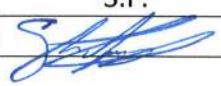




SERVICE LETTER SL2009-014

Rev.	Date	Description of Revision	Prepared By	Approved
I/R	Mar 17, 2010	Initial Release	T. Bliss	S.F.
A	Aug 4, 2010	Revised Revision Block on Page 1 of 12	C. Hathaway	

Subject: DC Electric Hover Refill Pump Recommended Maintenance Schedule

Applicability: This service letter is applicable to Simplex Manufacturing Fire Attack Systems (FAS) as stated in Table 1.

Table 1 Fire Attack Applicability

Fire Attack System Model	Hover Pump Assembly Part Number (ref)	Pump Part Number (-004 supersedes -002)	Rotorcraft Series
301	300-704002-003	301-704020-003	Eurocopter AS365N
304 (2-door)	300-704002-001	301-704020-004	Bell 205A-1, 205B, 212,412,AB412,412EP and UH-1
308	300-704002-001	301-704020-004	Bell 407
310	300-704002-001	301-704020-004	Eurocopter AS350 and AS355
311	300-704002-001	301-704020-004	Kawasaki BK-117
323	300-704002-001	301-704020-004	Agusta A119 Koala

NOTE: *The information contained in this document is for reference only and does not supersede the service instructions contained in the respective Maintenance Manuals (MM) or Instructions for Continued Airworthiness (ICA).*

Purpose: This document was drafted to recommend annual Hover Refill Pump (HRP) maintenance and 1500 hour HRP time in service overhaul to ensure peak performance and reduce unscheduled maintenance during periods of heavy use.

Compliance: Compliance of this service letter is recommended prior to heavy seasonal use on systems that are more than 18 months since new or with more than 300 hours time in service on the hover refill pump and every year or 300 hours thereafter for annual maintenance and complete assembly overhaul every 5 years or 1500 hours of hover pump use, whichever comes first.



Parts:

The parts required by Fire Attack System to comply with this Service Letter are listed in Table 2 for annual maintenance and Table 3 for pump overhaul. Replacement parts and equipment may be ordered through your local authorized Simplex Representative or directly from Simplex Manufacturing.

Table 2 Parts Required for Annual Pump Maintenance

28VDC Hover Pump Assembly 301-704020-004 (110A) and 301-704020-003 (90A)		
Kit Part Number	Description	Quantity
300-106001-001	Annual DC Pump maintenance kit and service instructions	1
000-109085-001	Brush Assembly	2
*000-126390-001	Hose, 3"	10'
*301-704045-001	Electric Motor (includes brushes)	1
*301-704051-001	Flapper Assembly	1

Table 3: Parts Required for Hover Pump Assembly Overhaul

Hover Refill Assembly Installation 300-704002-001 (110A) and 300-704002-003 (90A)		
Part Number	Description	Quantity
*301-704020-003	Hover Pump Assembly, 90 Amp, Complete	Ref
*301-704020-004	Hover Pump assembly, 110 Amp, Complete	Ref
300-704037-001	Hose Assembly	1
300-106001-001	Annual DC Pump maintenance kit and service instructions	1
000-109085-001	Brush Assembly	2
**300-704029-001	Impeller 90 AMP Pump	1
**300-704061-001	Impeller 110 AMP Pump	1
*300-704012-001	Enclosure, Motor	1
301-704031-001	Shaft, Impeller	1
301-704040-001	Cover, Impeller	1
300-704060-001	Seal, Sleeve	1
301-704047-001	Bumper, Screen	1
301-704048-001	Bumper, Motor	1
000-112480-000	Washer, Lock	7
000-110865-000	Bolt	3
000-139095-000	Key Stock, Motor Shaft	1.75"
000-139095-000	Key Stock, Impeller Shaft	1.25"
000-110869-001	Bolt	4
000-111139-000	Half Nut, Locking	1
000-112200-000	Washer, Flat	1
000-105990-000	Electric Boot, stud cover	2

