

SEED SHUTTLE



SS400 - SS500 Owners Manual

Read this manual before operating your Norwood equipment. The information presented will prepare you to do a better and safer job. Keep this manual handy for ready reference. Require all operators to read this manual carefully and become acquainted with all the adjustment and operating procedures before attempting to operate. Replacement manuals can be obtained from your dealer.

The equipment you have purchased has been carefully engineered and manufactured to provide dependable and satisfactory use. Like all mechanical products, it will require cleaning and upkeep. Lubricate the unit as specified. Observe all safety information in this manual and safety decals on the equipment.

Use only genuine Norwood service parts. Substitute parts will void the warranty and may not meet standards required for safe and satisfactory operation. Record the model number and serial number of your equipment in the spaces provided:

Model: _____ Date of Purchase: _____

Serial Number: _____

Provide this information to your dealer to obtain correct repair parts.

Throughout this manual, the term **IMPORTANT** is used to indicate that failure to observe can cause damage to equipment. The terms **CAUTION**, **WARNING** and **DANGER** are used in conjunction with the Safety-Alert Symbol, (a triangle with an exclamation mark), to indicate the degree of hazard for items of personal safety.



This Safety-Alert Symbol indicates a hazard and means **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**



Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.



Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed



Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury.



Indicates that failure to observe can cause damage to equipment.



Indicates helpful information.

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General Information

The purpose of this manual is to assist you in operating and maintaining your Seed Shuttle. Read it carefully. It furnishes information and instructions that will help you achieve years of dependable performance. These instructions have been compiled from extensive field experience and engineering data. Some information may be general in nature due to unknown and varying operating conditions. However, through experience and these instructions, you should be able to develop procedures suitable to your particular situation.

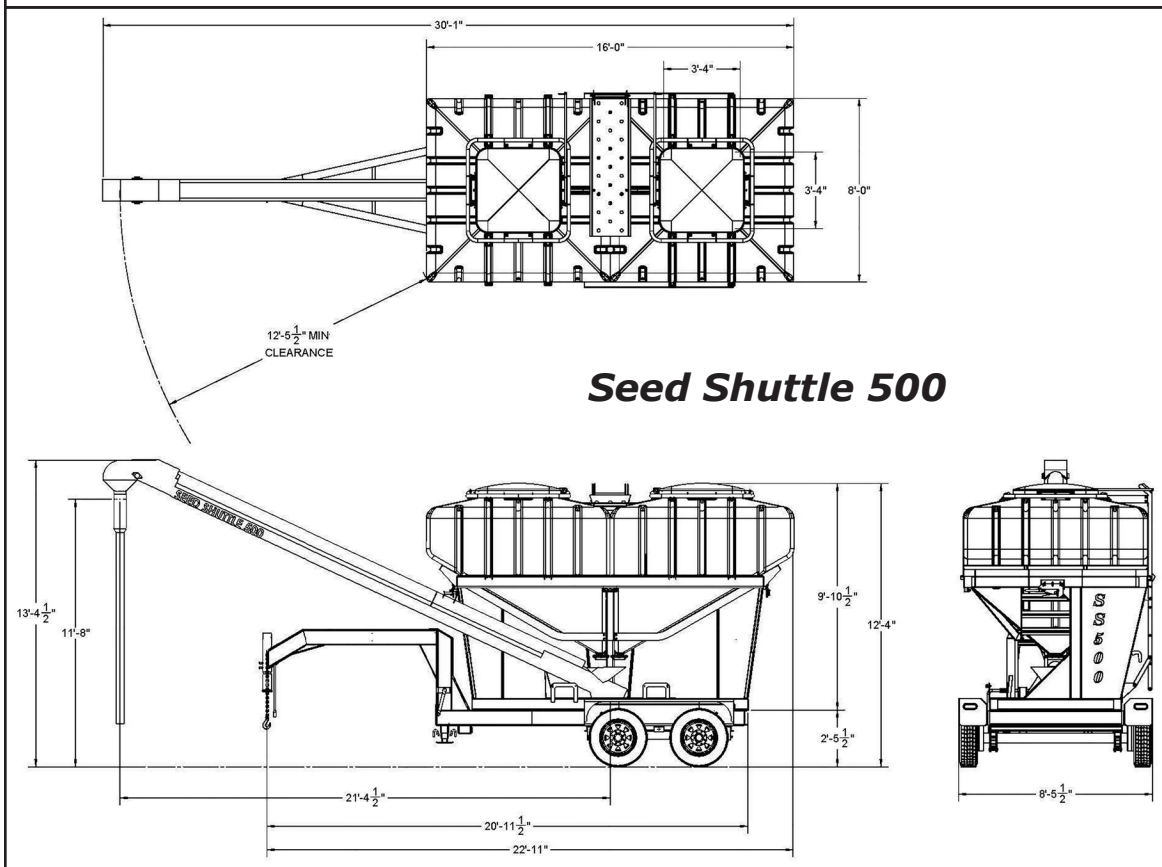
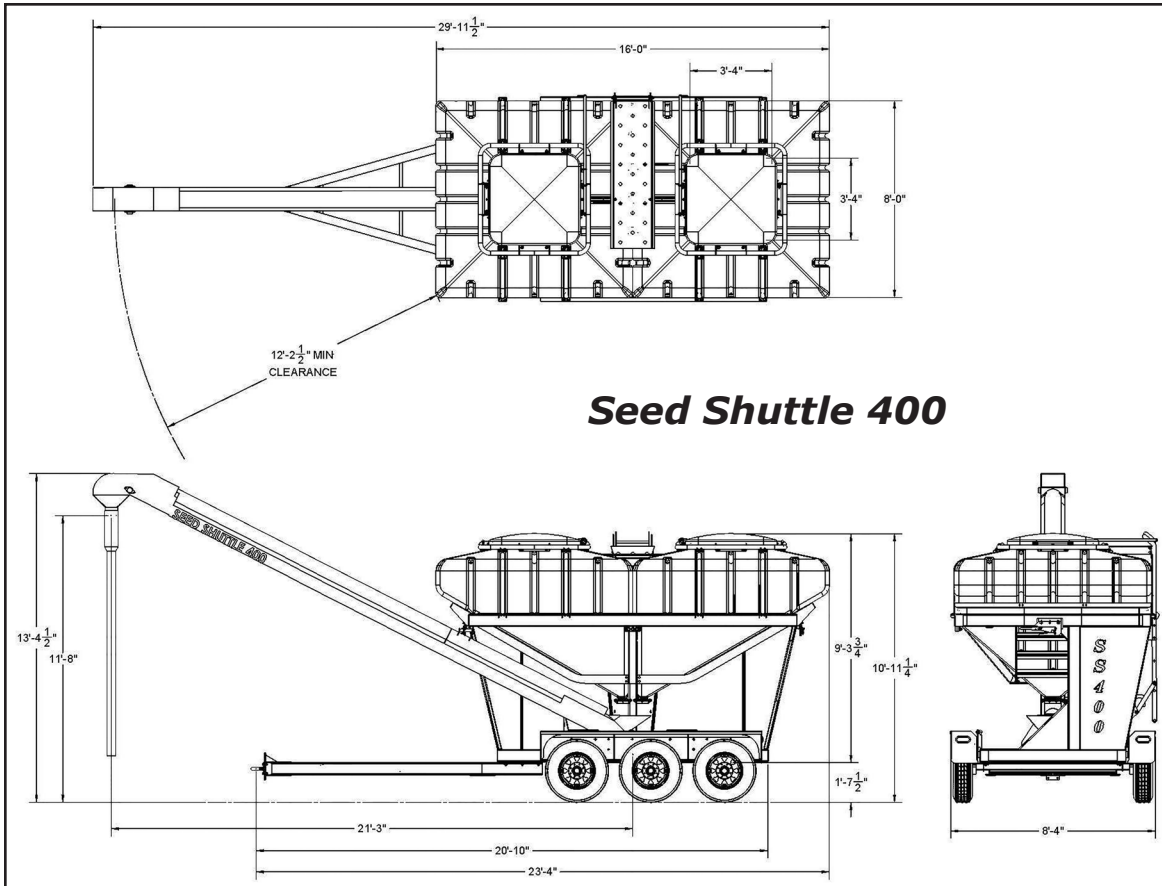
The illustrations and data used in this manual were current at the time of printing, but due to possible in-line production changes, your machine may vary slightly in detail. We reserve the right to redesign and change the machines as may be necessary without notification.



