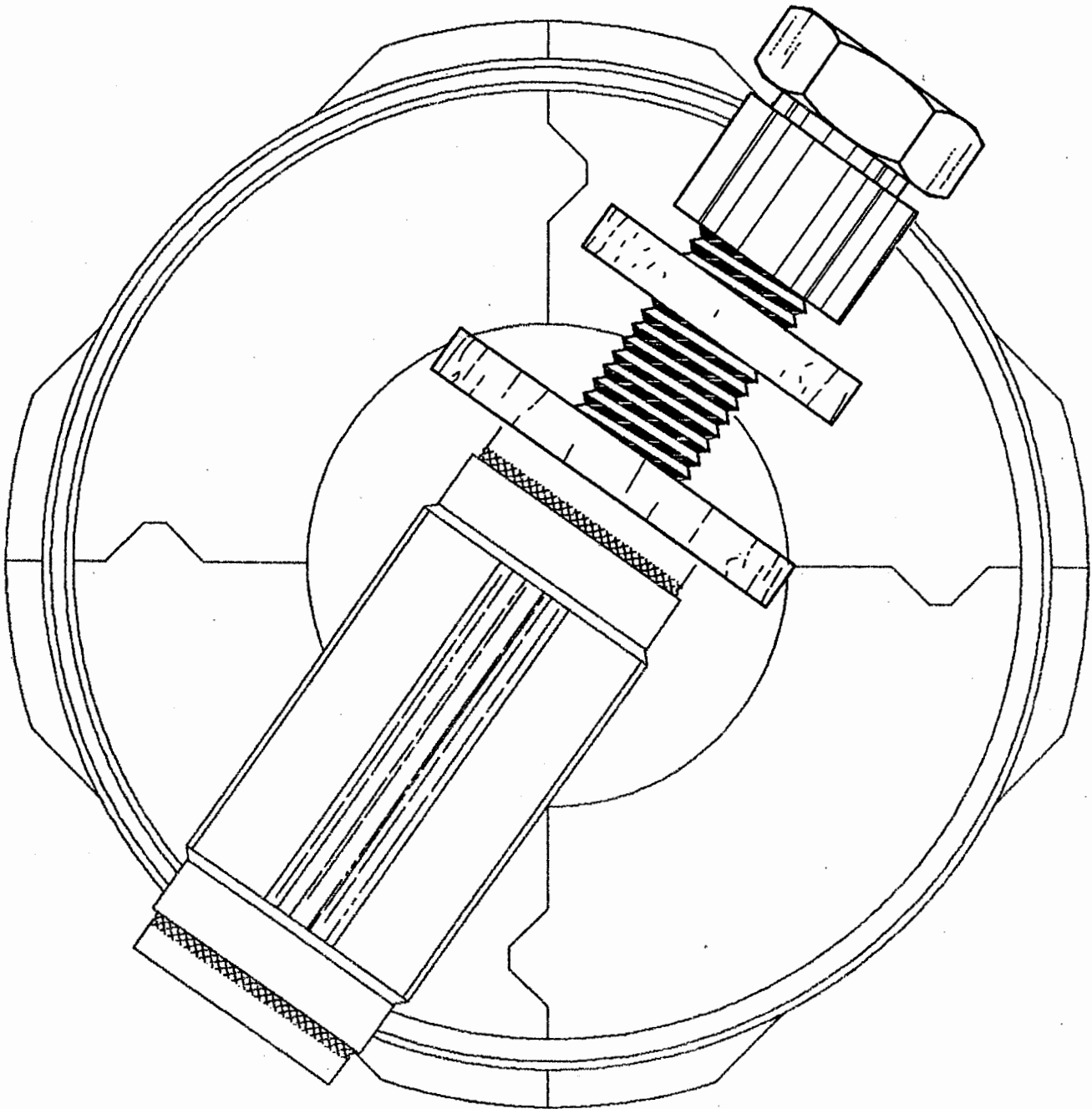


THE *Ultimate* IN

SAFETY *and* PERFORMANCE



A PRECISION DEVICE FOR MOUNTING HIGHWAY POLES IN HIGH-INCIDENT AREAS
(Meets all aspects of 1985 AASHTO standard)

