

RR510

24' FIREWOOD CONVEYOR

Assembly Guide



Frame assembly | Conveyor trough | Hydraulic system | Grizzly separator | Chain setup

Read this guide completely before beginning assembly.

01 BEFORE YOU BEGIN

Safety, preparation, and assembly scope

SAFETY: Assembly involves long and heavy sections, pinch points, hydraulic connections, gasoline-powered equipment, a pivoting grizzly assembly, and a conveyor that can move unexpectedly. Use suitable lifting assistance and keep the engine disabled until the initial test.

- Work on a firm, level surface with enough clear space to lay out the frame, four trough sections, and lift-frame assembly.
- Use at least two capable adults and suitable lifting equipment for long or heavy components.
- Wear safety glasses, work gloves, and protective footwear. Keep hands clear of frame, trough, lift-frame, and grizzly-bar pinch points.
- Keep the engine OFF, cool, and unable to start while assembling or servicing the machine.
- Do not work beneath a raised conveyor unless it is securely supported by rated mechanical supports.
- Keep all hydraulic fittings, hose ends, and ports clean and capped until immediately before connection.
- Never use your hand to check for a hydraulic leak. Use cardboard or wood and seek immediate medical care for any injection injury.

Assembly sequence

- Build the wheel/base frame and install the power unit and hydraulic tank.
- Assemble the lift frame, cylinder, supports, drawbar, and four-section conveyor trough.
- Install the motor, controls, stabilizer jacks, hydraulic hoses, upper hardware, and grizzly separator.
- Fill fluids, cycle the hydraulic system, install and tension the chain, and complete the final inspection.

02 COMPONENTS AND SUPPLIES

Lay out the main assemblies and prepare required service supplies



Lay out the base frame and conveyor trough sections

Main assemblies

- Base-frame sections and connectors, front frame, axle stubs, wheels, drawbar, jack mounts, and stabilizer jacks
- Engine/pump assembly, exhaust protector, hydraulic tank, control valve, lift cylinder, and hoses
- Yellow lift-frame assembly with extensions, frame braces, four trough sections, and trough frame supports
- Hydraulic conveyor motor, chain, upper roller, side extensions, motor-end plates, grizzly bars, swivel adapters, and grate pan

Tools and supplies

- Metric sockets and wrenches, metric hex keys, pliers, grease gun, clean fill equipment, and suitable lifting/support equipment
- 400 mL of conventional 10W-30 engine oil and the correct fresh fuel specified by the engine manufacturer
- 2-1/2 gallons of AW-32 or AW-46 hydraulic fluid

HARDWARE: Use the supplied fasteners in the locations shown. If any hardware differs from the photographs, confirm the correct fastener and tightening requirement with Range Road or an authorized dealer before continuing.

03 BUILD THE BASE FRAME

Join the long frame sections with both frame connectors

1 Identify the base-frame sections and connectors

Lay out the base-frame sections in line and locate the two short frame connectors and their supplied hardware.



Base-frame sections arranged for assembly

2 Join and square the frame

Slide one connector into each frame rail, align the mounting holes, and install the supplied fasteners. Tighten the two sides evenly, then confirm the assembled frame lies flat without visible twist.



Bring the frame sections and connectors together



Install and tighten the remaining frame-joint fasteners

CHECK: Both connectors must be fully engaged and both frame rails must remain parallel before the axle stubs are installed.

04 INSTALL AXLE STUBS AND WHEELS

Adjust both swivel pivots and secure each wheel with four lug nuts

3 Install both axle stubs

Fit one axle stub to each side of the frame. Tighten each swivel bolt until vertical play is removed while the axle stub can still pivot freely from side to side.



Position each axle stub at its swivel mount



Tighten the swivel bolt without binding the pivot

4 Install the wheels

Place each wheel onto its hub and install all four lug nuts. Tighten the nuts evenly in a crossing pattern.



Both axle stubs and four-lug wheels installed

INSPECTION: Rotate each wheel and swivel each axle by hand. The wheels must turn freely and the axle pivots must move without vertical play or binding.

05 INSTALL THE FRONT FRAME

Orient and secure the long front-frame assembly

5 Orient and install the front frame

Position the front frame as shown, bring it into alignment with the completed base frame, and secure all frame-joint hardware evenly.



