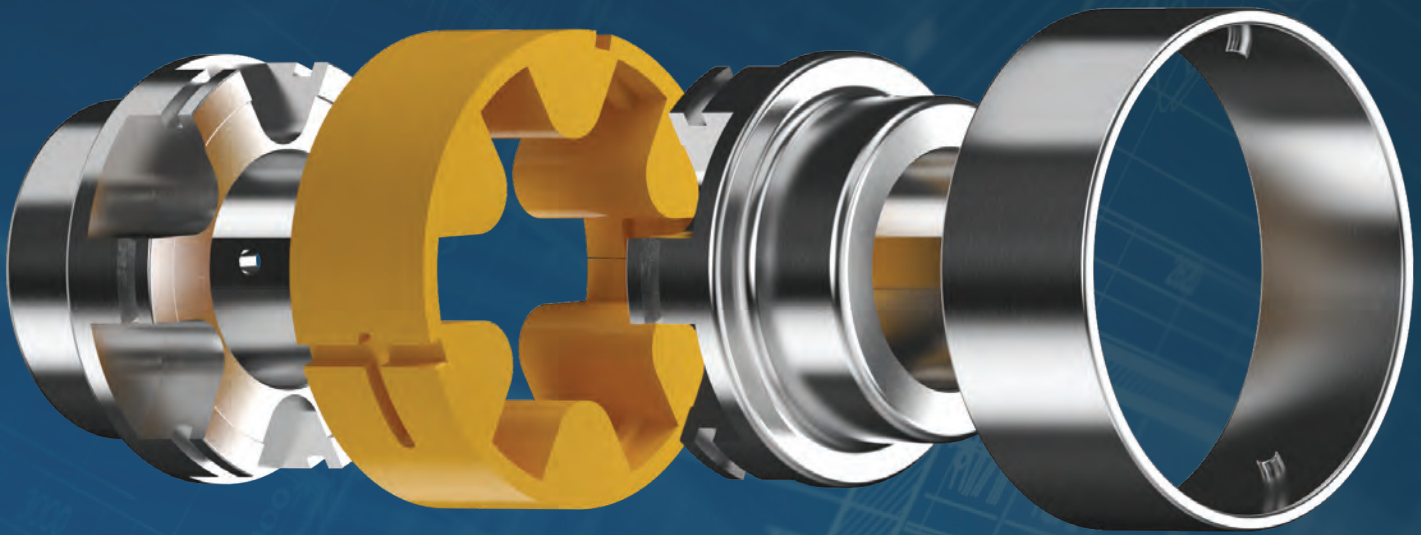


Installation & Maintenance Instructions

ATRA-FLEX® Millennium® (M-Series)



Tools Required: Standard mechanics tools, straight edge and feeler gauge, dial indicator or laser alignment tool (whichever is preferred).

For technical support, please contact ATR Sales at
800-443-6613

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1. MOUNTING OF NON SPACER, SPACER AND FLYWHEEL COUPLINGS
 - A. MAKE SURE THAT THE PRIME MOVER STARTING SWITCH IS LOCKED OUT.
 - B. CLEAN SHAFTS.
 - C. PLACE THE RING ON ONE OF THE SHAFTS BEFORE MOUNTING THE SECOND HUB, OR IF INSTALLING FLYWHEEL HUB OR SPACER FLANGE PLACE RING ON STANDARD HUB SIDE.
 - D. MOUNT HUBS ON SHAFTS SO THAT THE DISTANCE BETWEEN THE TEETH IS EQUAL TO THE "E" DIMENSION SHOWN ON TABLE 1 FOR A-SERIES OR TABLE 2 FOR MILLENNIUM:
(TOLERANCES - RADIAL, AXIAL, and ANGULAR). DO NOT PRELOAD THE HUBS WHEN THE INSERT IS INSTALLED.