* Replace on condition ** Choose based on model and Amperage rating



Equipment:

1. Typical mechanics tool kit
2. Shop rags
3. Suitable work surface

Consumables:

1. Grease MIL-G-18709 or equivalent
2. Corrosion Inhibitor MIL-C-16173-D grade 4 or equivalent
3. Hydraulic Fluid MIL-H-5606, MIL-H-83282 or equivalent
4. 000-153084-000 Sealant (included in rebuild kit)
5. 000-159102-000 Super Lube (included in rebuild kit)
6. 000-159100-000 732 Sealant
7. NLGI-2 Lithium Grease or equivalent
8. MIL-PRF-907-F Anti-Seize Lubricant or equivalent

Weight and Balance:

No effect.

Electrical Loads:

No effect.

References:

1. Simplex System Manuals ICA or MM.
XXX-102005-001 or later (XXX represents specific FAS model number) consult Simplex Manufacturing for latest revision information.



Annual (300 Hour) Procedure:

1. Review rotorcraft log books and determine date of initial installation, hours in service, and time in service of Fire Attack System with hover pump installed.
2. Perform inspection and maintenance as described in Table 4.
3. Alternately the customer may choose to return the hover refill pump to Simplex Manufacturing for servicing.
4. Allow 24 hours for 732 Sealant to dry.
5. Test water tightness by completely submerging pump assembly in water and looking for air bubbles. Pull motor drain plug after bubble test to check for water infiltration. If any water is observed in motor housing, investigate source and reseal with 732 Sealant or replace seal at source of leak.

Table 4: Annual (300 Hour) Inspection Procedure

ANNUAL INSPECTION and MAINTENANCE (1-year or 300 hours) Initial each item after accomplishment. Record all findings and attach a copy of this inspection form to maintenance records. Sign off inspection when complete.							
Serial No.	_____ (FAS) _____ (HRP)	Total System Time	_____	HRP Time	_____	Date	_____
1	PRE INSPECTION REQUIREMENTS						INITIAL
	Review maintenance records and determine time in service and hours of operation of the Hover Refill Pump.						
2	HOVER PUMP ASSEMBLY (28VDC ELECTRIC)						INITIAL
	ACCESS REQUIREMENTS: Remove Hover Refill Pump Assembly (HRP) from rotorcraft. Clean and flush HRP with fresh water.						
	INSPECTION: Inspect all attachment fittings and connections for proper operation and condition. Check for signs of stress or corrosion. See Figure 1. Check condition of electrical harness and connectors. Inspect hose for condition and wear.						
	MAINTENANCE: Hose must be replaced if worn through 50% of wall. Replace electric harnesses that contain burnt or broken wires. Replace any damaged protective sleeve or boot. Clean pump screen.						



