

Guardian Steel Gear Shaft Coupling

Service & Installation Instructions

P-8609-GC
GUA-MRK-DOC-026



 **Guardian Couplings**[®]
Altra Industrial Motion

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IMPORTANT READ ALL NOTICES & WARNINGS BEFORE ATTEMPTING ANY INSTALLATION!

NOTICES:

- PLEASE CAREFULLY READ OVER AND UNDERSTAND INSTRUCTIONS BEFORE ATTEMPTING ANY MAINTENANCE. IF ADDITIONAL ASSISTANCE IS NEEDED PLEASE CONTACT GUARDIAN BEFORE SERVICING/INSTALLING THE PRODUCT.
- WHILE GUARDIAN MAKES EVERY EFFORT TO ENSURE THE ACCURACY OF THE INFORMATION PROVIDED, WE MAKE NO WARRANTY AS TO THE ACCURACY OR COMPLETENESS OF SAID INFORMATION. THE INFORMATION PROVIDED CORRESPONDS TO THE INSTALLATION STANDARDS AT THE TIME OF PRINTING.
- THESE INSTALLATION INSTRUCTIONS ACT AS GENERAL GUIDELINES, AND DO NOT COVER EVERY SCENARIO. IF YOUR INSTALLATION DOES NOT APPLY, PLEASE CONTACT GUARDIAN TO FURTHER REVIEW YOUR APPLICATION TO ENSURE PROPER INSTALLATION IS COMPLETED.
- ENSURE PROPER SIZING AND OFFSETS TO AVOID CAUSING DAMAGE TO THE MACHINERY AND/OR COUPLING.
- KEEP COUPLINGS FREE OF DUST AND GRIME TO ENSURE LONG LIFE.
- VERIFY APPLICATION DATA AND REVIEW TORQUE SPECIFICATIONS, MIS-ALIGNMENT, AND APPLICATION SERVICE FACTORS. IF FURTHER ASSISTANCE IS NEEDED PLEASE CONTACT GUARDIAN COUPLINGS.
- CHECK TO MAKE SURE MAXIMUM ALLOWABLE BORE DIAMETERS ON HUBS ARE NOT EXCEEDED. SEE CATALOG SPECIFICATIONS FOR MORE DETAILS.
- HUBS THAT ARE MODIFIED OR MACHINED BY THE CUSTOMER ARE NOT COVERED UNDER THE STANDARD WARRANTY TERMS. IF MODIFICATIONS ARE MADE BY THE CUSTOMER IT IS RECOMMENDED THAT THE CUSTOMER ADHERES TO GUARDIAN MACHINING STANDARDS TO ENSURE PROPER OPERATION.

WARNINGS:

- DISENGAGE ALL POWER TO NECESSARY MACHINERY BEFORE PERFORMING ANY WORK ON THE ASSEMBLY. MAKE SURE NO ACCIDENTAL ENGAGEMENT CAN OCCUR.
- IMPROPER USE OR INSTALLATION MAY RESULT IN SERIOUS INJURY OR DEATH. GUARDIAN COUPLINGS WILL NOT BE LIABLE FOR IMPROPER USE/INSTALLATION OF THE PRODUCTS. THE PURCHASER/INSTALLER IS RESPONSIBLE FOR PROPER INSTALLATION, SAFEGUARDS, MAINTENANCE AND OPERATION OF THE PRODUCT AND EQUIPMENT.
- ANY MODIFICATIONS TO INSTRUCTIONS AND/OR COUPLING CHARACTERISTICS MAY RESULT IN A PREMATURE FAILURE.
- MAKE SURE THAT COUPLINGS ARE NOT IN CONTACT WITH ANY NON-ROTATING SURFACES.
- IF ANY PROBLEMS OCCUR DURING ASSEMBLY, CONTACT GUARDIAN COUPLINGS IMMEDIATELY.
- THIS PRODUCT CONTAINS WEAR ELEMENTS THAT WILL EVENTUALLY FAIL. MAKE SURE THE ASSEMBLY IS ADEQUATELY COVERED/ENCLOSED TO AVOID INJURY IN CASE OF A FAILURE.
- WARNING: THIS PRODUCT MAY CONTAIN CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER AND/OR BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

