



OPERATION, MAINTENANCE, OVERHAUL, AND FUNCTIONAL TEST MANUAL

AIRLINX Aircraft Services, Inc. Lavatory "WYE" Drain Couplings VIM 2651

**VIM2651J048P01
VIM2651J133P01
VIM2651J206P01**

**VIM2651J133P10
VIM2651J206P10**

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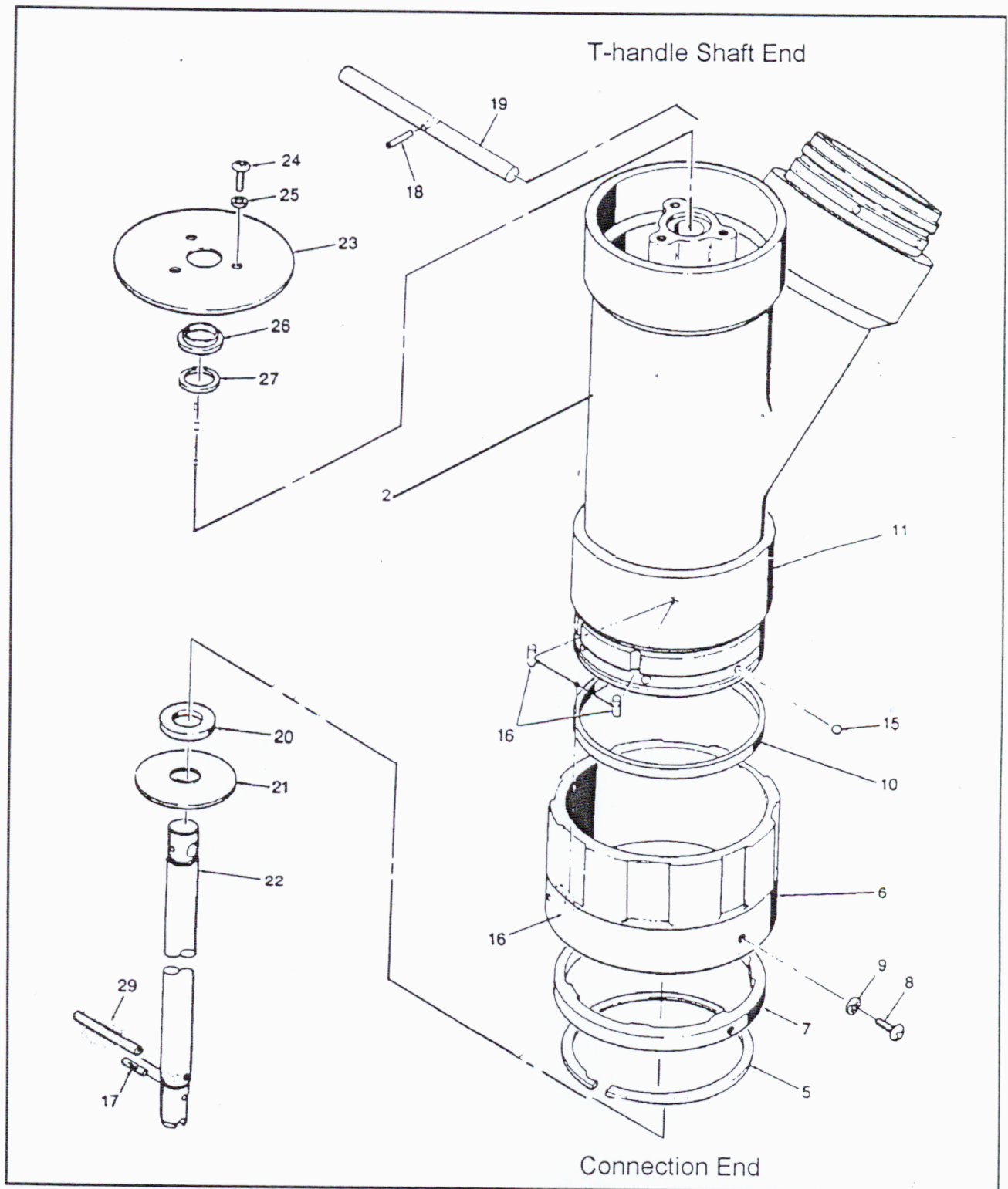


FIGURE 1 DRAIN COUPLING ASSEMBLY, EXPLODED VIEW
(FOR REFERENCE ONLY)

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ABBREVIATIONS AND ACRONYMS USED:	WORD(S):
Assy	Assembly
CCW	Counter Clockwise
CW	Clockwise
dia	diameter
I.D.	Inside Diameter
In.	Inches
in. lb.	Inch pounds
LG	Long
LH	Left Hand
max.	Maximum
min.	Minimum
MOD	Modification
MS	military Standard
N/C	No Change
O.D.	Outside Diameter
P/N	Part Number
Ref.	Reference
RH	Right Hand
Rev	Revision

LAVATORY "WYE" DRAIN COUPLINGS (VIM 2651 SERIES)

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AIRLINX LAVATORY "WYE" DRAIN COUPLINGS (VIM 2651 SERIES)

1. DESCRIPTION

AIRLINX Lavatory "WYE" Drain Couplings (VIM 2651); V2651J048P01, V2651J133P10, V2651J206P10, V2651J240P01 provide the necessary connection between aircraft waste tank and the sump of a ground service cart or truck. They mate with standard 4-inch lavatory drain nipples used on all American transport aircraft. The couplings include a control shaft for extraction and reinsertion (when required) of the drain plug. The couplings handle prescribed drain-and-flush procedures as established by the manufactures or the operators of the aircraft.