PFI 200-1A COUPLER

Provided by PrecisionForm, Inc.
148 West Airport Rd.
Lititz, PA 17543

PRECISIONFORM COUPLERS
NOW MEET ALL ASPECTS OF THE
1994 ASSHTO STANDARD
AS REVISED IN 1998

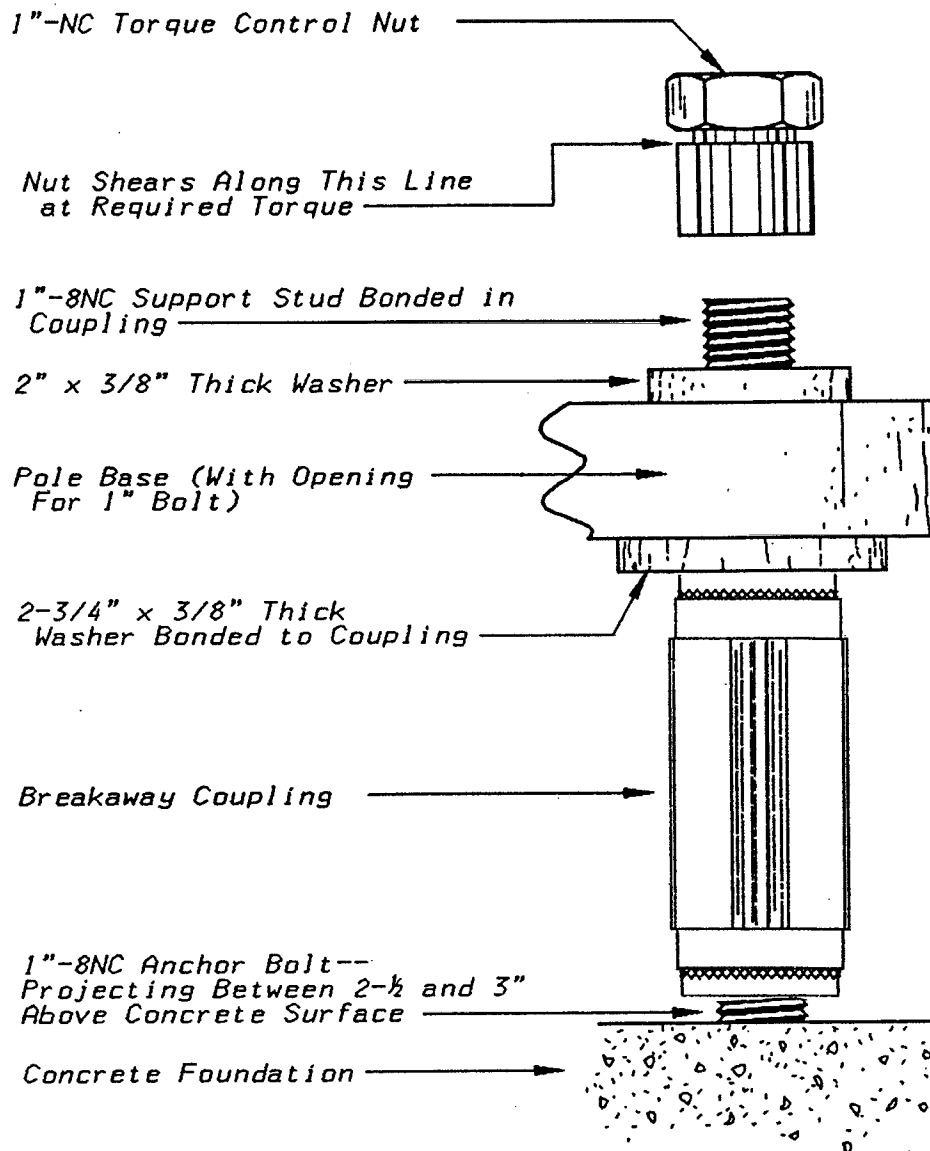


PrecisionForm
Incorporated

Description-

The PFI 200-1A coupler is a precision machined assemblage of components designed with a failure mode that meets all aspects of the 1985 American Association of State Highway and Transportation Officials (AASHTO) specification for sign, luminaire and traffic signal supports. Reference to the schematic drawing will allow identification of the aluminum alloy 6061-T6 body segments and the 2024-T851 control rings.

Otherwise the device is dimensionally the same as the PFI 100-1 and other couplers that met the 1975 AASHTO specifications. The PFI 200-1A coupler is available as a direct replacement for those products, thus assuring the motoring public the ultimate in safety.



Features-

1. Tamper resistant.
2. Easy to install.
3. Maintenance practically non-existent.
4. Direct replacement for supports of history.
5. Meets all aspects of the 1985 AASHTO standard.
6. Extensive laboratory tests verify superior performance.
7. No anchor bolt damage after accidents.
8. Precision manufacturing systems ensure repeatable characteristics.

Warranty-

The same warranty is provided for the PFI 200-1A support as the PFI 100-1 regarding material and workmanship for a period of one year from the date of installation. A complete text of the warranty appears on the back cover of this brochure.

