

# OPERATOR'S MANUAL

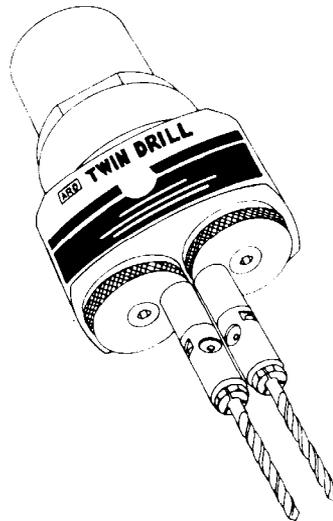
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INCLUDING: INSTALLATION & MAINTENANCE

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Form: 3121-2

## DUAL SPINDLE ATTACHMENT MODEL 47276 FOR USE WITH ARO® SERIES 5 ELECTRA-FEED™ DRILL

**IMPORTANT: READ THIS MANUAL CAREFULLY BEFORE INSTALLING,  
OPERATING OR SERVICING THIS EQUIPMENT.**



DRILL SIZES UP TO:  
3/8" (9.5 mm)

CENTER DISTANCES:  
3/4" TO 3-3/4"  
(19.0 TO 95.0 mm)

### TO ATTACH TO TOOL

REMOVE SCREW Y194-16 SECURING DRILL CHUCK TO SPINDLE AND REMOVE DRILL CHUCK. REMOVE LOCKNUT 46971 FROM PISTON ASSEMBLY. ASSEMBLE DRIVING DOG 47757-301 TO SPINDLE AND SECURE WITH SCREW Y99-478 SUPPLIED WITH ADAPTER ASSEMBLY 47876. THREAD ADAPTER 47757-300 TO PISTON ASSEMBLY ALIGNING KEY SLOT OF DRIVE GEAR 47757-317 WITH KEY IN DRIVING DOG 47757-301. TIGHTEN SECURELY. ASSEMBLE DUAL SPINDLE ATTACHMENT 47768 TO ADAPTER ASSEMBLY 47876. IMPORTANT — ALTERNATELY TIGHTEN ADJUSTMENT SCREWS 46036 APPROXIMATELY 1/2 TURN AT A TIME TO PREVENT DAMAGING THE UNIT.

### RECOMMENDED METHOD FOR HOLDING DRILLS IN SPINDLES

TO PROPERLY HOLD DRILL BIT IN COLLET AND REDUCE THE CHANCE OF SLIPPAGE, A FLAT MUST BE GROUND ON THE SHANK END OF THE BIT. THE FLAT SHOULD BE APPROXIMATELY 5/16" (8mm) LONG AND THE DEPTH SHOULD BE 1/3 OF THE BIT DIAMETER. NOTE: IF BIT IS TOO LARGE TO FIT INTO LOCKING INSERT (SMALLER CAPACITY DUAL SPINDLES DO NOT HAVE INSERT), A SQUARE MUST BE GROUND ONTO THE SHANK END OF THE BIT. INSERT BIT INTO SPINDLE AND INTO LOCKING INSERT (WHERE APPLICABLE) INSURING THAT ONE OF THE SET SCREWS LOCATES SQUARELY ON THE FLAT OF THE BIT. TIGHTEN COLLET FIRMLY, THEN TIGHTEN SET SCREWS. NOTE: DO NOT OVERTIGHTEN COLLET. INTENT OF SET SCREWS IS ONLY TO KEEP BIT FROM TURNING IN COLLET.