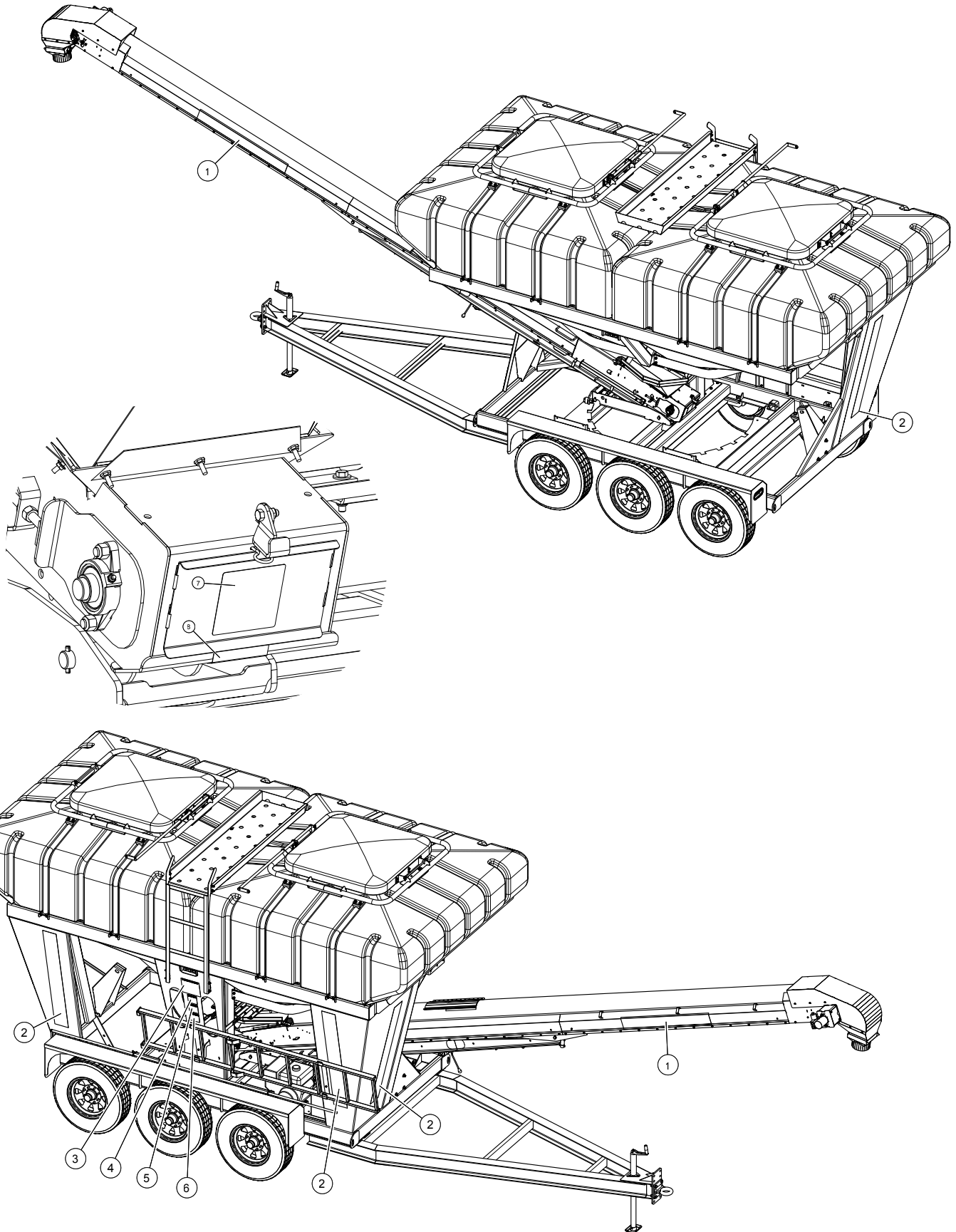
Some illustrations in this manual show the Seed Shuttle with safety shields removed to provide a better view. The Seed Shuttle should never be operated with any safety shielding removed.

Throughout this manual, references are made to right and left direction. These are determined by standing behind the equipment facing the direction of forward travel.

Dimensions & Specifications



Safety & Instructional Decals

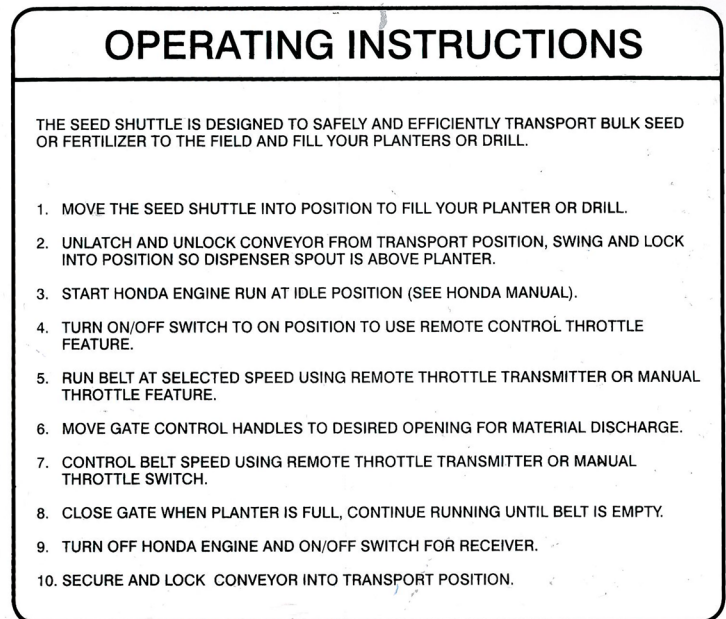


Safety & Instructional Decals

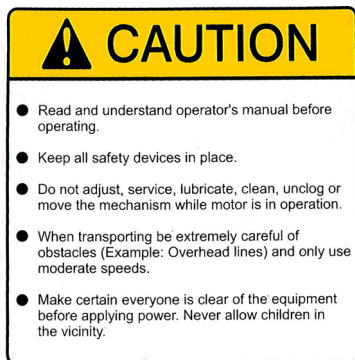
1.	90-44-0015 Decal, Seed Shuttle 400 Horizontal	90-44-0016 Decal, Seed Shuttle 500 Horizontal
2.	90-44-0014 Decal, Seed Shuttle 400 Vertical	90-44-0001 Decal, Seed Shuttle 500 Vertical



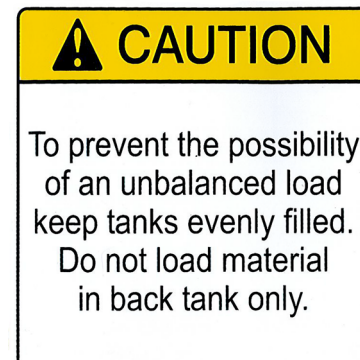
8. 90-44-0021
Decal, Missing Guard



3. 90-44-0005
Decal, Seed Shuttle Operating Instructions



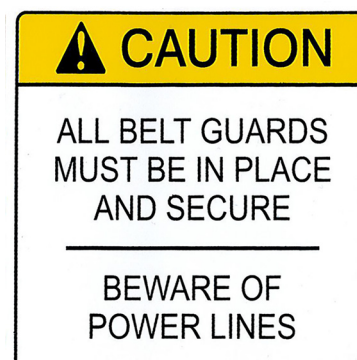
4. 90-44-0004
Decal, Caution Read Operators Manual



5. 90-44-0002
Decal, Caution Even Fill



7. 90-44-0020
Decal, Warning Rotating Part Hazard



6. 90-44-0003
Decal, Caution Guards & Power Lines

Safety

Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by a single careless act of an operator.

