



Heat

Thaw

Cure

Dry

Operators Manual

Hose Reel

Model HRA 4000 / HRA 6000

S.N. 1643-01 -

**DRYAIR Manufacturing Corp.
Box 126, 400 Service Road
St. Brieux, SK, Canada
S0K 3V0
Tel: (306) 275-4848 1-888-750-1700
Fax (306) 275-4664**



Table of Contents

1.	Introduction HRA Hose Reel	1-1
	Operating Features	1-1
	Drive Features & Power Requirements	1-1
	Electrical Precautions	1-1
	Extension Cord Selection	1-2
	Transportation & Storage	1-2
2.	Setup/Operation	2-1
	Manual Controls	2-1
	Reel Power	2-1
	Reel Direction Modes	2-1
	Mechanical Drive Components	2-2
	Electric Motor	2-2
	Gear Box	2-3
	Torque Limiter Clutch	2-4
3.	Maintenance	3-1
	Precautions	3-1
	Auto Resets	3-1
	Manual Resets	3-1
	Electric Motor	3-1
	Gear Box	3-2
	Maintenance & Operation	3-2
	Oil Filling Procedure	3-2
	Break-In Period	3-2
	Torque Limiter Adjustment	3-2
	Physical Check	3-3
	Torque Adjust Procedure	3-3
	Run-in Procedure	3-3
4.	Appendix	4-1
	Electrical Schematic	4-1



Table of Figures

Figure 1-1: Hose Reel	1-1
Figure 1-2: Outlet Adapter Use.....	1-1
Figure 2-1: Control Panel.....	2-1
Figure 2-2: Electric Motor	2-2
Figure 2-3: Gear Box	2-3
Figure 3-1: Gear Box Oil Filling Procedure	3-2
Figure 4-1:Electrical Schematic.....	4-1



Table of Tables

Table 1: Electric Motor Features & Data.....2-2

1. Introduction HRA Hose Reel

Operating Features

**DANGER! It is very important that you read and understand this manual before operating the reel! Failure to follow the procedures and cautions in this manual could lead to injury or possible death! **

The DRYAIR hose reel's primary purpose is dispense and collect fluid circulation hose on job sites; primarily with respect to ground thaw and/or concrete cure operations.

The hose reel (see at right in Figure 1-1) includes the following controls

- Spool directional controls
- Momentary foot switch for Load or Unload application.
- Hose Reel drive speed
- Degree of drive engagement/braking



Figure 1-1: Hose Reel

Drive Features & Power Requirements

- The reel can be run off an 115VAC, 15 Amp circuit.
- Reel power and directional control is handled through two toggle switches. One controls Power - On/Off, the other controls the Mode - Load/Unload.
- The reel motor is a permanent magnet, direct-current, high-torque, 1HP motor capable of variable speed operation. The reel operates between 5 RPM and 15 RPM. This is adjusted by the MOTOR SPEED control dial.
- Drive and motor protection against inertial forces is provided by an adjustable torque-limiter clutch located between the motor/gear box and the reel spool. An adjustable torque-limiter clutch located between the motor/gearbox and the reel spool provides additional protection against high inertial load as well as offering a degree of safety against entanglement.

Electrical Precautions

- Take care to not unplug the unit by pulling on the cord. To unplug, grasp the plug, not the cord.
- *CAUTION! Do not operate unit if the power supply cord or plug is damaged! Inspect all cords before operating the unit. **

- This appliance is for use on a nominal 120V circuit, and has a grounding plug that looks like the plug illustrated Sketch A in Figure 1-2. A temporary adaptor, which looks like the adaptors illustrated in Sketches B and C, may be used to connect this plug to a 2-pole receptacle as shown in Sketch B if a properly grounded outlet is not available. The temporary adaptor should be used only until a properly grounded outlet can be installed by a qualified electrician. The grounding means (lug,

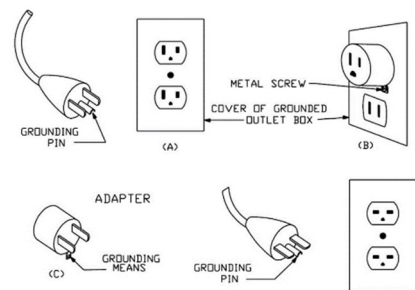


Figure 1-2: Outlet Adapter Use



rigid ear, etc.) on the adaptor must be connected to a permanent ground such as a properly grounded outlet box cover. This connection must be made with a metal screw.

