

OPERATOR'S MANUAL

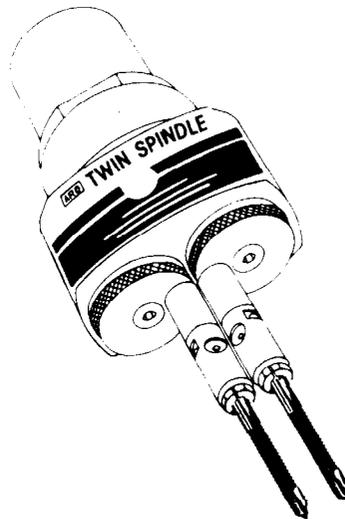
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INCLUDING: INSTALLATION & MAINTENANCE

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DUAL SPINDLE ATTACHMENT MODEL 48055 FOR USE WITH ARO® PAR-A-MATIC® SELF-FEED DRILL

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



TAP CAPACITY UP TO:
1/4" (6.5 mm)

CENTER DISTANCES:
1/2" TO 2-1/2"
(12.7 TO 63.5 mm)

TO ATTACH TO TOOL

REMOVE DRILL CHUCK FROM SPINDLE. INSURE SPINDLE NUT (38893) IS IN PLACE ON SPINDLE AND THREAD DRIVING GEAR (47757-21) ON SPINDLE AND TIGHTEN SECURELY — R.H. THREADS. THREAD ADAPTER RING (47757-20) TO RING GEAR ALIGNING SPLINES OF DRIVING GEAR WITH INTER GEARS (47757-6). TIGHTEN SECURELY.

ASSEMBLE TWIN SPINDLE HEAD ASSEMBLY (47980) TO ADAPTER ASSEMBLY (47982). IMPORTANT — ALTERNATELY TIGHTEN ADJUSTING SCREWS (45992) APPROXIMATELY 1/2 TURN AT A TIME TO PREVENT DAMAGING THE UNIT. SEE "SPINDLE ADJUSTMENT," PAGE 4.

RECOMMENDED METHOD FOR HOLDING TAPS IN SPINDLES

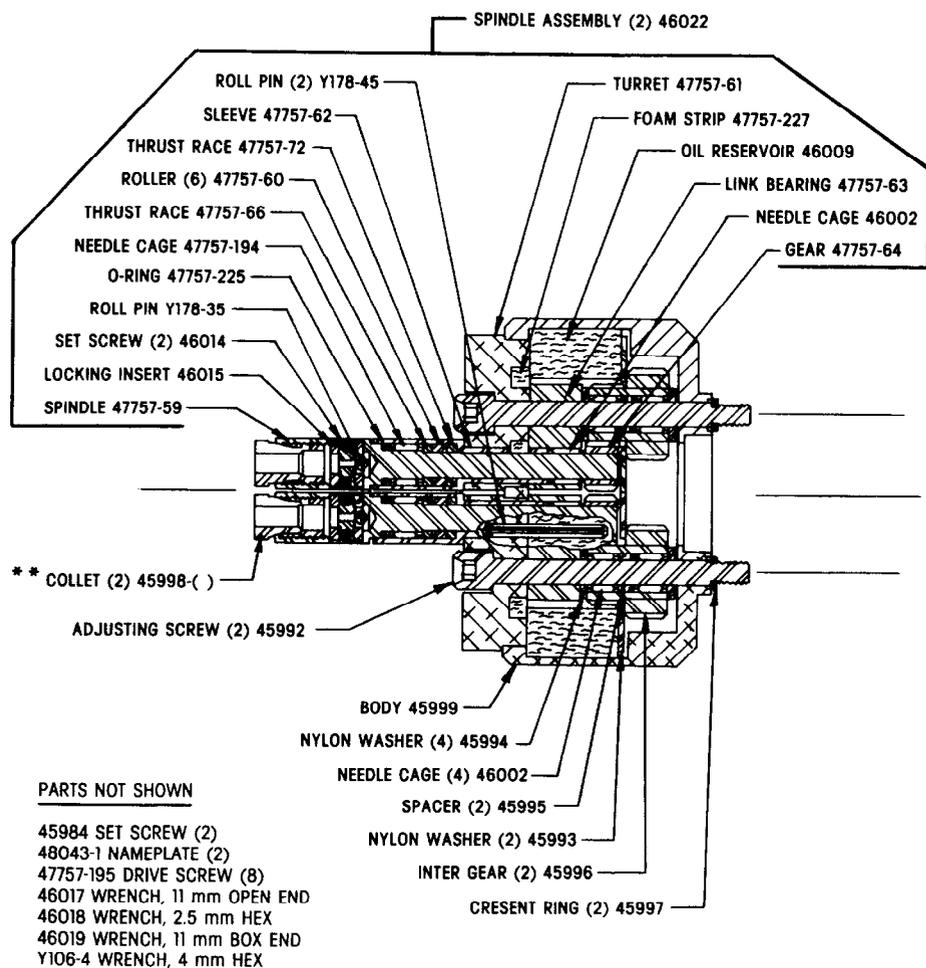
TO PROPERLY HOLD TAP BIT IN COLLET AND REDUCE THE CHANCE OF SLIPPAGE, INSERT BIT INTO SPINDLE WITH SQUARE END OF TAP SHANK INTO LOCKING INSERT (WHERE APPLICABLE — SMALLER CAPACITY DUAL SPINDLES DO NOT HAVE AN INSERT, ONLY SET SCREWS). TIGHTEN COLLET FIRMLY, THEN TIGHTEN SET SCREWS. NOTE: DO NOT OVERTIGHTEN COLLET. INTENT OF SET SCREWS IS ONLY TO KEEP BIT FROM TURNING COLLETS.