Front-frame orientation and connector locations

CHECK: Confirm the front frame is straight, fully seated, and securely fastened before adding the engine and hydraulic components.

06 INSTALL THE POWER UNIT

Mount the engine/pump assembly and exhaust protector

6 Position the engine and hydraulic pump

Remove the four engine-mount nuts. Set the engine on the mounting plate with the hydraulic pump facing the wheel end of the frame. Raise the studs through the engine base, reinstall the nuts, and tighten evenly.



Raise the four mounting studs through the engine base



Engine, pump, and hydraulic tank orientation

7 Install the exhaust protector

Locate the exhaust protector bracket and fasten it in the orientation shown. Confirm that it does not contact the muffler, engine controls, wiring, or fuel components.



Exhaust protector bracket



Protector installed beside the power unit

ORIENTATION: Do not reverse the engine/pump orientation; the pump must face the wheel end so the hydraulic plumbing reaches the intended components.

07 INSTALL THE HYDRAULIC TANK

Prepare and secure the reservoir mounting location

8 Prepare the tank mounting location

Remove the six retained fasteners from the hydraulic-tank mounting area shown. Keep the fasteners organized for reinstallation.



Remove the six tank-mount fasteners

9 Mount the hydraulic tank

Lower the tank onto the frame, align all mounting holes, reinstall the retained hardware, and tighten evenly. Keep all tank ports capped until hose installation.



Hydraulic tank installed behind the engine and pump

CLEANLINESS: Do not allow paint chips, dirt, packaging material, or seal debris to enter the reservoir or open hydraulic connections.

08 INSTALL THE STABILIZER JACKS

Support and level the front of the conveyor before adding the lift frame

10 Install both jack mounts

Fasten one jack mount to each side of the front frame in the locations shown. Tighten the mounting hardware evenly.



Jack mount and stabilizer jack components

11 Install both jacks

Insert the stabilizer jacks into their mounts and secure them. Extend both jacks to support the front frame and level the machine before continuing assembly.



Both stabilizer jacks installed

STABILITY: Both jacks and both wheels must be on firm, level ground before the lift frame is installed or the conveyor is raised.

09 ASSEMBLE THE LIFT-FRAME CROSSMEMBER

Join the yellow lift-frame extensions and mount the pivoting assembly

12 Assemble and install the lift frame

Lay out the yellow lift-frame sections. Align the extension splice plates and install the four fasteners at each splice as shown. Mount the completed lift frame to the rear pivot points and retain it with the supplied hardware.



Complete yellow lift-frame assembly



Four-bolt extension splice on each side

PIVOT CHECK: The installed lift frame must move through its travel without binding. Do not clamp a pivot point rigidly.

10 INSTALL THE LIFT CYLINDER AND SUPPORTS

Connect the lift mechanism, both frame brackets, and the front drawbar

13 Install the lift cylinder

Remove the protective caps only when ready to install the cylinder. Pin the cylinder between the frame and yellow lift assembly in the orientation shown, then secure both pins.

CYLINDER ALIGNMENT: If the cylinder rod does not reach the lift-arm pin location by hand, complete the hydraulic connections before installing that pin. With the frame supported and the area clear, operate the lift control slowly to extend the cylinder until the pin holes align. Stop the engine, relieve hydraulic pressure, then install and secure the pin.

14 Install both frame brackets

Install one blue frame brace on each side. Orient both braces symmetrically and confirm they do not interfere with cylinder or lift-frame movement.



Lift cylinder and both blue frame braces installed



Frame-brace mounting position and bolt orientation

15 Install the front drawbar

Slide the drawbar into the front receiver, align the holes, reinstall the retaining pin, and secure the pin.



Front drawbar installed and pinned

11 ASSEMBLE THE CONVEYOR TROUGH

Join all four trough sections on the ground

16 Join the four trough sections

Lay the four trough sections in their operating order on level ground. Bring each mating flange together, install all supplied flange fasteners, and tighten each joint evenly in an alternating pattern.



Install all flange fasteners at each trough joint



Four-section trough assembled on the ground

ALIGNMENT: Before final tightening, sight down the trough and correct any visible twist or offset between sections.