Performance-

Full scale crash tests-

The Federal Outdoor Impact Laboratory (FOIL) tested the PFI 200-1 coupler* on April 30, 1987 at 20 mph, and again on May 01, 1987 at 60 mph. The couplers were mounted under a 523 lb. aluminum pole measuring 53'-2" in height. A reusable bogie weighing 1850 lbs. was crashed into the installation at 20.7 mph and 61.2 mph. The reported change in velocity for these tests were 11.2 ft/sec and 8.8 ft/sec. Calculated changes in velocity of a theoretical occupant were 12.4 ft/sec and 10.3 ft/sec respectively. (The 1985 AASHTO specification requires a maximum velocity change for an 1800 lb. vehicle of 16 ft/sec.)

Of importance is the absence of any projection on the foundation - only anchor bolts remained. The stub height requirement of 4" is easily met.

Independent Laboratory Tests -

The long term viability of the PFI 100-1 is well known. Accordingly, the Westmoreland Research and Testing Laboratory was engaged to evaluate the PFI 200-1 coupler* with respect to the PFI 100-1 coupler.

RESULTS-

Fatigue

Cyclic test loads of +6.5 Kips to +12 Kips and -2.7 Kips to +7.5 Kips for 2 million cycles had no adverse affect on the PFI 200-1 coupler*. Subsequent destructive tensile tests averaged 30,000 lbs. (29,420 min. for 5 tests).

One test was carried on to 4 million cycles (-2.7 Kips to 7.5 Kips) without failure and tensile tested, breaking at 30,570 lbs. Clearly the PFI 200-1 coupler* was superior to the PFI 100-1 design per the requirements of the 1985 AASHTO specifications.

