE WIRE ROPE LOOPS. (PC 12)
3. THESE ARE THE ONLY DIFFERENCES BETWEEN THE AUTOLOC AND THE MANUAL SPREADERS.

REVISIONS

REV	DESCRIPTION	DATE	APPROVED
A	SEE SHEET 4	12/9/09	DAH
B	SEE SHEET 3	2/7/11	DAH
C	SEE OTHER SHEETS	6/12/12	DAH

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LOAD LEVELING SPREADER MAINTENANCE DETAILS

Cage Code: 65059 | Drawing No: XN31000A | Revision: C | Sheet: 7 of 8

NOTES:

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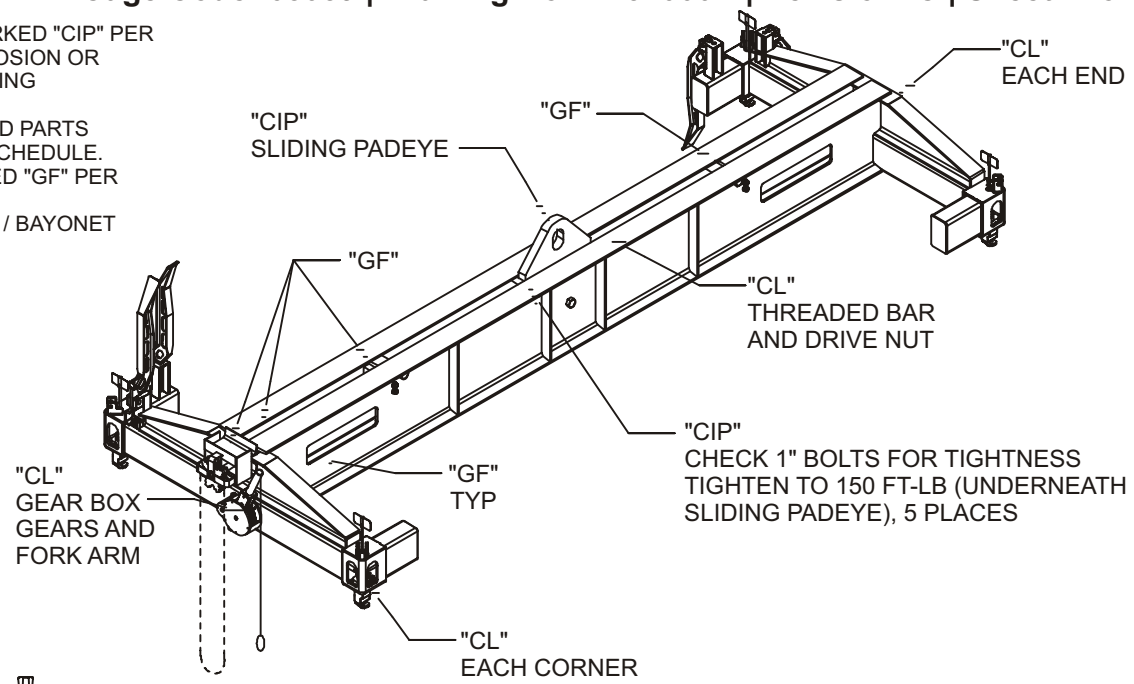
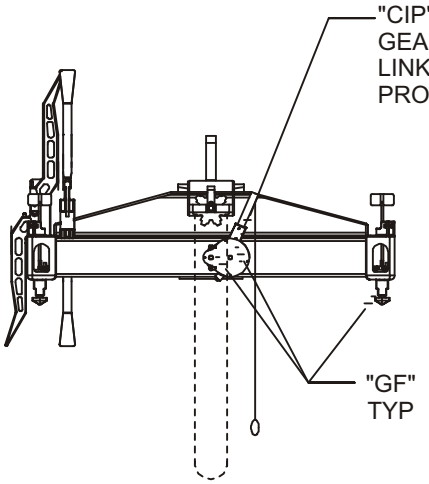
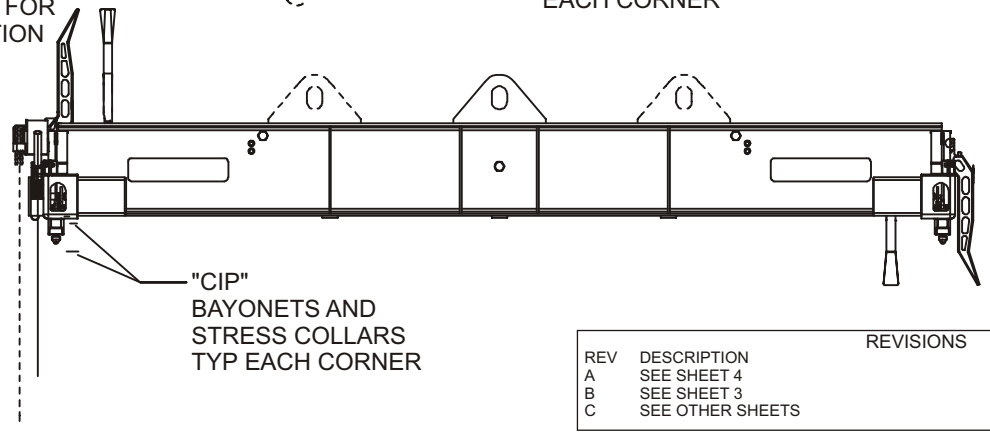
2. LIBERALLY APPLY STAPLEX RED GREASE ON ALL MOVING MATED PARTS MARKED "CL" FOR COATED LUBRICATION PER MAINTENANCE SCHEDULE.
3. APPLY STAPLEX RED GREASE TO ALL GREASE FITTINGS MARKED "GF" PER MAINTENANCE SCHEDULE.
4. SEE SHEETS 2 & 3 FOR LINKAGE DETAILS AND STRESS COLLAR / BAYONET ASSEMBLY DETAILS.
5. SEE SHEETS 5 & 8 FOR GEAR BOX DETAILS







