SECTION V
ASSEMBLY

THE FOLLOWING SAFETY PRECAUTIONS SHOULD BE THOROUGHLY UNDERSTOOD BEFORE ATTEMPTING MACHINE ASSEMBLY.

1. Wear personal protective equipment such as, but not limited to protection for eyes, ears, feet, hands, lungs and head when assembling the equipment. Do not wear loose clothing or jewelry that may catch on equipment moving parts.
2. Do not lift heavy parts or assemblies. Use crane, jack, tackle, fork trucks or other mechanical devices.
3. Select an area for assembly that is clean and free of any debris which might cause persons working on the assembly to trip.
4. Arrange parts to be assembled neatly in the work area and have tools or other mechanical assisting devices in easy reach.
5. Inspect all parts and assemblies thoroughly and remove any sharp edges, grease, oil or dirt which might cause pieces to slip when handling.
6. Preview the assembly instructions in your operator’s manual before proceeding further.
7. If the assembly instructions call for parts or assemblies to be blocked up, use only blocking material that is in good condition and is capable of handling the weight of the assembly to be blocked. Also, insure that the blocking material is on a clean, dry surface.
8. Never put hands or any other part of body under blocked up assemblies if at all possible.
9. Always wear goggles or safety glasses when hammering, grinding, or drilling metal parts.
10. If the assembly calls for welding or cutting, be sure that there are no flammable materials close at hand and that bystanders have taken necessary precautions.

AFTER COMPLETING ANY ASSEMBLY STEP, THOROUGHLY READ THE NEXT STEP IN THE ASSEMBLY INSTRUCTIONS BEFORE PROCEEDING WITH THAT STEP.

11. After completing assembly, thoroughly inspect the machine to be sure that all nuts, bolts, hydraulic fittings or any other fastened assemblies have been thoroughly tightened.
12. After completing assembly, be sure that all safety locking devices or guards are in place.
13. Before operating the machine, thoroughly read the operation section of this manual.
14. Before operating the machine, read the maintenance section of this manual to be sure that any parts requiring lubrication such as gearboxes are full to avoid any possible damage.

BEFORE OPERATING THE EQUIPMENT, IF YOU HAVE ANY QUESTIONS REGARDING THE PROPER ASSEMBLY OR OPERATION, CONTACT YOUR AUTHORIZED BUSH HOG DEALER OR REPRESENTATIVE.

5-1 MODEL 2415 ASSEMBLY

NOTE
Overall machine assembly illustration is located on center spread.

A. Lift the center section with a chain hoist or fork lift and attach the skid assemblies with 1/2" x 2 bolts, lockwasher and nuts. (Figure 5-1)

B. Lower the center section and block up the rear of the cutter approximately 9" to level the cutter from front to rear. With the use of a chain hoist or fork lift slide both side wing units into place so the hinge tubes align on the center and wing section. Apply a heavy coat of grease to each hinge rod and drive the rod through the hinge tube until the knock out pad contacts the front hinge tube. The knock out pad should extend upward so the rod can be driven out. Install a 1/4 x 1-1/2" bolt and lock nut through the rear of the rod.

Figure 5-1  Skid Assembly

Hinge Rod Knock Out Pad
C. Attach center axle assembly to the center section of the cutter. Align mounting holes and insert axle bushings 5-5/8" long on the two center rails with 3/4" x 7" bolts, flatwashers and locknuts. Install 3-3/8" bushing through the outside mounting holes using 3/4" x 4-1/2" bolts, flatwashers and locknuts. (Figure 5-2) **Note:** Lubricate the bushings prior to assembly and drive into place with a rubber hammer. Care should be given not to distort these bushings.

Figure 5-2 Axle Assemblies

D. Connect the 1" x 3" center axle arms with 3/4" x 4" bolts, 1/4" spacer plates, lockwashers and nuts. Note: Single spindle arms should have the spindle hubs in the directions of the wings. (Figure 5-3)

E. Assemble wing axle assemblies to the wing decks by installing axle bushings 2-3/32' long, 3/4" x 3-1/2" bolts, flatwashers and locknuts. (Figure 5-2) **Note:** Lubricate the bushings prior to assembly and drive into place with a rubber hammer. Care should be given not to distort these bushings.