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.

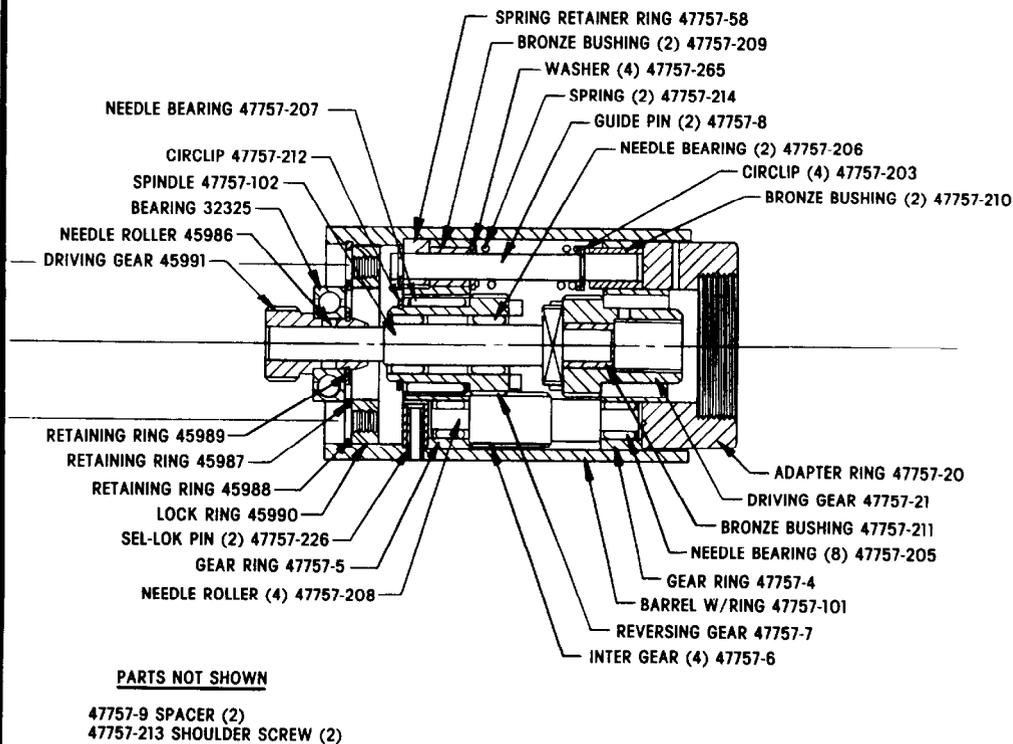


DUAL SPINDLE ATTACHMENT MODEL 48055



PARTS ON THIS SIDE OF HEAVY LINE ARE INCLUDED IN TWIN SPINDLE HEAD ASSEMBLY 47980.

**** NOTE: COLLETS ARE NOT FURNISHED WITH DUAL SPINDLE ATTACHMENT
-- COLLETS MUST BE ORDERED SEPARATELY.**



PARTS ON THIS SIDE OF HEAVY LINE ARE INCLUDED IN ADAPTER ASSEMBLY 47982.

DISASSEMBLY

DUAL SPINDLE ATTACHMENT
MODEL 48055

The Dual Spindle Attachment can be serviced without removing the complete assembly from tool. Using 4 mm hex wrench supplied with unit, loosen both Adjusting Screws (45992)—**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.

Remove Crescent Ring (45997). Rotate Spindle Turret and at the same time pull back slightly on Turret to locate alignment of Spindle with notch in Body (45999) and remove Spindle Assembly from Body. To remove Gear (45996) from Body, remove Oil Reservoir (46009) and Nylon Washer (45993)—bend washer slightly to remove. Needle Cage (46002), Spacer (45995) and Washer (45994) are loose parts and will drop out. **DO NOT** disassemble Spindle (46022) unless it is necessary to replace a part.

To disassemble Spindle Assembly (46022): Using a flat bottom type punch or similar tool and an arbor press, remove Gear (47757-64) from Spindle (47757-59). Remove Spindle from the Sleeve carefully because the six (6) Rollers (47757-60) are loose parts and will drop out. **NOTE:** Thrust Race (47757-66) is press fit on Spindle. Cut off O-Ring (47757-225) and using a "C" type washer that properly fits spindle, press Thrust Race and Needle Cage off Spindle. If Link Bearing (47757-63) and Sleeve (47757-62) are removed from Turret, it will be necessary to remove the Foam Strip (47757-227) 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.

