

Guardian FH Flywheel Coupling

Service & Installation Instructions

P-8606-GC
GUA-MRK-DOC-015



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IMPORTANT READ ALL NOTICES & WARNINGS BEFORE ATTEMPTING ANY INSTALLATION!

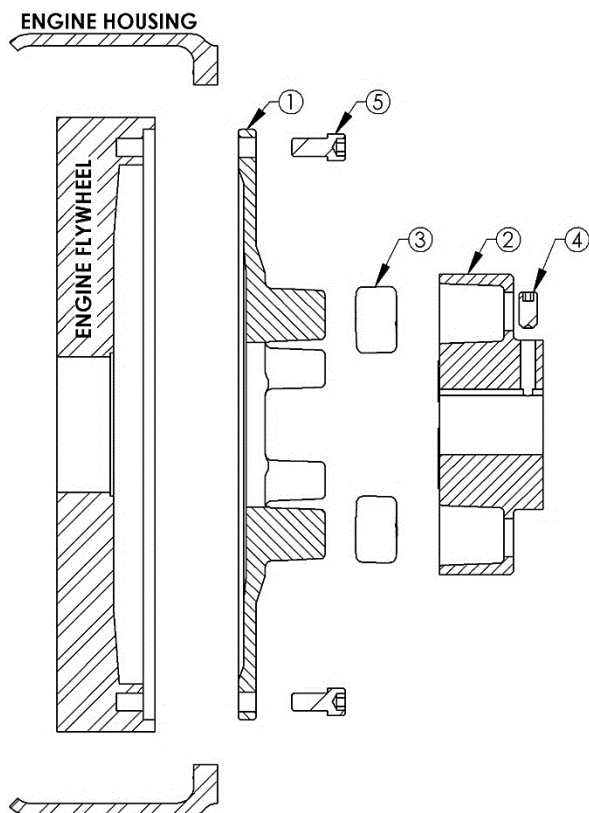
NOTICES:

- 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



ITEM NUMBER	ITEM DESCRIPTION
1	FH COUPLING FLYWHEEL
2	FH COUPLING HUB
3	FH COUPLING RUBBER INSERTS
4	SETSCREW
5	COUPLING MOUNTING HARDWARE*

*SHOWN FOR REFERENCE ONLY – NOT INCLUDED WITH COUPLING

FIGURE 1.1 FH COUPLING CROSS SECTION

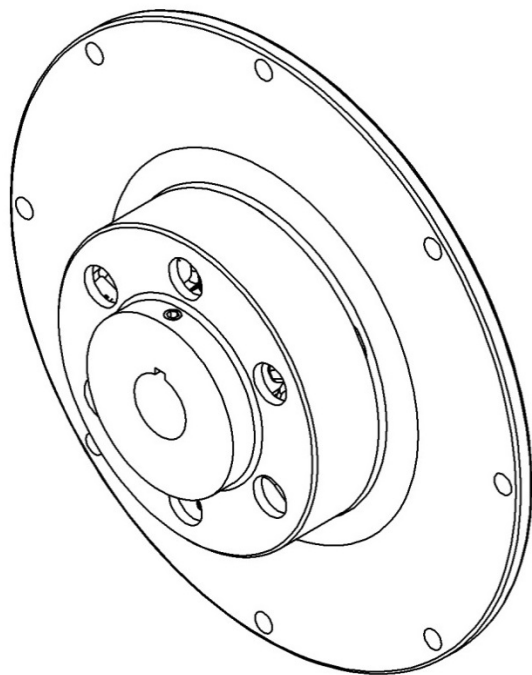


FIGURE 1.2 FH COUPLING (PUMP SIDE)

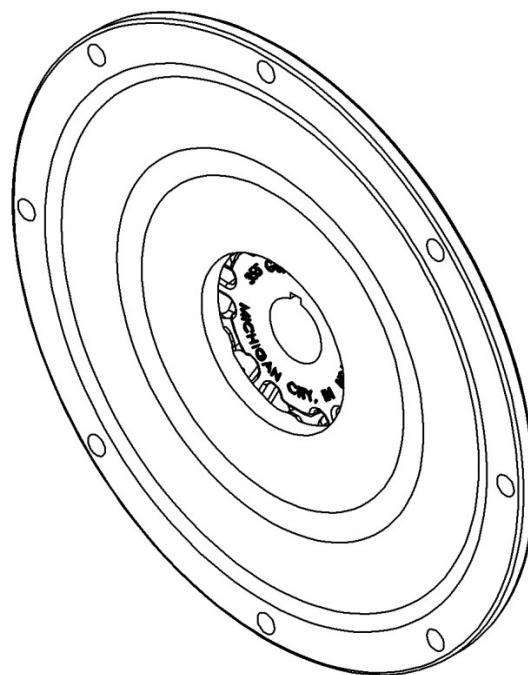


FIGURE 1.3 FH COUPLING (ENGINE SIDE)

