



Aerospace Group
Conveyance Systems Division
Carter® Brand Ground Fueling Equipment

SM64052

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Applicable additional manuals:

SM64051 Commercial 2" Unisex
Coupling, Non-Valved

Maintenance & Repair Manual

Commercial 2" Unisex Coupling - Valved

Model 64052

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**MAINTENANCE, OVERHAUL & TEST INSTRUCTIONS
CARTER PART NUMBER 64052**

1.0 INTRODUCTION

This manual furnishes detailed instructions covering the operation, maintenance and overhaul of Carter Ground Fueling Division., Model Number

64052 2" Commercial Valved Unisex Couplings and the various options listed in Section 3.0.

2.0 EQUIPMENT DESCRIPTION

The Carter Part Number 64052, Valved Unisex Coupling is commercial version of the 2 inch hose coupling that is universally connectable to either another 64052 Valved Unisex Coupling, to Carter 64051 Non-valved Unisex Couplings, to other derivatives of the Carter family of unisex couplings. The units are qualified in accordance with A-A-59377, Class A (formerly MIL-C-53071).

The basic valved coupling is procured under the part number 64052 with various options that determine the desired inlet or hose mounting configuration. The table in Paragraph 3.0 and the exploded views in the figures at the end of the manual include the various options available.

3.0 TABLE OF OPTIONS AND ORDERING INFORMATION

The 64052 is available with various inlet or hose mounting configurations as described in the tables below.

OPTIONS TO BE ADDED TO 64052 VALVED UNISEX COUPLING

OPTION LETTER	DESCRIPTION	OPTION LETTER	DESCRIPTION
A	Adds 40-mesh Screen (only with option N)	J	Adds 2" Male NPT Inlet
B	Adds 60-mesh Screen (only with option N)	M	Adds 2 1/2" Female BSPP Inlet
C	Adds 100-mesh Screen (only with option N)	N	Adds 2" Female BSPP Inlet
D	Adds Optional Dust Cap	P	Adds 2" Female NPT Inlet
E	Adds 2" Hose Barb Inlet	R	Adds 1 1/2" Female NPT Inlet
F	Adds 1 1/2" Hose Barb Inlet	S	Adds 1 1/2" Female BSPP Inlet
G	Adds 1 1/4" Female BSPP Inlet	T	Adds 1 1/2" Male BSPP Inlet
H	Adds 1 1/2" Male NPT Inlet	U	Adds 2 1/2" Female NPT Inlet

Example: 64052F - Valved unisex coupling with 1 1/2" hose barb inlet fitting.
64052J - Valved unisex coupling with 2" male NPT inlet fitting.

