



# INSTRUCTION BULLETIN

No. 340854  
Machine: M20 / T20  
Published: 12-2015  
Rev. 02

**NOTE: DO NOT DISCARD the Parts List from the Instruction Bulletin. Place the Parts List in the appropriate place in the machine manual for future reference. Retaining the Parts List will make it easier to reorder individual parts and will save the cost of ordering an entire kit.**

*NOTE: Numbers in parenthesis ( ) are reference numbers for parts listed in Bill of Materials.*

Installation instructions for **kit number 9003461**

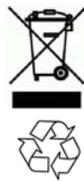
## SYNOPSIS:

This kit contains the parts needed to replace scrub vacuum fan motor on M20 (Serial Numbers 000000-006877) and T20 (Serial Numbers 000000-005892) machines.  
Please follow step-by-step instructions.

## SPECIAL TOOLS / CONSIDERATIONS:

(Estimated time to complete: 5-7 hours (5 hours if hydraulic system is vacuumed down, 7 hours if hydraulic fluid is removed))

1. Thoroughly clean outside of hydraulic components **before** disconnecting hydraulic hoses or fittings and flush hoses and fittings with air, solvent, or hydraulic fluid and cap disconnected hoses or open ports to prevent contaminants from entering system.
2. Mark hydraulic hoses with locations of where they are attached. Markings make it easier to reconnect hoses to proper locations.
3. Discard all hydraulic fluid drained from the system. Use only new approved hydraulic fluid to replenish hydraulic reservoir. Hydraulic fluid is potentially dangerous to the environment. Obey all federal, state, and local laws/regulations governing the disposal of environmentally hazardous materials when disposing hydraulic fluid.



## PROTECT THE ENVIRONMENT

Please dispose of packaging materials, used machine components such as batteries and fluids in an environmentally safe way according to local waste disposal regulations.

Always remember to recycle.

## PREPARATION:

1. Park the machine on a clean level surface, turn off the machine, engage the parking brake, and remove the key.

**FOR SAFETY: Before leaving or servicing machine, stop on level surface, turn off machine, and remove key.**

2. Disconnect the battery cables from the battery.



**WARNING: Always disconnect battery cables from machine before working on electrical components.**

*NOTE: Do not discard removed parts unless instructed to do so. Most parts are reinstalled after the scrub vacuum fan is replaced.*

3. Remove the engine cover from the machine. Set the engine cover aside.

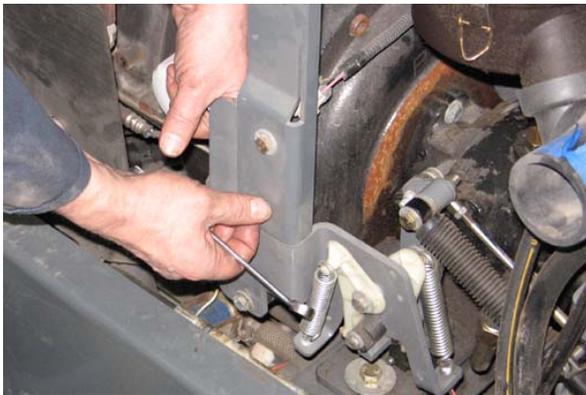
4. Remove the coolant reservoir from the bracket and move the reservoir away from the scrub vacuum fan. (Fig. 1)

*NOTE: If necessary, unplug spark plug cables before moving the coolant reservoir.*



**FIG. 1**

5. Remove the hardware holding the air cleaner bracket to the machine and move the air cleaner/air cleaner bracket away from the scrub vacuum fan. (Fig. 2)



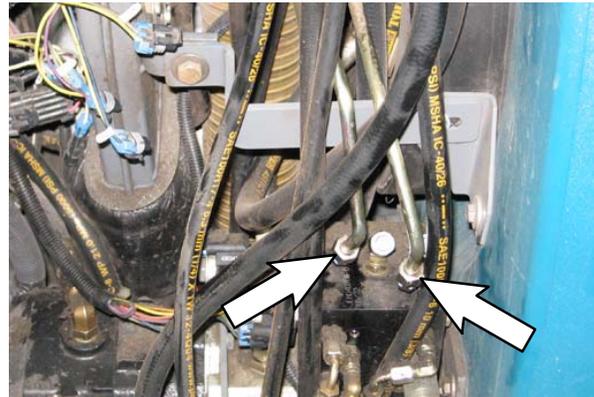
**FIG. 2**

6. Drain hydraulic fluid from the system.

*NOTE: It is not necessary to drain hydraulic fluid if a hydraulic vacuum is used to vacuum down the hydraulic system.*