In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of equipment.

It has been said "The best safety device is an informed, careful operator." We ask you to be that kind of an operator.

General Safety

- Read and understand the Operator's Manual before operating, maintaining, adjusting or unplugging the Seed Shuttle.
- Only trained competent persons shall operate the seed shuttle. An untrained operator is not qualified to operate the machine.
- Have a first-aid kit available for use should the need arise and know how to use it.
- Provide a fire extinguisher for use in case of an accident. Store in a highly visible place.
- Wear appropriate protective equipment. This list includes but is not limited to:
 - ✓ Hard Hat
 - ✓ Protective Shoes
 - ✓ Protective Goggles
 - ✓ Heavy Gloves
 - ✓ Hearing Protection
 - ✓ Respirator or Filter Mask
- Stop engine, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing, or unplugging.
- Review safety related items annually with all personnel who will be operating or maintaining the Seed Shuttle.
- Be familiar with machine hazard area. If

anyone enters hazard areas, shut down machine immediately. Clear the area before restarting.

- Keep hands, feet and clothing away from all moving and/or rotating parts.
- Do not operate machine with any guards removed.
- Clear the area of bystanders when carrying out any maintenance and repairs or making any adjustments.
- Before resuming work, install and secure all guards when maintenance work is completed.

Refueling Safety

- Refer to Honda Owner's Manual.
- Handle Fuel with Care. It is highly flammable.
- Allow engine to cool before refueling. Clean up spilled fuel before restarting engine.
- Fill Fuel tank outdoors.
- Prevent fires by keeping machine clean of accumulated grease and debris.

Storage Safety

- Refer to Honda Owner's Manual.
 - Store the unit in an area away from human activity.
 - Do not permit children to play on or around the stored machine.
-

Safety

Battery Safety

- Refer to Honda Owner's Manual.
- Keep all sparks and flames away from batteries, as gas given off by electrolyte is explosive.
- Avoid contact with battery electrolyte: Wash off any spilled electrolyte immediately.
- Wear Safety glasses when working near batteries.
- Do not tip batteries.
- To avoid injury from spark or short circuit, disconnect battery ground cable before servicing any part of the electrical system.

Gas Engine Safety



Read and understand the operating and maintenance instructions that came with your honda engine

DO NOT run engine in an enclosed area. Exhaust gases contain carbon monoxide, an odorless and deadly poison.

DO NOT place hands or feet near moving or rotating parts.

DO NOT refuel indoors or in an area that is not well ventilated. Outdoor refueling is preferred.

DO NOT fill fuel tank while engine is running. Allow engine to cool before refueling.

Store fuel in an approved safety container only.

DO NOT remove fuel cap while engine is running.

DO NOT operate engine if fuel is spilled. Move machine away from the spill.

DO NOT smoke when filling fuel tank.

DO NOT choke carburetor to stop engine. Whenever possible, gradually reduce engine speed before stopping.

DO NOT run engine above recommended speeds.

DO NOT tamper with governor springs, governor links or other parts which may increase the governed engine speed.

DO NOT tamper with the engine speed selected by the original equipment manufacturer.

DO NOT check for spark with spark plug or spark plug wire removed. Use an approved tester.

DO NOT crank engine with spark plug removed. If engine is flooded, place throttle in "FAST" position and crank until motor starts.

DO NOT strike flywheel with a hard object or metal tool as this may cause flywheel to shatter in operation. Use proper tools to service engine.

DO NOT operate engine without muffler.

DO NOT operate engine with an accumulation of grain dust, dirt or other combustible materials in the muffler area.

DO NOT touch hot muffler, cylinder or fins. Contact may cause burns.

DO NOT run engine with air cleaner or cleaner cover removed.

Safety

Transportation Safety

- Before transporting verify the following:
 - ✓ Conveyor swing base is locked into position.
 - ✓ Upper conveyor support latch is closed, locking conveyor in place.
 - ✓ Lids on poly tanks are securely latched in closed position.
 - ✓ Down spout is in transport or secured position.
 - ✓ Safety chains are attached and in good condition.
 - ✓ Hitch is adjusted so that the Seed Shuttle sits level for towing.
 - ✓ Both poly tanks are evenly filled. **DO NOT LOAD** material in back tank only!
 - Refer to Honda Owner's Manual for engine transport.
 - Block wheels when Seed Shuttle is not in transport.
 - Remove all loose objects before transport.
 - Stay away from overhead obstructions and power lines during operation and transportation.
 - Use care on unlevel surfaces and when cornering to avoid tipping. The Seed Shuttle has a High Center of Gravity.
-

Operation

The Seed Shuttle is designed to safely and efficiently transport bulk seed or fertilizer to the field and fill your planter or drill.

Review all safety, maintenance and operation information before operating the Seed Shuttle.

Operating Instructions

1. Move the Seed Shuttle into position to fill your planter or drill.
2. Unlatch and unlock conveyor from transport position. Rotate the conveyor and lock into position so the dispenser spout is above planter.
3. Unhook downspout and position to dispense in planter.
4. Start Honda Engine and run at idle speed (see *Honda Owner's Manual*).
5. Turn receiver on/off switch to on position to use remote control throttle feature.
6. Operate belt at desired speed using the remote throttle transmitter or manual throttle control feature.
7. Adjust slide gates to desired material flow using the gate control handles. BOTH TANKS SHOULD BE EMPTIED EVENLY TO AVOID AN UNSTABLE CONDITION.
8. Control belt speed while filling by using the remote throttle transmitter or the manual control switch.
9. Close the slide gates when planter is full, allowing the conveyor to run until the belt is completely empty.
10. Turn off Honda Engine and on/off switch for receiver.
11. Return downspout to transport or secured position.
12. Rotate conveyor to secure and lock in transport position.

Wireless Instructions

Programming Instructions:

Each transmitter has its own unique internal address. The receiver needs to be programmed to respond only to the specific transmitter it is intended to operate with. The following steps configure the receiver to operate with a particular transmitter or transmitters.

Momentary or Latching Output:

The transmitter and receiver can be configured for momentary or latching operation. For momentary operation, the output of the receiver will be active for as long as the transmitter switch is depressed, and will turn off when the switch is released. In the latching configuration, the receiver output will turn on as soon as the transmitter switch is depressed and released. To turn off the latching output, the transmitter switch must be depressed and released again.

1. Locate the pushbutton switch labeled "PROGRAM" on the receiver. Press and hold this switch until the red LED next to the program switch illuminates (approximately 3 seconds). The receiver is now in the transmitter program mode, release the switch. At this point all previously programmed transmitter addresses are erased from the receiver's memory.
2. For momentary operation, press and release a switch on the transmitter. The red program LED on the receiver will blink once. For latching output, press and release the same switch a second time, the program LED will flash on and off.
3. Repeat previous step for additional transmitters that you desire the receiver to respond to.
4. The receiver will return to normal mode if no transmitter switches are pressed for 5-seconds. The red LED on the receiver will flash and then turn off. The receiver is now in the normal mode of operation. This completes the programming instructions. The receiver will retain all of its programming even when power is removed.