4.0 **DISASSEMBLY**

- 4.1 Remove Screw (1) using a torque wrench, checking the running torque. If the running torque is less than 3.5 in-lb. discard Screw (1). Note: Screw (1) is self-locking and is designed to be reused several times before replacement is necessary. If a torque wrench is not used to remove it, Screw (1) should be replaced. Remove and discard Packing (2). Holding the unit over a suitable container to collect the Balls (3) in the swivel joint, with the screw hole toward the container, rotate the inlet fitting to allow the Balls (3) to fall into the container. There should be 41 Balls (3). When all 41 Balls (3) have been collected pull the Inlet (4 thru 15) from the main unit. Remove and discard Packings (25 & 26). Be careful not to lose any of the Springs (23). Remove and discard Upstream Seal (24). Set the inlet and Springs (23) aside for later use.
- Remove the Screen Assembly (62) (Option A – C only) by removing the split ring and pulling both from the ball.
- 4.2 Rotate Ball (27) to closed position to align the slots in the upper and lower sections to allow for removal. Remove Ball (27) from inlet of Body (51).
- 4.3 Remove Stop Pin (29) and Wave Washer (28) along with Packing (30) (lower Ball support). Discard Packing (30).
- 4.4 Reach into Body (51) cavity and remove Downstream Seal Assembly (31) and discard it.
- 4.5 Remove Screws (33) from Arm (35). Arm Assembly (34) can now be removed. If this part of the unit is not damaged and is functioning properly, it is not necessary to disassemble it further. If necessary to disassemble then using an Allen key remove Screw (36), Spring (37) and Grip (38).
- 4.6 Shaft (39) can be removed from the inside of the Body (51). Remove and discard Packing (30).
- 4.7 Remove and discard seal (41) from interface end of body (51).
- 4.8 If Option D, Dust Cap (46) is resent and/or the Cable (50) is to be replaced cut the Cable (50) to remove.
- Remove and discard Seal (41) from Dust Cap (46)
- 4.9 Remove the Bumper (42) only if replacement is needed or if it is necessary to replace the Lugs (44) or (45).
- 4.10 Remove Screw (43) to replace Lugs (44) and/or (45).
- 4.11 Do not try to disassemble the Body (51) to remove the spring loaded Ball (56), Spring (55) or Retainer (57) permanently affixed in the face of the unit. If the ball is damaged, replacement of the Body (51) will be necessary.
- 4.12 Do not remove the interlock mechanism, Lockout Pin (54), Screw (52) and Spring (53) unless replacement is needed. If necessary use an Allen key to remove Screw (52) then Spring (53) and Lockout Pin (54).

5.0 **INSPECTION**

It is recommended that all Packings (2), (25), (26), (30) and Seals (24), (31), (41), (48) be discarded and replaced at each overhaul.

Inspect all metal parts for dings, gouges, abrasions, etc. On all parts except for the Ball (27), use 320 grit paper to

smooth and remove sharp edges. Replace any part with damage exceeding 15% of local wall thickness. Use alodine 1200 to touch up bared aluminum. If Ball (27) is scratched or damaged it should be replaced.

Inspect the Bumper (42) for evidence of cracking or wear. Replace as necessary.

Check Lugs (44) and (45) to assure that they are not loose. If loose, remove Bumper (42) to check the tightness of the Screws (43). Screws (43) should be tightened to 6 in-lb.

Count the Balls (3) to make sure that all 41 are present.

Check the hole in the face of the unit adjacent to the large Lug (43) to be sure it is clear and free of contamination.

Check the groove (round bottom) in the Inlet (4 through 15) for burrs on the corners. If groove is worn such that burrs exist, use 320 grit paper to smooth and remove sharp edges. Burrs will make it difficult to re-install the part.

Inspect the Dust Cap (46), if present for soundness and completeness. If cracked or broken, replace.

Inspect the small spring loaded ball located in the face of the unit. Push the ball in and be sure that it pops back into place. The purpose of this ball is to provide electrical continuity between mating units.

Inspect the Screw (36) and Arm (35) for damage that could have been caused by dropping the unit. If either part is bent replace it.

Inspect the Screen Assembly (62) (Option A – C only) for any damage. If damaged replace it. Clean the screen of any dirt or debris.

6.0 REASSEMBLY

Reassemble the parts in the reverse order of disassembly noting the following:

- 6.1 Make certain all components are clean and free from oil, grease, or any other corrosion resistant compound on all interior or exterior surfaces. Wash all parts with cleaning solvent and dry thoroughly with a clean, lint-free cloth or compressed air.

WARNING

Use cleaning solvent in a well-ventilated area. Avoid breathing of fumes and excessive solvent contact with skin. Keep away from open flame.

- 6.2 Install the Seal (48) in Dust Cap (47), if present using a finger to be sure that the seal is properly seated in its groove. This Seal (48) and Seal (41) are identical.
- 6.3 If the Cable (50) was cut to remove it from the Dust Cap (47), rebuild it by looping one end of the Cable (50) (approximately 18" long before

assembly) through the hole in the Dust Cap (47). Make a loop approximately one inch long. Retain the loose end of the Cable (50) with Sleeve (49). Crush the Sleeve (49) to retain the Cable (50) using a pair of vise grips or heavy battery pliers. Make a one inch loop on the opposite end of the Cable (50) and secure it with another Sleeve (49) affixing it as above. The loop in the Cable (50) is treaded onto the Ring (40) to affix it to the unit.