## INSTALLATION:

1. **M20 machines serial numbers 000000 - 002699 only:** Disconnect both steel tubes from the lower valve. (Fig. 3)



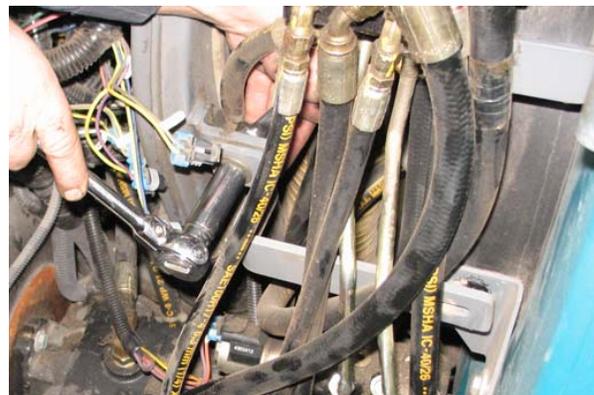
**FIG. 3**

2. Disconnect the hose attached to location P1 on the scrub valve. (Fig. 4)



**FIG. 4**

3. Disconnect all main wire harness leads from the scrub valve.
4. Remove the support bracket. Set the support bracket and hardware aside. (Fig. 5)



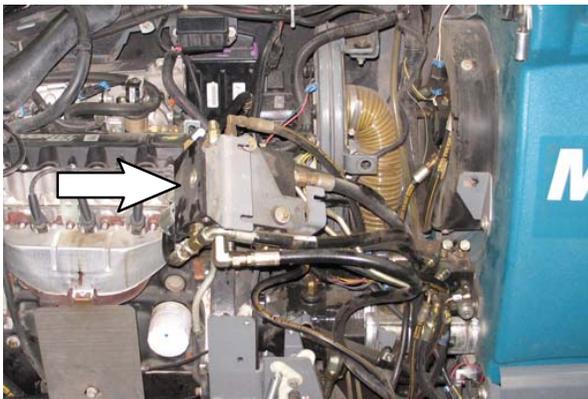
**FIG. 5**

- Loosen the hardware holding the scrub valve bracket to the solution tank. (Fig. 6)



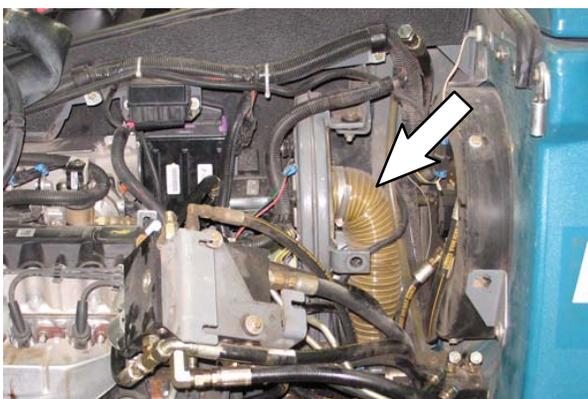
**FIG. 6**

- Lift the scrub valve assembly up from the hardware and away from the solution tank. (Fig. 7)



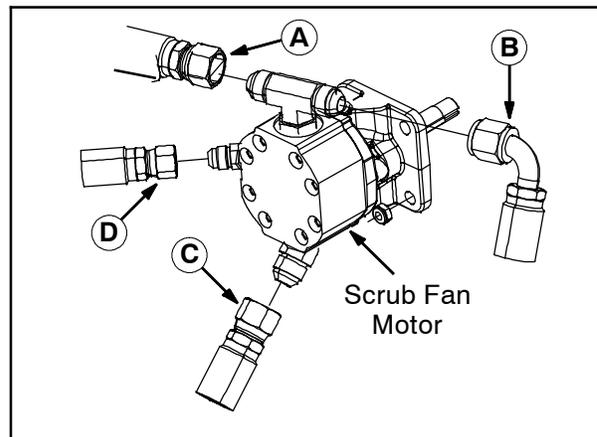
**FIG. 7**

- Disconnect the intake hose from the sweep fan. Move the intake hose away from the scrub vacuum fan. Set the hose clamp aside. (Fig. 8)



**FIG. 8**

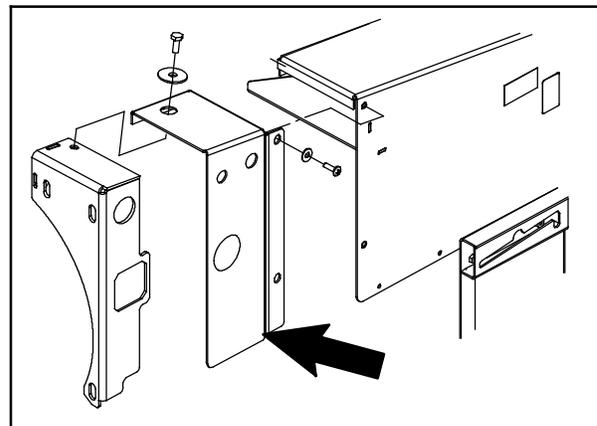
- Disconnect the four hydraulic hoses (A), (B), (C), and (D) from the fittings on the scrub fan motor. (Fig. 9)