ANNUAL INSPECTION and MAINTENANCE (1-year or 300 hours)											
Initial each item after accomplishment.											
Record all findings and attach a copy of this inspection form to maintenance records.											
Sign off inspection when complete.											
3	HOSE ASSEMBLY	INITIAL									
	ACCESS REQUIREMENTS: Disassemble hose from pump by removing cam-lock safety mechanism and rotating cam-lock until free. Remove hose assembly from pump. Disconnect electrical provisions and support channel.										
	INSPECTION: Inspect internal flapper assembly for condition and proper operation. Flapper act as a check valve to prevent tank contents from back flowing overboard. Inspect electrical wiring where it enters and exits hose fittings for damage.										
	MAINTENANCE: Coat aluminum fittings with corrosion inhibitor MIL-C- 16173-D grade 4. Replace damaged or missing cable ties and hose clamps. Replace wire seals if worn or damaged. Reseal wires at fitting interfaces with 732 Sealant. Replace flapper if missing or damaged. Replace electrical wires that show signs of insulation wear or damage.										
4	WATER PUMP	INITIAL									
	ACCESS REQUIREMENTS: Disassemble as shown in Figure 2 to gain access to impeller and screen.										
	INSPECTION: Inspect attachment hardware for condition Inspect condition of pump and housing. Inspect Impeller, pump housing (volute) and impeller cover for condition, replace if pitted, cracked or worn. Measure impeller and cover. Replace if out of limits defined below.										
	<table border="1"> <thead> <tr> <th>LIMIT (acceptable range)</th> <th>90 Amp Pump</th> <th>110 Amp Pump</th> </tr> </thead> <tbody> <tr> <td>Impeller</td> <td>3.400-3.436 inches outer diameter</td> <td>3.500-3.567 inches outer diameter</td> </tr> <tr> <td>Impeller cover</td> <td>4.508-4.580 inches inner diameter at base, impeller side</td> <td>4.508-4.580 inches inner diameter at base, impeller side</td> </tr> </tbody> </table>	LIMIT (acceptable range)	90 Amp Pump	110 Amp Pump	Impeller	3.400-3.436 inches outer diameter	3.500-3.567 inches outer diameter	Impeller cover	4.508-4.580 inches inner diameter at base, impeller side	4.508-4.580 inches inner diameter at base, impeller side	
LIMIT (acceptable range)	90 Amp Pump	110 Amp Pump									
Impeller	3.400-3.436 inches outer diameter	3.500-3.567 inches outer diameter									
Impeller cover	4.508-4.580 inches inner diameter at base, impeller side	4.508-4.580 inches inner diameter at base, impeller side									



ANNUAL INSPECTION and MAINTENANCE (1-year or 300 hours) Initial each item after accomplishment. Record all findings and attach a copy of this inspection form to maintenance records. Sign off inspection when complete.		
	MAINTENANCE: Replace any damaged or missing hardware or components. Clean screen. Replace impeller shims, seals and bearings as described in the instructions included with the maintenance kit. Reassemble. Measure impeller top and bottom clearance as shown in Figure 2 and adjust shim count as necessary.	
5	ELECTRIC MOTOR (28VDC)	INITIAL
	ACCESS REQUIREMENTS: Remove support channel and case cover by removing eight (8) bolt sets. Retain reusable hardware for reinstallation if desired. Disconnect electrical provisions, retaining any reusable hardware.	
	INSPECTION: Inspect housing for condition. Inspect electrical connections for corrosion or evidence of arcing. Open motor as described in instructions included with rebuild kit (Figure 3).	
	MAINTENANCE: Replace any discolored or damaged electrical connectors and covers. Replace all damaged hardware. Replace brushes. Spray corrosion inhibitor on motor end prior to installing cover. Reassemble with Permatex where appropriate per Figure 2. Pack pump support (Figure 1) with Lithium Grease at fittings shown in Figure 2. Seal all electrical wiring with 732 Sealant.	
6	RETURN TO SERVICE	INITIAL
	ASSEMBLE Connect cam-lock fittings at hose end and secure with safety wire or wire ties. Verify all hardware is intact and torqued as required in ICA or MM. Ensure all secondary locks are installed correctly (cotter pins and safety wire) Seal all motor studs and seams with 732 Sealant. Allow 24-hours for 732 Sealant to dry. Check for water tightness and reseal as required.	
	POST INSPECTION: Verify pump operation Make the appropriate logbook entries	
Performed By: _____ Signature: _____ No.: _____		
Inspected By: _____ Signature: _____ No.: _____		



1500 Hour (5-year) Procedure:

1. Review rotorcraft log books and determine date of initial installation, hours in service, and time in service of Fire Attack System with hover pump installed.
2. Perform inspection and maintenance as described in Table 5.
3. Alternately the customer may choose to return the hover refill pump to Simplex Manufacturing for servicing.
4. Allow 24-hours for 732 Sealant to dry.
5. Test water tightness by completely submerging pump assembly in water and looking for air bubbles. Pull motor drain plug after bubble test to check for water infiltration. If any water is observed in motor housing, investigate source and reseal with 732 Sealant or replace seal at source of leak.