Maintenance

By following a careful service and maintenance program for your Seed Shuttle, you will enjoy many years of trouble-free service.

Conveyor Belt Tension

Adjusting your conveyor belt for proper tension helps to ensure trouble-free operation and long belt life. A conveyor belt only needs to be tight enough to eliminate slipping on the drive roller. If the belt is too loose, it will slip on the drive roller making a noticeable sound, with the belt slowing down. To correct belt slippage and set proper tension on the belt, follow the steps below.

1. Clear area of bystanders.
2. Remove ignition key or lockout power source.
3. Loosen bearing bolts and jam nut at tightening roller.
4. Tighten adjustment bolts equally, using a tape measure to verify. The belt should deflect 1"-2" when pushed down with a 5lb force or be difficult to pull from sides of hopper transition. (Some covers may need to be removed for this)
5. Tighten bearing bolts and jam nuts.
6. Check belt tension by running conveyor for one (1) minute. If belt is not slipping, then proceed to next step, otherwise repeat previous steps.
7. If belt is not slipping, but is running to one side, the tensioned roller needs to be realigned. See **Belt Alignment** section to correct this problem.
8. Ensure that all covers and guards are securely in place before operation.

Helpful Tips:

- If the belt is slipping and adjustment bolts are fully tightened, the belt must be shortened. **See Belt Lacing and Length Adjustment** section for instructions.
- If Engine V-belt has proper tension, tighten conveyor belt at spout end, not the hopper end of the conveyor.



Ensure ignition key is removed or lockout power source before adjusting or servicing conveyor.



- Do not operate conveyor if belt is slipping. Stop conveyor and tighten belt before continuing operation. Failure to do so will result in damage to the conveyor belt and may void warranty.



- Some belts may have uneven edges, appearing to be misaligned. Wait until the belt makes a complete revolution before adjusting roller.
-

Maintenance

Conveyor Belt Alignment

The Seed Shuttle Conveyor belt should be checked weekly to ensure it is properly aligned. If the belt is tracking to one side, use the following steps to correct the problem.

1. Clear area of bystanders.
 2. Ensure the conveyor is completely empty of all product.
 3. Remove ignition key or lockout power source.
 4. Loosen bearing bolts and jam nuts if equipped.
 5. Start checking the alignment at the hopper end followed by the discharge end.
 6. If belt is not centered, adjust the bearing on the side the belt is moving toward. The bearing should be moved in the direction which would tighten the belt. See Figure 1.
 7. Start the conveyor and run empty for one (1) minute.
 8. Stop conveyor, remove ignition key or lockout power source.
 9. If belt is centered continue to the next step, if not repeat alignment process.
 10. Tighten bearing bolts and jam nuts if equipped.
 11. Replace any covers or guards that may have been removed.
-

Belt Lacing and Length Adjustment

1. Rotate the conveyor belt until the lacing is easily accessible.
 2. Loosen the conveyor belt and remove lacing retainer clip and pin. See Figure 1.
 3. Use a square and sharp knife to cut the belt. If just replacing the lacing cut right behind existing lacing. If shortening the belt, cut off the appropriate amount of belt. **THE BELT ENDS MUST BE CUT SQUARE.**
 4. Use a knife to remove the crescent top pattern 1" back from the end of the belt. This ensures that the lacing is centered and fully seated on the belt.
 5. Use a lacing tool to install new lacing clips. Lacing clips should be one clip shorter than conveyor belt width. Center lacing on the belt and install the lacing as per instructions on lacing tool.
 6. Pull the conveyor belt ends together. If required use a ratchet strap clamped to the belt to pull the ends together.
 7. Install the lacing pin and retainer clip on each end of the pin.
 8. Remove the ratchet strap if used and tighten the conveyor belt.
 9. Follow **Belt Tension** and **Belt Alignment** steps to properly adjust the conveyor belt.
 10. Clear area of bystander and run the conveyor for 30 seconds. Shut down the conveyor and inspect the lacing and belt alignment.
-

Maintenance

Conveyor Belt Replacement

1. Rotate the conveyor belt until the lacing is easily accessible.
 2. Loosen the conveyor belt and remove lacing retainer clip and pin. See Figure 1.
 3. Attach one end of the replacement belt to the belt being removed.
 4. Pull the opposite end of the old belt so that the new belt is pulled into and through the conveyor.
 5. Disconnect the old belt.
 6. Pull the conveyor belt ends together. If required use a ratchet strap clamped to the belt to pull the ends together.
 7. Install the lacing pin and retainer clip on each end of the pin.
 8. Remove the ratchet strap if used and tighten the conveyor belt.
 9. Follow **Belt Tension** and **Belt Alignment** steps to properly adjust the conveyor belt.
 10. Clear area of bystander and run the conveyor for 30 seconds. Shut down the conveyor and inspect the lacing and belt alignment.
-

Drive Belt Replacement

- Turn Honda Engine off and remove Key.
- To Replace the Belt
 1. Move motor base to completely loosen belt.
 2. Remove the existing belt and replace with the new belt.
 3. Follow belt alignment and tension instructions.
- To Adjust Alignment
 1. Use a straight edge across the pulley faces to check alignment.
 2. Adjust the pulley on the shaft to achieve proper alignment.
 3. Tighten hub bolts or set screws to secure the pulley.
 4. Check the belt tension
- To Tension the Belt
 1. The belt should deflect 1/4" to 1/2" at the center of the span with a 5lb force applied.
 2. Loosen Engine bolts and use the Engine push bolt to properly tension the belt.
 3. Tighten Engine bolts and replace any guards that may have been removed.