**FIG. 9**

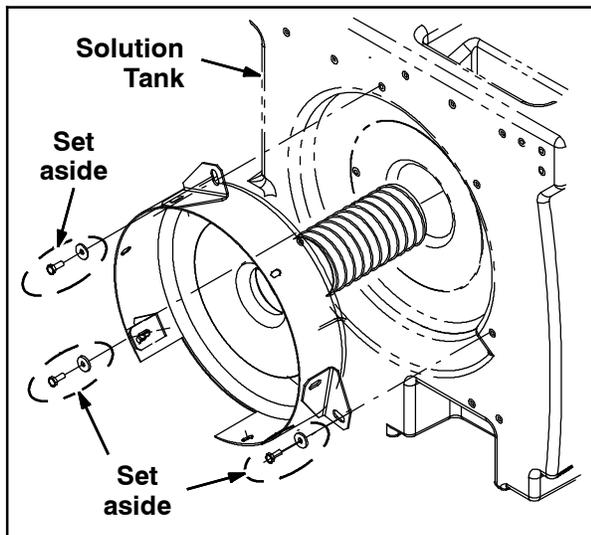
*NOTE: If working on an LP machine, the fuel tank can be removed to make access to scrub vacuum fan easier. Refer to Operators Manual for instructions how to remove LP tank.*

*NOTE: If working on a diesel or gasoline machine without FaST, ES, or spray hose options, the operator station removable panel can be removed to make access to scrub fan easier. Set the panel and hardware aside. (Fig. 10)*



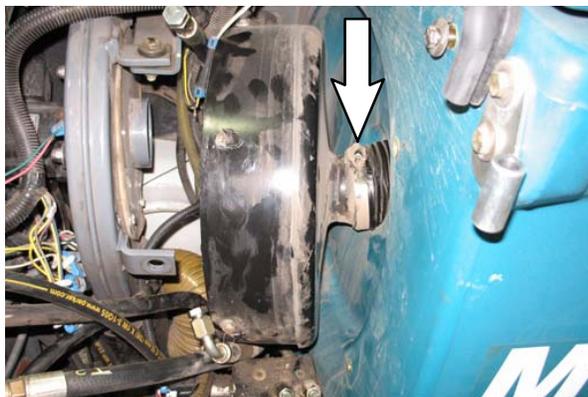
**FIG. 10**

9. Remove the hardware holding the scrub vacuum fan to the solution tank. Set the hardware aside. (Fig. 11)



**FIG. 11**

10. Disconnect the hose from the scrub vacuum fan. Set the hose clamp aside. (Fig. 12)



**FIG. 12**

11. Remove the scrub vacuum fan from the machine. (Fig. 12)

12. Cut the silicone sealant from around the scrub vacuum fan. (Fig. 13)



**FIG. 13**

13. Use a marker to mark the positions of the vacuum fan opening and brackets onto the scrub vacuum fan housing. (Fig. 14)



**FIG. 14**

14. Remove the hardware holding the brackets onto the scrubber vacuum fan and the hardware holding the front housing to the scrubber vacuum fan housing. Set all hardware and brackets aside. (Fig. 15)