F. Attach wing axle arms with 3/4" x 4" bolts, 3/8" spacer plates, lockwashers, and nuts. Spindle hubs should be located toward the outside of cutter. (Figure 5-3)

G. Mount wheels on hubs securing with lug nuts. **Note:** When using laminated tires and airplane tires, the flat side of the lug nut should be against the rim. When using automotive rims, the tapered side of the lug nut should be against the rim.

H. Attach turnbuckles adjustment links to the center and wing axles using 1" x 4-1/2" bolts, flatwashers, and nuts. Position grease fitting toward the wing for ease of greasing. (Figure 5-4)

Figure 5-4 Grease Fitting Turnbuckle

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**NOTE:**

The spacing between mounting holes in the wing axle arms is 6-7/16".

The spacing between mounting holes in the center axle arms is 6".
I. Install center axle cylinder using 1" diameter pins and presto pins shipped in cylinder assembly. There are three type wheels available for this machine. The laminated and airplane tire have the same outside diameter whereas the automotive tire will have a larger outside diameter. According to Figure 5-5, pin the base end of the cylinder according to the type tire being used.

J. Bolt tongue to center section using 1" x 5-1/2" bolts, locknuts, and 3-17/32" bushing. (Figure 5-6)

K. Pin jackstand to tongue.

L. Pin the leveling rods assemblies to the tongue using pin, flatwasher and cotter pins shipped with assembly. The slotted casing end should be attached to the tongue. (Position for greasing.) It may be necessary to raise the tongue slightly for the attachment of the leveling rod. Connect the opposite end to the center axle weldment using the pin and cotter pins shipped in the leveling rod assembly. (Figure 5-7)

M. Attach hose holder rod to tongue using 5/8" x 2" bolt, nut, flatwasher and lockwasher. (Figure 5-6)

N. Slide the center driveline clutch onto center gearbox input shaft until it bottoms out against casting. (Figure 5-8) Slide yoke assembly onto transfer gearbox output shaft until it bottoms out against casting. Place stub shaft between yokes, then slide clutch and yoke assembly until tapered pins can be installed to retain. **Tighten tapered pin retaining nut to 30 ft. lbs.** Install one pin through yoke and stub shaft.
O. Attach shield bracket to blade gearbox using four 8mm x 15mm bolts and flatwashers. (Figure 5-9) Remove two top bolts from power divider gearbox and install two 8mm x 25mm bolts and flatwashers.

P. Install adjustable pin into bracket. Pin should be adjusted so that when shields are closed, lynch pin will hold shields tightly to prevent rattling. Attach rear shield, hinge pin, and 1/8” x 1” cotter pins.

Q. Install front shield with 3/8” x 1-1/4” bolts and locknuts. Fold both shields and retain with lynch pin. (Figure 5-9)

R. Install plastic clutch shield on wing gearboxes using four 8mm x 15mm bolts and flatwashers per shield. (Right side wing box may require four 8mm nuts and flatwashers.) (Figure 5-10)

S. Install wing drivelines, attaching clutch to wing gearboxes. Secure driveline with tapered pin, lockwasher, and nut. Tighten nut to 30 ft. lbs. Pull on each driveline section to make certain it is securely attached.

T. Install wing lift cylinders with the rod end connected to the wing lug. It will be necessary to remove port plugs to extend cylinder. Pin the base end of the cylinder to the cylinder lug on the center section using the 1” pin and presto pins shipped with the cylinder. Place the rod end of the cylinder between the two ears of the wing section. Locate the over center latch to the rear of the lug as shown and fasten with a 1” x 6-1/4” pin, flatwashers, and 1/4” roll pins. (Figure 5-11) Note: Flatwashers are required on both ends of the pin against the roll pins. If this is not done the pin can work free of the cylinder lug.

U. Plumb hydraulic cylinders as shown. (Figures 5-12 a & b) (Hydraulic hoses are supplied for attachment to three tractor remotes.) Plugs are supplied to adapt value for either an open or closed center tractor hydraulic system. Consult your tractor dealer to determine which type system your tractor has. Use tie straps to secure hydraulic hoses to leveling rod.

V. Fill each gearbox with EP80W-90 gear oil to check plug on the rear or side of the gearbox. Allow time for oil to seep through bearings into lower housing. Replace temporary plug with vent plug supplied in operator’s manual package.