### LUBRICATION

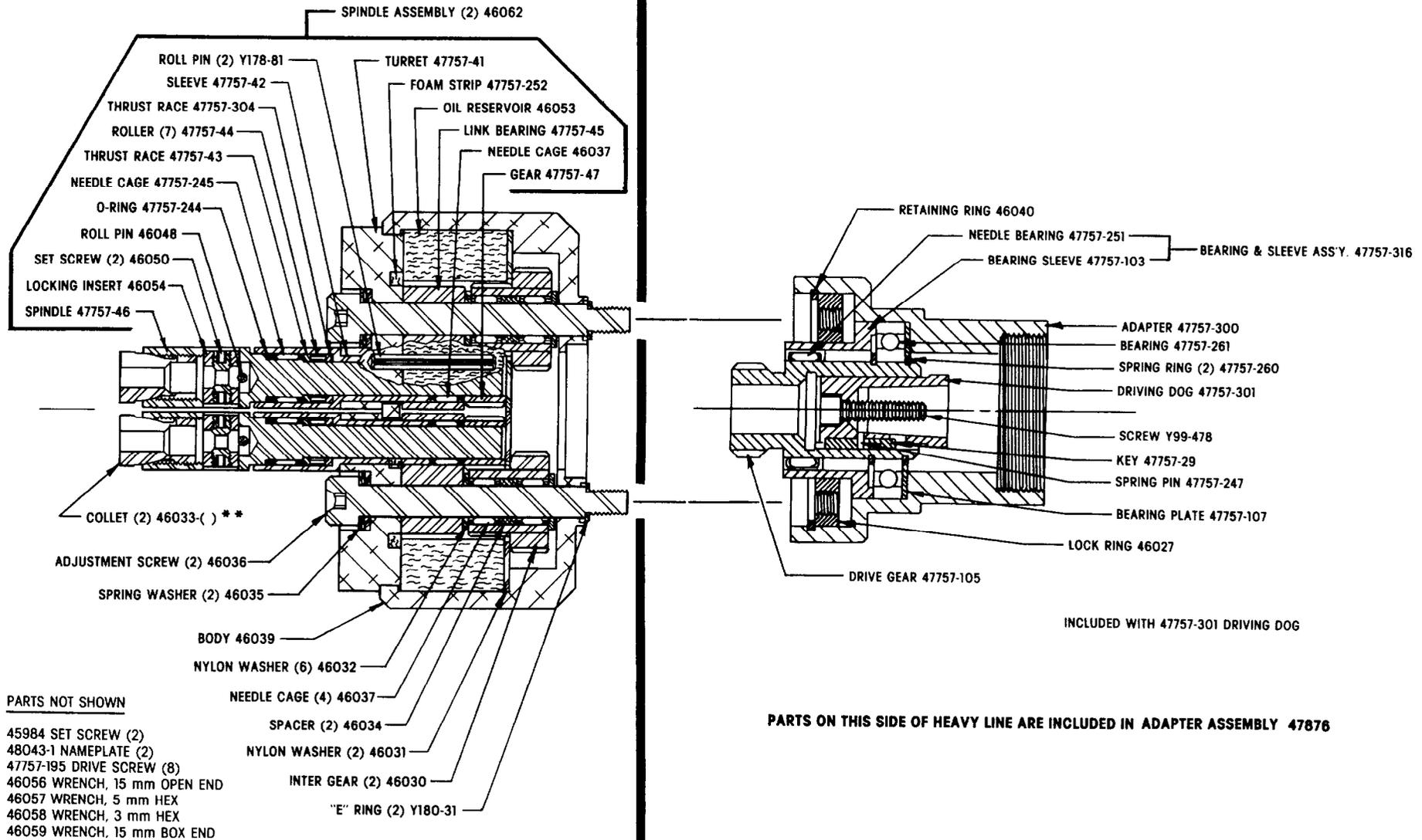
OIL RESERVOIRS CAN BE REPLENISHED THRU EITHER SOCKET HEAD SET SCREW (45984) LOCATED ON OPPOSITE SIDES OF THE BODY. THE FELT TYPE OIL RESERVOIRS (46053) SHOULD BE SATURATED WITH A GOOD MULTIGRADE 10W/30 OIL AT APPROXIMATELY EVERY 160 HOURS OF USE. USE ONLY MULTIGRADE 10W/30. DO NOT USE GREASE.

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### DISASSEMBLY

The Dual Spindle Attachment can be serviced without removing the complete assembly from tool. Using 5 mm hex wrench supplied with unit, loosen both Adjusting Screws (46036)—**IMPORTANT:** Alternately unthread Adjusting Screws approximately 1/2 turn at a time or unthread screws simultaneously to prevent damaging the unit and remove dual spindle unit from tool.

Push back on head of Adjusting Screw (46036) to compress Spring Washer (46035) and expose "E" Ring (Y180-31) out of counterbore of Body and remove "E" Ring. Rotate Spindle Turret and at the same time pull back slightly on Turret to locate alignment of Spindle with notch in Body (46039) and remove Spindle Assembly from Body. To remove Gear (46030) from Body, remove Oil Reservoir (46053) and Nylon Washer (46031)—bend washer slightly to remove. Needle Cage (46037), Spacer (46034) and Washer (46032) are loose parts and will drop out. **DO NOT** disassemble Spindle (46062) unless it is necessary to replace a part.

To disassemble Spindle Assembly (46062): Using a flat bottom type punch or similar tool and an arbor press, remove Gear (47757-47) from Spindle (47757-46). Remove Spindle from the Sleeve carefully because the seven (7) Rollers (47757-44) are loose parts and will drop out. **NOTE:** Thrust Race (47757-43) is press fit on Spindle. Cut off O-Ring (47757-244) and using a "C" type washer that properly fits spindle, press Thrust Race and Needle Cage off Spindle. If Link Bearing (47757-45) and Sleeve (47757-42) are removed from Turret, it will be necessary to remove the Foam Strip (47757-252) first. Lift one end of Foam Strip and pull so it slides through notch under Link Bearing. Using a proper size punch and arbor press, remove Link Bearing. Press Sleeve through remaining distance in Turret.