Table 5: Overhaul 5-year (1500 hour) Procedure

OVERHAUL or 5-YEAR PROCEDURE (5-years or 1500-Hours) Initial each item after accomplishment. Record all findings and attach a copy of this inspection form to maintenance records. Sign off inspection when complete.							
Serial No.	_____ (FAS) _____ (HRP)	Total System Time	_____	HRP Time	_____	Date	_____
1	PRE INSPECTION REQUIREMENTS						INITIAL
	Review maintenance records and determine time in service and hours of operation of the Hover Refill Pump.						
2	HOVER PUMP ASSEMBLY (28VDC ELECTRIC)						INITIAL
	ACCESS REQUIREMENTS: Remove Hover Refill Pump Assembly (HRP) from rotorcraft. Clean and flush HRP assembly with fresh water.						
	INSPECTION: Inspect all attachment fittings and connections for proper operation and condition. Check for signs of stress or corrosion. See Figure 1. Check condition of electrical harness and connectors.						
	MAINTENANCE: Replace electric harnesses that contain burnt or broken wires. Replace any damaged protective sleeve or boot.						
3	HOSE ASSEMBLY						INITIAL
	ACCESS REQUIREMENTS: Disassemble hose from pump by removing cam-lock safety mechanism and rotating cam-lock until free. Remove from pump assembly Disconnect hose from end fittings						



OVERHAUL or 5-YEAR PROCEDURE (5-years or 1500-Hours) Initial each item after accomplishment. Record all findings and attach a copy of this inspection form to maintenance records. Sign off inspection when complete.		
	MAINTENANCE: Replace hose	
4	WATER PUMP	INITIAL
	ACCESS REQUIREMENTS: Disassemble as shown in Figure 2.	
	INSPECTION: Check for cracks, corrosion or other signs of damage. If pump housing is cracked or damaged, STOP and replace entire pump assembly, which includes a new motor.	
	MAINTENANCE: Clean or replace screen Replace all components listed in Table 3. Reassemble.	
5	ELECTRIC MOTOR (28VDC)	INITIAL
	ACCESS REQUIREMENTS: Remove support channel and case cover by removing eight (8) bolt sets, discard hardware and replace with new. Disconnect electrical provisions.	
	INSPECTION: Inspect housing for condition. Inspect motor for condition. If evidence of water damage exists, STOP and replace motor. Inspect electrical connections for corrosion, wear or evidence of arcing. Open motor as described in instructions included with rebuild kit.	
	MAINTENANCE: Replace any discolored or damaged electrical connectors and covers. Replace all damaged hardware. Replace brushes. Spray corrosion inhibitor on motor end prior to installing cover. Reassemble with Permatex where appropriate per Figure 2. Pack pump support (Figure 1) with Lithium Grease at fittings shown in Figure 2. Seal all electrical wiring with 732 Sealant.	
6	RETURN TO SERVICE	INITIAL



OVERHAUL or 5-YEAR PROCEDURE(5-years or 1500-Hours)

Initial each item after accomplishment.

Record all findings and attach a copy of this inspection form to maintenance records.

Sign off inspection when complete.

	ASSEMBLE Connect cam-lock fittings at hose end and secure with safety wire or wire ties. Verify all hardware is intact and torqued as required in ICA or MM. Ensure all secondary locks are installed correctly (cotter pins and safety wire). Allow 24-hours for 732 Sealant to dry. Check for water-tightness and reseal as required.	
	POST INSPECTION: Verify operation of pump Make the appropriate logbook entries.	
Performed By: _____ Signature: _____ No.: _____		
Inspected By: _____ Signature: _____ No.: _____		