- 1.1 **Part Number V2651J048P01** has a beaded tube outlet for 3-1/2 inch ID flexible hose (see figure 3).
- 1.2 **Part number V2651J133P10** has a 4 inch quick disconnect nipple outlet (see figure 3).
- 1.3 **Part number V2651J206P10** has a beaded tube for a 4 inch ID flexible hose outlet (see figure 3).
- 1.4 **Part Number V2651J240P01** has an outlet for drain carts with special nipples (used in restricted airports).

2. OPERATION, MAINTENANCE AND OVERHAUL

Operation of the AIRLINX Lavatory "WYE" Drain Coupling includes pre-operational checks, connection and release of the coupling.

CAUTION: **SEWAGE HANDLED BY THE "WYE" DRAIN COUPLINGS IS VERY INFECTIOUS, TOXIC AND DANGEROUS. WEAR PROPER PERSONAL PROTECTIVE SAFETY EQUIPMENT DURING ALL OPERATING AND SERVICING PROCEDURES. FOLLOW DECONTAMINATION PROCEDURES IMMEDIATELY AFTER USING OR SERVICING THE "WYE" DRAIN COUPLINGS.**

- 2.1 **Pre-operational Checks:** To insure proper operation the "WYE" Drain Coupling must be checked before use.
 - 2.1.1 **External and Internal Checks:** Check for external and internal damage to the coupling which includes:
 - 2.1.1.1 Visually check connection end for a missing or damaged seal (Seal, Elastomer, Table 2, Item No. 10).
 - 2.1.1.2 Visually check connection end (6 places), for missing or damaged balls (Balls, Stainless Steel, Table 2, Item No. 15)
 - 2.1.1.3 Rotate the collar connection to the right (CW) and to the left (CCW) stops. The collar will rotate approximately 60 degrees and stop.

WARNING: **REMOVE COUPLING FROM SERVICE IN THE EVENT THE COLLAR TURNS GREATER THAN APPROXIMATELY 60 DEGREES (INDICATING A DAMAGED GROOVE PIN). DAMAGED GROOVE PINS ARE NOT REPAIRABLE ON SITE.**

- 2.1.1.4 Check the shaft for free rotation, smooth movement in and out, and a solid stop at each end of travel.

WARNING: REMOVE THE COUPLING FROM SERVICE IF UNABLE TO MOVE BECAUSE OF CORROSION OR CONTAMINATION. A CORRODED COLLAR IS NOT REPAIRABLE ON SITE.

2.1.1.5 Visually check that the truss head screws are in place on the collar.

2.1.1.6 Check for proper identification label

2.2 Operation. Use the following steps to connect and disconnect the coupling to and from the drain nipple on the aircraft.

2.2.1 Coupling Connection

2.2.1.1 Prepare to connect the coupling by rotating the collar full right (CW) to the stop.

2.2.1.2 Align the coupling with the axis of the nipple, firmly push the coupling over the nipple and securely connect the coupling.

NOTE: WORN NIPPLES MAY REQUIRE CONSIDERABLE FORCE AND SOME ROCKING TO MAKE THE CONNECT COUPLING CONNECT SECURELY.

2.2.1.3 To lock the coupling, rotate the collar approximately 60 degrees full left (CCW) to the stop.

NOTE: NO MOVEMENT IS POSSIBLE WHEN THE COUPLING IS PROPERLY CONNECTED.

2.2.2 Release Drain Plug Use the following steps to release drain plug (AIRLINX P/N V4259J064S20 or equivalent).

2.2.2.1 Push the T-handle shaft against the aircraft drain plug and rotate the shaft right or left to insert the key slot in the plug.

NOTE: WHEN INSERTED, THE CONTROL SHAFT WILL MOVE INWARDS AN ADDITIONAL 1/4 TO 3/8 INCH WHERE THE SHAFT ENGAGES THE CROSS PIN ON THE PLUG. THE ENGAGED SHAFT WILL NOT ROTATE TO THE RIGHT (CW).

2.2.2.2 Continue inward pressure on the T-handle shaft and turn it left (CCW) about a 1/4 turn (90 degrees) maintain firm pressure. At the left stop the drain plug is connected (keyed) to the shaft and released from the nipple.

NOTE: THE PLUG REMAINS CONNECTED TO THE SHAFT.