X. Attach all driveline shield chains to keep shields from turning. (Figure 5-10)

Y. On each clutch, loosen eight nuts retaining clutch springs 1/3 turn or until spring can be turned with fingers.

Z. With tractor at idle speed, engage tractor PTO drive 2-3 seconds. Each clutch should slip without turning blades.

AA. Retighten nuts to within 1/64” of original position. Initial spring length for the clutches is 1.27” (32.2mm)
IMPORTANT

FAILURE TO RETIGHTEN NUTS TO ORIGINAL POSITION MAY CAUSE DAMAGE TO IMPLEMENT AND/OR TRACTOR DUE TO IMPROPER SLIP CLUTCH TORQUE SETTING.

BB. Note: Refer back to Section 2-1G prior to folding the wings with the tractor hydraulics. Fold wings into the transport position and install transport lock pins and presto pin. (Figure 2-4)

CC. Fasten the wing driveline retaining rings to the wings sections using 1/2" x 1-1/2" bolts, flatwashers, lockwashers, and nuts. (Figure 5-10)

DD. With the wings folded raise the center section and install stop collars on height adjustment cylinder to retain in this position.

EE. Attach the rear belting with 3/8" x 1" bolts, flatwashers, lockwashers and nuts. (Figure 5-13)

FRONT BELTING (Figure 5-13)
A. Compare each front belting to below diagram to determine location for installation.
B. Align holes in belting with holes on the front lip of the cutter. Attach with 3/8" x 1" bolts, flatwashers, and locknuts.

FRONT CHAIN (Figure 5-13)
A. Align holes in chain assembly with the holes in the front lip of the cutter. Attach with 3/8" x 1-1/4" bolts, flatwasher, lockwashers and locknuts.
B. Install three links of chain between the front hitch lugs by installing 3/8" x 5" bolt, chain spacers and locknut.

SAFETY TOW CHAIN (Figure 5-14)
A. Securely attach tow chain to cutter by looping hook end of chain around one side member of tongue and back through large link on opposite end of chain.
B. Before use, attach loose end of chain to towing vehicle attaching point such as drawbar or bumper, etc. Fasten chain back to itself with hook latch.

WARNING

FOR NON-AGRICULTURAL USE, OSHA, ASAE, SAE AND ANSI STANDARDS REQUIRE THE USE OF CHAIN GUARDS OR OTHER PROTECTIVE GUARDS AT ALL TIMES. BUSH HOG STRONGLY RECOMMENDS THE USE OF SUCH GUARDS FOR AGRICULTURAL USES AS WELL, TO REDUCE THE RISK OF PROPERTY DAMAGE, SERIOUS BODILY INJURY, OR EVEN DEATH FROM OBJECTS THROWN OUT BY OR FROM CONTACT WITH THE CUTTING BLADES.

Figure 5-13 Flexible Band / Chain Installation

NOTE:
FLEXIBLE BANDS OR CHAINS INSTALL IN THE SAME MANNER EXCEPT FOR THE THREE PIECE CHAIN SECTIONS AT THE FRONT CENTER OF THE MACHINE.

Figure 5-14 Safety Tow Chain
When using tractor hydraulics

**2415 PLUMBING DIAGRAM**
(USING TRACTOR HYDRAULICS)

![Diagram of plumbing system](image)

**IMPORTANT**

DURING OPERATION THE HYDRAULIC VALVE WING LEVERS MUST BE LOCKED IN THE FLOAT POSITION TO AVOID DAMAGE TO THE CYLINDERS AND AXLES.
Figure 5-12 (b)
2415 PLUMBING DIAGRAM
(USING REMOTE VALVE)

90° Elbow 3/4" SAE "O" Ring Boss to 9/16" JIC

174° Hydraulic Hose

228° Hydraulic Hose

90° Adaptor 9/16" JIC Female to 9/16" JIC Male

7/8" SAE to 9/16" JIC When using Bush Hog (Gresen) Control Valve
3/4" SAE to 9/16" JIC or 1/2" NPT to 9/16" JIC When using tractor hydraulics

1-1/16" SAE "O" Ring Boss to 3/4" JIC

7/8" SAE "O" Ring Boss to 3/4" JIC

Important
During operation the hydraulic valve wing levers must be locked in the float position to avoid damage to the cylinders and axles.
CV DRIVELINE MOUNTING

A. Install driveline with the CV body attaching to the tractor PTO.
B. Secure the opposite end to the power divider gearbox using the tapered pin and locknut.

Tighten nut to 30 ft. lbs. Pull on each driveline section to make certain it is securely attached.
C. Do not chain the CV bell shielding! Attach all driveline shield chains to keep shields from turning.

Figure 5-15  Input Driveline