SECTION 1 – COUPLING OVERVIEW (continued)

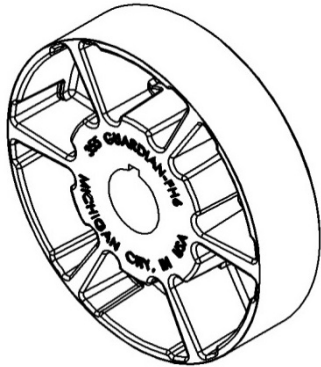


FIGURE 1.4 FH COUPLING HUB (POCKET SIDE)

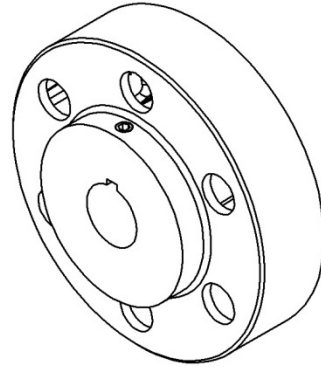


FIGURE 1.5 FH COUPLING HUB (BODY SIDE)

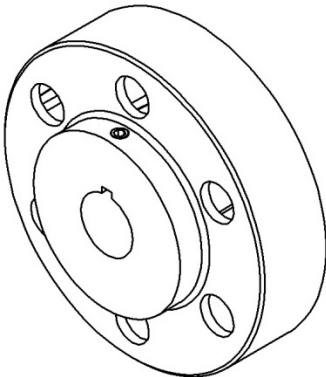


FIGURE 1.6 BORE & KEYWAY

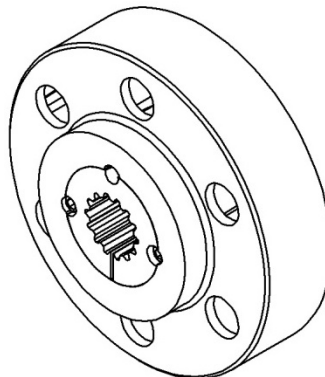


FIGURE 1.7 TAPER-LOCK BUSHING

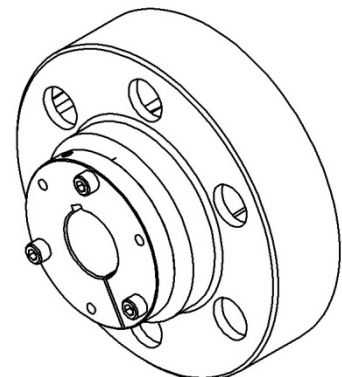


FIGURE 1.8 QD BUSHING

SECTION 2 - TOOLS/MATERIAL REQUIRED

- TORQUE WRENCH
- ALLEN SOCKETS
- MEDIUM STRENGTH REMOVABLE LOCTITE
- CALIPERS
- P-80 RUBBER LUBRICANT (OR ACID FREE GREASE)
- ALIGNMENT TOOLS (IE: STRAIGHT EDGE, DIAL INDICATOR, SHIMS... ETC.)

SECTION 3A – INSTALLATION INSTRUCTIONS (HOUSING MOUNTED UNIT)

- 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) INSTALL AND MATE COUPLING FLYWHEEL WITH ENGINE FLYWHEEL PILOT AND MOUNTING HOLES
COUPLING SHOULD BE INSTALLED WITH THE FLYWHEEL TEETH AWAY FROM ENGINE
- 3) WITH HOLES ALIGNED, INSTALL PROPERLY SIZED BOLTS INTO ENGINE FLYWHEEL MOUNTING HOLES
GUARDIAN RECOMMENDS USING MEDIUM STRENGTH REMOVABLE LOCTITE
(SEE TABLE 4.1 FOR STANDARD SAE ENGINE FLYWHEEL HOLE SIZES)
- 4) ENSURING COUPLING IS FLAT WITH ENGINE FLYWHEEL, TORQUE BOLTS TO RECOMMENDED SEATING TORQUE
(SEE TABLE 4.1 FOR BOLT SEATING TORQUES)

SECTION 3A – INSTALLATION INSTRUCTIONS (HOUSING MOUNTED UNIT) (continued)