To disassemble Adapter Assembly (47982): Remove the Adapter Assembly from the drilling unit (tool). Remove Retaining Rings (45987) and (45988) and remove Lock Ring (45990) from Barrel. Remove two (2) Circlips (47757-203) from the two (2) Guide Pins (47757-8). Pull off Barrel (47757-101). Remove Retaining Ring (45989). Push Bearing (32325) back on spindle exposing Needle Roller (45986) and remove Needle Roller, Driving Gear (45991) and Bearing (32325). Remove Shoulder Screws (47757-213) to disassemble the remaining adapter parts.

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 (46022): Press Sleeve (47757-62) into Turret. **IMPORTANT — SLOT IN THE SLEEVE MUST BE ALIGNED WITH THE NOTCH IN THE BACK FACE OF TURRET.** Push the Foam Strip (47757-227) 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 (47757-225) and Needle Cage (47757-194) on Spindle. Slide Thrust Race (47757-66) on Spindle and press to location diameter up to shoulder adjacent to Bearing (47757-194). Be certain Thrust Race is pressed on and squarely seated or premature failure of the bearing may occur. Assemble Thrust Race (47757-72) and slide Spindle into Sleeve leaving approximately a 1/2" gap between end of Sleeve and Thrust Race and assemble the six (6) Rollers to Spindle. Be certain there are six rollers. Lubricate Rollers and bearings using a good grade of bearing grease and slide Spindle on into Sleeve. Assemble Needle Cage (46002) to Spindle and press Gear (47757-64) on Spindle leaving an end play of .001/.002".

