Operation and Maintenance Manual

Northern® Pump Cart Model 100597

Northern® Pump
A Division of McNally Industries, LLC

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Cautionary Statements

Failure to heed these cautionary statements may result in personal injury and/or damage to equipment.

1. Disable and lock-out the drive system before any work is done to maintain the pump cart, replace the filter element, or remove the pump.
2. Fully depressurize the entire system.
3. Close the valve closest to the pump in both the suction and discharge pipe.
4. Wear protective eyewear.
5. When handling corrosive, caustic, toxic, or hazardous liquids, wear protective clothing to prevent contact with skin.
6. Wear protective footwear such as safety shoes.
7. When handling liquids with toxic vapors, wear a properly rated breathing mask.
8. Work area must be properly ventilated.
9. Work area must be properly grounded.
10. Do not work alone.
11. Clean up any spilled liquid immediately.

General Description

The Pump Cart consists of a pressurizable stainless steel reservoir, an integrated electric motor and speed reducer, two interchangeable pumps, a filter, a variable frequency drive, and three isolation valves mounted on a stainless steel cart.

The reservoir is capable of operation with 100 psi internal pressure. Caution is advised when attempting to operate with the reservoir pressurized. Applying more pressure than the minimum necessary to move the liquid to the pump will cause unnecessary wear on the shaft seals and the thrust bearing.

The cart is 316 stainless steel with two swivel casters with brakes and locks on the handle end. The casters may be locked in 4 positions in 90º increments relative to the centerline of the cart.

There are two pumps supplied with the Pump Cart. One has a displacement of 1 cc/rev and the other has a displacement of 15 cc/rev. The pumps are interchangeably flange mounted to the speed reducer.

All fittings are sanitary type with heavyweight clamps. These clamps have a 500 psi pressure rating.

The Pump Cart is supplied with a ten foot long, 1 inch ID, discharge hose. The hose connectors are 1 inch, sanitary fittings.

The Pump Cart is supplied with a ten foot long electrical cord with a three phase, 460 volt plug, NEMA Style L16-20

Filter

The filter is a bag style filter using Industry Size 4 bags. Replacement bags in a wide variety of filtration media are available from Industrial Supply companies servicing the filtration market.

The filter is Sun Central part number HEBC10. It is supplied with a 200 mesh basket screen, 1 inch sanitary fittings, and a Teflon® encapsulated O-ring style gasket.

Specifications:

Manufacturer:	Sun Central
Model No.:	HEBC10
Material:	316 Stainless Steel
Screen:	200 Mesh
Size:	Industry Size 4
Gasket:	Teflon Encapsulated Viton
	McNally Industries Part No.: 19120247-90

Motor

The electric motor is a 1 horsepower, 1800 rpm, vector inverter duty motor capable of continuous operation at 2 rpm.

Specifications:

Manufacturer:	Reliance Electric (Baldor)
Model:	P14A6953
Horsepower:	1
Rated Speed:	1750 rpm
Frame:	WC143TC
Enclosure:	TENV
Insulation:	F
Temperature Rise:	B
Ambient Temperature:	40º C
Duty Cycle:	Continuous
Service Factor:	1.0
Periodic Maintenance:	Not normally required

Reducer

The reducer is C-face mounted on the motor. The speed reduction is 4:1.

Specifications:

Manufacture:	Grove Gear
Model:	TXQ24140TC56C
Ratio:	4:1
Type:	In-line, Helical
Oil Capacity:	.875 pint
Oil Type:	AGMA #4
Oil Change Interval:	6 Months or 2500 hours, whichever occurs first

Reservoir

The reservoir is a 5 gallon stainless steel reservoir capable of being pressurized to 100 psig. There are two 3/8 inch NPT fittings on the cover which can be used to pressurize the reservoir and to attach a pressure gage (not included).

The cover is sealed to the canister with a Santoprene® gasket, McNally Industries Part Number 100593.

Caution is advised when attempting to operate with the reservoir pressurized. Applying more pressure than the minimum necessary to move the liquid to the pump will cause unnecessary wear on the pump's shaft seals and its thrust bearing.