NOTE: ON SPACER COUPLING APPLICATIONS, THE STANDARD HUB IS INSTALLED SO THAT THE END OF SHAFT IS PERPENDICULAR WITH THE END OF THE WINGS ON THE HUB. THE SPACER FLANGE IS INSTALLED WITH THE FACE OF THE FLANGE FLUSH TO SHAFT END.
 - E. IF HUBS ARE TO BE INSTALLED INTERFERENCE FIT, HEAT ACCORDING TO INSTRUCTIONS BELOW.
 - F. WHEN THE MOUNTING OF THE HUBS IS COMPLETE TIGHTEN THE SETSCREWS.
2. SETTING THE "E" DIMENSION AND THE ANGULAR ALIGNMENT
 - A. USE A BAR IN EQUAL OR LESSER THICKNESS TO THE "E" DIMENSION SHOWN ON TABLE 1 FOR A-SERIES OR TABLE 2 FOR MILLENNIUM.
 - B. INSERT THE BAR THE DEPTH OF THE TEETH, AND AT 90 DEGREE INCREMENTS (WHEN POSSIBLE), MEASURE WITH A FEELER GAUGE OR CALIPERS THE "E" DIMENSION.
 - C. THE DIFFERENCE BETWEEN THE MINIMUM AND THE MAXIMUM MEASUREMENTS MUST NOT EXCEED THE ANGULAR TOLERANCE.
3. SETTING THE RADIAL ALIGNMENT
 - A. WITH A STRAIGHT EDGE APPLIED ACROSS THE TEETH OF BOTH HUBS, THE STRAIGHT EDGE MUST REST SQUARELY OR WITHIN THE RADIAL TOLERANCES ON TABLE 1 FOR A-SERIES OR TABLE 2 FOR MILLENNIUM. THIS PROCESS SHOULD BE DONE AT 90-DEGREE INTERVALS.
 - B. THE USE OF A DIAL INDICATOR OR LASER ALIGNMENT TOOL WILL ALLOW FOR CLOSER TOLERANCES IN ALIGNMENT.
 - C. TIGHTEN THE MOUNTING BOLTS AND PERFORM SECTIONS 2 AND 3 AGAIN TO MAKE SURE THAT THE ALIGNMENT HAS NOT CHANGED. IF THE ALIGNMENT IS WITHIN THE TOLERANCES OF TABLE 1 FOR A-SERIES OR TABLE 2 FOR MILLENNIUM PROCEED TO THE NEXT STEP. IF THE TOLERANCES ARE NOT THEN REALIGN THE HUBS.
4. INSTALL THE INSERT
 - A. THE INSERT SHOULD FIT LOOSELY (APPROXIMATELY .010 TO .070 PER SIDE DEPENDING ON THE SIZE) AS IT IS WRAPPED AROUND THE TEETH OF THE HUBS. DO NOT FORCE THE INSERT INTO THE TEETH, AS IT WILL PRELOAD THE COUPLING. FOR T-SLOT INSERTS, INSTALL THE INSERT SO THAT THE T-SLOT IS OPPOSITE THE ROTATION OF THE COUPLING.
5. INSTALL THE RING . A. ALIGN THE PINS IN THE RING WITH THE SLOTS ON THE INSERT AND SLIDE THE RING OVER THE INSERT. THE RING IS IN PLACE WHEN THE PINS ARE IN THE LOCATOR ON THE INSERT. ON LARGER RINGS A SOFT Mallet MIGHT BE NEEDED TO MOVE THE RING OVER THE INSERT AND IN PLACE. FOR T-SLOT INSERTS YOU MAY THEN ROTATE THE RING IN THE DIRECTION OF THE T-SLOTS SO THAT THE PINS ARE LOCKED INTO THE T-SLOT OF THE INSERT.

6. INSTALLATION OF JACKSHAFTS

- A. FOLLOW ALL STEPS PRECEDING WITH THE FLOATER HUB AND FLOATER RINGS INSTALLED ON THE OUTPUT DRIVER AND THE DRIVEN SIDE OF APPLICATION.
- B. MAKE SURE YOU HAVE ALLOWED FOR THE "E" DIMENSION WHEN THE CENTER SHAFT IS LIFTED INTO PLACE.
- C. LIFT AND SUPPORT CENTER SECTION SHAFT AT BOTH ENDS. POSITION IN ALIGNMENT WITH DRIVER AND DRIVEN SHAFT HUBS.
- D. INSTALL INSERTS.
- E. CHECK "E" DIMENSIONS AT BOTH ENDS.
- F. MOVE FLOATER RINGS INTO POSITION AND BOLT ONTO FLOATER HUBS, OR IF SNAP RING DESIGN -INSTALL SNAP RINGS.
- G. REMOVE CENTER SECTION SUPPORTS SLOWLY.
- H. REPLACE ALL GUARDING.