Stress Corrosion

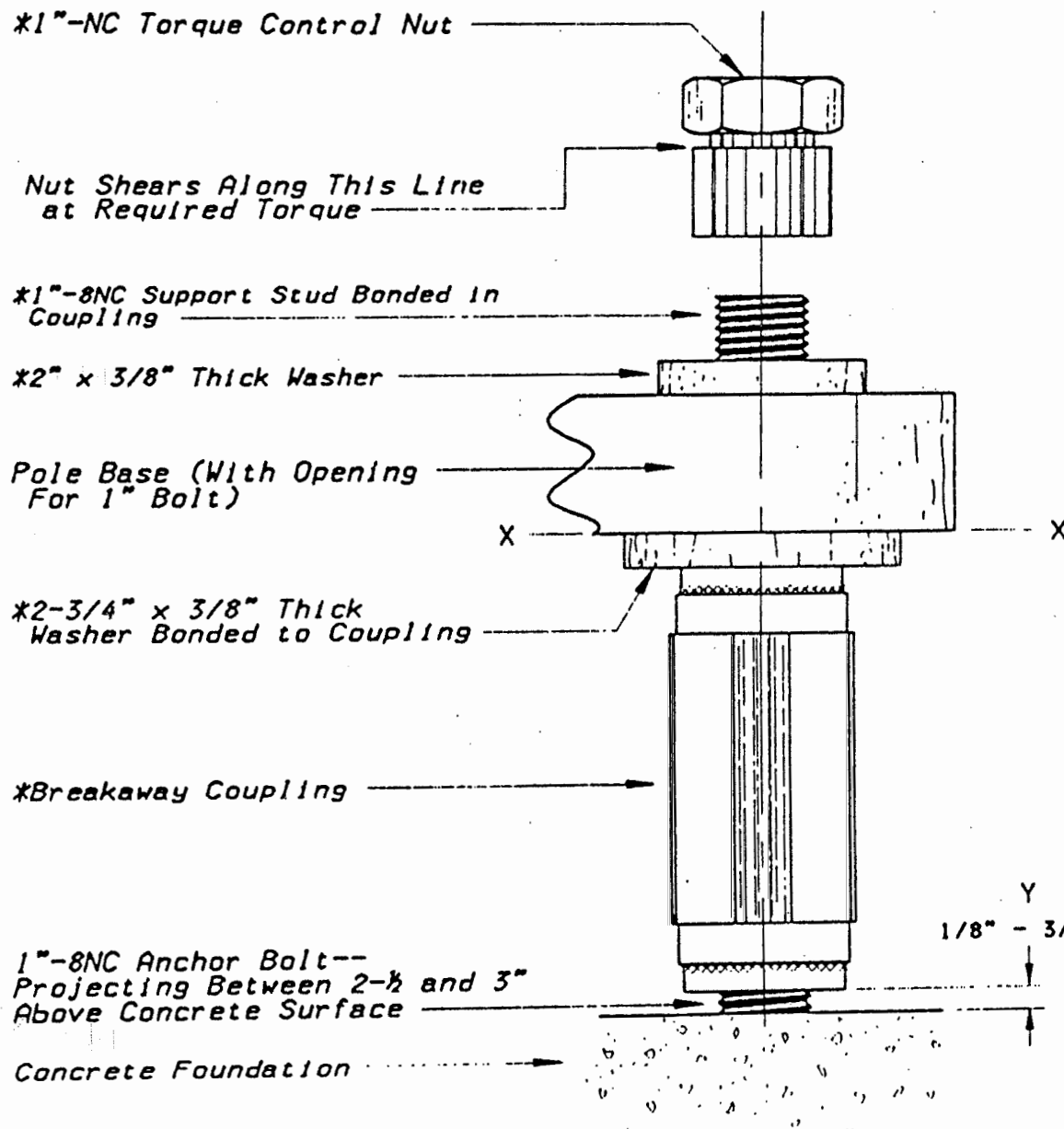
Similarly, both couplers were subjected to a stress corrosion test for 1000 hrs in accordance with ASTM B117-85 specifications. No evidence of stress corrosion, pitting or general corrosive degradation was observed.

These tests substantiate a long life expectancy while providing maximum safety virtually maintenance-free.

* The 200-1 coupler was modified slightly to improve compression strength and is designated 200-1A. The device continues to meet or exceed the 1985 AASHTO specifications substantiated by additional fatigue and production control tests.