Extension Cord Selection

An extension cord may be necessary to operate the unit. Keep the following precautions in mind when selecting a cord.

- The marked electrical rating of the cord should be at least as great as the electrical rating of the appliance.
- The extension cord used should be a grounding type, 3-wire (3 prong) cord.
- Do not drive, drag, or place objects over extension cords.
- Cords rated for indoor used should not be used outdoors.
- Note that the extension cord connection should be kept dry and off of the ground. Store all cords indoors when not in use, wherever possible.

**DANGER! Keep out of reach of children. **

**CAUTION! Do not clean this unit with a water spray or similar. **

Transportation & Storage

- The reel can be transported by common carrier. The reel can be loaded using a forklift.
- A transport trailer is also available with a heat unit.
- If the reel is remote and not connected to the heating system, it can be stored out of the way or off the site when it is not needed.

2.Setup/Operation

**DANGER! It is very important that you read and understand this section before operating the hose reel! Failure to follow the procedures and cautions in this manual could lead to injury or possible death! **

Manual Controls

The Hose Reel has a master power switch, a motor direction switch, a belt tension switch, a motor speed dial, and a circuit breaker. These controls can all be found on the Control Panel (seen below in Figure 2-1).

**CAUTION! When NOT operating the reel, put the reel Main Power Switch toggle switch in the “Off” position to prevent accidental activation and possible injury. When the hose reel is to be left unsupervised, the power cord should be unplugged from the power supply. **

Reel Power

Power is present when the MAIN POWER switch is in the “ON” position. The motor is operated by depressing the foot switch, which operates a momentary contact (will only operate when depressed).

Reel Direction Modes

Mode 1 – Powered Load

Mode 2 – Freewheeling Unload

Mode 3 – Powered Unload

Mode 4 – Cold Starting

**CAUTION! Take care not to allow your hands, feet or clothing to become trapped in any of the reel’s moving mechanisms. **

Mode 1 – Powered Load

The LOAD mode is achieved by the mode toggle switch is in the LOAD position and the belt is sufficiently tightened to transmit power from the motor/gearbox to the hose reel spool.

The foot switch is momentary and will only operate when it is depressed.

The hose must be directed manually into position on the hose reel.

The hose reel speed may be varied by means of the MOTOR SPEED dial.

Mode 2 – Freewheel Unload

The BELT TENSION switch controls the linear actuator which positions the pivot arm, on the end of which is an idler sheave that depresses the drive belt. This adjusts the belt tension. With the belt loosened the hose reel may freewheel.

It is important to maintain sufficient tension on the belt to allow a degree of braking on the hose reel spool while unrolling hose. The hose reel spool possesses a variable amount of inertia depending on its mass and its angular velocity. This necessitates gradually loosening the belt as the hose is unloaded: less spool inertia (from decreased mass) requires less braking.



Figure 2-1: Control Panel

Note that for transport of the hose reel it is advisable to maintain sufficient tension on the hose reel to arrest any rotation of the hose reel spool caused by motion of the unit.

Mode 3 – Powered Unload

The UNLOAD mode is achieved by the mode toggle switch is in the UNLOAD position and the belt is sufficiently tightened to transmit power from the motor/gearbox to the hose reel spool.

The foot switch is momentary and will only operate when it is depressed.

Mode 4 – Cold Starting

It is advisable that when beginning operation below 18°F (-8°C) that the belt tension be temporarily loosened far enough that motor rotation will not cause spool rotation and that the motor be powered for a minimum of 5 minutes. This will allow the oil in the gearbox to warm up and to allow smooth low-temperature operation.