- 5) IF REQUIRED, MATE PUMP/EQUIPMENT WITH MOUNTING PLATE/HOUSING
REFER TO GUARDIAN'S SUPPLEMENTARY INSTALLATION INSTRUCTIONS FOR FURTHER ASSISTANCE
- 6) IF REQUIRED, INSTALL RUBBER INSERTS INTO COUPLING HUB POCKETS
GUARDIAN RECOMMENDS APPLYING P-80 LUBRICANT TO RUBBER INSERTS WHEN INSTALLING
(LUBE SUPPLIED WITH COUPLING)
- 7) WITH RUBBER INSERTS INSTALLED IN HUB, INSTALL AND MATE COUPLING HUB BORE WITH MATING SHAFT
(SEE FIGURE 1.6 THRU 1.8 FOR TYPICAL MOUNTING OPTIONS)
- 8) FOR HOUSING MOUNTED UNITS, GUARDIAN WILL PROVIDE A DETAILED ASSEMBLY PRINT FOR HUB LOCATION
POSITION COUPLING HUB ON SHAFT PER RESPECTIVE GUARDIAN ASSEMBLY PRINT
(GUARDIAN WILL REQUIRE DETAILED DIMENSIONS ON ENGINE FLYWHEEL, HOUSING AND DRIVEN SHAFT)
- 9) WITH HUB PROPERLY POSITIONED, TORQUE CLAMPING FASTENER TO RECOMMENDED SEATING TORQUE
GUARDIAN RECOMMENDS USING MEDIUM STRENGTH REMOVABLE LOCTITE
(SEE TABLE 4.2 FOR PROPER BORE & KEYWAY SETSCREW SEATING TORQUES)
FOR TAPER-LOCK AND QD BUSHINGS, REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS
- 10) APPLY P-80 LUBRICANT TO RUBBER INSERTS AND FLYWHEEL TEETH (LUBE SUPPLIED WITH COUPLING)
- 11) COUPLING IS NOW READY FOR INSTALLATION OF PUMP/ENGINE HOUSING
REFER TO SUPPLEMENTARY INSTALLATION INSTRUCTIONS FOR FURTHER ASSISTANCE WITH
ENSURE FLYWHEEL TEETH GO BETWEEN RUBBER INSERTS AND INSERTS DO NOT TIP DURING INSTALLATION

SECTION 3B – INSTALLATION INSTRUCTIONS (FREE STANDING UNIT)

- 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) INSTALL AND MATE COUPLING FLYWHEEL WITH ENGINE FLYWHEEL PILOT AND MOUNTING HOLES
COUPLING SHOULD BE INSTALLED WITH THE FLYWHEEL TEETH AWAY FROM ENGINE
- 3) WITH HOLES ALIGNED, INSTALL PROPERLY SIZED BOLTS INTO ENGINE FLYWHEEL MOUNTING HOLES
GUARDIAN RECOMMENDS USING MEDIUM STRENGTH REMOVABLE LOCTITE
(SEE TABLE 4.1 FOR STANDARD SAE ENGINE FLYWHEEL HOLE SIZES)
- 4) ENSURING COUPLING IS FLAT WITH ENGINE FLYWHEEL, TORQUE BOLTS TO RECOMMENDED SEATING TORQUE
(SEE TABLE 4.1 FOR BOLT SEATING TORQUES)
- 5) IF REQUIRED, INSTALL RUBBER INSERTS INTO COUPLING HUB POCKETS
GUARDIAN RECOMMENDS APPLYING P-80 LUBRICANT TO RUBBER INSERTS WHEN INSTALLING
(LUBE SUPPLIED WITH COUPLING)
- 6) WITH RUBBER INSERTS INSTALLED IN HUB, INSTALL AND MATE COUPLING HUB BORE WITH MATING SHAFT
(SEE FIGURE 1.6 THRU 1.8 FOR TYPICAL MOUNTING OPTIONS)
- 7) POSITION COUPLING HUB ON DRIVEN SHAFT
- 8) WITH HUB PROPERLY POSITIONED, TORQUE CLAMPING FASTENER TO RECOMMENDED SEATING TORQUE
GUARDIAN RECOMMENDS USING MEDIUM STRENGTH REMOVABLE LOCTITE
(SEE TABLE 4.2 FOR PROPER BORE & KEYWAY SETSCREW SEATING TORQUES)
FOR TAPER-LOCK AND QD BUSHINGS, REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS
- 9) APPLY P-80 LUBRICANT TO RUBBER INSERTS AND FLYWHEEL TEETH
(LUBE SUPPLIED WITH COUPLING)
- 10) MOVE DRIVEN UNIT AND COUPLING HUB TOWARD COUPLING FLYWHEEL.
ENSURE FLYWHEEL TEETH GO BETWEEN RUBBER INSERTS AND INSERTS DO NOT TIP DURING INSTALLATION
- 11) MOVE DRIVEN UNIT TOWARD COUPLING FLYWHEEL UNTIL PROPER ASSEMBLY GAP IS ACHIEVED
(SEE FIGURE 4.1 AND TABLE 4.3 FOR PROPER ASSEMBLY GAP)
- 12) ENSURE DRIVEN UNIT IS ALIGNED TO DRIVING UNIT, WITHIN COUPLINGS RATED MISALIGNMENT CAPABILITIES
ALIGNMENT CAN BE CHECKED USING EITHER THE "STRAIGHT EDGE METHOD" OR A DIAL INDICATOR, TAKING
MEASUREMENTS (4) PLACES 90° APART
ALIGNMENT MEASUREMENTS SHOULD NOT EXCEED THE VALUES LISTED IN TABLE 4.4