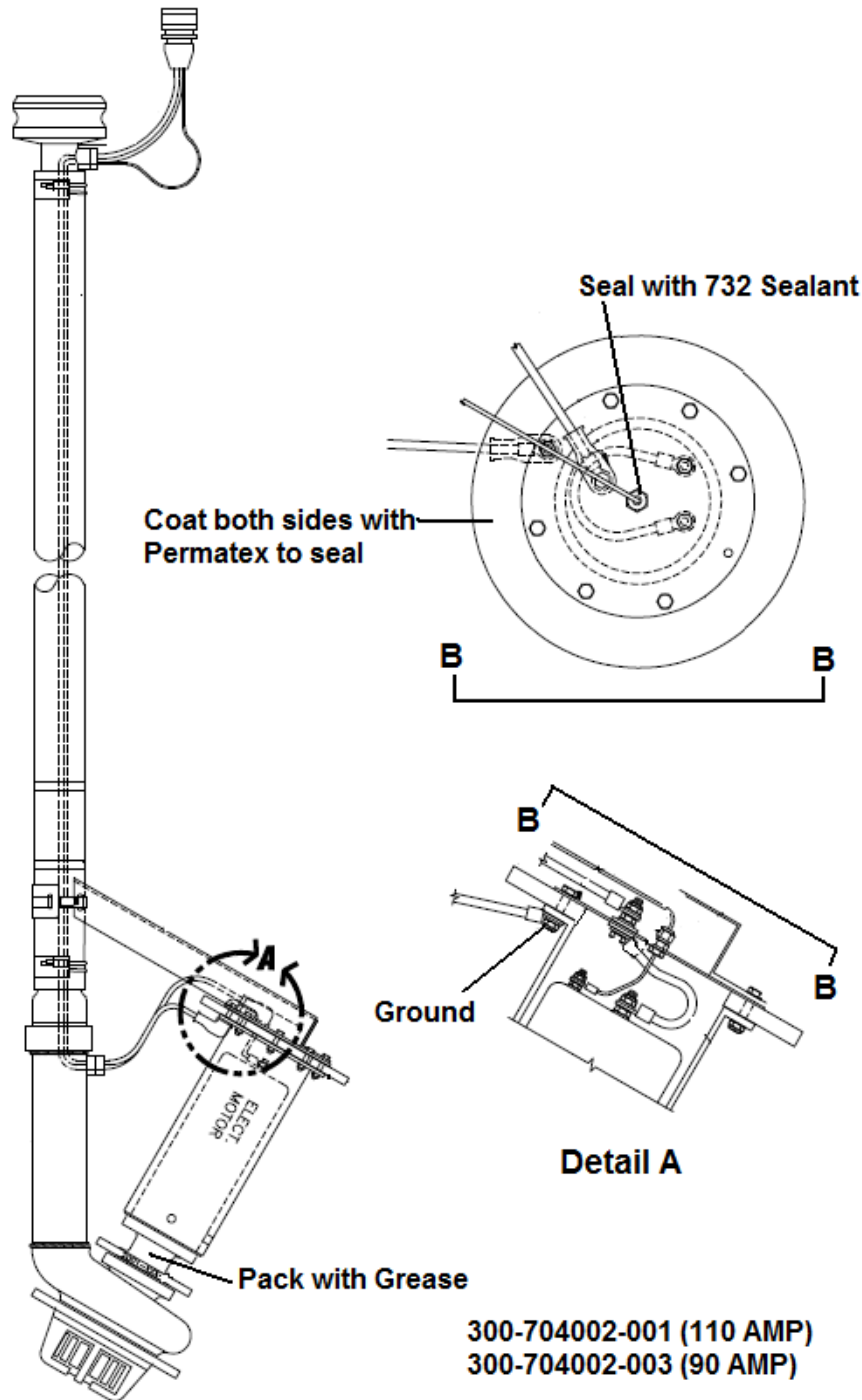


Figure 1: Hover Refill Pump Assembly