SECTION 1 – COUPLING OVERVIEW

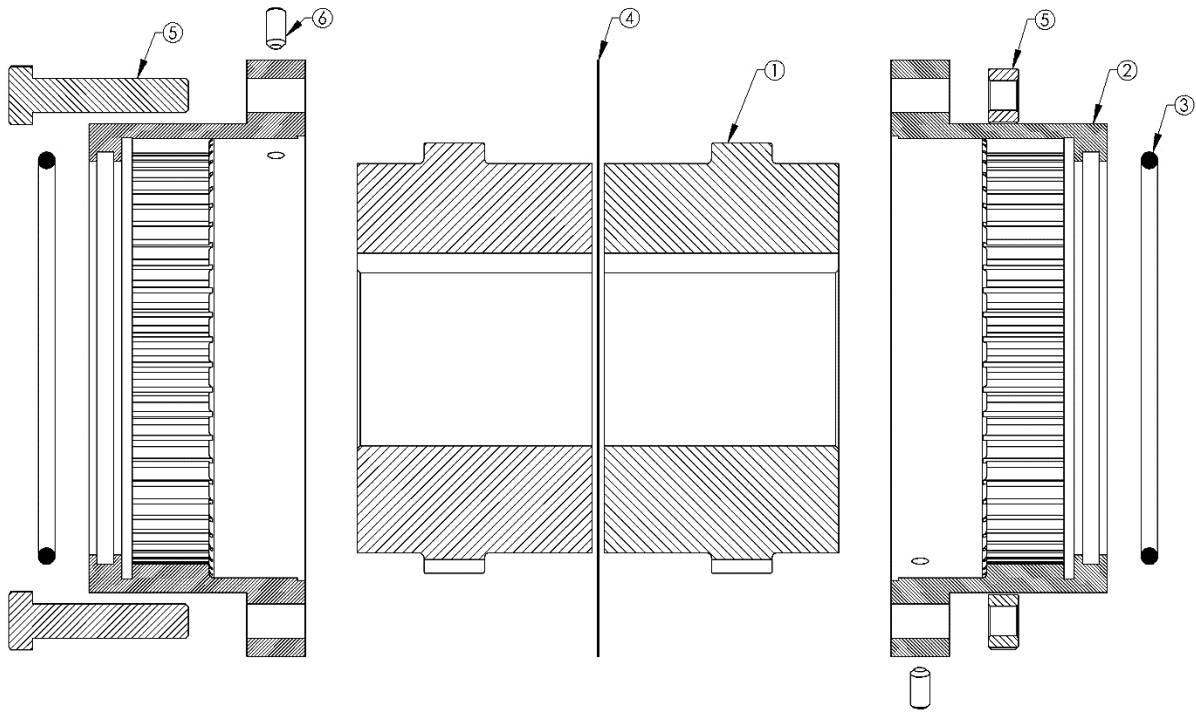


FIGURE 1.1 STEEL GEAR DOUBLE FLEX COUPLING (EXPLODED VIEW)

| ITEM NUMBER | ITEM DESCRIPTION |
|-------------|----------------------------------|
| 1 | STEEL GEAR FLEX HUB |
| 2 | STEEL GEAR FLEX SLEEVE |
| 3 | STEEL GEAR FLEX SLEEVE SEAL |
| 4 | STEEL GEAR GASKET |
| 5 | STEEL GEAR HARDWARE |
| 6 | STEEL GEAR FLEX SLEEVE LUBE PLUG |

SECTION 1 – COUPLING OVERVIEW (CONTINUED)