For Honda Engine Maintenance refer to the Honda Owner's Manual

Maintenance

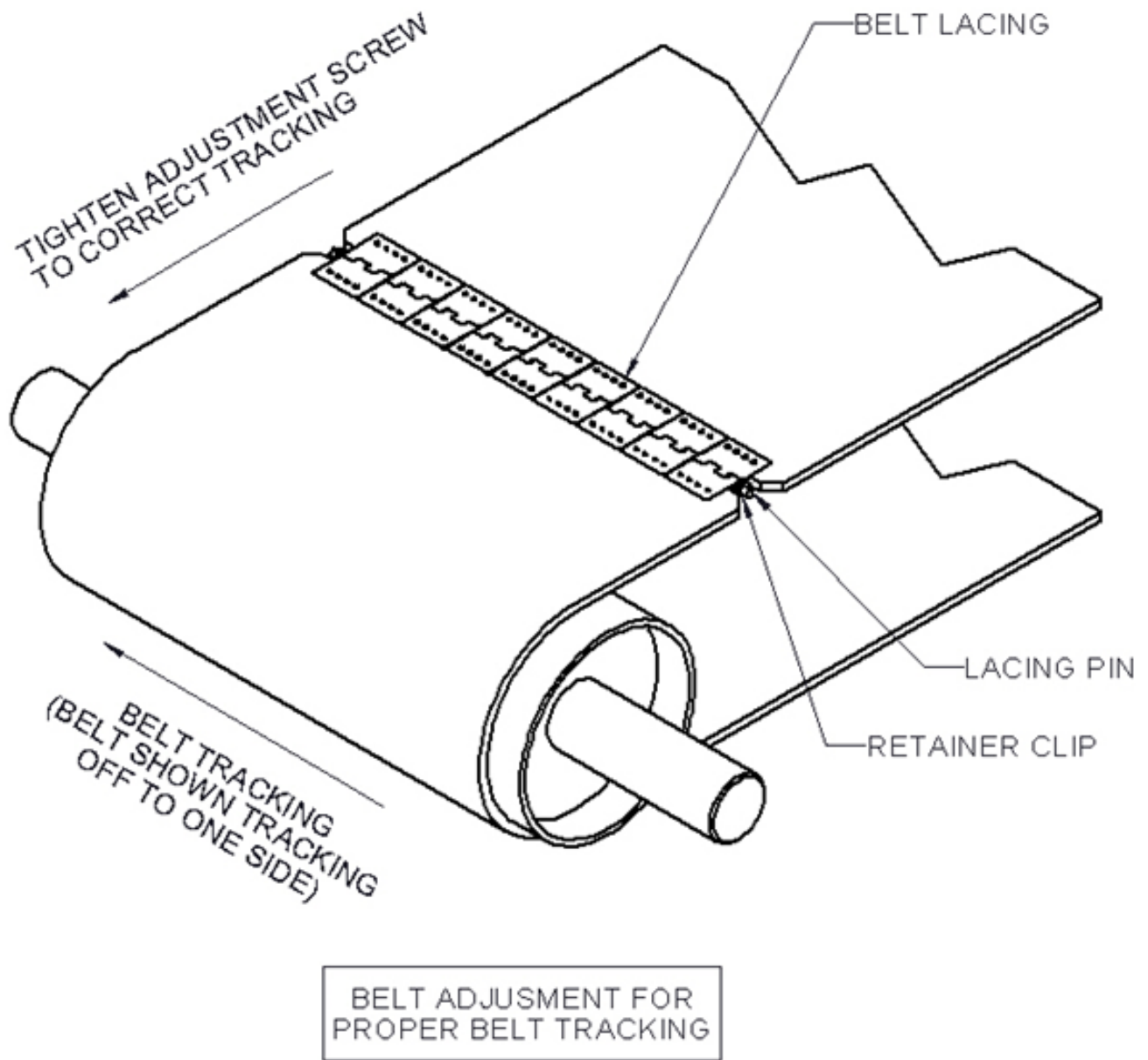


FIGURE 1

Brake Adjustment

Brakes should be adjusted (1) after the first 200 miles of operations when the brake shoes and drums have "seated", (2) at 3000 mile intervals, (3) or as use and performance requires. The brakes should be adjusted as follows, based on type of axle brakes.



Never crawl under your trailer unless it is resting on properly placed jack stands. Do not lift or place supports on any part of the suspension system.

Maintenance

- **Manually Adjusted Brakes**

1. Jack up trailer and secure using adequate capacity jack stands. Check that the wheel and drum rotate freely.
2. Remove the adjusting hole cover from the adjusting slot on the bottom of the brake backing plate.
3. Using an adjusting tool or standard screwdriver, rotate the star wheel until there is a heavy brake drag.
4. Loosen the star wheel until the wheel turns freely about 3/4 to one full turn.
5. Replace the adjusting hole cover and lower the wheel to the ground. Repeat the above procedure on all brakes.

- **Self Adjusting Brakes**

1. Self Adjusting Brakes are automatically adjusted during hard reverse stops.
 2. When the leading shoe leaves the anchor pin, the adjuster cable pulls the adjuster pawl upward to engage the next tooth of the adjuster star wheel if adjustment is necessary due to normal wear.
 3. To release the shoes, the adjuster pawl must be pulled away before the star wheel can be turned backward to decrease brake adjustment.
-

Brake Inspection

Your brakes must be inspected and serviced at yearly intervals or more often as use and performance requires. Magnets and shoes must be changed when they become worn or scored, thereby preventing adequate vehicle braking.

Clean the backing plate, magnet arm, magnet and brake shoes.

Make certain that all removed parts are replaced in the same brake and drum assembly. Inspect the magnet arm for any loose or worn parts. Check shoe return springs, hold down springs and adjuster springs for stretch or deformation and replace if required.



Asbestos Dust Hazard!

Since some brake shoe friction materials contain asbestos, precautions need to be taken when servicing brakes.

- Avoid creating or breathing dust.
 - Avoid machining, filing, or grinding the brake linings.
 - Do not use compressed air or dry brushing for cleaning. (Dust can be removed with a damp brush.)
-

Trouble Shooting

The Seed Shuttle uses pattern topped conveyor belt moving through a tube to convey material from one location to another. It is a simple and reliable system that requires minimal maintenance.

In the following section, we have listed many of the typical problems, causes and solutions to possible problems you may encounter.

If you encounter a problem that is difficult to solve, even after having read through this troubleshooting section, please call your local Norwood Sales dealer or distributor. Before you call, please have this Operator's Manual and the serial number from your machine ready.

Conveyor Belt

Problem	Cause	Solution
Belt Slipping	Conveyor belt is loose	Tighten and align belt (Fig. 1)
	Drive roller lagging worn or damaged	Replace drive roller lagging
	Drive belt loose	Tighten and align
	Belt frozen to tube from operating in high humidity and cold temperatures	Remove conveyor from area of high humidity and warm belt to de-ice
Excessive belt edge fraying	Belt not in alignment	Align and tension belt
Belt loose	Belt stretches over time...also can be caused by oily grain products	Re-tension belt If tightener is fully engaged, you may need to shorten belt



Do not over tighten belt, doing so may cause bearing and belt damage.

Hopper

Problem	Cause	Solution
Grain leaking from conveyor hopper	Belt not tracked properly	Track conveyor belt (Fig. 1)
	Flashing worn or installed incorrectly	Inspect flashing for wear and replace if required

Drive

Problem	Cause	Solution
Drive making noise	Slipping belt	See belt slipping
	Hot shaft, pulley or bearing	Overheated components indicate a failed bearing that must be repaired
	Broken drive roller	Replace damaged component

Trouble Shooting

Spout

Problem	Cause	Solution
Grain leaking from conveyor spout between belt & tube	Belt not tracked properly	Track conveyor belt (Fig. 1)
Grain leaking from conveyor spout between hood & belt	Belt is running too fast (hood plugging)	Decrease belt speed or feed rate
Grain following belt around to return side	Wet product, possibly from inoculation	Allow product to dry before conveying

Transmitter & Receiver

If you are encountering problems with the control system on your Seed Shuttle, this guide will take you through basic trouble shooting.

If the system simply **"will not work"** in wireless or manual mode, begin by checking battery voltage. On electric start applications, if the engine cranks normally, battery voltage can be considered good. If the engine does not crank normally, check battery voltage. On manual start models, begin by checking battery voltage. **Battery voltage must be between 10 & 12 Volts DC. Battery connections must also be clean and tight.** Also check the tension on the VTC cable, which is attached to the throttle lever on the engine. This cable must move freely and must not be over-tightened.

The control system is fused and requires a 2 or 3 AMP ATO automotive style fuse. If you cannot determine that the fuse is good or bad visually check with a meter or test light. **Replace fuse if it's bad.**

Wireless Control System

The wireless portion of the control system is switched to isolate it from the battery, preventing battery run-down and isolating it from the system when starting. The wireless control should be switched off when the system is not in use or when starting the engine.

To test for current to the wireless control, first check for voltage going in to the function selector switch on the white wire coming from the battery. If there is power coming in, select wireless and check for voltage on the white wire coming out. If voltage is present on both sides when the wireless function is selected, power should be present at the wireless controller. When power is present and the handheld transmitter is working properly, a function light will be visible when cover is removed. Contact your Seed Shuttle dealer if you are unsure of the wireless controller operation. If the function light is present, output voltage from the wireless controller can be checked at the VTC connector, the black and white wires. Check for voltage by actuating the wireless controller with the hand held transmitter. +12VDC should be present on alternating wires, depending on user input of the throttle up or throttle down. The VTC utilizes reversing polarity for orientation, so these wires will change polarity when the manual switch is activated.