- 6.4 If removed during disassembly, install Lugs (43 and 44) in their proper positions. Match the holes in the Lugs (43 and 44) with the hole pattern in the Body (51). Tighten Screws (43) to 6 in-lb. to retain.
- 6.5 Install Bumper (42) onto Body (51) such that the thin lip seal end is facing away from the unit.
- 6.6 Install the Seal (41) into the groove in the face of the Body (51) making sure that its outer face is smooth and free of any wrinkles.

- 6.7 Insert Downstream Seal Assembly (31) in place into Body (51). Press firmly into place.
- 6.8 Place one Packing (30) onto Shaft (39) and insert into the hole in the Body (51) from the inside of the Body (51). Press firmly to seat the part into the Body (51).
- 6.9 If disassembled, reassemble Grip (38), Spring (37) and Arm (35) with Screw (36). Tighten the Screw (36) to bottom out only, do not over tighten. Place assembly onto the Shaft (39) aligning the two holes and affix with the two Screws (33), torque to 8 in-lb. Rotate the Arm (35) into the closed position.
- 6.10 Place Packing (30) in groove in Stop Pin (29) and install Stop Pin (29) in hole in Body (51) being sure that the hump on the Stop Pin (29) is to the left when the inlet opening of the Body (51) through which you are working is facing you and the stop pin hole in the Body (51) is closest to you. Place the Wave Washer (28) into the groove in the Stop Pin (29).
- 6.11 Align the proper slots in the Ball (27) with the tangs on the Shaft (39) and the Stop Pin (29) and insert the Ball (27) into the Body (51). Some slight movement may be necessary to accomplish this.
- 6.12 Rotate the Arm (35) to the open position. and retain the Ball (27) in place.
- 6.13 If the Lockout Pin (54) was not removed from the unit, keep the Ball (27) and the Arm (35) in the open position, and check to see if the Lockout Pin (54) can be depressed. If it cannot be fully depressed into its cavity in the Body (51), the Stop Pin (54) was installed correctly. Otherwise, the Stop Pin (29) was installed with the hump to your right and not to your left. Remove the Ball (27) and correct the Stop Pin (29) installation.
- If the Lockout Pin (54) was removed from the unit, keep the Ball (27) and the Arm (35) in the open position, and visually check to see if the Lockout Pin (54) is installed correctly by looking at the Stop Pin (29) through the lockout pin hole on the interface end of the Body (51). If the hump of the Stop Pin (29) was rotated to a position closest to the interface end of the Body (51), the Stop Pin (29) was installed correctly. Otherwise, the Stop Pin (29) was installed with the hump to your right and not to your left. Remove the Ball (27) and correct the Stop Pin (29) installation.
- 6.14 If the Lockout Pin (54) was removed from the unit install Screw (52) into Body (51), then drop Spring (53) over Screw (52). Place Lockout Pin (54) in place and start the Screw (52) with an Allen key. Tighten Screw (52) until the ramp edge of Lockout Pin (54) is even with or slightly below the adjacent ledge of the Body (51). Then pull the Grip (38) back and slowly turn the Arm (35) towards the closed position. If the Arm (35) will not rotate or is too tight to rotate, loosen the Screw (52) by one-quarter turn at a time until the Arm (35) can be rotated freely.
- In the Lockout Pin (54) adjustment process, ensure the Ball (27) is securely seated in the Body (51) at all times. After the adjustment process is completed, rotate Arm (35) to the open position and retain the Ball (27) in place while completing the remainder of the operation.
- 6.15 On options A – C insert the Screen (62) into the ball and insert spilt ring to retain.