Insert a dummy Adjusting Screw (45992) (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 (45994) to dummy screw. Assemble one Needle Cage (46002), Spacer (45995) and Needle Cage (46002) into Gear (45996) and assemble Gear to the dummy screw. Assemble Nylon Washer (45993) into Body — Bend Washer slightly to insert into Body and assemble Oil Reservoir (46009) into Body.

Assemble Adjusting Screw (45992) to Spindle Assembly (46022) and assemble Nylon Washer (45994) 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, assemble Crescent Ring (45997) to Adjusting Screw securing Screw to Body.

Assembling Adapter (47982): If Needle Bearings (47757-205) and/or Bronze Bushings are being replaced — press Needle Bearings into Gear Rings (47757-4) and (47757-5) to flush or to .010" below face of Gear Ring. Press short Bronze Bushings (47757-209) into Gear Ring (47757-5) and the long Bronze Bushings into Gear Ring (47757-4). Press Needle Bearings (47757-206) into Reversing Gear (47757-7) — the top Needle Bearing should be pressed flush with the back face of the dogs and should not obstruct the engagement of the dogs. Lightly grease all Needle Bearings with a good grade of bearing grease. **DO NOT GREASE BRONZE BUSHINGS.** Remove excess grease from bearings as this can affect the performance of the adapter by blocking breather channels. Assemble Reversing Gear into Gear Ring (47757-5) and assemble Circlip (47757-212) to Gear. Be sure Gear rotates freely. Assemble Needle Roller (47757-208) into large end of Inter Gear (47757-6) and press through leaving an equal projection of the Needle Roller at each end of Gear.

Place Adapter Ring (47757-20)/Gear Ring (47757-4) Assembly on working surface with Gear Ring "up" and assemble Inter Gears into Needle Bearings — adjacent and diametrically opposite gears should be reversed. Assemble Gear Ring (47757-5) to Inter Gears and push together maintaining alignment of Needle Bearings. Assemble Spacers (47757-9) between Gear Rings, assemble Shoulder Screws (47757-213) and tighten sub-assembly. Be sure gears rotate freely. Slide Guide Pins (47757-8) into bushings — Pins must slip freely into bushings. Partially withdraw Guide Pin and assemble Washer (47757-265), Spring (47757-214) and second Washer (47757-265). Seat Guide Pin in bushing, compress Spring slightly and assemble Circlips (47757-203) to Guide Pins. Fit Spindle (47757-102) into assembly and place Retaining Ring (45989) onto Spindle. Place Bearing (32325) onto Driving Gear leaving cross-hole for Needle Roller open. Slide Gear onto Spindle aligning holes for Roller and secure Gear to Spindle with Roller. Slide Bearing over Roller and secure with Retaining Ring (45989). Grease gear dog and tapping spindle tangs. Slide Barrel over assembly so that Guide Pins project through Spring Retainer Ring. **NOTE:** Barrel should be a slide fit. A tight fit will affect the performance of the Tapping Adapter. Using a pair of long nosed pliers pull Guide Pins through Spring Retainer Ring and assemble Circlip (47757-203) to groove. Assemble Lock Ring (45990) to Barrel and secure with Retaining Rings (45988) and (45987).

NOTE: When assembling Dual Spindle Attachment to Adapter assembly, alternately thread Adjusting Screws (45992) approximately 1/2 turn at a time to prevent damaging the unit.