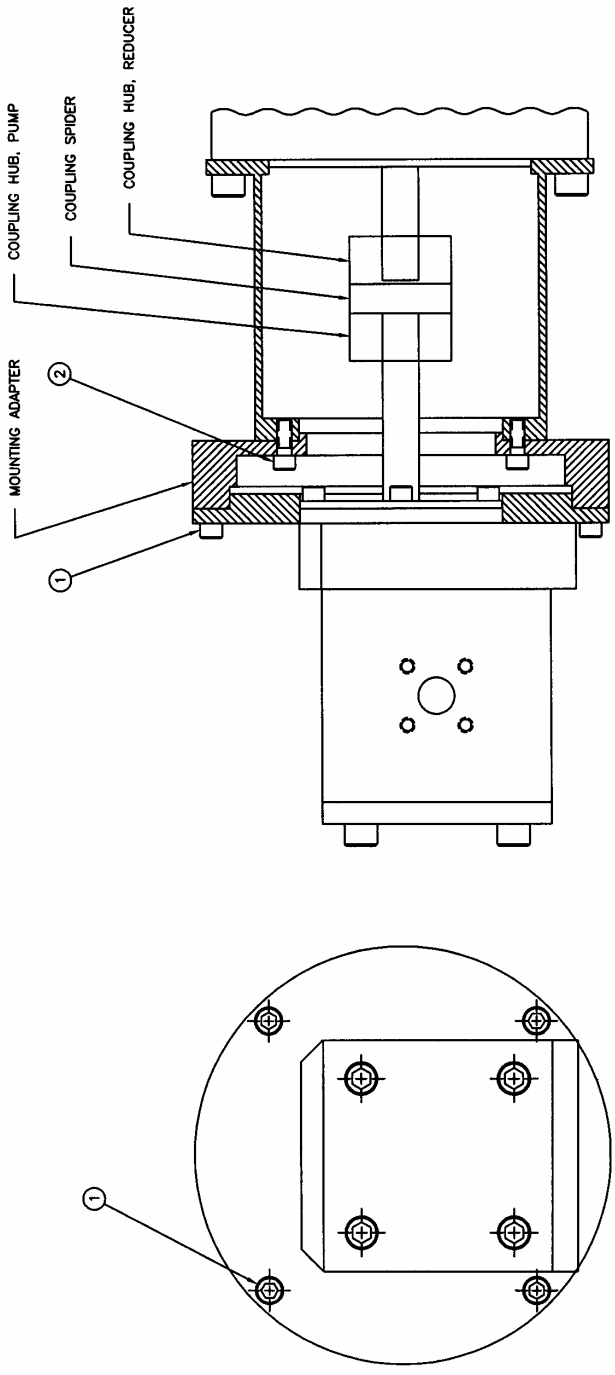
COUPLING HUB, REDUCER
COUPLING SPIDER
COUPLING HUB, PUMP
MOUNTING ADAPTER
2
1
1

FIGURE 1

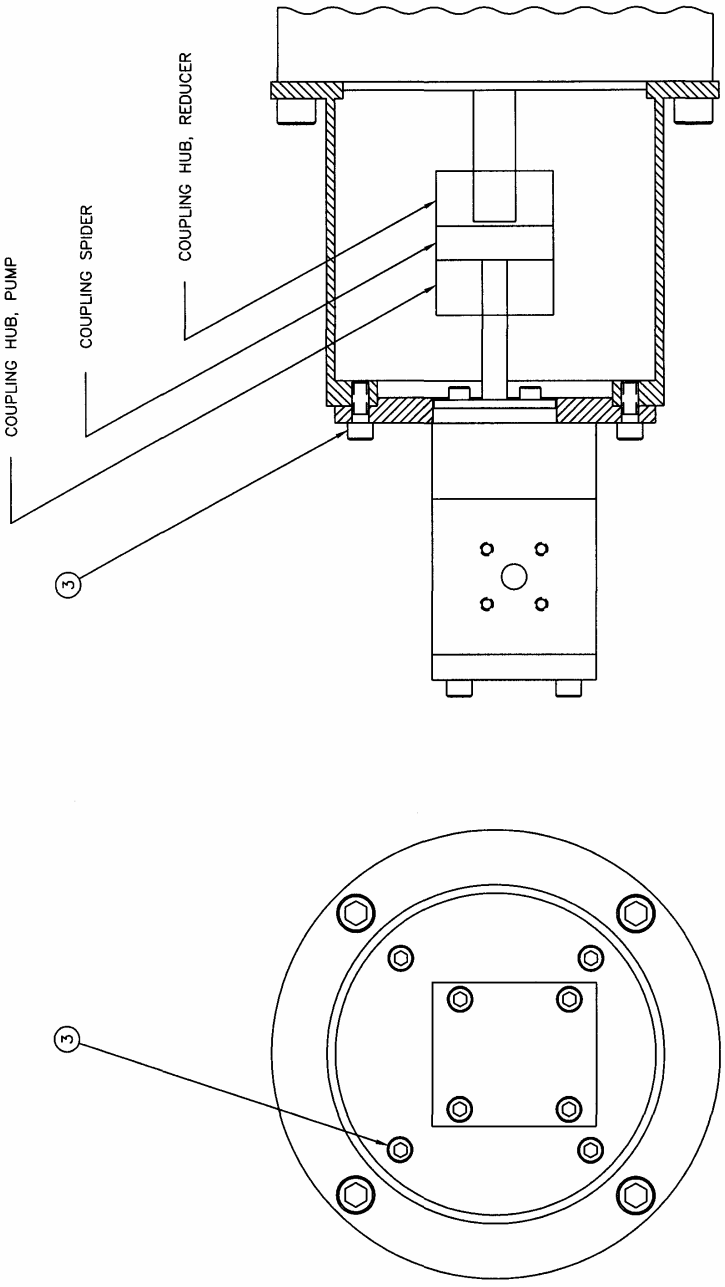

FIGURE 2

Interchanging the Two Pumps

Figures 1 and 2 on pages 8 and 9 show how the pumps are mounted to the reducer. The two pumps may be interchanged so that a wider flow rate range can be obtained from the pump cart.

The following instructions assume:

1. that the drive has been properly disconnected and locked out
2. that the suction and discharge lines have been disconnected from the pump body

Figure 1 shows a Model NPC-15 pump mounted to the reducer. To remove a Model NPC-15 pump from the reducer:

1. Remove the 4 cap screws labeled 1. You must hold the pump in place while the cap screws are removed. Pull the pump straight out of the mounting bracket. The coupling will separate without doing anything to it.

2. Remove the 4 cap screws labeled 2. You must hold the mounting adapter in place while the cap screws are removed. Pull the mounting adapter straight out of the mounting bracket on the reducer.

Figure 2 shows a Model NPC-1 pump mounted to the reducer. To remove a Model NPC-1 pump from the reducer:

1. Remove the 4 cap screws labeled 3. You must hold the pump in place while the cap screws are removed. Pull the pump straight out of the mounting bracket. The coupling will separate without doing anything to it.

To install a Model NPC-15 pump to the reducer, refer to Figure 1 and do the following:

1. Install the mounting adapter to the mounting bracket on the reducer. The pilot diameter on the mounting adapter is a slip fit into the mounting bracket on the reducer. If it does not fit together without being forced, check both parts for nicks and burrs and remove as necessary. Install the 4 cap screws labeled 2 and tighten snugly, do not over tighten.

2. Install the coupling hub on to the pump shaft. Both the drive shaft key and the coupling hub are slip fits. If they do not fit together without force, check for nicks and burrs and remove as required. Adjust the