7. INSTALLATION OF END- FLOAT LIMITING COUPLINGS

- A. FIND MAGNETIC CENTER ON YOUR MOTOR AND MARK SHAFT.
- B. MOUNT COUPLING HUBS ONTO SHAFTS SO THAT THE "E" DIMENSION WILL BE CORRECT WHEN THE MOTOR IS IN ITS MAGNETIC CENTER OR CENTER OF ITS TOTAL AXIAL TRAVEL WHEN MOUNTED IN PLACE. PLACE RING OVER ONE HUB ON EITHER SIDE OF APPLICATION
- C. ALIGN COUPLING PER INSTALLATION SECTION #3
- D. CHECK "E" DIMENSION
- E. INSTALL INSERT INTO COUPLING
- F. INSTALL RING OVER INSERT
- G. CHECK THAT MOTOR SHAFT IS IN ITS CENTER OF AXIAL TRAVEL (MARK ON SHAFT)
- H. REPLACE ALL GUARDING BEFORE START-UP

8. INSTALLATION OF HORIZONTAL SHEAR / SLIDE COUPLINGS

- A. ADJUST THE DBSE ACORRDNIG TO THE MINIMUM OR MAXIMUM THE COUPLING IS DESIGNED FOR.
- B. SET SHAFTS IN THE POSITION OF TRAVEL INN OR OUT OR COMBINATION OF BOTH.
- C. MARK SHAFT FOR NON FLANGE HUB POSITION
- D. INSTALL NON FLANGED HUB ONTO SHAFT
- E. INSTALL FLANGED HUB ONTO SHAFT FLUSH WITH END OF SHAFT
- F. INSTALL RING, INSERT AND WINGED PLATE INTO NON FLANGED HUB, OR IF SPACER TYPE COUPLING ASSEMBLE SPACER UNIT WITH RING, INSERT AND BOTH WINGED PLATES, BOLT TO THE FLANGE HUBS (ONE ON EACH END OF SHAFTS)
- G. PLACE FLANGED HUB EQUIPMENT IN POSITION AND BOLT FLANGE HUB TO WINGED PLATE
- H. ALIGN COUPLING PER INSTALLATION SECTION # 3
- I. CHECK "E" DIMENSION AND OVERALL TRAVEL OF COUPLING
- J. REPLACE ALL GUARDING BEFORE START-UP

WARNING: ACCIDENTS INVOLVING ROTATING EQUIPMENT MAY RESULT IN LOSS OF LIFE, SERIOUS BODILY INJURY OR PROPERTY DAMAGE. THE PURCHASER OF THIS EQUIPMENT MUST ASSURE THAT THE EQUIPMENT IS PROPERLY ASSEMBLED, INSTALLED, SHIELDED, OPERATED AND MAINTAINED. THIS EQUIPMENT MUST NOT BE OPERATED AT CONDITIONS THAT EXCEED MANUFACTURER'S SPECIFICATIONS. PURCHASER MUST FOLLOW ALL FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS COVERING THE SAFE OPERATION AND MAINTENANCE OF THE EQUIPMENT, WITHOUT LIMITATION, THE USDOL-OSHA "LOCKOUT/TAGOUT" PROCEDURE SET FORTH IN 29 CFR 1910.147. IT IS THE PURCHASERS RESPONSIBILITY TO IMPLEMENT AND FOLLOW ITS OWN SAFETY, MAINTENANCE, AND EMPLOYEE TRAINING PROGRAM REGARDING THE SAFE AND PROPER OPERATION AND MAINTENANCE OF THE EQUIPMENT.