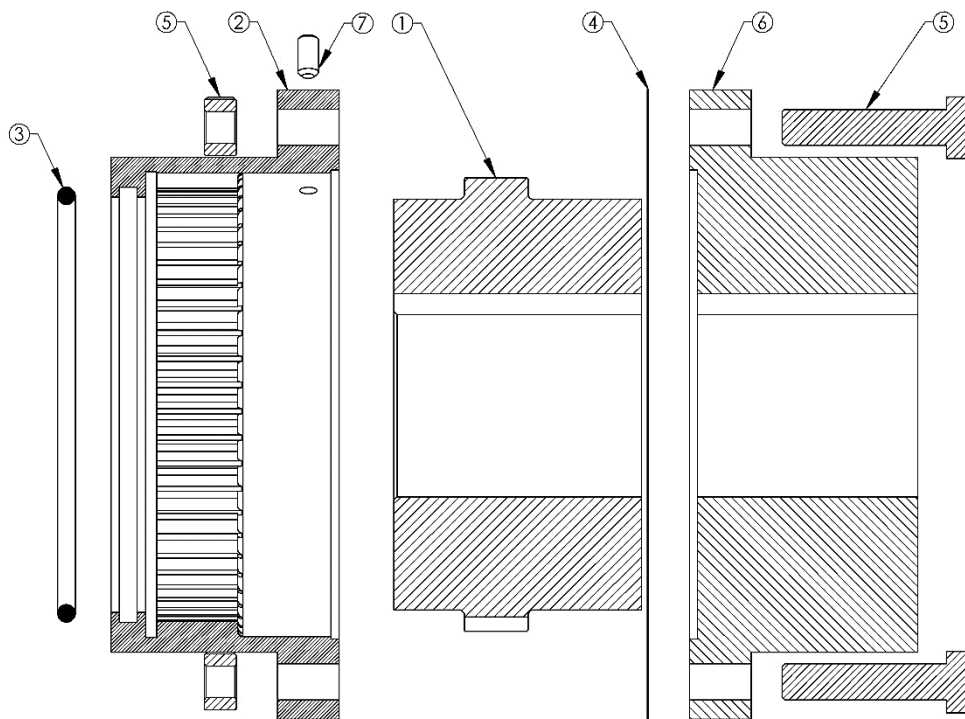


FIGURE 1.2 STEEL GEAR SINGLE FLEX COUPLING (EXPLODED VIEW)

| ITEM NUMBER | ITEM DESCRIPTION |
|-------------|----------------------------------|
| 1 | STEEL GEAR FLEX HUB |
| 2 | STEEL GEAR FLEX SLEEVE |
| 3 | STEEL GEAR FLEX SLEEVE SEAL |
| 4 | STEEL GEAR GASKET |
| 5 | STEEL GEAR HARDWARE |
| 6 | STEEL GEAR RIGID HUB |
| 7 | STEEL GEAR FLEX SLEEVE LUBE PLUG |

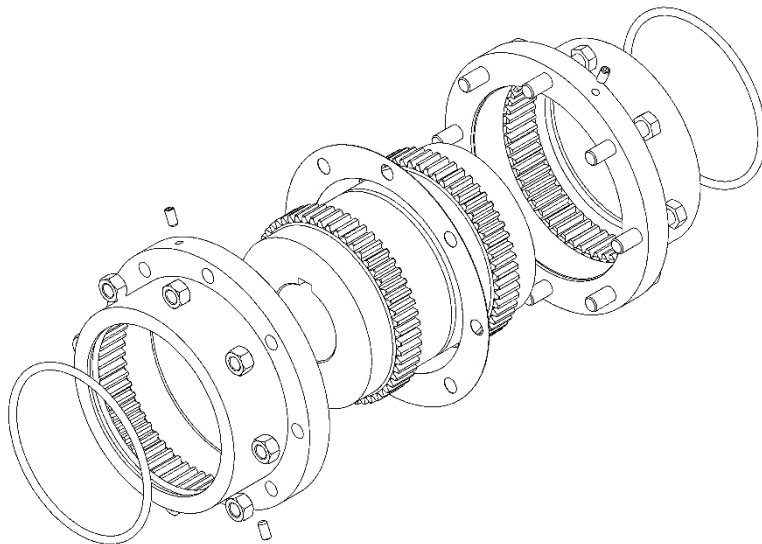


FIGURE 1.3 STEEL GEAR DOUBLE FLEX COUPLING (ISO)

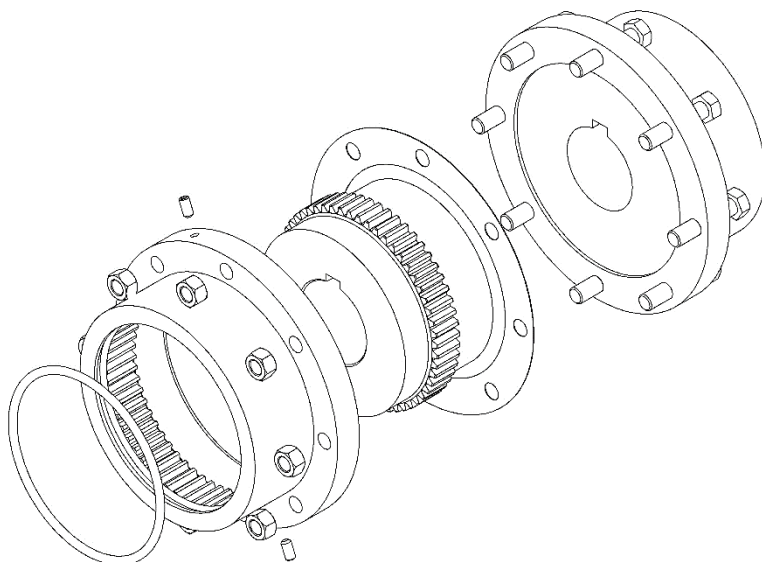


FIGURE 1.4 STEEL GEAR SINGLE FLEX COUPLING (ISO)