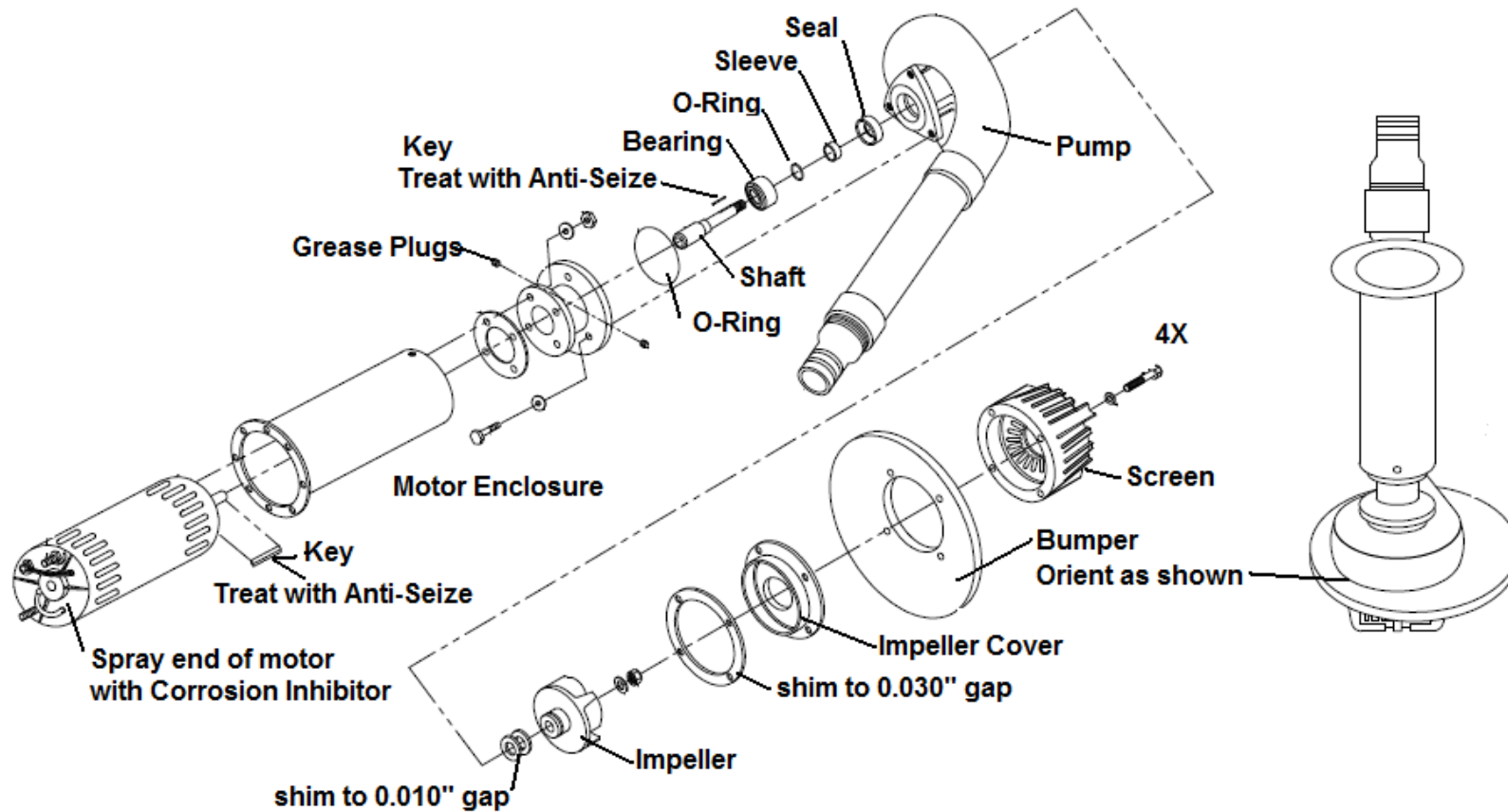


Figure 2: Hover Refill Pump – Exploded