Following system warm-up re-tension the belt and begin your desired operation.

Mechanical Drive Components

Access to the internal mechanical drive components (Figure 2-2) is through the access door. This door must be removed.

Electric Motor

- No regular maintenance is required.
- Low temperature automatic reset thermal protector.
- Totally enclosed and fully gasketed construction for dirty environments.
- Make sure that, during operation or storage, the motor is not in prolonged contact with moisture.
- Refer to the chart “Table 1- Electric motor features & data”, below for motor data.



Figure 2-2: Electric Motor

Table 1: Electric Motor Features & Data

PRODUCT FEATURE - ENCLOSED HIGH TORQUE PMDC MOTOR			
Model Number:	MPTM-001-1L18	Weight:	29 Lbs
Power:	1 HP	Torque:	2.92 Ft*Lbs.
ω:	1800 RPM	Housing Rating:	TEFC
Voltage:	90VDC	Insulation Class:	F
Frame:	NEMA 56C	Output Shaft:	5/8”
Mounting:	C-FACE	Service Factor:	1.0

Gear Box

The gear box can be seen below in Figure 2-3.

- Helical worm gear reducer.
- 60:1 gear reduction.
- 5/8” input shaft size.
- 1 1/8” output shaft size.

**CAUTION! Do not operate the unit without ensuring it contains the correct amount of oil. Do not overfill or under fill with oil. Injury to personnel, unit, or other equipment may result.*

*Oil should be changed with greater frequency if unit is used in severe environment (dusty or high humidity). **

**CAUTION! Oil, housing, and other components can reach high temperatures during operation, and can cause severe burns. Use extreme care when removing lubrication plugs and vents while servicing the unit. See “Maintenance - Gear Box” section of the Operators Manual for Gear Box oil filling procedures, service & maintenance. **



Figure 2-3: Gear Box

Torque Limiter Clutch

- The Torque limiter protects the drive line from damage due to overload conditions. The driven center member slips on non- asbestos friction discs during overload situations in the drive line.
- Torque Ratings
 - Minimum: 60 lb.-ft.
 - Maximum: 190 lb.-ft.

Please note that the torque ratings are estimates. Actual torque capacity may vary significantly depending on many factors. Field conditions such as oil, humidity, water and temperature as well as the frequency and duration of slippage all affect torque capacity. Although the torque limiter clutch is factory set at Dryair, periodic adjustment may be required. It is recommended the torque setting of the clutch be checked twice per season (see “Maintenance” section). With prolonged use, the two friction disks, located on either side of the A-plate sprocket, will eventually show wear.

- It is important that the torque limiter clutch is adjusted properly. The clutch should be set to a slip torque of 100 Ft*Lbs.

**Note: A visual check may be required to confirm whether it is the clutch that is slipping or the motor. (See “Maintenance - Torque limiter adjustment” section of the Operator’s manual for Torque Adjustment & Run-In Procedure.) **

3.Maintenance

**DANGER! It is very important that you read and understand this section before operating the hose reel! Failure to follow the procedures and cautions in this manual could lead to injury or possible death! **

Precautions

Electric shock will result in death or serious injury.

- The user is responsible for conforming to all applicable code requirements with respect to grounding all equipment.
- Many parts in this drive controller, including printed wiring boards, operate at line voltage. **DO NOT TOUCH.** Use only electrically insulated tools.
- **DO NOT** touch unshielded components or terminal strip screw connections with voltage present.
- Install and close all covers before applying power or starting and stopping the hose reel.
- Before servicing:
 - Disconnect all power.
 - Place a “DO NOT TURN ON” label on the drive controller disconnect.
 - Lock the disconnect in the open position.
- Disconnect all power including external control power that may be present servicing the drive controller.

Auto Resets

The drive controller is factory set and will reload its factory default settings each time the AC line is connected. It will also automatically start when recovering from a series of different faults.