SPINDLE ADJUSTMENT

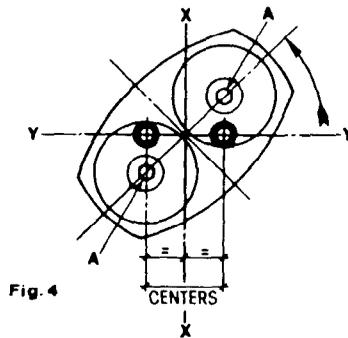
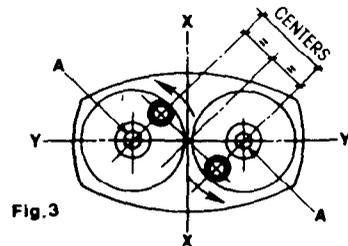
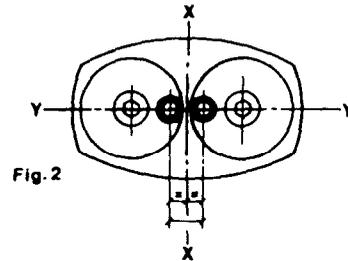
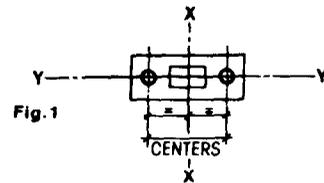
FOR SIMPLE SPINDLE ADJUSTMENT THE "X" "X" AND "Y" "Y" AXIS OF THE COMPONENT SHOWN IN FIG. 1 SHOULD COINCIDE WITH THE "X" "X" AND "Y" "Y" AXIS OF THE DRILL HEAD AND DRILLING UNIT AS SHOWN IN FIG. 2 THE SPINDLES SHOULD THEN BE ADJUSTED IN THE MANNER SHOWN IN FIGS. 3 AND 4.

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 "Y" "Y" TO SUIT GAUGE OR DRILL BUSHINGS AND TIGHTEN SCREWS "A" SECURELY.



TAP CHART 45988-() COLLETS

PART NO.	TAP RANGE (METRIC)
45998-27	No. 0 - No. 6 (M 1.6 - M 3.5)
45998-34	No. 8 (M 4)
45998-41	No. 10 (M 4.5 - M 5)
45998-47	No. 12
45998-56	1/4" (M 6)

PART NO.	BORE DIA. (REF.)	INCH	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
45998-1	.039		61	1.0	45998-20	.114		33	2.9	45998-39	.189	3/16	12	4.8
45998-2	.043		57	1.1	45998-21	.118		32	3.0	45998-40	.193		10	4.9
45998-3	.047	3/64	56	1.2	45998-22	.122		31	3.1	45998-41	.197		9	5.0
45998-4	.052		55	1.3	45998-23	.126	1/8	-	3.2	45998-42	.201		7	5.1
45998-5	.055		54	1.4	45998-24	.130		30	3.3	45998-43	.205	13/64	5	5.2
45998-6	.059		53	1.5	45998-25	.134		29	3.4	45998-44	.209		4	5.3
45998-7	.063	1/16	52	1.6	45998-26	.138		-	3.5	45998-45	.213		3	5.4
45998-8	.067		51	1.7	45998-27	.142	9/64	28	3.6	45998-46	.216		-	5.5
45998-9	.071		50	1.8	45998-28	.146		26	3.7	45998-47	.220	7/32	2	5.6
45998-10	.075		48	1.9	45998-29	.150		25	3.8	45998-48	.224		-	5.7
45998-11	.079	5/64	47	2.0	45998-30	.154		23	3.9	45998-49	.228		1	5.8
45998-12	.083		45	2.1	45998-31	.157	5/32	22	4.0	45998-50	.232		-	5.9
45998-13	.087		44	2.2	45998-32	.161		20	4.1	45998-51	.236	15/64	A	6.0
45998-14	.091		43	2.3	45998-33	.165		19	4.2	45998-52	.240		B	6.1
45998-15	.094	3/32	42	2.4	45998-34	.169		18	4.3	45998-53	.244		C	6.2
45998-16	.098		40	2.5	45998-35	.173	11/64	17	4.4	45998-54	.248		D	6.3
45998-17	.102		38	2.6	45998-36	.177		16	4.5	45998-55	.252	1/4	E	6.4
45998-18	.106		36	2.7	45998-37	.181		14	4.6	45998-56	.256		F	6.5
45998-19	.110	7/64	35	2.8	45998-38	.185		13	4.7					