2.2.3 Open Drain To open the drain, pull the T-handle shaft completely out.

NOTE: DURING DRAIN-AND-FLUSH OPERATIONS, FOLLOW THE DRAIN-AND-FLUSH PROCEDURES ESTABLISHED BY AIRCRAFT MANUFACTURES OR OPERATORS.

2.2.3.1 During flush operation, push the T-handle shaft almost completely in and pull it completely out several times. This will rinse off the plug and prepare it for reinsertion in the aircraft nipple.

2.2.4 Reinsert Plug Use the following steps to reinsert the drain plug (AIRLINX P/N V4259J064S20 or equivalent).

2.2.4.1 Push the T-handle shaft completely in to force the plug against the drain valve seat.

2.2.4.2 Maintain inward pressure and turn the T-handle shaft left (CCW) until it stops. This indicates the plug is properly located in the nipple.

2.2.4.3 Maintain firm inward pressure to the plug. Disconnect the plug by rotating the T-handle shaft approximately 1/4 turn (90 degrees) full right (CW) until it stops. At the right stop the drain plug is released from the shaft and connected to the nipple. Pull the T-handle shaft from the drain plug.

2.2.5 Collar Disconnect Rotate the collar full left (CCW) to the unlocked position to disconnect and remove the coupling.

2.2.5.1 Return the coupling to a stowed position on the ground service cart or truck.

CAUTION: FOLLOW DECONTAMINATION PRECEDURES IMMEDIATELY AFTER USING OR SERVICING THE "WYE" DRAIN COUPLINGS.

2.3 Maintenance Operational maintenance is limited to lubrication of moving parts and replacement of seal (as required).

2.3.1 Elastomer Seal Replacement

2.3.1.1 Clean and rinse out the seal groove in the coupling.

2.3.1.2 Apply adhesive (Loctite 380 or 3M Scotch-Grip Rubber & Adhesive) around the groove of the ball cage and on the seal facing the groove.

2.3.1.3 Immediately insert the seal, Elastomer (Table 2, item 10) into the groove.

2.3.1.4 Ensure the seal fits properly all the way around and allow to dry.

2.3.1.5 Lubricate the seal with Vaseline or grease.

2.3.2 Lubrication

2.3.2.1 The Shaft must move in and out of the bearing freely. Lubricate the T-handle shaft with a light coat of oil or grease. Apply the lubrication to the shaft where it enters the housing. Rotate and move the shaft in and out of the bearing several times until it moves freely.

2.3.2.2 The collar connection must rotate freely from stop to stop with a solid click at each end of its travel. Lubricate all around the cam end, cam ring, locking balls and the opposite end of the collar (where it turns on the coupling body) with a coat of light oil. Rotate the control collar from stop to stop to insure free movement and solid clicks.

2.4. Overhaul

CAUTION: FOLLOW ALL APPLICABLE DECONTAMINATION AND SANITATION PROCEDURES PRIOR TO SERVICING THE "WYE" DRAIN COUPLINGS

WARNING: NO MEDICAL RESPONSIBILITY IS ASSUMED FOR INFORMATION CONTAINED IN THIS MANUAL. ALL OPERATIONS WITH HAZARDOUS WASTE MUST ADHERE TO ORGANIZATIONAL, LOCAL, STATE AND FEDERAL REGULATIONS. WARNINGS, CAUTIONS AND NOTES PROVIDED IN THIS MANUAL SERVE AS A REMINDER TO ADHERE TO ESTABLISHED HEALTH, SAFETY AND OPERATIONAL PRACTICES. DECONTAMINATION PROCEDURES PROVIDED HEREIN INDICATE THE TOLERANCE OF THE "WYE" DRAIN COUPLINGS TO THOSE PROCEDURES.

2.4.1 Tools & Equipment Required The following items are required to disassemble or assemble the "WYE" Couplings.

- 1/8 inch diameter pin (approximately 7 inches long)
- 2 inch diameter X 6 inch min. length wood or metal rod
- 5/32 inch hex long-arm Allen key
- Drill bit, # 30 (0.1285 inch diameter)
- Lead hammer
- Loctite
- Plastic Pipe Cement for ABS pipe fittings (Ref ASTM D2235)
- Adhesive (Loctite 380 or 3M Scotch-Grip 847 Rubber and Gasket Adhesive)
- Screwdriver, Phillips # 2
- Screwdriver, flat
- Center punch or small pointed tool

2.4.2 Decontamination Decontaminate all parts. All waste, oil and grease must be removed from contaminated parts prior to any operation. The drain assembly has aluminum, sintered bronze, brass, ABS and PVC plastic parts, some of which may be harmed by improper decontamination.

WARNING: DECONTAMINATION AND CLEANING PROCEDURES THAT REQUIRE TEMPERATURES ABOVE 190° F MAY CAUSE HEAT DISTORTION TO PLASTIC PARTS.