12 INSTALL AND SECURE THE TROUGH

Add both frame supports, lift the trough into place, and secure the lower mounting points

17 Install both trough frame supports

Fit both rectangular support bars across the underside of the trough at the mounting locations shown. Install the supplied fasteners through the trough and supports, then tighten evenly.



Position both trough frame supports



Support fasteners installed through the trough

18 Place the trough on the frame

Using at least two capable adults or suitable lifting equipment, raise the joined trough and lower it onto the frame in the orientation shown. Control both ends and keep hands clear of pinch points.



Joined trough seated on the support frame

19 Secure the lower trough to the frame

Align the lower trough mounting holes with the frame brackets, install the supplied retaining fasteners, and tighten them securely. Recheck nearby bearing set screws after the trough is aligned.



Identify the lower trough pivot fastener



Lower trough pivot aligned and secured

LIFTING: The assembled trough is long and awkward. Do not attempt to lift or balance it alone.

13 INSTALL THE CONVEYOR MOTOR AND CONTROLS

Couple the hydraulic motor and mount the operator controls

20 Install the hydraulic conveyor motor

Mount the motor at the lower end of the trough. Install the retaining hardware, align the drive coupler, and tighten both coupler set screws securely.



Hydraulic conveyor motor mounted at the lower trough end



Drive-coupler alignment and motor mounting detail

21 Install the control T-handle

Insert the control T-handle into the frame bracket and secure it in the operating position shown.



Control mounting plate and T-handle location

22 Mount the control valve and levers

Fasten the control valve to the frame, install the operating levers, and tighten the lever locknuts. Confirm both levers move freely without contacting the frame.



Control valve and operating levers installed

14 CONNECT THE LIFT-CYLINDER HYDRAULICS

Route the cylinder hoses and set the needle valve for a slow first movement

23 Connect the elevation-cylinder hoses

On the right side of the control valve, route the upper hose fitted with the needle valve to the lower cylinder port. Route the lower valve hose to the upper cylinder port. Keep both hoses clear of pivots, tires, sharp edges, and exhaust heat.



Right-side valve hoses for the lift cylinder



Needle valve in the upper cylinder hose

24 Set the needle valve for initial testing

Turn the needle valve toward the closed/minus position before startup. During the first hydraulic cycle, open it gradually until the conveyor raises at a controlled speed.

CONTROL: Begin with the elevation speed slow. A fast first movement can create instability or expose an incorrect hose route.

15 COMPLETE THE HYDRAULIC PLUMBING

Connect the suction, pressure, return, and conveyor-motor circuits

25 Identify the pump and control-valve ports

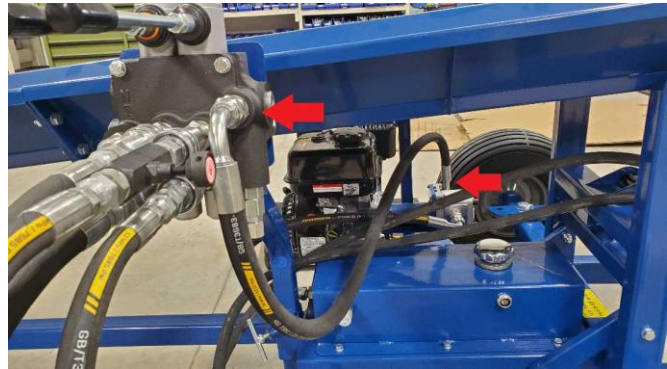
Identify the pump connection on the side closest to the hydraulic tank. On the control valve, the upper-right port is pressure-in and is marked P; the lower-left port is the outlet/return port and is marked T.

26 Connect the pump suction and pressure hoses

Connect the large suction hose between the hydraulic tank outlet and the pump connection on the side of the pump closest to the tank. Connect the pump pressure hose to the upper-right valve port marked P. Use the lower-left port marked T for the valve outlet/return connection. Route all hoses without kinks, tight bends, or contact with hot or moving parts.



Pump suction hose connects to the pump side nearest the tank



Control valve: upper-right P port and lower-left T port

27 Connect the conveyor-motor hoses

Connect the motor hoses to the control valve using the quick-connect fittings, then connect their opposite ends to the conveyor motor. Trace each hose before tightening and protect both lines from abrasion.