REVISIONS

REV	DESCRIPTION	DATE	APPROVED
A	SEE SHEET 4	12/9/09	DAH
B	SEE SHEET 3	2/7/11	DAH
C	SEE OTHER SHEETS	6/12/12	DAH

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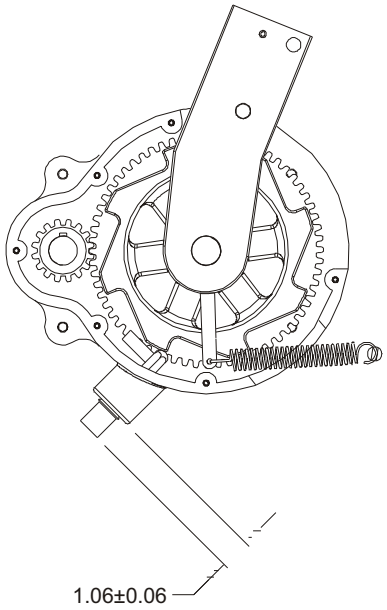
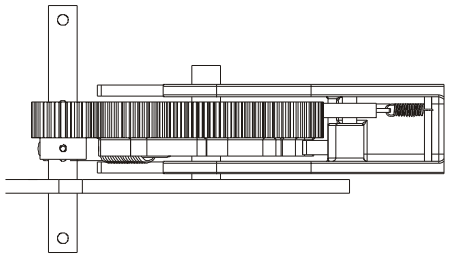
GEAR BOX ASS'Y FOR LOAD LEVELING SPREADER

Cage Code: 65059 | Drawing No: XN31000A | Revision: C | Sheet: 8 of 8





NOTES:

1. AA45006B-1PA, GEAR BOX ASS'Y
2. FINISH: SANDBLAST AND PRIME
3. GREASE ALL MOVING PARTS

REVISIONS

REV	DESCRIPTION	DATE	APPROVED
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B	SEE SHEET 3	2/7/11	DAH
C	SEE OTHER SHEETS	6/12/12	DAH

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