**FIG. 15**

15. Remove the front housing from the scrubber vacuum fan housing. Set the front housing aside. (Fig. 16)



**FIG. 16**

16. Remove the crown nut holding the impeller onto the hydraulic motor. Discard the crown nut. (Fig. 17)



**FIG. 17**

17. Pry the impeller from the scrubber vacuum fan and set the impeller aside. Discard the motor key. (Fig. 18 / Fig. 23)



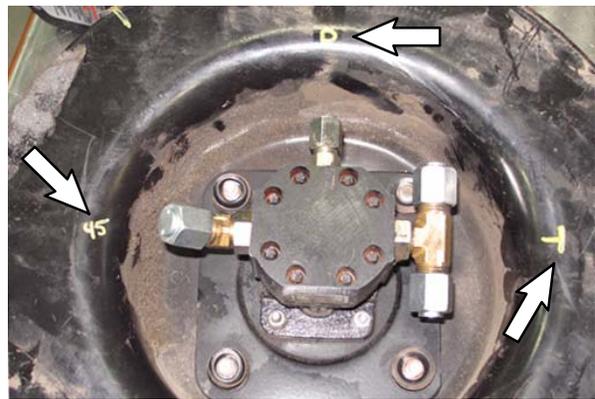
**FIG. 18**

18. Remove six shims (three thin and three thick) from the scrubber vacuum fan. Set shims aside. (Fig. 19 / Fig. 23)



**FIG. 19**

19. Use a marker to mark the positions of the hydraulic motor fittings onto the scrub vacuum fan housing. (Fig. 20)



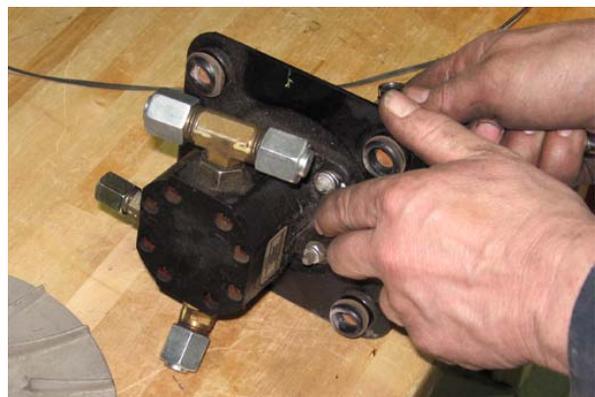
**FIG. 20**

20. Remove and discard the four flat screws, isolator bushings, washers, and hex nuts holding the hydraulic motor assembly to the scrubber vacuum fan housing. (Fig. 21 / Fig. 23)

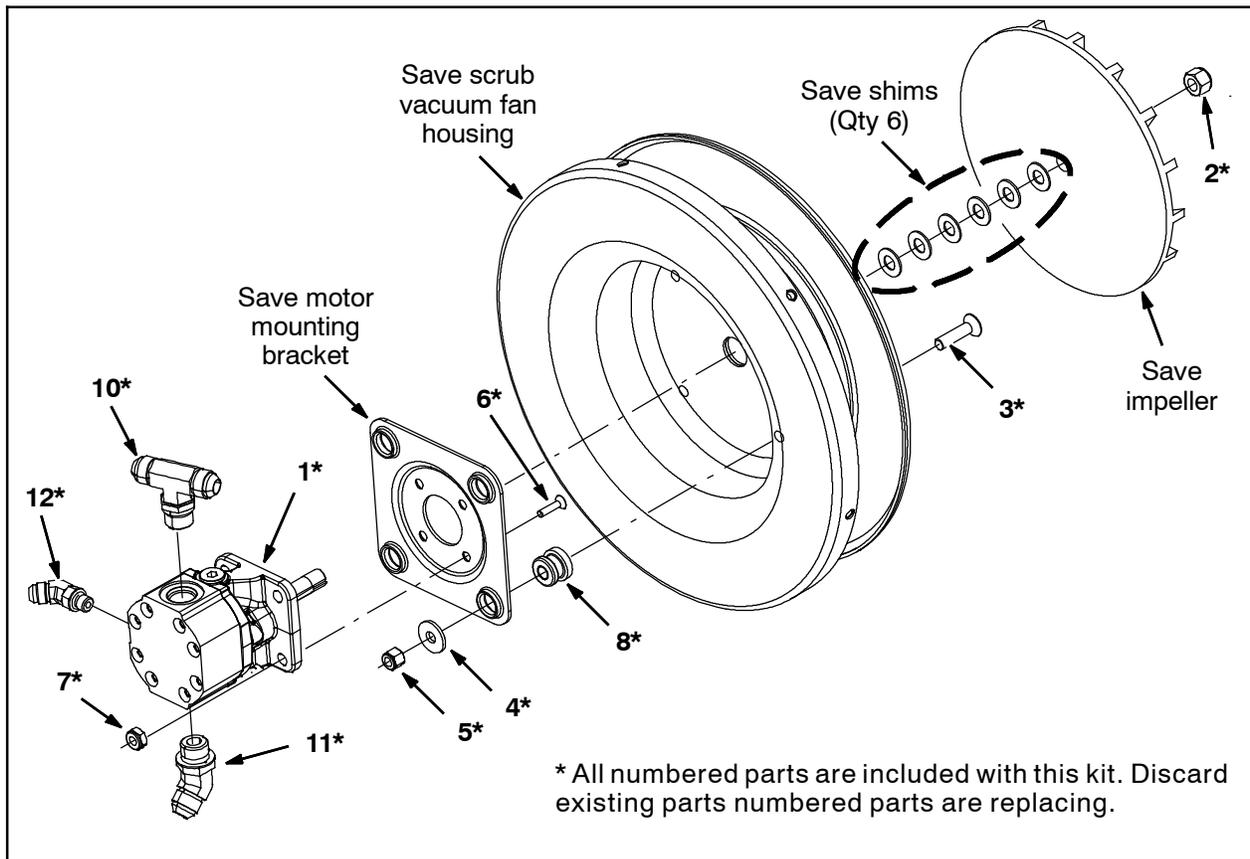


**FIG. 21**

21. Remove the hydraulic motor from the motor mounting bracket. Set the bracket aside. Discard motor and hardware. (Fig. 22)