Pressure hose routed to the control valve



Motor-hose connections at the conveyor motor

HYDRAULIC SAFETY: Stop the engine, relieve pressure, and clean the connection area before correcting any hose or fitting.

16 INSTALL THE UPPER ROLLER AND EXTENSIONS

Complete the discharge-end trough hardware before adding the grizzly separator

28 Install the upper chain roller

Fit the upper chain roller and sprocket at the discharge end. Install the retaining hardware but leave the assembly free to slide during chain-tension adjustment.



Upper roller and sprocket at the discharge end

29 Install the upper side extensions

Mount both upper side extensions in the orientation shown and tighten their fasteners evenly.



Discharge-end side extension and slotted mounting holes



Both upper extensions installed around the roller assembly

17 INSTALL THE GRIZZLY SEPARATOR

Mount the pivoting bars and suspend the debris pan

30 Mount both L-brackets

At the discharge end, remove the rear mounting bolts from the two upper side extensions. Position one grizzly L-bracket on each side and reinstall the same bolts through the extensions and brackets.



L-bracket mounted using the rear side-extension bolts

31 Attach the swivel adapters

Fasten one slotted angle swivel adapter to each L-bracket. Leave the adjustment hardware loose enough to set both sides to the same angle.



Slotted swivel adapter mounted to the L-bracket

32 Attach the grizzly-bar assembly

Position the grizzly-bar assembly between the two swivel adapters and install its pivot fasteners. Center the assembly and confirm it can swing without binding.



Grizzly-bar assembly attached to both swivel adapters

18 COMPLETE THE GRIZZLY AND MOTOR-END GUARDS

Suspend the grate pan, install the motor-end plates, and check all moving clearances

33 Attach the grate pan

Suspend the grate pan beneath the grizzly bars using the supplied chains. Use matching chain links on both sides so the pan hangs level and clears the moving grizzly assembly.



Grate pan suspended from the grizzly assembly



Completed grizzly bars and grate pan

MOVEMENT CHECK: Swing the grizzly assembly through its available travel. It must move freely without striking the trough, chain, upper roller, or grate pan.

34 Install the motor-end plates

Fit the remaining guard and transition plates around the hydraulic-motor end of the conveyor. Tighten all plate hardware and confirm there are no sharp exposed edges or chain interferences.



First motor-end plate



Motor-end plates fitted around the drive area

OPTIONAL Install the rubber debris flap

If desired, install the supplied rubber flap across the lower opening using a suitable angle support and fasteners. Position it so the flap blocks falling debris without contacting the conveyor chain, flights, or drive components.



Optional rubber debris flap installed across the lower opening

19 FILL FLUIDS AND CYCLE THE HYDRAULICS

Prepare the power unit before raising the conveyor

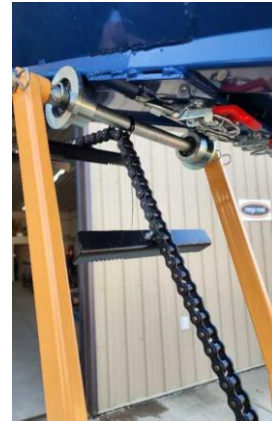
- ☐ Fill the hydraulic reservoir with 2-1/2 gallons of AW-32 or AW-46 hydraulic fluid.
- ☐ Fill the engine with 400 mL of conventional 10W-30 motor oil.
- ☐ Grease every bearing and lubrication point.
- ☐ Add the correct fresh fuel specified by the engine manufacturer.
- ☐ Confirm all hydraulic hoses are connected, supported, and clear of pinch points, hot surfaces, and moving components.
- ☐ Confirm both stabilizer jacks and both wheels are firmly supported on level ground.

35 Perform the first hydraulic cycle

Start the engine according to the engine manual and allow it to warm briefly. At low speed, operate each control valve slowly in both directions. Use the needle valve to keep elevation movement controlled.



Needle valve used to control raising speed



Raise the conveyor slowly for chain installation

STOP AND INSPECT: Shut the engine off, relieve pressure, and recheck the hydraulic-oil level. Inspect every fitting and hose for fresh leaks before continuing.