SECTION 4 - REFERENCE DATA

TABLE 4.1 SAE – J620d ENGINE FLYWHEEL HOLE SIZES AND SEATING TORQUES

SAE FLYWHEEL SIZE		6-1/2	7-1/2	8	10	11-1/2	14	18
IMPERIAL BOLTS		5/16-18		3/8-16			1/2-13	5/8-11
SEATING TORQUE	FT-LBS	19		34			85	170
	Nm	26		46			115	230
METRIC BOLTS		M8		M10			M12	M16
SEATING TORQUE	FT-LBS	20		40			70	155
	Nm	27		54			95	210

TABLE 4.2 FH COUPLING SERIES MOUNTING SETSCREW

FH COUPLING SERIES		FH6	FH12	FH25	FH50	FH100
IMPERIAL SETSCREWS		3/8-16		1/2-13		3/4-10
SEATING TORQUE	FT-LBS	23		50		167
	Nm	31		68		226

TABLE 4.3 FH COUPLING SERIES ASSEMBLY

FH COUPLING SERIES	FH6	FH12	FH25	FH50	FH100
ASSEMBLY GAP	.157"	.157"	.157"	.157"	.157"

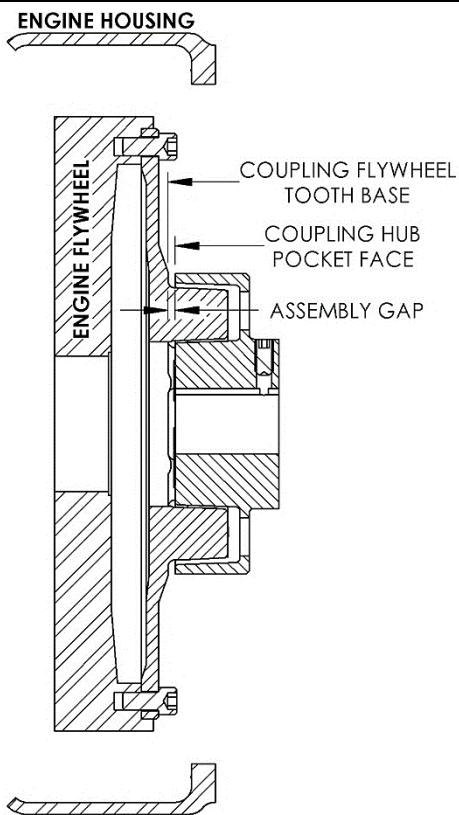
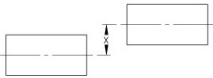
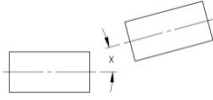
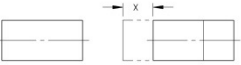



FIGURE 4.1 FH HUB ASSEMBLY GAP

SECTION 4 - REFERENCE DATA (continued)

TABLE 4.4 FH COUPLING SERIES MISALIGNMENT CAPABILITIES

FH COUPLING SERIES	FH6	FH12	FH25	FH50	FH100
RADIAL					
	.040"	.040"	.040"	.040"	.040"
ANGULAR					
	1°	1°	1°	1°	1°
AXIAL					
	.118" MAX	.118" MAX	.118" MAX	.118" MAX	.118" MAX
TORSIONAL ANGLE					
	3° - 5°	3° - 5°	3° - 5°	3° - 5°	3° - 5°

SECTION 5 - STORAGE

- COUPLINGS SHOULD BE STORED IN A DRY, WELL MAINTAINED ENVIRONMENT
- HUMID STORAGE ENVIRONMENTS COULD LEAD TO SURFACE RUST ON THE HUB AND BORE (INSPECT BORE FOR RUST AND BURRS PRIOR TO INSTALLATION)
- COUPLINGS SHOULD BE STORED WITH RUBBER INSERTS FREE OF OIL

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.

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