The hand held transmitter for your control system utilizes a A23 battery. Refer to the user guide for proper battery replacement to insure the water and dust resistant integrity of the transmitter. There are no other user serviceable parts in the transmitter.

Trouble Shooting

Manual Control System

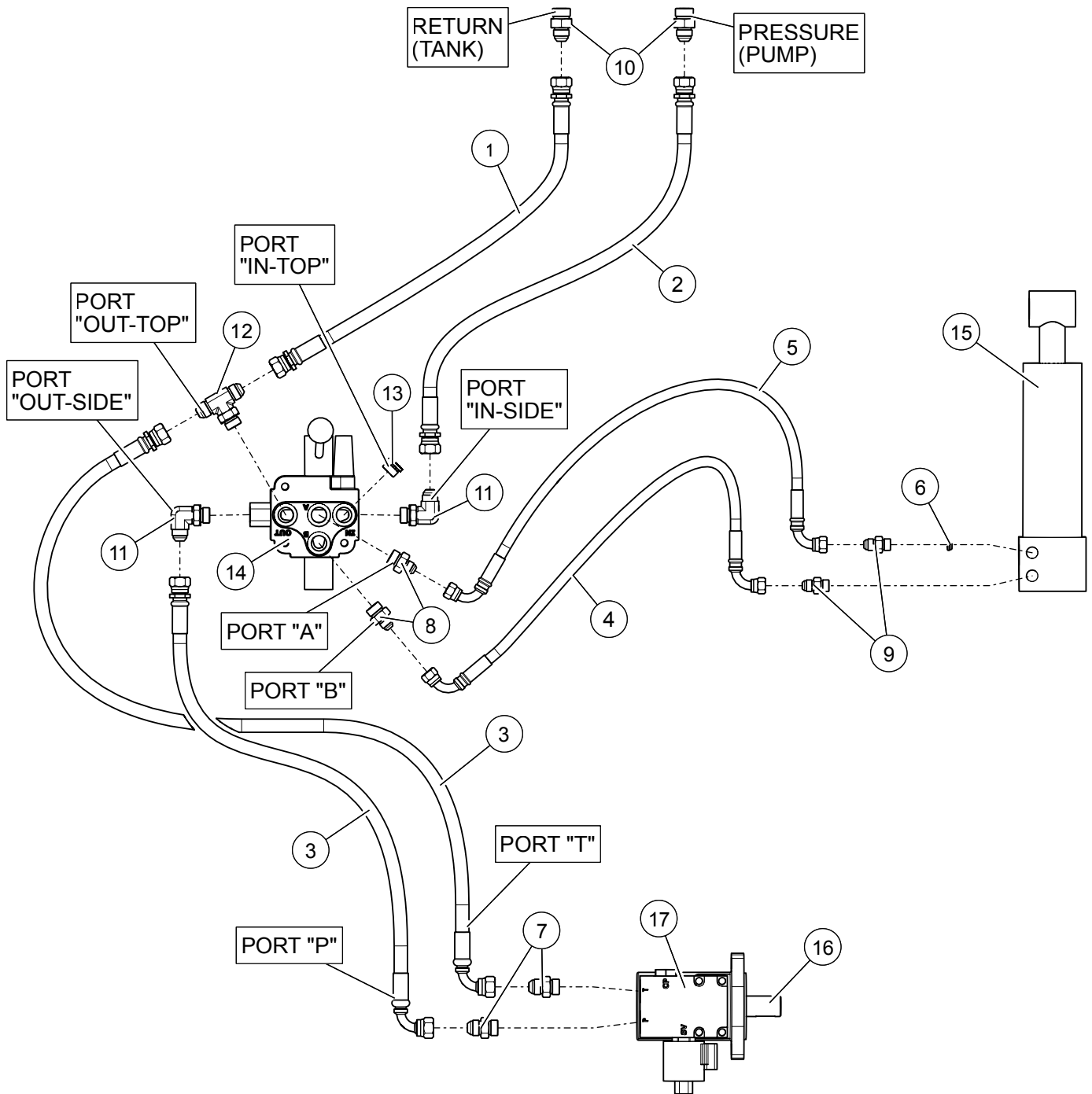
The manual portion of the system utilizes a self centering toggle switch to activate the VTC (throttle motor).

To test for voltage at the manual control switch check the yellow power wire going in. If voltage is present, the switch can be checked for integrity by selecting manual on the selector switch, moving the bat handle of the throttle switch and again checking for voltage on the black and white wires. When actuating the switch. +12VDC should be present on alternating wires, depending on user input of throttle up or throttle down. The VTC utilizes reversing polarity for orientation, so these wires will change polarity when the manual switch is activated.

VTC

The VTC is a right angle drive DC gear motor that utilizes reversing polarity for orientation. This is a very small motor, so it is important that the throttle control cable move freely without binding. The motor can be moved manually if care is exercised, to check cable movement. Simply apply finger pressure only (no tools) on the motor arm in line with the cable attachment. The motor will provide some resistance, but you will be able to determine if the cable is binding. Motor arm breakage is not covered by warranty.