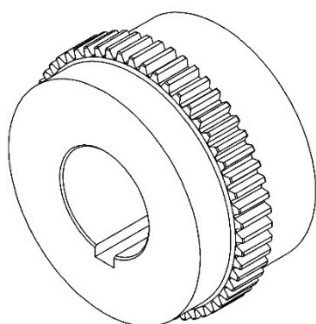


FIGURE 1.5 STEEL GEAR FLEX HUB (SHORT END)

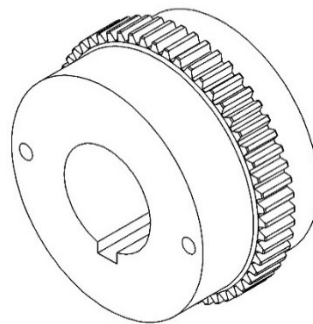


FIGURE 1.6 STEEL GEAR FLEX HUB (LONG END)

SECTION 2 - TOOLS/MATERIAL REQUIRED

- TORQUE WRENCH
- ALLEN SOCKETS
- MEDIUM STRENGTH REMOVABLE LOCTITE
- CALIPERS / FEELER GAGE(S)
- STEEL GEAR COUPLING GREASE (SUPPLIED WITH COUPLING)
- ALIGNMENT TOOLS (IE: STRAIGHT EDGE, DIAL INDICATOR, SHIMS... ETC.)

SECTION 3A – INSTALLATION INSTRUCTIONS (DOUBLE FLEX)

- 1) **PLEASE READ & FOLLOW ALL NOTICES & WARNINGS PRIOR TO INSTALLATION OF THIS PRODUCT**
DISENGAGE ALL POWER TO NECESSARY MACHINERY BEFORE PERFORMING ANY WORK ON THE ASSEMBLY
MAKE SURE NO ACCIDENTAL ENGAGEMENT CAN OCCUR
- 2) LIGHTLY GREASE FLEX SLEEVE SEALS AND INSTALL INTO EACH FLEX COVER SEAL GROOVE
- 3) PLACE ONE SLEEVE AND SEAL ASSEMBLY OVER DRIVING
- 4) INSTALL AND MATE COUPLING HUB BORE WITH DRIVING SHAFT
HUB SHOULD BE INSTALLED WITH THE SHORT END TOWARD THE DRIVING UNIT
(FOR SHRINK FIT HUBS, APPLY HEAT TO HUB EVENLY, PREFERABLY SUBMERGED IN OIL NOT EXCEEDING 350°F)
!! DO NOT ALLOW FLEX SLEEVE SEAL TO CONTACT HEATED HUB !!
- 5) POSITION HUB ON MATING SHAFT WITH LONG END FLUSH WITH THE END OF THE MATING SHAFT
- 6) REPEAT STEPS 3 THRU STEPS 5 FOR THE DRIVEN SHAFT HUB
- 7) MOVE DRIVEN AND DRIVING EQUIPMENT TOGETHER UNTIL PROPER ASSEMBLY GAP IS ACHIEVED
(SEE FIGURE 4.1 AND TABLE 4.1 FOR PROPER ASSEMBLY GAP)
- 8) ENSURE DRIVEN UNIT IS ALIGNED TO DRIVING UNIT, WITHIN COUPLINGS ALLOWABLE MISALIGNMENT
ANGULAR ALIGNMENT
MEASURE THE GAP BETWEEN HUBS IN (4) LOCATIONS 90° APART.
THE MEASUREMENT RANGE SHOULD NOT EXCEED THE ANGULAR LIMIT LISTED IN TABLE 4.4
PARALLEL ALIGNMENT
PLACE A STRAIGHT EDGE SQUARE ON THE BODY OF BOTH HUBS IN (4) LOCATIONS 90° APART
THE MAXIMUM GAP SHOULD NOT EXCEED THE OFFSET LIMIT LISTED IN TABLE 4.4
- 9) APPLY COUPLING GREASE TO THE PERIMETER AND GROOVES OF BOTH COUPLING HUBS TEETH
GUARDIAN RECOMMENDS USING SHELL ALVANIA CG GREASE (GREASE SUPPLIED WITH COUPLING)
- 10) MOVE BOTH SLEEVE AND SEAL ASSEMBLIES TOGETHER, TAKING CARE NOT TO DAMAGE THE SEALS
- 11) PLACE GASKET BETWEEN BOTH SLEEVES AND ROTATE TO ALIGN HOLES
- 12) WITH HOLES ALIGNED, SECURE BOTH SLEEVES TOGETHER WITH MOUNTING HARDWARE
(SEE TABLE 4.2 FOR RECOMMENDED TIGHTENING TORQUES)
- 13) REMOVE LUBE PLUGS AND ADD COUPLING GREASE IN THE AMOUNT LISTED IN TABLE 4.3
GUARDIAN RECOMMENDS USING SHELL ALVANIA CG GREASE (GREASE SUPPLIED WITH COUPLING)
- 14) REINSTALL LUBE PLUGS AND INSTALL UNTIL SECURELY SEATED
GUARDIAN RECOMMENDS APPLYING PERMATEx No. 2 TO THE THREADS OF LUBE PLUGS