2.4.2.1 Degrease all parts by any available degreasing system such as:

- Vapor
- Caustic
- Steam cleaning

2.4.2.2 Sanitize all parts by immersion in disinfectant solutions such as:

- Chlorine
- Alcohol
- Any other authorized disinfectant that will not react to the drain coupling materials.

2.4.3 Disassembly-Coupling End

2.4.3.1 Remove retainer ring (Table 2, Item No. 5) – use a small screw driver or pointed tool.

2.4.3.2 Remove collar (Table 2, Item No. 6) – slide forward of housing.

2.4.3.3 Remove and discard balls (Table 2, Item No. 15) and dowel pins (Table 2, Item No. 16).

2.4.3.4 Remove screws (Table 2, Item No. 8) and lock washers (Table 2, item No. 9) from collar (Table 2, Item No. 6).

2.4.3.5 Remove cam ring (Table 2, Item No. 7).

2.4.3.6 Degrease and decontaminate loose parts.

2.4.4 Disassembly – Shaft Assembly

WARNING DO NOT ATTEMPT TO REMOVE THE SHAFT FROM THE HOUSING BY REMOVING THE SPRING PIN (TABLE 2, ITEM NO. 29) AND PULLING OUT BY HAND.

2.4.4.1 Drive out and discard roll pin (Table 2, Item no. 18) – use 1/8-inch diameter pin punch to drive out and discard the roll pin.

2.4.4.2 Free T-handle (Table 2, Item no. 19) and remove it from the shaft (Table 2, Item No. 22).

2.4.4.3 Remove the shaft (Table 2, Item No. 22) from the housing assembly through the coupling end.

2.4.4.4 Remove and discard bumper washer (Table 2, Item No. 20), washer (Table 2, Item No. 21) and spring pin (table 2, Item No. 29).

2.4.4.5 Remove and discard the groove pin (Table 2, Item No. 17) – use 1/8-inch diameter pin punch to drive out and discard the groove pin.

2.4.4.6 Degrease and decontaminate shaft (table 2, Item No. 22) and T-handle (Table 2, Item No. 19).

2.4.5 Disassembly – T-handle Shaft End.

2.4.5.1 Remove and discard screws (Table 2, Item No. 24) and lock washers (Table 2, Item No. 25) from the retainer plate (Table 2, Item No. 23).

2.4.5.2 Remove the retainer plate (Table 2, Item No. 23), shoulder washer (Table 2, Item No. 26) and retainer (Table 2, Item No. 27).

2.4.5.3 Degrease and decontaminate retainer plate (Table 2, Item No. 23) shoulder washer (Table 2, Item No. 26) and retainer (Table 2, Item No. 27).

NOTE: THE HOUSING ASSEMBLY IS NOT REPAIRABLE, DISCARD IF DAMAGED OR WORN BEYOND USEFULNESS.

2.4.6 Collar Repair Dents, flat spots, and other impediments to flow at the entry of the cam ring, at the outer end or the entry of the housing assembly at the inner end may be panned, pressed, or filed to restore smooth flow.

2.4.7 Shaft assembly repair An end slot or spring pin hole (Table 2, Item No. 22) that have damage, or groove pin hole with a diameter larger than 0.131 inch, may be salvaged by a machining the operating end in accordance with figure 2.

NOTE: NEW SHAFTS ARE MANUFACTURED 1 INCH LONGER TO PROVIDE SALVAGE CAPABILITY.

2.4.7.1 Replace groove pin (Table 2, Item No. 17) – Press in the replacement part so it is symmetrical to the shaft within 0.010 inch.

WARNING: CHECK THE SHAFT CROSS HOLE DIAMETER. IF IT EXCEED 0.125 INCH DIAMETER, FOLLOW THE REWORK PROCESS.

REWORK PROCEDURE: ENLARGE THE 0.131 INCH DIAMETER HOLE TO 0.1553/0.1558 INCH DIAMETER THEN USE MS16555-636 RIVET (1/8" DIAMETER X 3/4" LONG) OR EQUIVALENT. SEE FIGURE 2, PAGE 15 OF 16 NOTE 1.

NOTE: **NEW PRODUCTION SHAFTS WILL HAVE A HOLE 0.1241/0.1246 DIAMETER AND USE A MS16555-629 RIVET (1/8" DIAMETER X 3/4" LONG) OR EQUIVALENT. SEE FIGURE 2, PAGE 15 OF 16, NOTE 2.**

2.4.8 T-handle Shaft Assembly

- 2.4.8.1 Insert spring pin (Table 2, Item No. 21) into hole in shaft (Table 2, Item No. 22).
- 2.4.8.2 Slide washer (Table 2, Item No. 21) and bumper washer (Table 2, Item No. 20) onto shaft (Table 2, Item No. 22).
- 2.4.8.3 Lightly lubricate and insert shaft (Table 2, Item No. 22) into open end of housing assembly (Table 2, Item No. 11) and carefully work it through the bearing housing. Move the shaft in and out to distribute lubrication and assure free action.
- 2.4.8.4 Install retainer (Table 2, Item No. 27), shoulder washer (Table 2, Item No. 26), retainer plate (Table 2, Item No. 23), lock washers (Table 2, Item No. 25) and screws (Table 2, Item No. 24).
- 2.4.8.5 Slide T-handle (Table 2, Item No. 19) into hole in shaft (Table 2, Item No. 22), align cross holes and drive in roll pin (Table 2, Item No. 18) until flush.