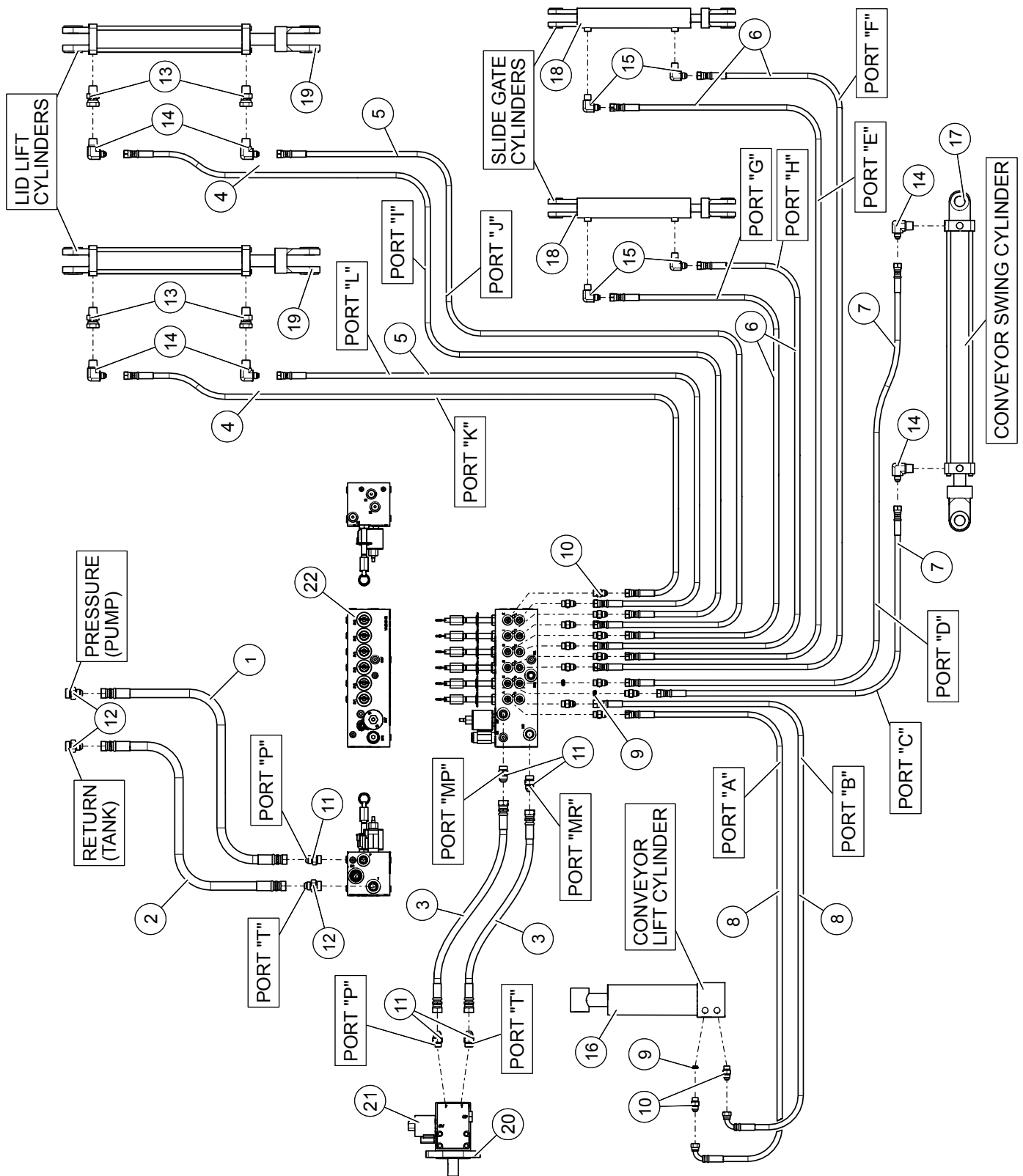
Swing Hydraulic Diagram



Swing Hydraulic Diagram

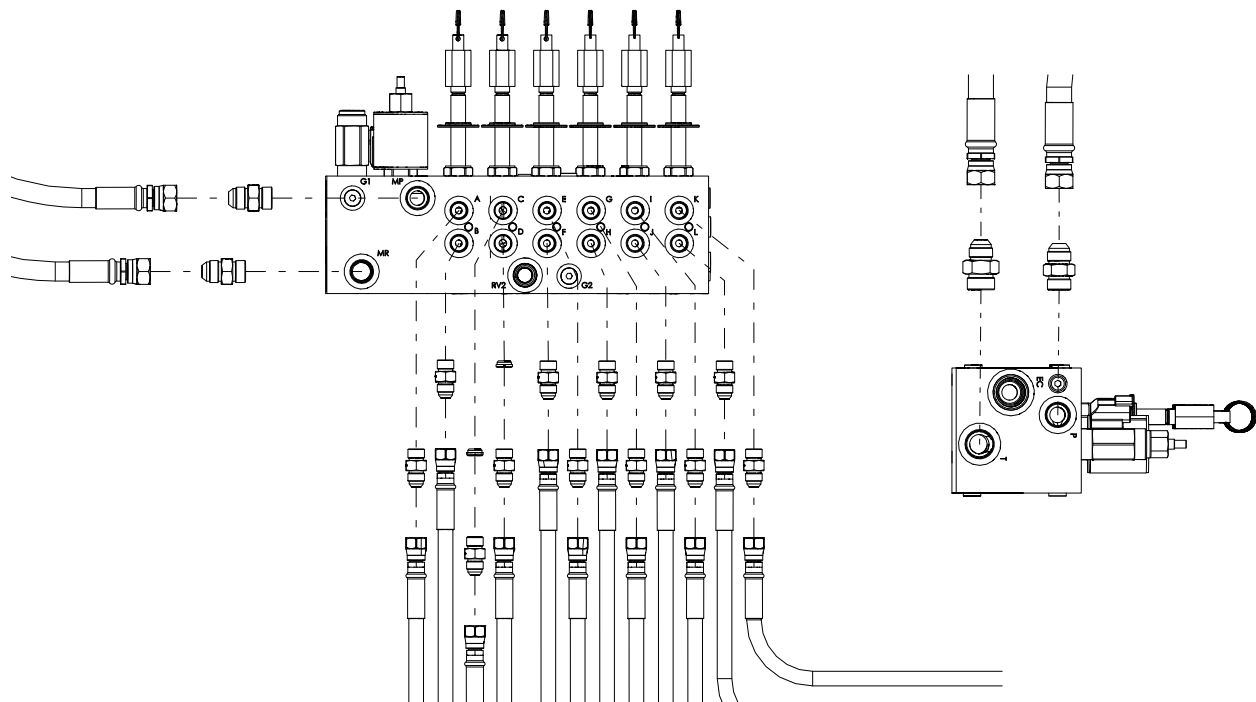
Item No.	Part No.	Description	Qty.
1	90-37-1055	Hose, 06 x 163", 08 FJX x 08 FJX	1
2	90-37-1056	Hose, 06 x 141", 08 FJX x 08 FJX	1
3	90-37-1053	Hose, 06 x 200", 08 FJX x 08 FJX90	2
4	90-37-1054	Hose, 04 x 51", 06 FJX90 x 06 FJX90	1
5	90-37-1069	Hose, 04 x 53", 06 FJX90 x 06 FJX90	1
6	90-36-0017	Orifice Disc, 06 MO Port 0.022 Hole	1
7	90-38-0018	Adapter, Straight, 08 MO x 08 MJ	2
8	90-38-0022	Adapter, Straight, 08 MO x 06 MJ	2
9	90-38-0043	Adapter, Straight, 06 MJ x 06 MO	2
10	90-38-0093	Adapter, Straight 08 MJ x 10 MO	2
11	90-38-0019	Adapter, 90° Elbow, 08 MO x 08 MJ	2
12	90-38-0020	Adapter, Tee, 08 MJ x 08 MJ x 08 MO	1
13	90-38-0094	Adapter, Plug, 8 MO (Hollow)	1
14	90-36-0001	Valve, MonoBlock	1
15	90-39-0005	Cylinder, 2.5" Bore x 4" Stroke w/ Check Valve	1
16	90-35-0003	Motor, Hyd H-Series	1
17	90-36-0016	Valve, 12V DC Manifold Mount Hydraulic	1
-	90-37-0013	Hose Kit, Seed Shuttle Swing Includes : #1 - #5	-
-	40-2-00091	Hydraulic Kit, Seed Shuttle Swing Conveyor Includes : #1 - #13	-