7.0 TEST

- 7.1 The following test procedures will be accomplished after overhaul:
- 7.2 Test conditions
Test media shall be Test Fluid in accordance with MIL-C-7024, type II,
- 7.3 Functional Test
- 7.3.1 Using the test unit and a similar valved unisex coupling, make sure that they will

- connect correctly while both couplings are in closed condition. After connecting the couplings, open the test unit and try to disconnect by applying a counterclockwise motion. The coupling, in open position, will prevent any disconnect attempt. Then close the test unit and disconnect by applying a counter-clockwise motion.
- 7.3.2 Connect the test unit to another unisex coupling with inlet capped. Connect fluid pressure source capable of 100-psi pressure to the inlet of the test unit. With the Arm (35) in the open position, apply pressure of 5 and 100 psig to the system and observe for external
- leakage. There should be no leakage over a period of at least one minute. Reduce the system pressure.
- 7.3.3 Connect fluid pressure source capable of 100-psi pressure to the inlet of test unit. With the test unit in disconnected condition and the Arm (35) in the closed position, apply pressure of 5 and 100 psig to the system and observe for external leakage. There should be no leakage over a period of at least one minute. Reduce the system pressure.
- 7.3.4 Remove test unit from the test system and install the dust cap, if present.
-

8.0 ILLUSTRATED PARTS CATALOG

Table 1.0 tabulates the parts and sub-assemblies comprising the 64052 Valved Unisex Coupling. The item

numbers of the table are keyed to the exploded views of the nozzle diagrammed in Figure 1.

TABLE 1.0
64052 2" UNISEX COUPLING & OPTIONS

Item	Part Number	Description	Units / Assy	Coupling Option	Spares/10 Units/Yr
1	GF35206-276	Screw	1	All	-
2	MS29513-010	Packing	1	All	10
3	220265	Ball	41	All	-
4	220132-1	Inlet, 2" Male NPT	1	J	-
5	220131-1	Inlet, 1 1/2" Male NPT	1	H	-
6	220502-1	Inlet, 1 1/2" Female NPT	1	R	-
7	220498-1	Inlet, 2" Female NPT	1	P	-
8	220499-1	Inlet, 2" Female BSPP	1	N	-
9	221320-1	Inlet, 1 1/2" Male BSPP	1	T	-
10	220500-1	Inlet, 1 1/2" Female BSPP	1	S	-
11	221505	Inlet, 1 1/2" Hose Barb	1	F	-
12	220130-1	Inlet, 2" Hose Barb	1	E	-
13	221319-1	Inlet, 1 1/4" Female BSPP	1	G	-
14	220574-1	Inlet, 2 1/2" Female NPT	1	U	-
15	220557	Inlet, 2 1/2" Female BSPP	1	M	-
16-22	Left intentionally blank				
23	220153	Spring	8	All	-
24	220157	Seal, Upstream	1	All	10
25	MS29513-133	Packing	1	All	10
26	MS29513-228	Packing	1	All	10
27	220152	Ball	1	All but A-C	-
	220775	Ball (with groove for screen)	1	A-C	-
28	W0367-006-S	Wave Washer	1	All	-
29	220150	Pin, Stop	1	All	-
30	MS29513-014	Packing	2	All	20
31	47363	Seal Assembly, Downstream	1	All	10
32	Left intentionally blank				
33	PL24693C50	Screw	2	All	-
34	47085	Arm Assembly	1	All	-
35	220147	Arm	1	All	-
36	220204	Screw	1	All	-
37	220145	Spring	1	All	-
38	220142	Grip	1	All	-
39	220154	Shaft	1	All	-
40	220482	Ring	1	All	-
41	220146	Seal	1	All	10
42	220161	Bumper	1	All	5
43	GF16997-20L	Screw	4	All	-