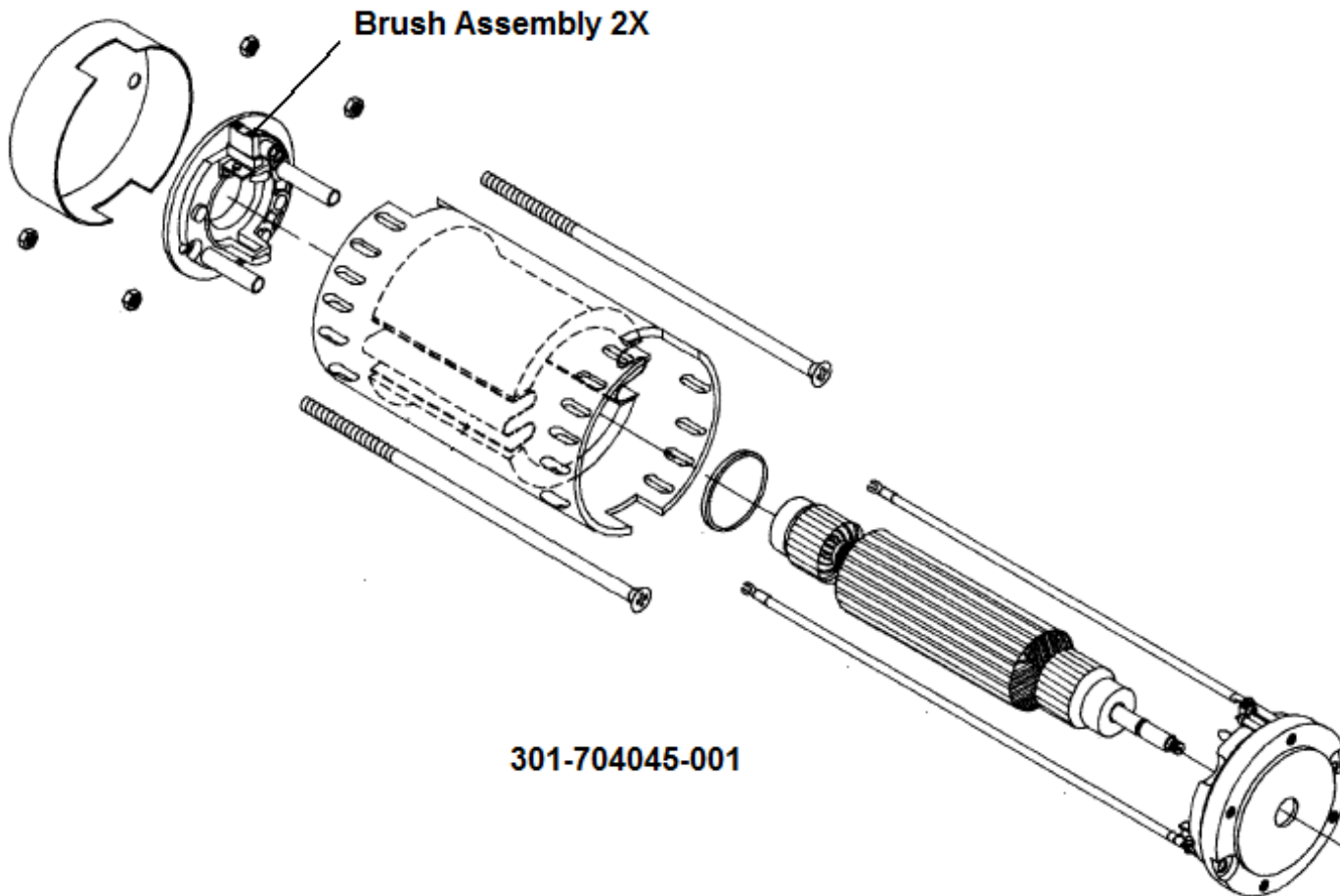


Figure 3: Motor Details