PrecisionForm Inc. Breakaway Support

INSTALLATION INSTRUCTIONS PFI 200-1A COUPLER



- CAUTION -

Proper installation is CRITICAL to the function of this device

Procedure:

1. Clear anchor bolts of excess zinc or foreign material by running a 1"-8NC nut with zinc allowance to within 1/2" of foundation.
2. Hand install the couplers to approx. 1/8" of foundation (DO NOT wrench in place!)
3. Level top of washers on all four couplers in plane X-X. Maintain distance Y between 1/8" & 3/8". DO NOT bottom couplers on concrete.
4. Remove nut, cardboard spacer and the 2" dia. washer. Set pole in place- the coupler studs should fit freely in base opening without binding and be vertical. With the pole plumb vertically, the base should sit squarely on all four coupler washers and not rock. Coupler must be removed if anchor bolt must be straightened. Installation should not proceed unless square fit-up of base is obtained.
5. Install 2" dia. washers and torque control nuts (Use of nuts other than control nuts supplied voids warranty). DO NOT lubricate stud in coupler or nut threads. Hold coupler to prevent rotation and tighten nuts hand tight. Check pole for plumb, leveling with couplers as required.
6. When pole is plumb, hold couplers and tighten nuts until separation of hex part occurs. (A wrench can be used to steady couplers during this operation.) Caution should be exercised, as separation occurs suddenly.

Installation is now complete

* Parts furnished with support

PFI One-Year Warranty on Breakaway Supports

The following warranty is made by PrecisionForm Inc. ("PFI") to the purchaser of the PFI Breakaway Supports, Part 200-1A ("Products") from PFI.

PFI warrants that the Products described herein, properly installed according to PFI's instructions with compatible luminaire support poles, for a period of one (1) year from the date of installation of such Products ("Warranty Period") will be free of defects in material and workmanship.

This Warranty shall not apply if the Products are not installed in strict accordance with PFI's published instructions, nor shall this Warranty apply if the Products are used with aluminum support poles exceeding 50 feet in height or steel poles exceeding 600 pounds in weight, nor shall this Warranty apply unless such Products are used in a manner so as not to exceed the shear load, tensile load and momentum change values specified for the Products. This warranty does not cover failure or damage of any kind to the Products caused by accidents or casualties, Acts of God, riots, civil commotion, vandalism and acts of war (declared or undeclared).