SECTION 3B – INSTALLATION INSTRUCTIONS (SINGLE FLEX)

- 15) **PLEASE READ & FOLLOW ALL NOTICES & WARNINGS PRIOR TO INSTALLATION OF THIS PRODUCT**
DISENGAGE ALL POWER TO NECESSARY MACHINERY BEFORE PERFORMING ANY WORK ON THE ASSEMBLY
MAKE SURE NO ACCIDENTAL ENGAGEMENT CAN OCCUR
- 16) DETERMINE IF FLEX HUB WILL BE INSTALLED ON DRIVING SHAFT OR THE DRIVEN SHAFT
- 17) LIGHTLY GREASE FLEX SLEEVE SEAL AND INSTALL INTO FLEX COVER SEAL GROOVE
- 18) PLACE SLEEVE AND SEAL ASSEMBLY OVER APPROPRIATE SHAFT
- 19) INSTALL AND MATE FLEX HUB BORE WITH APPROPRIATE SHAFT
HUB SHOULD BE INSTALLED WITH THE LONG END TOWARD THE SHAFT END
(FOR SHRINK FIT HUBS, APPLY HEAT TO HUB EVENLY, PREFERABLY SUBMERGED IN OIL NOT EXCEEDING 350°F)
!! DO NOT ALLOW FLEX SLEEVE SEAL TO CONTACT HEATED HUB !!
- 20) POSITION HUB ON MATING SHAFT WITH LONG END FLUSH WITH THE END OF THE MATING SHAFT
- 21) INSTALL AND MATE RIGID HUB BORE WITH OPPOSITE SHAFT
HUB SHOULD BE INSTALLED WITH FLANGE END TOWARD THE SHAFT END
(FOR SHRINK FIT HUBS, APPLY HEAT TO HUB EVENLY, PREFERABLY SUBMERGED IN OIL NOT EXCEEDING 350°F)
- 22) POSITION HUB ON MATING SHAFT WITH FLANGE END FLUSH WITH THE END OF THE MATING SHAFT
- 23) MOVE DRIVEN AND DRIVING EQUIPMENT TOGETHER UNTIL PROPER ASSEMBLY GAP IS ACHIEVED
(SEE FIGURE 4.2 AND TABLE 4.1 FOR PROPER ASSEMBLY GAP)
- 24) ENSURE DRIVEN UNIT IS ALIGNED TO DRIVING UNIT, WITHIN COUPLINGS ALLOWABLE MISALIGNMENT
ANGULAR ALIGNMENT
SINGLE FLEX COUPLINGS ARE NOT DESIGNED TO ACCOMMODATE ANGULAR MISALIGNMENT
PARALLEL ALIGNMENT
PLACE A STRAIGHT EDGE SQUARE ON THE BODY OF BOTH HUBS IN (4) LOCATIONS 90° APART
THE MAXIMUM GAP SHOULD NOT EXCEED THE OFFSET LIMIT LISTED IN TABLE 4.4
- 25) APPLY COUPLING GREASE TO THE PERIMETER AND GROOVES OF COUPLING HUB TEETH
GUARDIAN RECOMMENDS USING SHELL ALVANIA CG GREASE (GREASE SUPPLIED WITH COUPLING)
- 26) MOVE SLEEVE AND SEAL ASSEMBLY TOWARD RIGID FLANGE, TAKING CARE NOT TO DAMAGE THE SEALS
- 27) PLACE GASKET BETWEEN SLEEVE AND RIGID HUB; ROTATE TO ALIGN HOLES
- 28) WITH HOLES ALIGNED, SECURE SLEEVE TO THE RIGID HUB WITH MOUNTING HARDWARE
(SEE TABLE 4.3 FOR RECOMMENDED TIGHTENING TORQUES)
- 29) REMOVE LUBE PLUGS AND ADD COUPLING GREASE IN THE AMOUNT LISTED IN TABLE 4.3
GUARDIAN RECOMMENDS USING SHELL ALVANIA CG GREASE (GREASE SUPPLIED WITH COUPLING)
- 30) REINSTALL LUBE PLUGS AND INSTALL UNTIL SECURELY SEATED
GUARDIAN RECOMMENDS APPLYING PERMATEx No. 2 TO THE THREADS OF LUBE PLUGS