20 INSTALL AND TENSION THE CONVEYOR CHAIN

Support the raised conveyor, route the chain, and adjust both sides evenly

36 Secure the raised conveyor

Raise the conveyor only as high as needed for chain access, stop the engine, relieve hydraulic pressure, and support the conveyor with rated mechanical supports before working beneath or around it.

37 Route and connect the chain

Locate the removable master link shown. Feed the conveyor chain through the trough and around the drive and upper rollers in the orientation shown. Bring both chain ends together, install the master link, and secure all supplied retaining parts completely.



Conveyor chain before installation



Route the chain through the raised conveyor



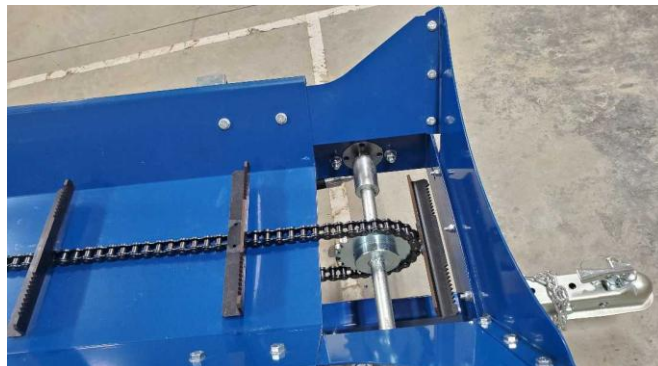
Master link used to join the conveyor chain

38 Adjust both chain tensioners evenly

Use the crossbar on the yellow support leg as the chain-tension reference. Adjust the left and right tensioners in equal increments until the chain is only tight enough to clear the crossbar. The chain must not contact the support leg during operation. Do not overtighten. Tighten the adjustment and bearing hardware after alignment.



Chain routed through the trough



Set tension so the chain clears the yellow support-leg crossbar

TENSION REFERENCE: Correct tension is the minimum required for the chain to clear the crossbar on the yellow support leg without touching it during operation.

21 FINAL INSPECTION AND FUNCTION TEST

Complete every check before placing the RR510 into service



Completed RR510 shown in its raised operating configuration

Mechanical inspection

- ☐ All frame joints, lift-frame extension joints, engine mounts, tank mounts, braces, guards, side extensions, jack mounts, and retained pins are installed and secure.
- ☐ All four lug nuts on each wheel are secure; both wheels turn freely and both axle pivots swivel without vertical play or binding.
- ☐ The trough and both trough frame supports are secure, aligned, and free of visible twist.
- ☐ The grizzly bars pivot freely, both swivel adapters are secure, and the grate pan hangs level from matching chain links.
- ☐ The conveyor chain is connected, centered, and tensioned only enough to clear the crossbar on the yellow support leg without contact during operation.

Fluid and hydraulic inspection

- ☐ Engine oil, fuel, hydraulic oil, and grease have been added to the specified levels.
- ☐ All fittings are clean and dry; hoses are supported and clear of heat, sharp edges, tires, and pinch points.
- ☐ The conveyor raises and lowers smoothly at a controlled speed, and the motor drives the chain in the intended direction.
- ☐ After cycling all functions, the engine is stopped, pressure is relieved, hydraulic oil is rechecked, and no leaks are present.

Initial operation recheck

- ☐ After the first no-load and loaded operating cycles, stop the engine, allow all moving parts to stop, and relieve hydraulic pressure.
- ☐ Recheck the hydraulic-reservoir level and inspect every hose, fitting, valve, cylinder, pump, and motor connection for leaks.
- ☐ Confirm the master link and all retaining parts remain secure; recheck chain tracking and tension at the yellow support-leg crossbar.
- ☐ Recheck both wheel lug nuts and all frame, guard, jack-mount, lift-frame, trough, and grizzly fasteners.
- ☐ Confirm the grizzly bars still swing freely and the grate pan, chains, conveyor chain, and upper roller do not interfere.

DO NOT OPERATE: Do not place the RR510 into service if any part is loose, damaged, leaking, binding, unstable, incorrectly routed, or operating in an unexpected direction.