2.4.9 Coupling End Assembly

- 2.4.9.1 Use Vaseline or grease to lubricate ball holes and pin slots in the ball cage end of the housing assembly (Table 2, Item No. 11).
- 2.4.9.2 Insert 6 balls (Table 2, Item No. 15) and 2 dowel pins (Table 2, Item No. 16) that are held in place by grease.
- 2.4.9.3 Apply adhesive (Loctite 380 or 3M Scotch-Grip™ 847 Rubber & Gasket Adhesive) around the groove of the ball cage immediately insert seal (Table 2, Item No. 10) and allow to dry.
- 2.4.9.4 Use Vaseline or grease to lubricate opposite side of seal (Table 2, Item No. 10).
- 2.4.9.5 Insert cam ring (Table 2, Item No. 7), chamfered edge first, into collar (Table 2, Item No. 6).

WARNING: **THE CAM RING IS CHAMFERED AT ONE EDGE AND SQUARE AT THE OTHER. IF ASSEMBLED SQUARE EDGE FIRST, THE COLLAR LOCKING ACTION WILL BE REVERSED.**

- 2.4.9.6 Align threaded holes in cam with drilled holes in the collar.
- 2.4.9.7 Insert screws (Table 2, Item No. 8) through lock washers (Table 2, Item No. 9) and screw into cam ring (Table 2, Item No. 7). Apply Loctite or equivalent to each screw and tighten to a torque of 10 to 20 inch pounds.

NOTE: **WIPE OFF EXCESS LOCTITE FROM SURFACES.**

- 2.4.9.8 Lubricate cam ring (Table 2, Item No. 7), opposite end of collar (Table 2, Item No. 6) and pin slot in collar with Vaseline or grease. Use grease to hold 2 dowel pins (Table 2, Item No. 16) in place and insert pins into pin slots.
- 2.4.9.9 Rotate collar (Table 2, Item No. 6) to position its dowel pin (Table 2, Item No. 16) between the 2 dowel pins (Table 2, Item No. 16) on the ball cage as indicated in Figure 2. Carefully slide the collar into position on the ball cage where it will rotate freely between the travel stop action of the 3 dowel pins (Table 2, Item No. 16).

WARNING: EARLY FAILURE OF THE BALL RETENTION SHOULDERS IN THE BALL CAGE AND COMPLETE COUPLING FAILURE IS THE RESULT WHEN ANY OF THE 3 DOWEL PINS ARE OMITTED OR THE COLLAR IS ASSEMBLED WITH ITS DOWEL PINS OUTSIDE THE SECTOR OF THE 2 DOWEL PINS IN THE BALLCAGE, CREATINGM A TRAVEL STOP BY THE BALLS (Table 2, Item No.15) AGAINST THE CAM RING (Table 2, Item No.7).

2.4.9.10 Install retainer ring (Table 2, Item No.5) and check for free rotation and a solid stop at each end of travel.

2.4.9.11 Hold the collar firmly against the counter clockwise stop (unlocked position) and move a finger around the row of balls; all balls must move freely into retracted or unlocked position.

Item & Part No.	Inspect	Inspection Requirement	Disposition
(6) Collar	Internal surfaces	Must be round enough and smooth enough to fit cam ring (7) (open end) and housing assembly (11) (back end).	Replace
		Screws fit holes and location matches cam ring holes (3) places.	Replace
		Minor cosmetic damage tolerated as long as serviceability is not affected.	Replace
		O.D. correct. No cracks, deep dents, major distortion or corrosion.	Replace
		I.D. correct. No cracks, deep dents, major distortion or corrosion.	Replace
(7) Cam ring	Cracks or breaks	No cracks, deep dents, major distortion or corrosion.	Replace
(22) Shaft	Sliding surface	Must be smooth to a diameter of 0.745" No scores, dents or bends.	Replace
	Operating end cross slot	Legs not broken or bent.	Replace
	Operating end spring pin (29) groove	Legs not broken or bent.	Replace
(11) Housing Assembly	Visually	Cylindrical form, not dented or cracked.	Replace
	Coupling end must fit on drain nipple	Snug fit, not bent or cracked. Ballcage must accept standard drain nipple or a 4.396" diameter plug gage to a depth of 0.870".	Replace
	Ball (15) retainer holes, 6 place	Must allow free entry of a .250" diameter ball from the outside and retain it at a dimension of 4.765" over the tops of a diametrically opposed ball.	Replace
	Dowel Pin (16) slots and tracks (between the two slots)	No excessive wear, scoring or impact damage. No track wear more than 0.010" below its original diameter of 4.890" max.	Replace
	Bearing housing	The inside diameter must be 0.751"/0.754". No structural defects or leakage in the plastic structure.	Replace
	Metal outlet housing	Metal outlet nipple on V2651J133P10 coupling must couple wit another "WYE" drain or V2653 series open coupling.	Replace