NOTE: INTERFERENCE FIT HUBS SHOULD BE HEATED IN AN OIL BATH OR OVEN TO A MAXIMUM OF 275 DEGREES FAHRENHEIT. THE FLASHPOINT OF THE OIL MUST BE 350 DEGREES FAHRENHEIT OR HIGHER

PER OSHA ALL ROTATIONAL EQUIPMENT MUST BE ENCLOSED WITH A GUARD. BEFORE START UP MAKE CERTAIN THAT GUARD IS IN PLACE. IF RING WALKS IN EITHER DIRECTION IMMEDIATELY SHUT UNIT OFF AND REFER TO TABLES 1 OR 2 AND FALLOW STEPS 2 THRU 5 AGAIN.

RECOMMENDED MAINTENANCE

ALL COUPLINGS SHOULD BE INSPECTED AT ROUTINE SHUT DOWNS OR EVERY SIX TO TWELVE MONTHS (OR 4500 TO 9000 HOURS) DEPENDING ON THE DUTY OF THE APPLICATION.

REMOVE THE RING AND UNWRAP THE INSERT. INSPECT THE INSERT FOR WEAR. MINOR CRACKING OR TEARING OF THE BELT PORTION OF THE INSERT WILL NOT AFFECT THE FUNCTION OF THE COUPLING.

IF THERE ARE ANY CRACKS OR TEARS IN THE LOBES OF THE INSERT IT SHOULD BE REPLACED. NORMAL WEAR WOULD BE SLIGHT INDENTS IN THE LOBES OF THE INSERTS WHERE THE WINGS OF THE HUBS MAKE CONTACT. IF THE INDENTS EXCEED APPROXIMATELY .050 X'S THE SIZE COUPLING, THE INSERT SHOULD BE REPLACED.

EXAMPLE

$M5 = 5 \times .05 = .250$

UP TO ¼" DEEP INDENTS WOULD BE PERMITTED BEFORE INSERT REPLACEMENT IS NEEDED ON AN M-5 COUPLING

THE ALIGNMENT AND GAP (E DIMENSION) OF THE TWO COUPLING HALVES SHOULD BE RECHECKED, AND ADJUSTED IF NEEDED. THE INSERT & RING CAN THEN BE INSTALLED.

Table 1: **A-Series®** Tolerances – Radial, Axial, and Angular

Size:	A-00	A-0	A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11
Distance Between Hubs "E"	.047	.062	.062	.062	.062	.188	.188	.188	.188	.188	.219	.250	.100
Radial Tolerance (TIR):	.02	.02	.039	.039	.039	.058	.058	.058	.058	.058	.078	.078	.078
Axial Tolerance:													
Minus	0	0	0	0	0	0	0	0	0	0	0	0	0
Plus	.039	.039	.058	.058	.078	.078	.177	.177	.177	.156	.156	.156	.156
Angular Tolerance	2°	2°	2°	2°	2°	1.3°	1.3°	1.3°	1°	1°	1°	1°	1°

Table 2: **Millennium®** Tolerances – Radial, Axial, and Angular

Size:	M00	M0	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
Distance Between Hubs "E"	.060"	.075"	.075"	.075"	.075"	.200"	.200"	.200"	.200"	.200"	.200"	.200"	.200"	.250"
Radial Tolerance (TIR):	.020"	.040"	.040"	.040"	.040"	.060"	.060"	.060"	.060"	.060"	.060"	.080"	.080"	.105"
Axial Tolerance:														
Minus	.010"	.010"	.020"	.020"	.020"	.040"	.040"	.040"	.040"	.040"	.060"	.100"	.100"	.100"
Plus	.030"	.040"	.040"	.040"	.040"	.075"	.100"	.100"	.100"	.100"	.100"	.150"	.150"	.200"
Angular Tolerance	2°	2°	2°	2°	2°	1°	1°	1°	1°	1°	1°	1°	1°	1°

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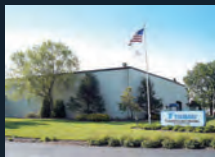
For over 100 years, Tsubaki has developed and manufactured the highest-quality products for power transmission and motion control. With a vast network of global production facilities, R&D resources, and sales offices, Tsubaki remains committed to providing innovative solutions to customers' problems for the next 100 years.



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