SECTION 4 - REFERENCE DATA

TABLE 4.1 STEEL GEAR COUPLING ASSEMBLY GAP

| COUPLING SERIES | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 |
|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| DOUBLE FLEX GAP | .12 | .12 | .12 | .20 | .20 | .24 | .24 | .31 | .31 | .31 | .31 |
| SINGLE FLEX GAP | .16 | .16 | .16 | .20 | .20 | .22 | .28 | .31 | .35 | .35 | .39 |

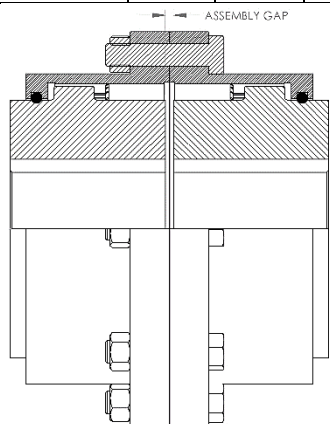


FIGURE 4.1 DOUBLE FLEX ASSEMBLY GAP

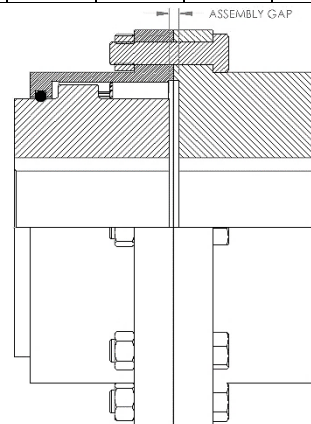


FIGURE 4.2 SINGLE FLEX ASSEMBLY GAP

TABLE 4.2 FLEX COVER FASTNER TIGHTENING TORQUE

| COUPLING SERIES | | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 |
|-----------------|--------|------|------|------|-------|----|-------|----|-------|----|----|----|
| SEATING TORQUE | FT-LBS | 10 | 29 | 63 | 125 | | 210 | | 313 | | | |
| | Nm | 13.6 | 39.3 | 85.4 | 169.5 | | 284.7 | | 424.4 | | | |

TABLE 4.3 COUPLING LUBRICATION QUANTITY

| COUPLING SERIES | | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 |
|-----------------|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| DOUBLE FLEX | LBS | .09 | .15 | .24 | .51 | .79 | 1.19 | 2.01 | 2.29 | 1.70 | 4.89 | 7.01 |
| SINGLE FLEX | LBS | .04 | .09 | .15 | .26 | .40 | .60 | 1.04 | 1.26 | 2.01 | 2.49 | 3.75 |

TABLE 4.4 STEEL GEAR COUPLING INSTALLATION ALIGNMENT LIMITS (INCHES)

| COUPLING SERIES | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 |
|---------------------------|------|------|------|------|------|------|------|------|------|------|------|
| OFFSET LIMIT | | | | | | | | | | | |
| DOUBLE FLEX COUPLING | .002 | .003 | .003 | .004 | .005 | .006 | .007 | .008 | .009 | .010 | .011 |
| SINGLE FLEX COUPLING | .001 | .001 | .001 | .002 | .002 | .002 | .003 | .003 | .003 | .003 | .004 |
| ANGULAR LIMIT | | | | | | | | | | | |
| DOUBLE FLEX COUPLING ONLY | .006 | .007 | .009 | .011 | .013 | .015 | .018 | .020 | .022 | .024 | .026 |