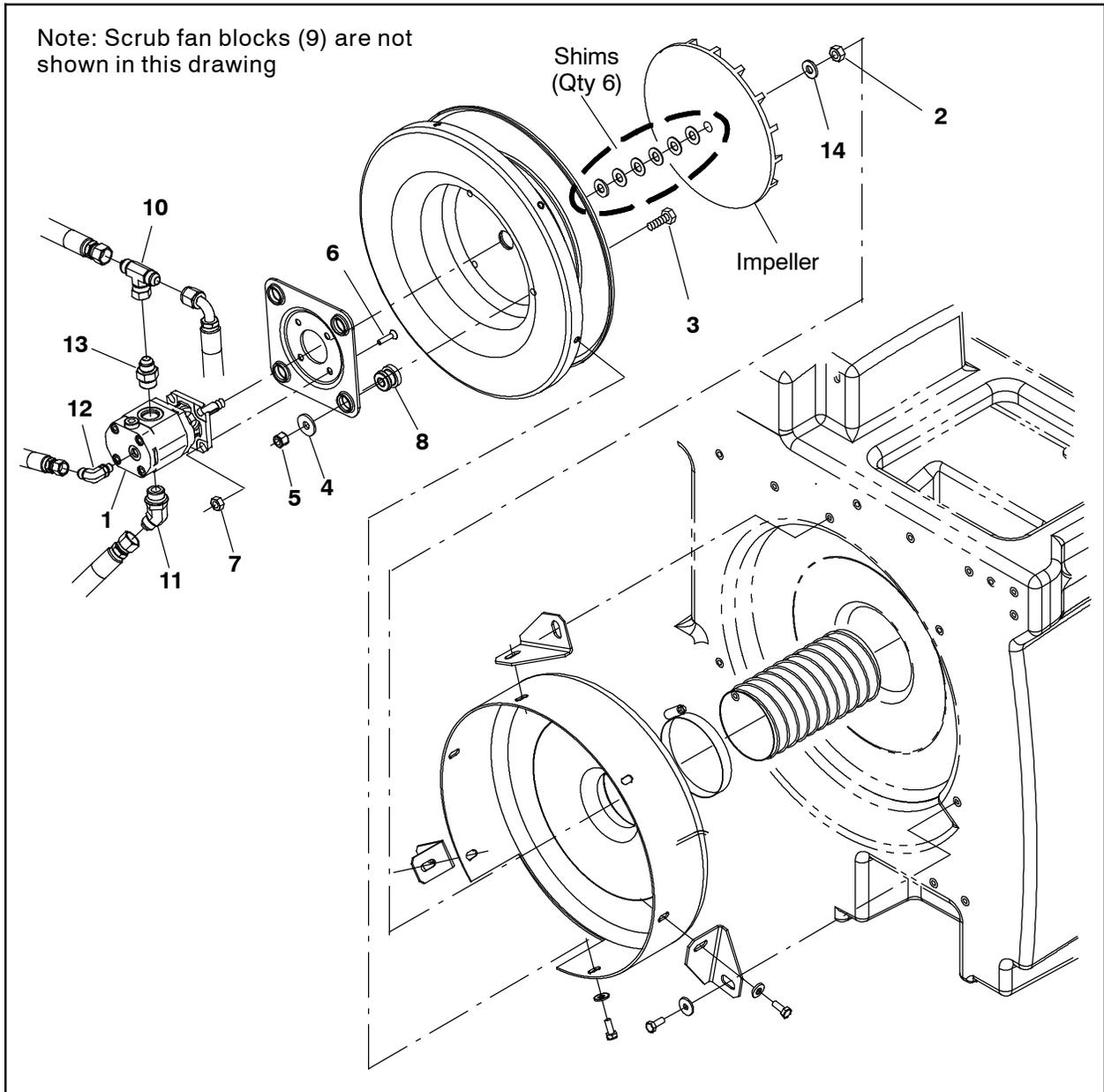
**FIG. 22**



**FIG. 23**

22. Remove the plugs from the new hydraulic motor (1). (Fig. 23 / Fig. 24)
  23. Install the straight fitting (13) into the hydraulic motor (1). (Fig. 23 / Fig. 24)
  24. Install the t-fitting (10) into the straight fitting (13) installed into hydraulic motor (1) in the previous step. Do not completely tighten t-fitting. The t-fitting is tightened during later adjustment. (Fig. 23 / Fig. 24)
  25. Install the 90° fitting (12) and 45° fitting (11) into the hydraulic motor (1). Note orientation of both fittings on the hydraulic motor. (Fig. 23 / Fig. 24)
  26. Use four flat screws (6) and hex nuts (7) to install the hydraulic motor (1) onto the motor mounting bracket. Torque hardware 7.6-9.9 Nm (5.6-7.3 ft. lbs). (Fig. 23 / Fig. 24)
  27. Use four flat screws (3), isolator bushings (8), washers (4), and hex nuts (5) to install the hydraulic motor assembly from the previous step onto the scrubber vacuum fan housing. Be sure fittings on the hydraulic motor are aligned with markings on the scrub vacuum fan housing. (Fig. 23 / Fig. 24)
  28. Apply a light coat of anti-seize lubricant onto the shaft of the hydraulic motor (1).
  29. Install the six shims onto the hydraulic motor (1) shaft. (Fig. 23 / Fig. 24)