After the Dual Spindle Head Assembly (47768) has been removed from the Adapter Assembly (47876), the Drive Gear and components can be removed from the Adapter without removing the Adapter from the tool. First remove Retaining Ring (46040) and Lock Ring (46027). Grasp Drive Gear (47757-105) and pull from Adapter. Tap gear end of Drive Gear (47757-105) to loosen from Bearing and Sleeve Assembly (47757-316). To remove Bearing (47757-261), remove Spring Ring (47757-260).

### REASSEMBLY

Pack bearings and coat gears with a good grade of bearing grease when assembling. Saturate Oil Reservoirs with a good multigrade 10W/30 oil.

**Assembling Spindle (46062):** Press Sleeve (47757-42) into Turret. **IMPORTANT — SLOT IN THE SLEEVE MUST BE ALIGNED WITH THE NOTCH IN THE BACK FACE OF TURRET.** Push the Foam Strip (47757-252) into the notch in Turret with the widest side across the notch. The center of the strip should be under the sleeve and the two ends should meet at the point opposite the sleeve. Press the Link Bearing on Sleeve keeping the 10 mm hole in the Link Bearing in accurate alignment with the 10 mm hole in the Turret. Slide O-Ring (47757-244) and Needle Cage (47757-245) on Spindle. Slide Thrust Race (47757-43) on Spindle and press to location diameter up to shoulder adjacent to Bearing (47757-245). Be certain Thrust Race is pressed on and squarely seated or premature failure of the bearing may occur. Assemble Thrust Race (47757-304) and slide Spindle into Sleeve leaving approximately a 1/2" gap between end of Sleeve and Thrust Race and assemble the seven (7) Rollers to Spindle. Be certain there are seven rollers. Lubricate Rollers and bearings using a good grade of bearing grease and slide Spindle on into Sleeve. Assemble Needle Cage (46037) to Spindle and press Gear (47757-47) on Spindle leaving an end play of .001/.002".

Insert a dummy Adjusting Screw (46036) (or a shaft of same dia.) thru Adapter side of Body to maintain alignment of parts to be assembled into Body and assemble Nylon Washer (46032) to dummy screw. Assemble one Needle Cage (46037), Spacer (46034) and Needle Cage (46037) into Gear (46030) and assemble Gear to the dummy screw. Assemble Nylon Washer (46031) into Body — Bend Washer slightly to insert into Body and assemble Oil Reservoir (46053) into Body.

Assemble Spring Washer (46035) and Nylon Washer (46032) to Adjusting Screw (46036) and assemble adjusting Screw to Spindle Assembly.

Assemble another Nylon Washer (46032) to Adjusting Screw. Assemble the Spindle Assembly into Body while holding Adjusting Screw in alignment with dummy screw to maintain parts alignment and using Adjusting Screw to push the dummy screw out of Body. **NOTE:** Align Spindle Assembly with notch in Body to assemble. After assembling Spindle to Body, depress head of Adjusting Screw and assemble "E" Ring to Screw securing Screw to Body.

**NOTE:** When assembling Dual Spindle Attachment to Adapter assembly, alternately thread Adjusting Screws (46036) approximately 1/2 turn at a time to prevent damaging the unit.

Reassembly of the Adapter Assembly (47876) will be the reverse of the disassembly procedure.

## SPINDLE ADJUSTMENT

FOR SIMPLE SPINDLE ADJUSTMENT THE "X" "X" AND "Y" "Y" AXIS OF THE COMPONENT SHOWN IN FIG. 1 SHOULD COINCIDE WITH THE "X" "X" AND "Y" "Y" AXIS OF THE DRILL HEAD AND DRILLING UNIT AS SHOWN IN FIG. 2. THE SPINDLES SHOULD THEN BE ADJUSTED IN THE MANNER SHOWN IN FIGS. 3 AND 4.

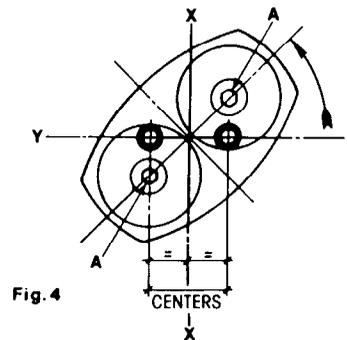
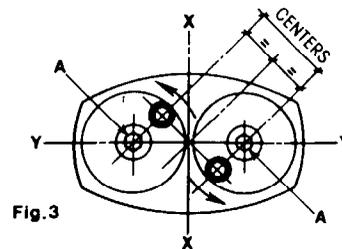
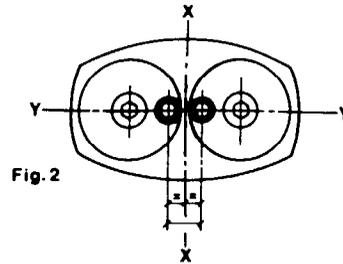
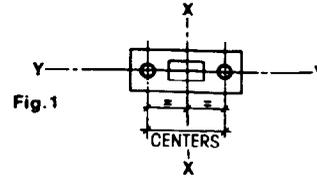
**IMPORTANT -**