Manual Resets

If a fault occurs due to a prolonged overload, overvoltage, undervoltage or phase failure, the control must be manually restarted. The control can be restarted by:

- 1) Disconnect AC power and wait for at least 30 seconds for drive controller to power down.
- 2) Reconnect the AC power. This will re-initiate the factory default settings.

Electric Motor

- No regular maintenance is required.
- Make sure that the motor is not in prolonged contact with moisture during operation or storage.

Gear Box

Maintenance & Operation

**CAUTION! Oil, housing, and other components can reach high temperatures during operation, and can cause severe burns. Use extreme care when removing lubrication plugs and vents while servicing the unit. **

- Do not operate the unit without making sure it contains the correct amount of oil. Do not overfill or under fill with oil, or injury to personnel, unit, or other equipment may result.
- For proper operation in subzero conditions, it is mandatory that the following oil be used: “Spartan EP 320 industrial gear oil” (or equivalent)
...any other gear oil will void warranty!

Oil Filling Procedure

- Remove Fill and Vent plugs (see Figure 3-1 for locations).
- Clean threads on the removed plugs and the plug holes with degreaser.
- Fill gear box with the recommended lubricant (see above) to a level near the center line of the uppermost horizontal shaft or until lubricant comes out of the oil level plug hole.
- Install plugs secure in gear case.

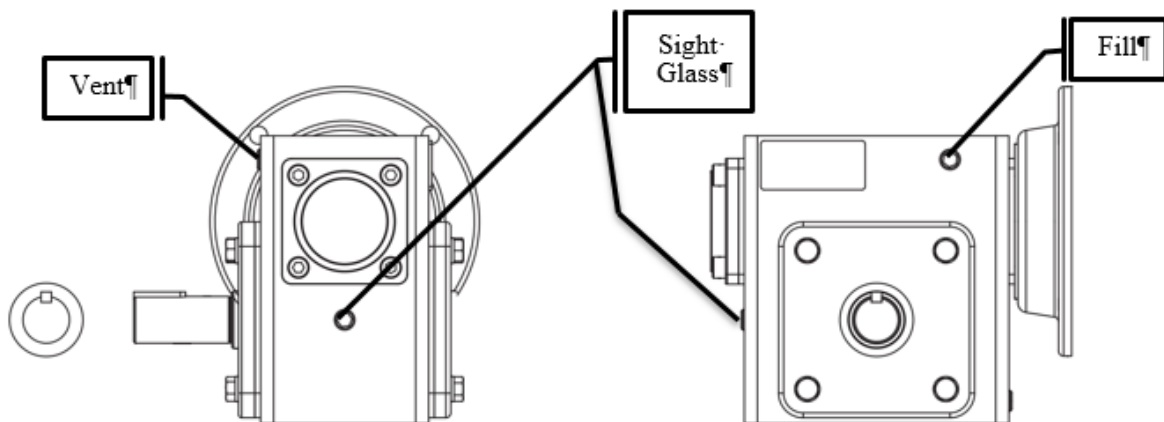


Figure 3-1: Gear Box Oil Filling Procedure

Break-In Period

After the first 100 hours of operation, drain out initial oil, flush out the gear case with an approved non-flammable, non-toxic solvent, such as Whitmore’s Flushing Oil (#06802030) or Medallion Flushing Oil Kosher (#06812010), and refill. Thereafter, oil should be changed at least every 2500 operating hours or every 6 months - whichever occurs first.

**Note: Oil should be changed with greater frequency if unit is used in severe environments (dust or high humidity). **

Torque Limiter Adjustment

- Although the torque limiter clutch is factory (Dryair) set, periodic adjustment may be required. It is recommended that the torque setting of the clutch be checked twice a season. With prolonged use, the two friction disks, located on either side of the A-plate sprocket, will eventually show wear.
- It is important that the torque limiter clutch is adjusted properly. If the clutch slips too easily, the spool will take too long to stop and hose will pile up on the reel. If the clutch does not slip at all,

the protection on the motor controller or belt will take over and the spool will again take too long to stop.