  30. Place the impeller onto the hydraulic motor (1) shaft. (Fig. 23 / Fig. 24)
  31. Insert the key to the hydraulic motor key into the slot in the shaft of the hydraulic motor (1).
  32. Apply a light coat of Loctite® 242 onto the hex nut (2) threads and use the nut and belleville washer (14) to secure the impeller onto the hydraulic motor (1). (Fig. 24)
- NOTE: Do not lose the key to the new hydraulic motor (1). Set the key aside in a safe place.*

*Loctite® is a registered trademark of the Henkel Corporation.*



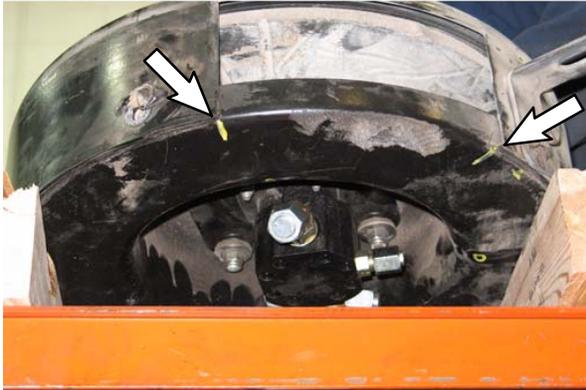
**FIG. 24**

33. Set the scrubber vacuum fan onto the scrub fan blocks (9). (Fig. 25)



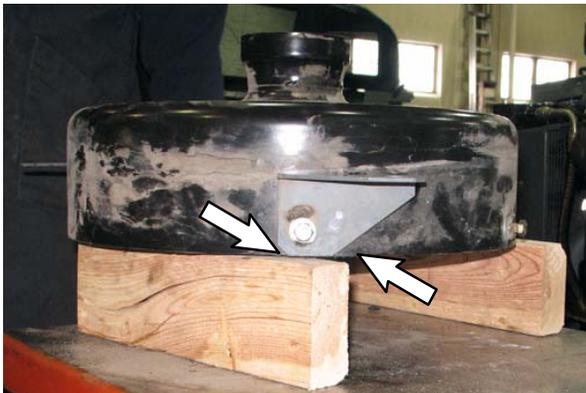
**FIG. 25**

34. Place the vacuum fan front housing onto the scrubber vacuum fan housing and align the opening in the vacuum fan front housing and bracket locations with markings on the scrubber vacuum fan housing. (Fig. 26)



**FIG. 26**

35. Reinstall the brackets and hardware onto the scrub vacuum fan. Be sure the vacuum fan front housing, the bottom edge of the scrubber vacuum fan housing, and the bottom edges of the brackets are aligned. (Fig. 27)



**FIG. 27**

36. Turn the scrub vacuum fan over and clean all old silicone sealant from the scrubber vacuum fan housing and the vacuum fan front housing.