7-Function Hydraulic Diagram

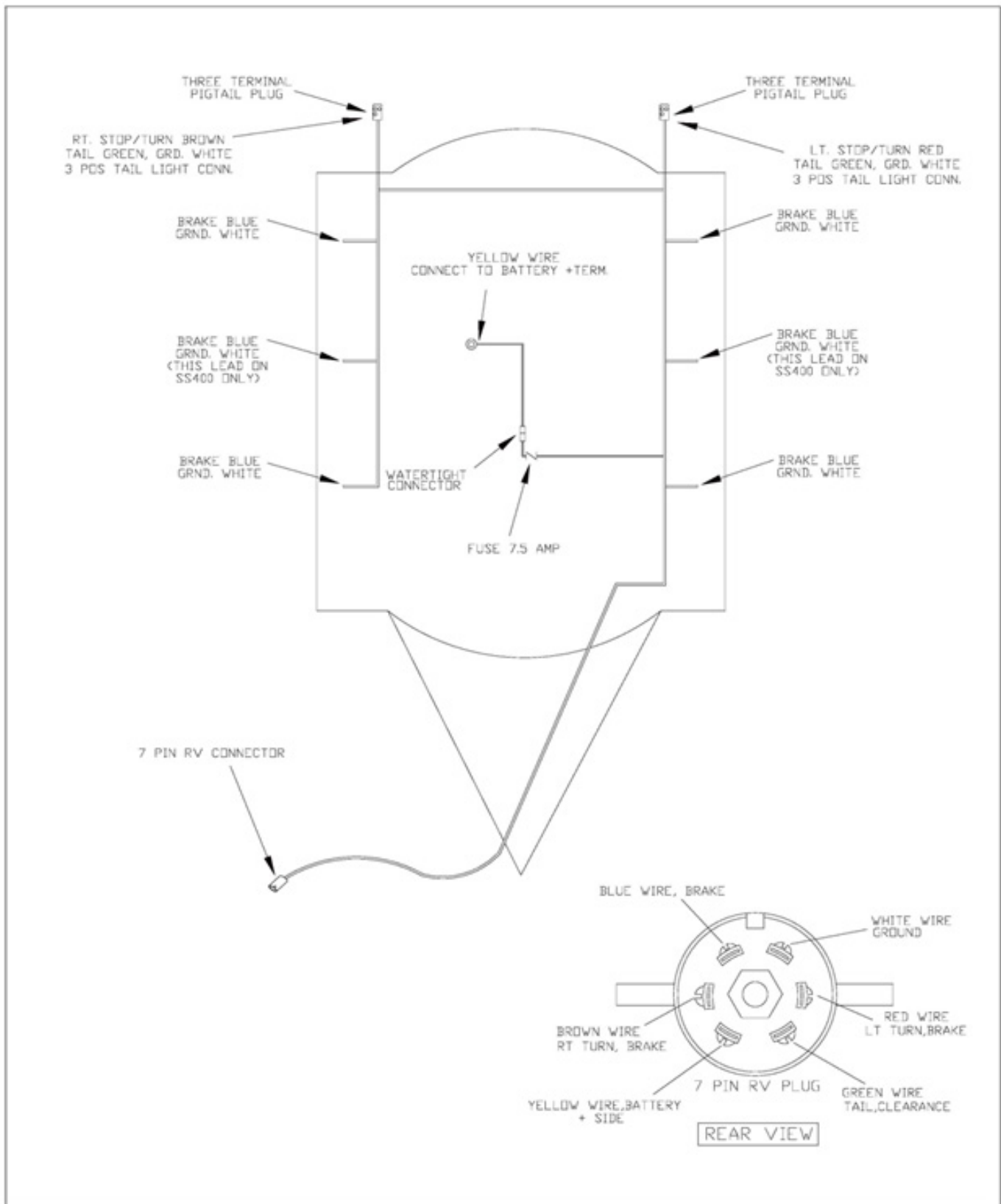


7-Function Hydraulic Diagram

Item No.	Part No.	Description	Qty.
1	90-37-1052	Hose, 08 x 27", 08 FJX x 08 FJX	1
2	90-37-1051	Hose, 08 x 47", 08 FJX x 08 FJX	1
3	90-37-1013	Hose, 06 x 360", 08 FJX x 08 FJX	2
4	90-37-1009	Hose, 04 x 216", 06 FJX x 06 FJX	2
5	90-37-1010	Hose, 04 x 230", 06 FJX x 06 FJX	2
6	90-37-1011	Hose, 04 x 44", 06 FJX x 06 FJX	4
7	90-37-1012	Hose, 04 x 28", 06 FJX x 06 FJX	2
8	90-37-1014	Hose, 04 x 114", 06 FJX x 06 FJX90	2
9	90-36-0017	Orifice Disc, 06 MO Port 0.022 Hole	3
10	90-38-0043	Adapter, Straight, 06 MJ x 06 MO	14
11	90-38-0018	Adapter, Straight, 08 MO x 08 MJ	5
12	90-38-0093	Adapter, Straight 08 MJ x 10 MO	3
13	90-38-0096	Adapter, Restrictor, 08 MP x 08 FPX (0.022 Hole)	4
14	90-38-0095	Adapter, 90° Elbow, 08 MP x 06 MJ	6
15	90-38-0044	Adapter, 90° Elbow, 06 MP x 06 MJ	4
16	90-39-0005	Cylinder, 2.5" Bore x 4" Stroke w/ Check Valve	1
17	90-39-0006	Cylinder, 2.0" Bore x 20" Stroke	1
18	90-39-0002	Cylinder, 1.5" Bore x 8" Stroke	2
19	90-39-0008	Cylinder, 2.0" Bore x 12" Stroke	2
20	90-35-0003	Motor, Hyd H-Series	1
21	90-36-0016	Valve, 12V DC Manifold Mount Hydraulic	1
22	90-36-0010	Valve, 7 Function Seed Shuttle	1
-	90-37-0005	Hose Kit, Seed Shuttle 7-Function Includes : #1 - #8	-
-	40-2-00092	Hydraulic Kit, Seed Shuttle 7-Function Includes : #1 - #15	-



Wire Schematics



Trailer Wire Schematic

Warranty

Warranty Registration

Customer's Name

Dealer's Name

Address

Address

City

State

Area Code

City

State

Area Code

Phone Number

Phone Number

Model

Serial Number

Delivery Date

Check One Below:

Commercial Use

Farm Use

Dealer Inspection Report

_____ Wheel Nuts Tight

_____ Tire Pressure

_____ Drives Aligned and Tensioned

_____ Drive System Rotates Freely

_____ Fasteners Tight

_____ Gas Engine Serviced

_____ Wireless Transmitter & Receiver

_____ All Decals Installed

_____ Signal Lights Work Properly

_____ Guards and Shield Installed

_____ Safety Chain Installed

_____ Review Operating & Safety Instructions

_____ Operator Manual Supplied

I have thoroughly instructed the buyer on the above described equipment including a review of the Operator's Manual content, equipment care, adjustments, safe operation and applicable warranty policy.

_____ Date

_____ Dealer's Signature

I have received the above equipment and Operator's Manual and I have been thoroughly instructed on its care, adjustments, safe operation and applicable warranty policy.

_____ Date

_____ Owner's Signature

Warranty

Limited Warranty Policy

Norwood Sales Inc. warrants to the buyer that the new machinery is free from defects in material and workmanship.

This warrant is only effective on new machinery, which has not been altered, changed or repaired since its delivery to the buyer.

Norwood Sales Inc. shall only be liable for defects in materials or workmanship and specifically excludes liability for repairs arising as a result of normal wear and tear of the new machinery and without limiting the generality of the foregoing, excludes application or installation of parts not completed in accordance with **Norwood Sales Inc.** operator's manual, specifications, or printed instructions.

Written notice shall be given by registered mail, to **Norwood Sales Inc.** within seven (7) days after the defect shall have become apparent or the repairs shall have become necessary, addressed as follows: **Norwood Sales Inc., 11202 38th Street South, Horace, ND 58047.**

This warranty shall expire one (1) year after the date of delivery of the new machinery.

If these conditions are fulfilled, **Norwood Sales Inc.** at its option will either repair or replace any defect. The buyer shall be responsible for all expenses incurred as a result of repairs, labor, parts, transportation or any other work, unless **Norwood Sales Inc.** authorizes such expenses in advance.

The warranty shall not extend to any repairs, changes, alterations, or replacements made to the new equipment other than by **Norwood Sales Inc.** or its authorized dealers.

This warranty extends only to the original owner of the new equipment.

This warranty is limited to the terms stated herein and is in lieu of any other warranties whether expressed or implied, and without limiting the generality of the foregoing, excluded all warranties, expressed or implied or conditions whether statutory or otherwise as to quality and fitness for any purpose of the new equipment. **Norwood Sales Inc.** disclaims all liability for incidental or consequential damages.

This machine is subject to design changes and **Norwood Sales Inc.** shall not be required to retro-fit or exchange items on previously sold units except at its own option.



Norwood Sales Inc.	Toll Free:	800-446-0316
www.norwoodsales.com	Local/Intl:	Fax:
Cooperstown, ND	701-797-3684	701-797-3685
Horace, ND	701-588-4000	701-588-4004
Union, NE	402-263-2100	402-263-2104