TABLE 1 INSPECTION LIST
(FOR REFERENCE ONLY)

FIGURE (S)	ITEM	PART NUMBER	NOMENCLATURE	UNITS PER ASSY.
3	1	V2651J206P01	Drain Coupling Assy., Lavatory Drain, WYE type	Ref.
1 & 3	2	V2651J133P01	Drain Coupling Assy., Lavatory Drain, WYE type	Ref.
(Not illustrated)	3	V2651J240P01	Drain Coupling Assy., Lavatory Drain, WYE type	Ref.
3	4	V2651J048P01	Drain Coupling Assy., Lavatory Drain, WYE type	Ref.
1	5	990-0014-120	*Ring, Retainer	1
1	6	015-0105-001	*Collar	1
1	7	163-0001-000	*Ring, Cam	1
1	8	990-0004-219	*Screw, Truss head	3
1	9	MS35333-38	*Lockwasher	3
1	10	167-0001-021	*Seal, Elastomer	1
1	11	158-0007-002	*Housing Assembly	1
1	12	*158-0007-001	*Housing Assembly	1
1	13	158-0007-003	*Housing Assembly	1
1	14	158-0011-000	*Housing Assembly	1
1	15	990-0000-105	*Ball, Stainless Steel	6
1	16	990-0000-106	*Pin, Dowel	3
1	17	990-0028-108	*Pin, Groove (See Figure 2, Note 1)	1
1	18	MS16562-229	*Pin, Roll	1
1	19	028-0100-000	*Handle, T	1
1	20	990-0001-215	*Washer, Bumper	1
1	21	990-0001-222	*Washer	1
1	22	**115-0769-001	*Shaft	1
1	23	140-0110-002	*Plate, Retainer	1
1	24	990-0004-219	*Screw, Truss head	3
1	25	MS35333-38	*Lockwasher	3
1	26	112-0110-001	*Washer, Shoulder	1
1	27	MS28782-15	*Retainer, Packing	3
1	28	990-0008-231	*Packing	1
1	29	990-0014-129	*Pin, Spring	1

** Available only as part of spare sub-assembly (V7778-030C00)

* Non-Repairable except stainless steel outlet nipple replacement available (V2651-134C00)

TABLE 2 ILLUSTRATED PARTS LIST
(FOR REFERENCE ONLY)