37. Apply the silicone sealant to the scrubber vacuum fan housing and the front vacuum fan housing. (Fig. 28)



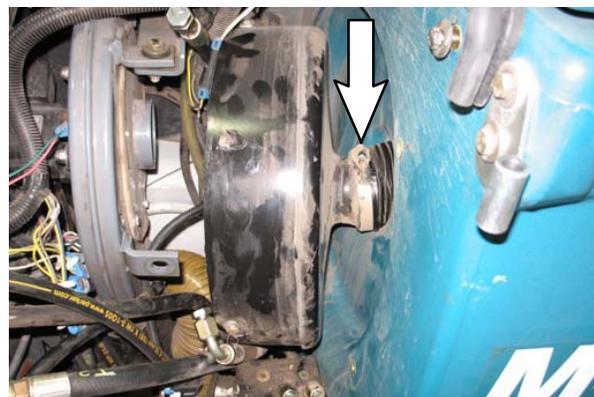
**FIG. 28**

38. Smooth the sealant into the groove where the scrubber vacuum fan housing and the front vacuum fan housing meet. Clean excess sealant from the scrub vacuum fan. Allow the sealant to dry for 2-3 hours. (Fig. 29)



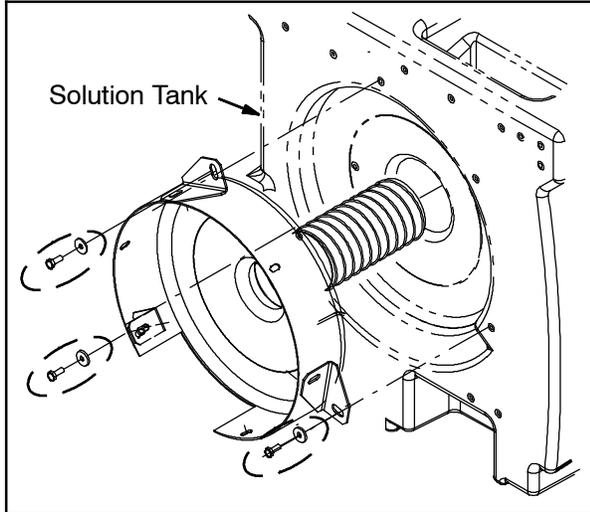
**FIG. 29**

39. Clamp the sweep vacuum hose back onto the scrub vacuum fan. (Fig. 30)



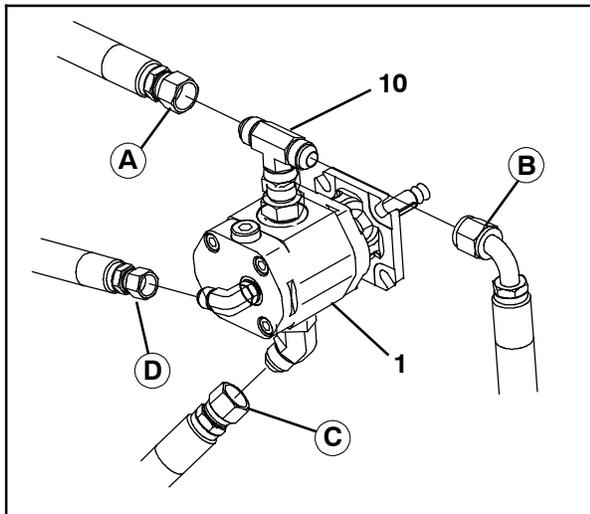
**FIG. 30**

40. Reinstall the scrub vacuum fan onto the solution tank. (Fig. 31)



**FIG. 31**

41. Hold hydraulic hoses (A) and (B) to the t-fitting (10) installed on the hydraulic motor (1) and note distance t-fitting must be adjusted for hose installation. (Fig. 32)

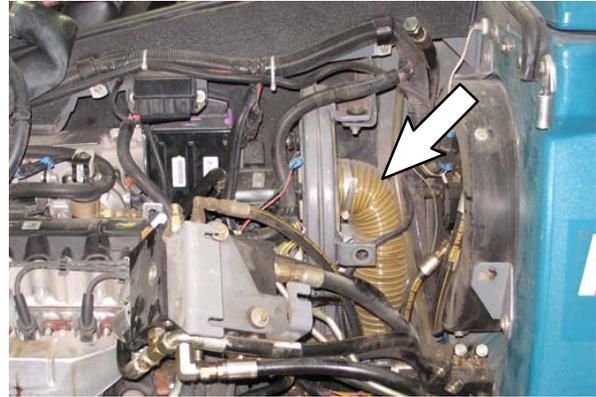


**FIG. 32**

42. Adjust the t-fitting (10) as necessary to connect hydraulic hoses (A) and (B). (Fig. 32)

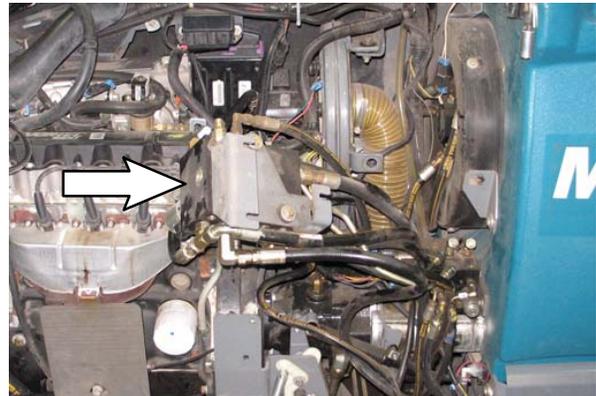
43. Connect hydraulic hoses (A), (B), (C), and (D) to the scrub fan motor (1). (Fig. 32)