IF THE PROCEDURE IS NOT FOLLOWED AND BOTH SPINDLES ARE MOVED OUT TO ONE SIDE OF THE HEAD, ANY SUBSEQUENT SPINDLE ADJUSTMENT WILL RESULT IN THE NECESSITY OF HAVING TO RE-ADJUST THE RELATIONSHIP BETWEEN THE DRILLING UNIT AND THE COMPONENT.

FIG. 2 SHOWS THE TWIN SPINDLE HEAD WITH THE SPINDLES SET TO THE MINIMUM CENTERS.

TO ADJUST THE SPINDLES AS SHOWN IN FIG. 3 LOOSEN BOTH SCREWS "A" AND ROTATE BOTH TURRETS IN THE DIRECTION INDICATED BY THE ARROWS TO THE APPROXIMATE CENTERS THAT ARE REQUIRED.

ROTATE THE COMPLETE DRILL HEAD ASSEMBLY TO BRING BOTH SPINDLES TO THE REQUIRED "Y" "Y" AXIS AS SHOWN IN FIG. 4. FINALLY ADJUST SPINDLE CENTERS ON AXIS "X" "X" TO SUIT GAUGE OR DRILL BUSHINGS AND TIGHTEN SCREWS "A" SECURELY.



## 46033-( ) COLLETS

PART NO	BORE DIA (REF)	ACCEPTS DRILL SIZES		PART NO	BORE DIA (REF)	INCH	ACCEPTS DRILL SIZES		PART NO	BORE DIA (REF)	INCH	ACCEPTS DRILL SIZES	
		NO	mm				NO	mm				NO	mm
46033 1	079	5/64	47	2.0	46033 27	181	14	4.6	46033 53	283			7.2
46033 2	083		45	2.1	46033 28	185	13	4.7	46033 54	287			7.3
46033 3	087		44	2.2	46033 29	189	3 16	12	4.8	46033 55	291	L	7.4
46033 4	091		43	2.3	46033 30	193		10	4.9	46033 56	295	M	7.5
46033 5	094	3/32	42	2.4	46033 31	197		9	5.0	46033 57	299	19 64	7.6
46033 6	098		40	2.5	46033 32	201		7	5.1	46033 58	303	N	7.7
46033 7	102		38	2.6	46033 33	205	13 64	5	5.2	46033 59	307		7.8
46033 8	106		36	2.7	46033 34	209		4	5.3	46033 60	311	5 16	7.9
46033 9	110	7/64	35	2.8	46033 35	213		3	5.4	46033 61	315	O	8.0
46033 10	114		33	2.9	46033 36	216		5	5.5	46033 62	319	-	8.1
46033 11	118		32	3.0	46033 37	220	7/32	2	5.6	46033 63	323	P	8.2
46033 12	122		31	3.1	46033 38	224		5	5.7	46033 64	327	-	8.3
46033 13	126	1/8	-	3.2	46033 39	228		1	5.8	46033 65	331	Q	8.4
46033 14	130		30	3.3	46033 40	232		5	5.9	46033 66	335	-	8.5
46033 15	134		29	3.4	46033 41	236	15 64	A	6.0	46033 67	339	R	8.6
46033 16	138		-	3.5	46033 42	240		B	6.1	46033 68	342	11 32	8.7
46033 17	142	9/64	28	3.6	46033 43	244		C	6.2	46033 69	346	-	8.8
46033 18	146		26	3.7	46033 44	248		D	6.3	46033 70	350	S	8.9
46033 19	150		25	3.8	46033 45	252	1 4	E	6.4	46033 71	354	-	9.0
46033 20	154		23	3.9	46033 46	256		F	6.5	46033 72	358	23 64	9.1
46033 21	157	5/32	22	4.0	46033 47	260		G	6.6	46033 73	362	-	9.2
46033 22	161		20	4.1	46033 48	264	17 64	-	6.7	46033 74	366	-	9.3
46033 23	165		19	4.2	46033 49	268		H	6.8	46033 75	370	U	9.4
46033 24	169		18	4.3	46033 50	272		I	6.9	46033 76	375	3/8	9.5
46033 25	173	11/64	17	4.4	46033 51	276		J	7.0				
46033 26	177		16	4.5	46033 52	280	9 32	K	7.1				