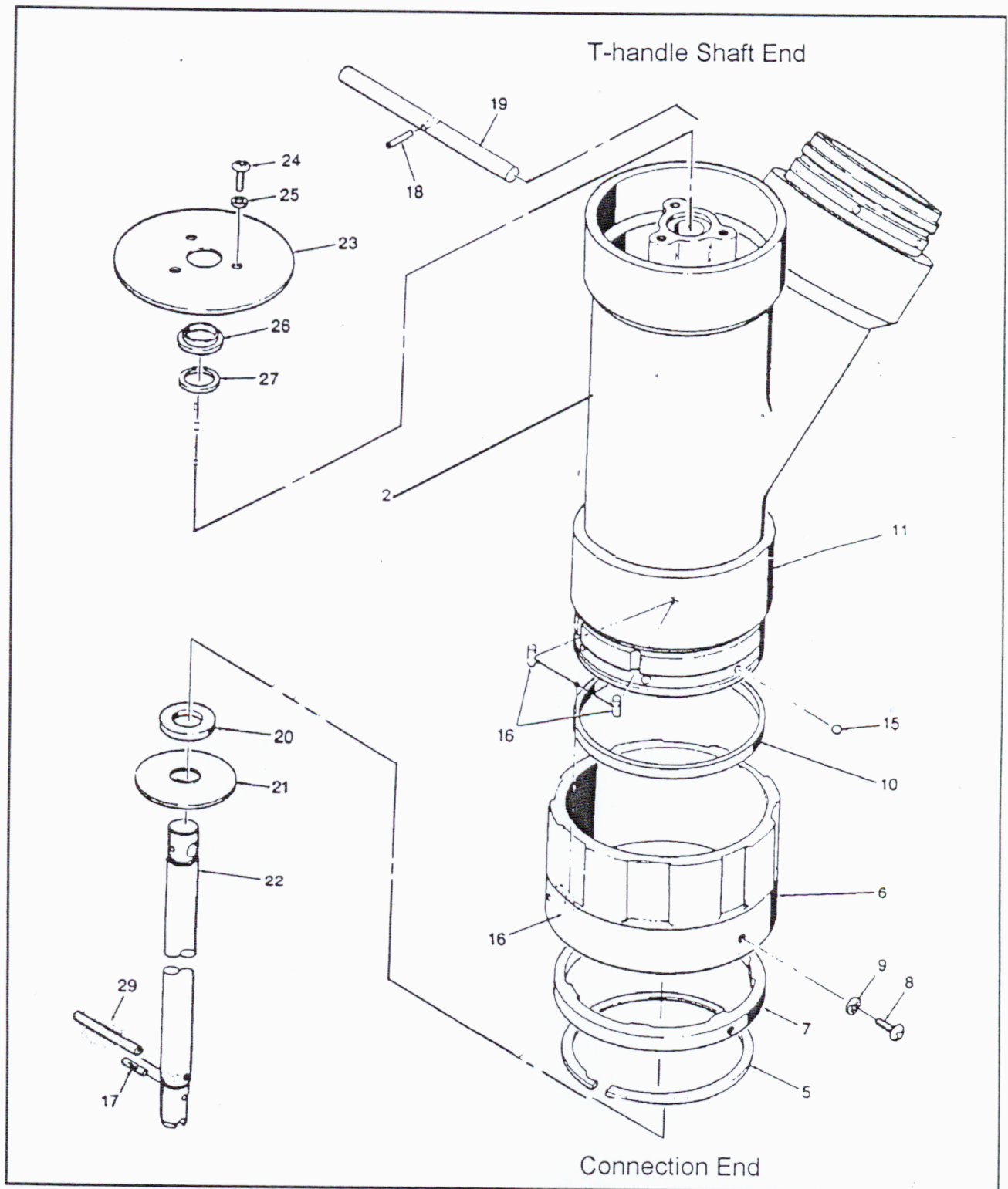


FIGURE 1 DRAIN COUPLING ASSEMBLY, EXPLODED VIEW
(FOR REFERENCE ONLY)