position of the coupling hub so that the end of the drive shaft is flush with the inner edge of the hub as shown in Figure 1. Tighten the set screw on to the drive shaft key.

3. Install the coupling spider into the reducer hub.

4. Install the pump on to the mounting adapter. The pilot diameter of the pump flange is a slip fit into the mounting adapter. If it does not fit together without being forced, check both parts for nicks and burrs and remove as necessary. Take care to properly align the coupling hub with the coupling spider. The coupling will slide together easily if the hub and spider are properly aligned. Install the 4 cap screws labeled 1 and tighten snugly, do not overtighten.

5. Check the gap between the ends of the coupling hub jaws and the mating coupling hub. The gap should be approximately .125 inch. If it is not, loosen the set screw on one hub and adjust the gap. Retighten the set screw.

To install a Model NPC-1 pump to the reducer, refer to Figure 2 and do the following:

1. Install the coupling hub on to the pump shaft. Both the drive shaft key and the coupling hub are slip fits. If they do not fit together without force, check for nicks and burrs and remove as required. Adjust the position of the coupling hub so that the end of the drive shaft is flush with the inner edge of the hub as shown in Figure 1. Tighten the set screw on to the drive shaft key.

2. Install the coupling spider into the reducer hub.

3. Install the pump on to the mounting bracket on the reducer. The pilot diameter of the pump flange is a slip fit into the mounting bracket. If it does not fit together without being forced, check both parts for nicks and burrs and remove as necessary. Take care to properly align the coupling hub with the coupling spider. The coupling will slide together easily if the hub and spider are properly aligned. Install the 4 cap screws labeled 3 and tighten snugly, do not overtighten.

4. Check the gap between the ends of the coupling hub jaws and the mating coupling hub. The gap should be approximately .125 inch. If it is not, loosen the set screw on one hub and adjust the gap. Retighten the set screw.