Item	Part Number	Description	Units / Assy	Coupling Option	Spares/10 Units/Yr
44	220159-1	Lug, long	1	All but Z	-
	220805-1	Lug, long stainless steel	1	Z	-
45	220159-2	Lug, short	1	All but Z	-
	220805-2	Lug, short stainless steel	1	Z	-
46	47062	Dust Cap Assembly	1	D	2
47	220162	Cap	1	D	-
48	220146	Seal	1	D	10
49	28-2-G	Sleeve	2	All	-
50	220201-1-18	Cable	1	All	-
51	220163-3	Body	1	All but V	-
52	GF16997-24L	Screw	1	All	-
53	220149	Spring	1	All	-
54	220151	Pin, Lockout	1	All	-
55	220335	Spring	1	All	-
56	220265	Ball	1	1	All
57	220334	Retainer	1	All	-
58-63	Left intentionally blank				
64	47115-40	Screen Assy	1	A	-
	47115-60	Screen Assy	1	B	-
	47115-100	Screen Assy	1	C	-
	KD64020-1	Kit of seals and other soft goods to repair a basic 64052 and any option. Contains proper quantities of items – 2, 24, 25, 26, 30 & 31.			
	KD64020-9	Kit containing Bumper, Cap Assembly and Interface Seal, items 24, 42 & 46.			

Notes:

1. Kits are the most economical way to procure basic repair parts. Other kits can be obtained upon request.

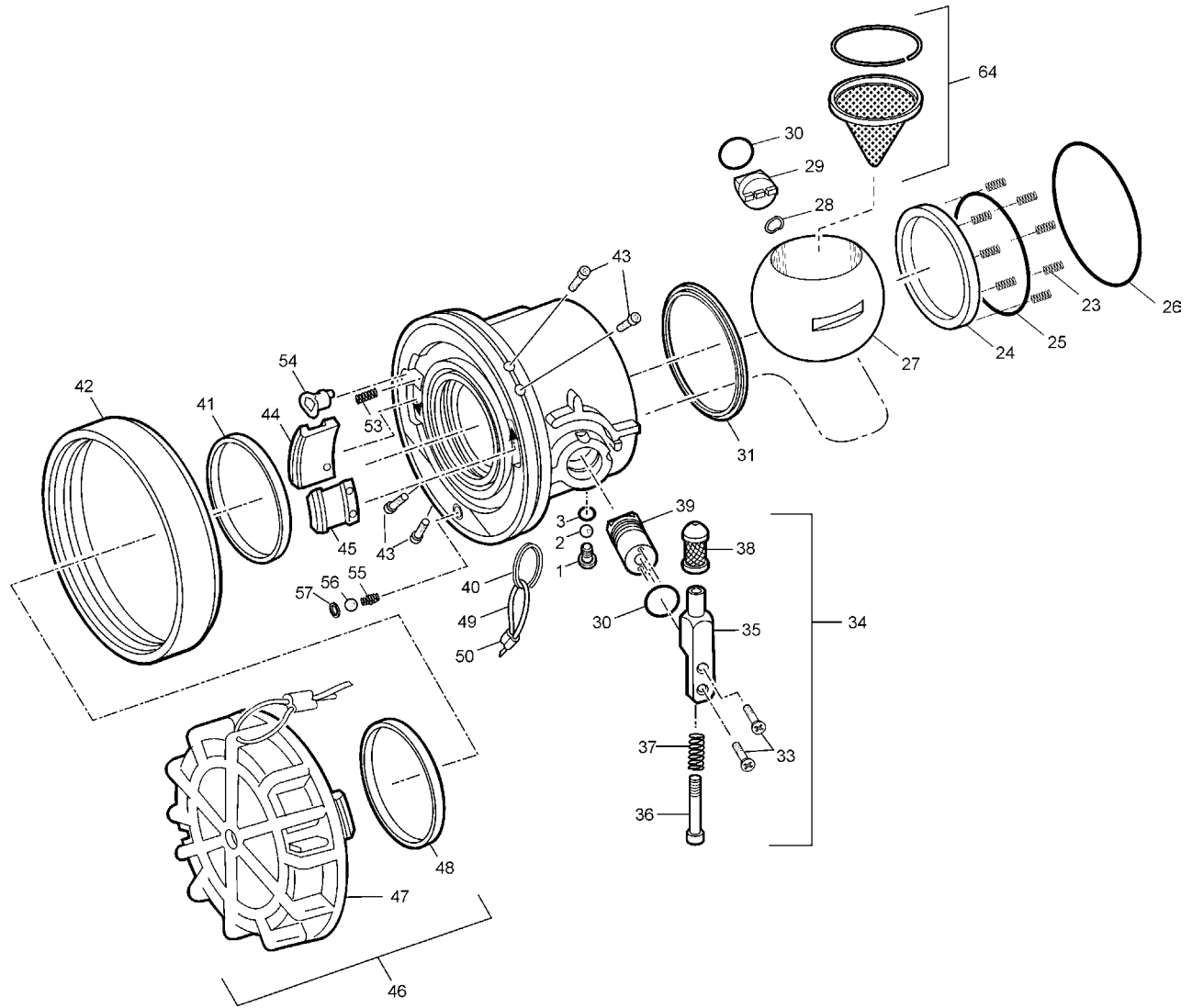


FIGURE 1
64052 2" BASIC UNISEX COUPLING & OPTION D PARTS BREAKDOWN

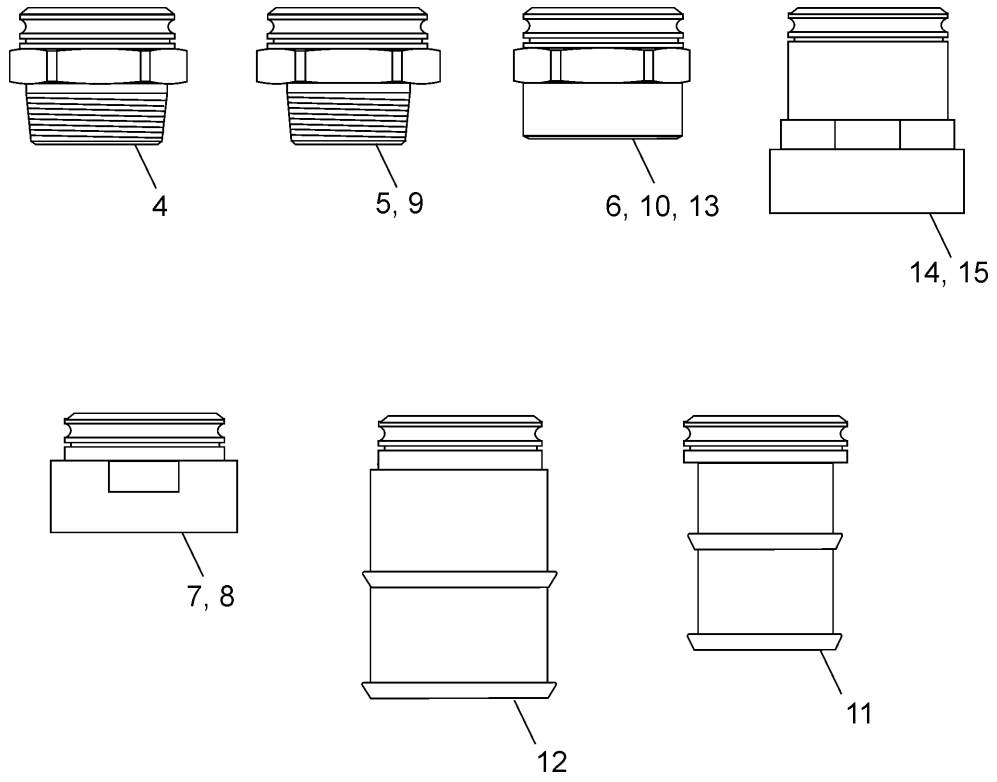


FIGURE 2
64052 2" UNISEX COUPLING INLET FITTINGS

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