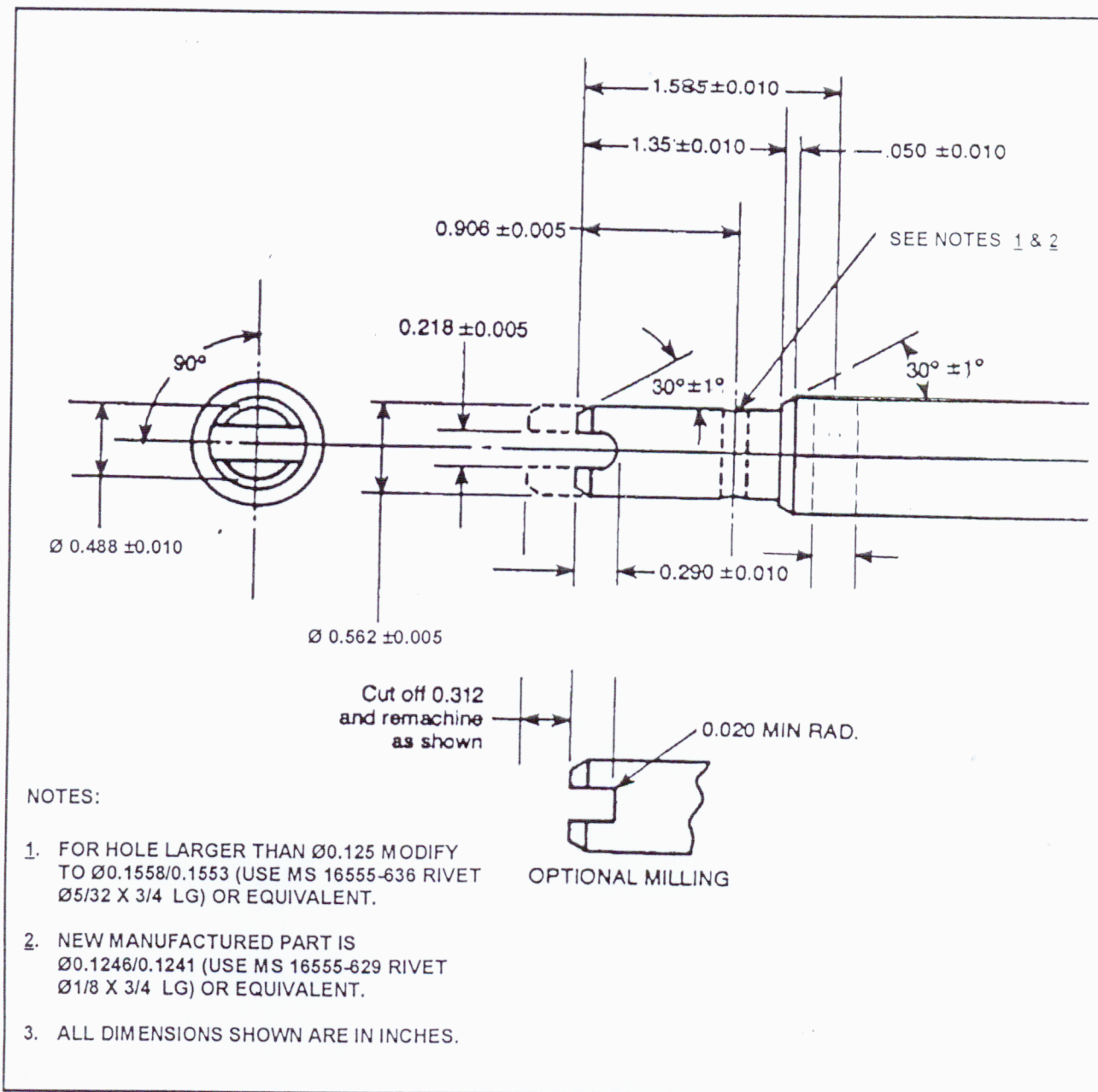


FIGURE 2 MACHINE SHOP REWORK DIMENSIONS FOR NIPPLE
 (FOR REFERENCE ONLY)

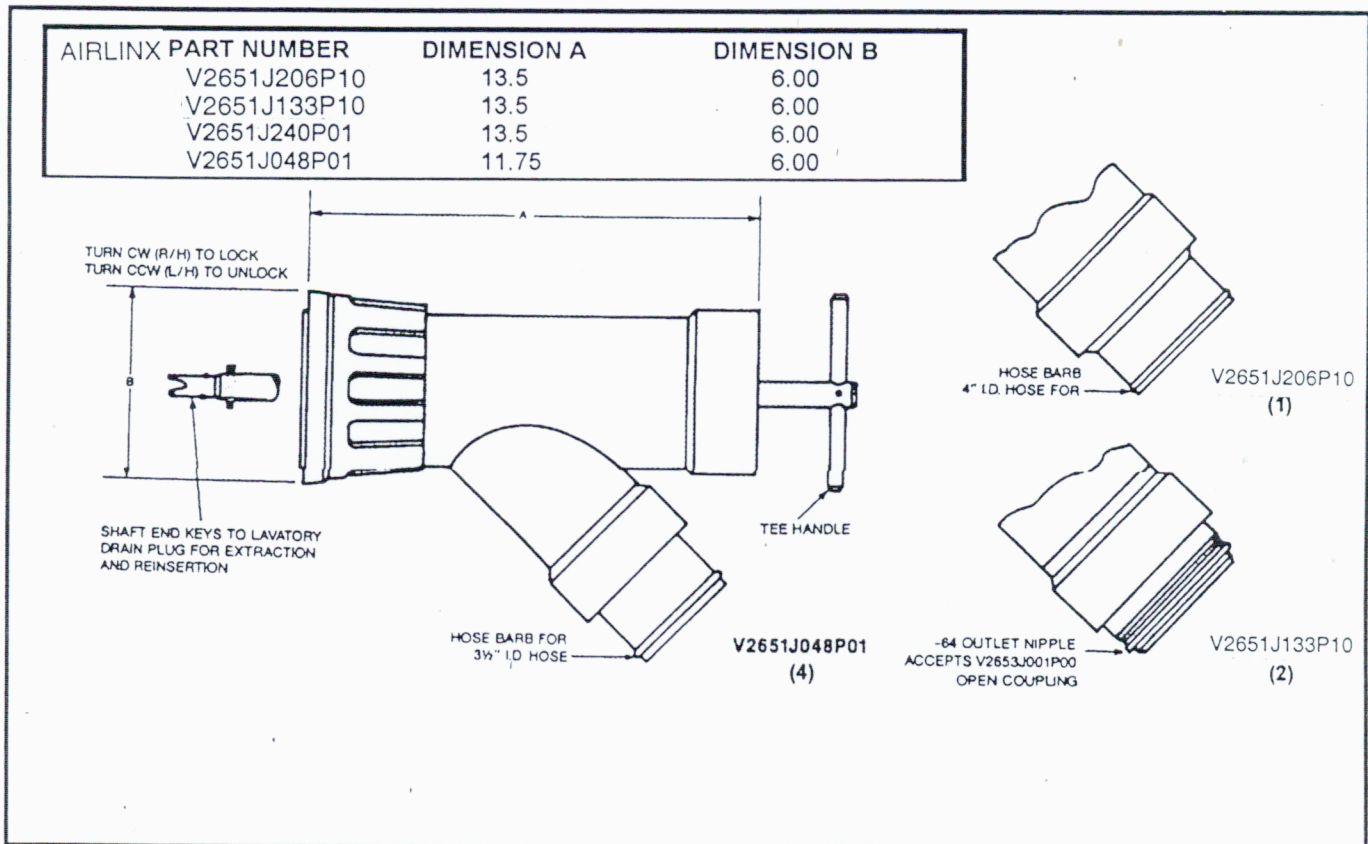


FIGURE 3 "WYE" COUPLING AND PLUG EXTRACTION ILLUSTRATION

(FOR REFERENCE ONLY)