**Note: A visual check may be required to confirm whether it is the clutch that is slipping or whether it is the motor controller or belt that is automatically adjusting in an overload situation. **

- Check that the clutch is adjusted properly with the following procedure:

Physical Check

- With no power being applied to the reel, grip the edge of the spool plate and apply full upward force, making sure that you are lifting with your legs and not your back.
- You should be able to cause the clutch to just slip with full lifting force.
- If the clutch does not slip or slips too easily, refer to the “torque adjust procedure”, below.

Torque Adjust Procedure

- Insure that the adjusting nut is in a finger tight position.
- If the adjustment nut is tighter than finger tight, loosen and complete previous step.
- Match mark the adjusting nut with the hub. Using a torque wrench tighten the adjusting nut to 90ft*lb.

After the break-away torque is set, bend the tabs of the lock washer over the hex flats of the adjusting nut.

**Note: The torque limiter clutch nut requires a reasonable amount of force to adjust. Use a torque wrench that provides you with at least 18” of leverage. **

Run-in Procedure

- If the torque has been taken apart and reassembled or friction disks have been changed, it is recommended that the clutch be “run in” by “slipping” the center member (sprocket).
- Insure that the adjusting nut is in a finger tight position.
- Match mark the adjusting nut and hub. Advance the adjusting nut ¼ turn from finger tight.
- Slip the torque limiter sprocket for 8 minutes at full RPM.
- Refer back to the “Torque adjust procedure” for final readjustment.

4. Appendix

Electrical Schematic

See below the electrical schematic for the HRA Hose Reel.

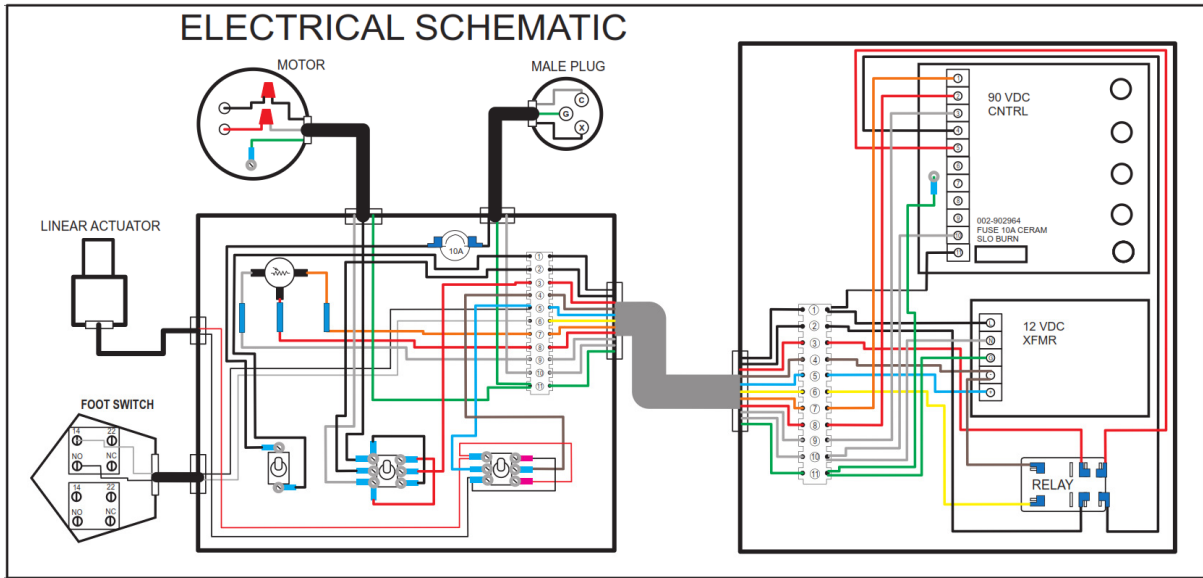


Figure 4-1: Electrical Schematic