44. Reconnect the intake hose to the sweep fan. (Fig. 33)



**FIG. 33**

45. Reinstall the scrub valve assembly onto the solution tank. (Fig. 34)



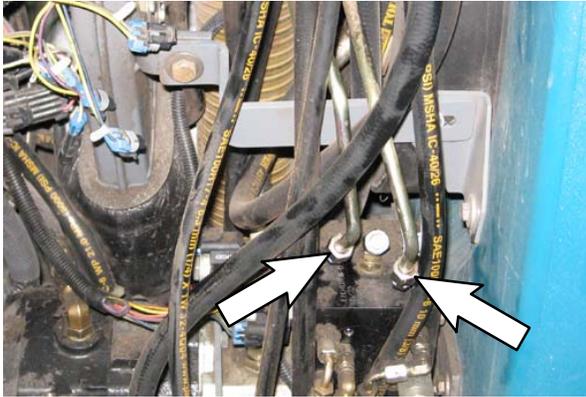
**FIG. 34**

46. Reconnect the hose removed from location P1 on the scrub valve. (Fig. 35)



**FIG. 35**

47. Reconnect both steel tubes to the lower valve. (Fig. 36)



**FIG. 36**

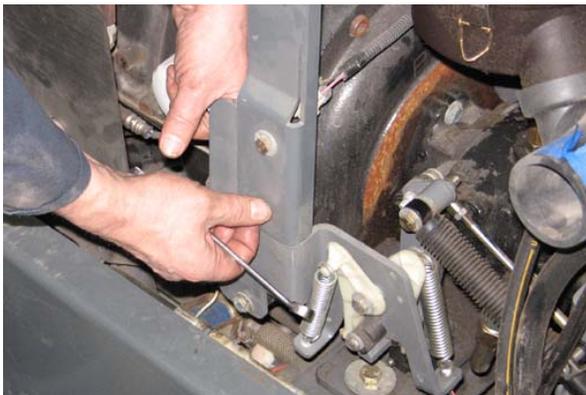
48. Reconnect the main wire harness leads to the scrub valve.

49. Reinstall the support bracket. (Fig. 37)



**FIG. 37**

50. Reinstall the air cleaner assembly/air cleaner assembly bracket onto the machine. (Fig. 38)



**FIG. 38**

51. Reinstall the coolant reservoir onto the bracket. (Fig. 39)



**FIG. 39**

52. If hydraulic fluid was drained to install this kit, replenish the hydraulic system with Tennant approved hydraulic fluid. Refer to the Operators Manual for additional information.

53. Reinstall the LP tank, operator station removable panel, and other parts/ components removed to install the new vacuum fan motor kit onto the machine.

54. Reconnect the battery cables to the battery.

55. Start and test the machine. Observe the scrub vacuum fan and other hydraulic components that had fittings / hoses removed / replaced for leaks. Run the scrub vacuum fan to ensure it operates.

**Bill of Materials for Motor Kit, Replmt [M20 & T20] - 9003461**

	<b>Ref.</b>	<b>Tennant Part No.</b>	<b>Description</b>	<b>Qty.</b>
▽		9003461	Motor Kit, Replmt [M20 & T20]	1
▲	1	1071252	Motor, Hyd, Gear, Ext 0.13 LH 3000	1
▲	2	07788	Nut, Hex, Std, M12 x 1.75, SS	1
▲	3	54861	Screw, Flt, .38- 16 X 1.50 Al	4
▲	4	1014563	Washer, Flat, 0.40B 1.12D .12, SS	4
▲	5	36643	Nut, Hex. Lock, .38- 16, NL, Thin	4
▲	6	39534	Screw, Flat, .25- 20 X 1.00, Alm	4
▲	7	32981	Nut, Hex, Lock, .25- 20, NI	4
▲	8	54274	Isolator, Vib, Bshg, 1.1D 0.6L .4B 0.78H	4
▲	9	1038573	Block, Fan, Scrub, Field Kit	2
▲	10	76315	Fitting, Hyd, Tee, JF08/JM08/JM08, Br	1
▲	11	47513	Fitting, Hyd, E45, JM08/OM10	1
▲	12	77098	Fitting, Hyd, E90, JM06/OM04	1
▲	13	56692	Fitting, Hyd, Str, JM08/OM10	1
▲	14	36328	Washer, Flat, Belleville, .50	1

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