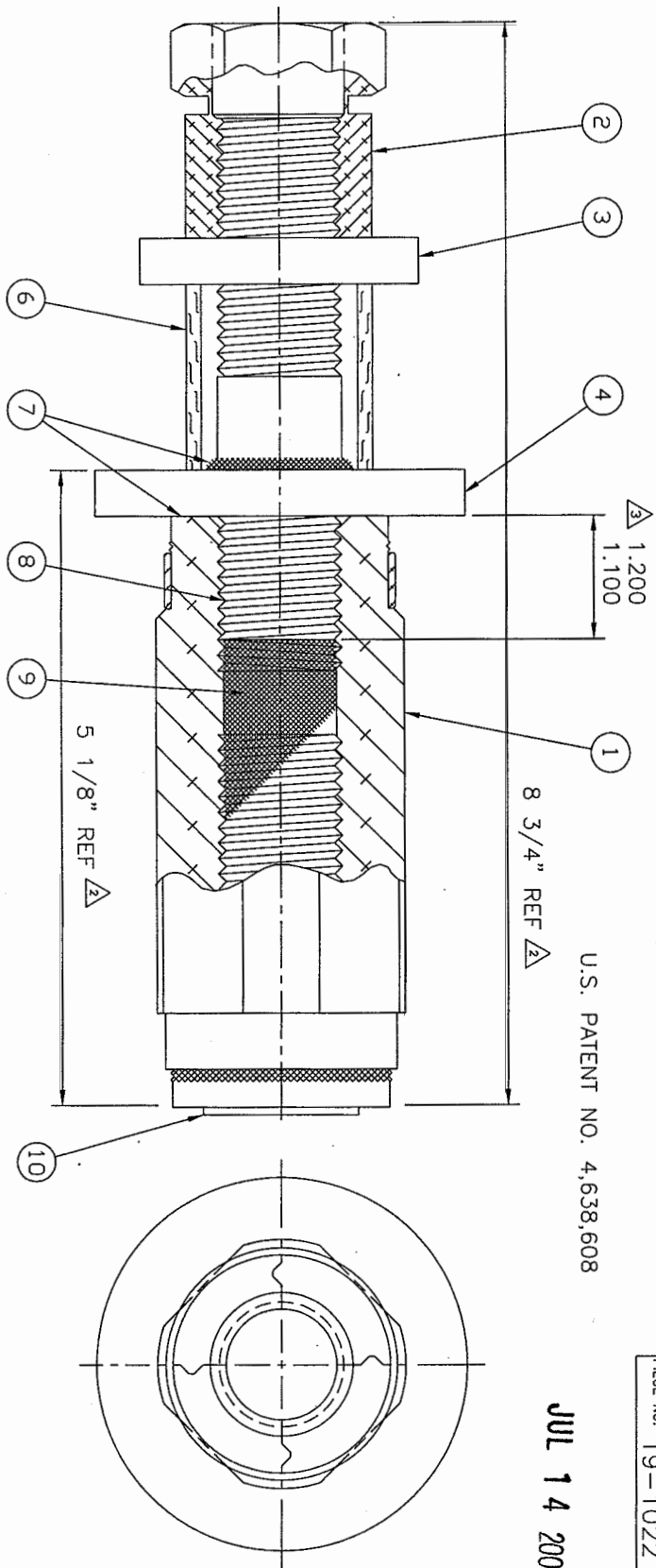
Any claim hereunder must be presented to PFI in writing within the Warranty Period and promptly after any failure of or damage to the Products has occurred and must be accompanied by the date of installation and name of purchaser of the Products. PFI, at its option, upon validation of the complaint by inspection, shall replace the defective Products in which any failure or damage in the breach of this Warranty has occurred or refund the purchase price of such Products. Any cost of labor for installation of replacement Products or removal of defective Products shall be at purchaser's expense.

PFI MAKES NO WARRANTY EXCEPT THAT EXPRESSLY SET FORTH HEREIN. THIS WARRANTY EXCLUDES ALL OTHER WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PURPOSE, EXPRESS OR IMPLIED BY OPERATION OF LAW OR OTHERWISE. PFI will not be liable for any consequential or incidental damages and in no event is the liability of PFI to exceed the obligation to replace or refund the purchase price of defective Products as set forth above.

This Warranty is extended to the purchaser of the Products alone and PFI's warranty and name are not to be used in any warranty given by such purchaser. This Warranty is nontransferable and nonassignable.

No terms and conditions other than those stated herein and no agreement or understanding, oral or written, in any way purported to modify this Warranty shall be binding upon PFI or purchaser unless made in writing and signed by their authorized representatives.





U.S. PATENT NO. 4,638,608

JUL 14 2003

PIECE NO. 19-1022 REV. 05

ITEM NO.	DESCRIPTION	NO. REQ'D	DETAIL DWG. NO.	REMARKS
1	BREAKAWAY COUPLING SUB-ASSEMBLY	1	19-1024A	ALUMINUM
2	1"-8 NC TORQUE CONTROL NUT	1	S-12381-3	ALUMINUM
3	2.0" O.D. FLAT WASHER	1	S-12381-4	HOT ZINC DIPPED STEEL
4	2.75" O.D. FLAT WASHER	1	S-12381-5	HOT ZINC DIPPED STEEL
5	INSTRUCTION SHEET (200-1A)	1		1 REQ'D PER 4 ASSEMBLIES
6	CARDBOARD TUBE 1.50" O.D. X 1.50" LG. X .12" WALL	1		1 REQ'D PER ASSEMBLY
7	SEALANT			DOW CORNING RTV SEALANT #732
8	ADHESIVE			LOCTITE THREADLOCKER 262
9	GREASE			LUBRIPLATE 730-1
10	PLASTIC PLUG	1	12381-6	