SECTION 5 - STORAGE

- COUPLINGS SHOULD BE STORED IN A DRY, WELL MAINTAINED ENVIRONMENT
- HUMID STORAGE ENVIRONMENTS COULD LEAD TO SURFACE RUST METAL COMPONENTS (INSPECT FOR RUST AND BURRS PRIOR TO INSTALLATION)

WARRANTY

Guardian Ind. Inc. warrants that the Goods will be free from defects in material and workmanship for a period of twelve (12) months from delivery, or such other period as shall be agreed upon in writing by the parties. Guardian Ind. Inc.'s limited warranty excludes remedy for damage or defect caused by abuse; failure to resist corrosion or erosion from any corrosive agent or fluid, or due to deposits of foreign material from any fluid; modifications not executed by Guardian Ind. Inc.; improper installation or operation; defects or failures arising out of, in any way related to, or as a result, either direct or indirect, of the Buyer's failure to properly advise Guardian Ind. Inc. of all normal and special operating conditions, known to or suspected by the Buyer, when Guardian Ind. Inc. is manufacturing the Product for a specific operation; or normal wear and tear under normal usage. All weights stated in Guardian Ind. Inc.'s catalog and lists are approximate and are excluded from this warranty. EXCEPT AS EXPRESSLY SET FORTH IN THIS PARAGRAPH, GUARDIAN IND. INC. MAKES NO OTHER WARRANTY WITH RESPECT TO THE GOODS DELIVERED HEREUNDER AND EXPRESSLY DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND OF FITNESS FOR A PARTICULAR PURPOSE, ARISING BY OPERATION OF LAW OR OTHERWISE.

Guardian Ind. Inc. must be notified in writing of any defect in the Goods within a reasonable period of time after discovery (not to exceed thirty (30) days) and the defective Goods must be delivered within the warranty period specified above, prepaid, to Guardian Ind. Inc.'s factory, with evidence that the Goods have been properly installed, maintained and operated in accordance with Guardian Ind. Inc.'s instructions. If Guardian Ind. Inc. determines that any such returned Goods are not in conformity with the warranty set forth herein, then Guardian Ind. Inc. shall, at its sole option and expense, either repair the same or supply replacement Goods.

The remedies of Buyer set forth herein are exclusive, and the total liability of Guardian Ind. Inc. hereunder, whether based on contract, warranty, negligence, indemnity, strict liability or otherwise, and shall not exceed the purchase price of the Goods giving rise to any such claim for liability. IN NO EVENT SHALL GUARDIAN IND. INC. OR ITS SUPPLIERS BE LIABLE TO BUYER, ANY SUCCESSORS IN INTEREST, OR ANY BENEFICIARY OF THIS CONTRACT FOR CONSEQUENTIAL, INDIRECT, INCIDENTAL, OR SPECIAL DAMAGES OR LOSSES, OR FOR ANY SECONDARY CHARGES OR ADMINISTRATIVE OR PUNITIVE DAMAGES, FINES, PENALTIES, FEES, EXPENSES AND OTHER CHARGES, ARISING OUT OF THE CONTRACT OR ANY BREACH THEREOF, WHETHER BASED UPON LOSS OF USE, LOSS OF PRODUCTION, LOST PROFITS OR REVENUE, INTEREST, LOST GOODWILL, WORK STOPPAGE, IMPAIRMENT OF OTHER GOODS, LOSS BY REASON OF SHUTDOWN OR NON-OPERATION, INCREASED EXPENSES OF OPERATION OR CLAIMS OF CUSTOMERS OF BUYER FOR SERVICE INTERRUPTION, OR ANY OTHER TYPE OF ECONOMIC LOSS OR DAMAGE, WHETHER OR NOT SUCH LOSS OR DAMAGE IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, INDEMNITY, STRICT LIABILITY OR OTHERWISE.

Further details pertaining to TERMS AND CONDITIONS OF SALES can be found at the following link:

http://www.altramotion.com/~media/Files/Corporate/Terms%20and%20Conditions/Sales-Terms/Guardian_Sales_Terms.ashx



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