J.I. Case

Service Manual

646 & 446

Lawn & Garden Tractor

S/n 0-9742952

Service Manual

CA-S-646+

Ingersoll

BF, B43M, B48M AND CCKA ONAN ENGINES

Service Manual 9-51393

QUALITY IN THE AMERICAN TRADITION

Ingersoll Equipment Co., Inc. Winneconne, Wisconsin 54986-9576

TABLE OF CONTENTS

TABLE OF CONTENTS

INTRODUCTION

This service manual section, "Troubleshooting the Engine" contains a concise listing of Symptom--Possible Cause--Probable Remedy for many engine problems.

Use an orderly process of elimination when troubleshooting. First eliminate the possible causes that are easy to check or test. Then move into the more complex areas that may require disassembly or more difficult tests.

Refer to the appropriate service manual for proper repair procedures. Refer to the electrical system service manual for troubleshooting the tractor electrical system. (The ignition system is the only electrical area covered in this service manual.)

TABLE OF CONTENTS

INTRODUCTION

This service manual section, "Troubleshooting the Engine" contains a concise listing of Symptom--Possible Cause--Probable Remedy for many engine problems.

Use an orderly process of elimination when troubleshooting. First eliminate the possible causes that are easy to check or test. Then move into the more complex areas that may require disassembly or more difficult tests.

Refer to the appropriate service manual for proper repair procedures. Refer to the electrical system service manual for troubleshooting the tractor electrical system. (The ignition system is the only electrical area covered in this service manual.)

TABLE OF CONTENTS

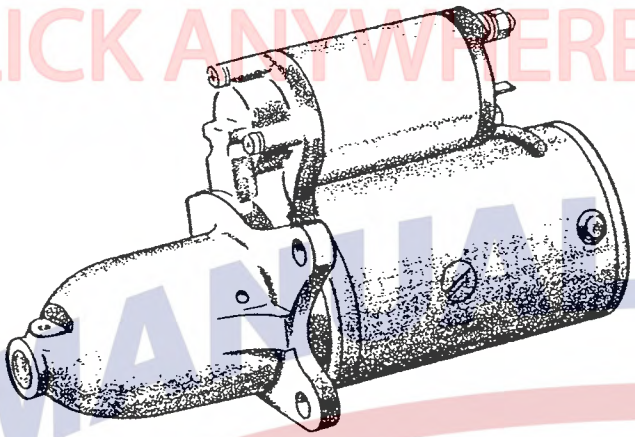


FIGURE 13 Starter Assembly

STARTER DISASSEMBLY

1. Loosen the M terminal nut on the magnetic switch and remove the connector. Remove the magnetic switch.

NOTE: The packings for the magnetic switch are mounted so that the steel packing is located in the front bracket side.

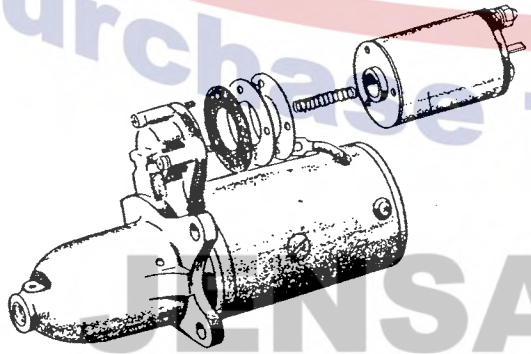


FIGURE 14 Magnetic Switch Removal

2. After removing the thru bolts, the starting motor can be divided into three parts — the front bracket, housing and rear bracket.

The spacing washers shown in Figure 15 are used for adjustment of the thrust gap of the armature shaft. They are between the rear bracket and the commutator.

NOTE: These washers are inserted so the steel washer is located in the commutator side.

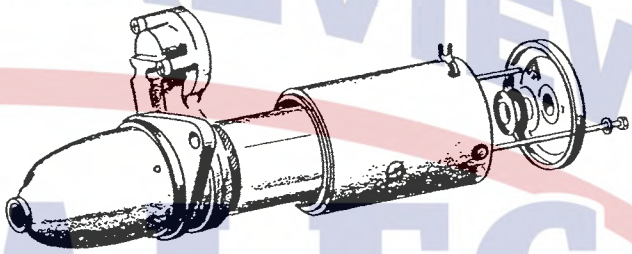


FIGURE 15 Removing Through Bolts

3. Remove the armature from the front bracket. Be careful not to miss a small steel washer used in the end of the armature shaft. Remove the shift lever along with the armature. In this case, the spring holder, lever springs and retainer can be taken out before the lever.

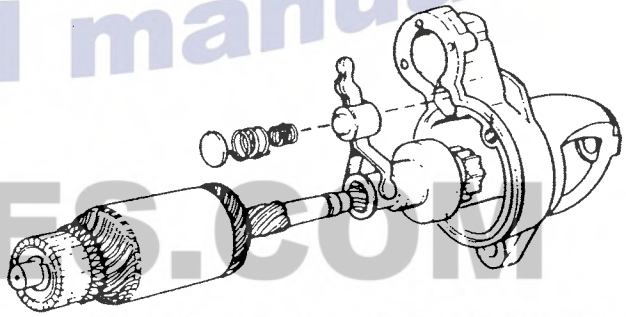
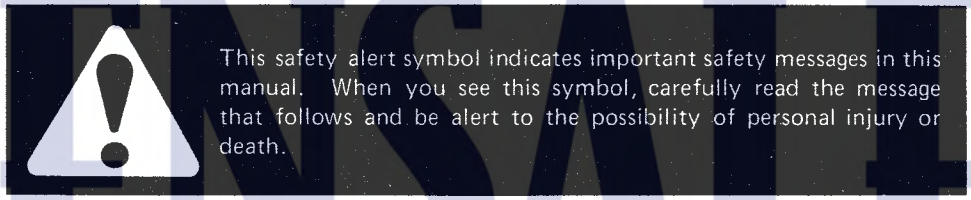


FIGURE 16 Removing Armature

TABLE OF CONTENTS



This safety alert symbol indicates important safety messages in this manual. When you see this symbol, carefully read the message that follows and be alert to the possibility of personal injury or death.

TABLE OF CONTENTS

INTRODUCTION

This manual covers service procedures for the hydraulically driven two-speed transmission used on:

200 and 400 series compact tractors
3000 and 4000 series compact tractors
3100 and 4100 series compact tractors
600 and 6000 series compact loaders

This safety alert symbol indicates important safety messages in this manual. When you see this symbol, carefully read the message that follows and be alert to the possibility of personal injury or death.

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

INTRODUCTION

This manual has service information for the hydraulic pumps used on hydraulic tractors.

See your parts catalog for the part number of the pump.

See your "HYDRAULIC TEST PROCEDURES" service manual section for pump performance specifications and testing procedures.

SINGLE ACTING THREE POINT HITCH CYLINDER

REMOVAL

1. Retract the cylinder and stop the engine. Remove the hose (4) from the lift valve at fitting (3). Cover or plug the exposed fittings to keep out dirt.

2. Remove the two mounting pins and remove the cylinder assembly from the hitch.

3. Remove the hose from the elbow (5) at the base of the cylinder. Clean paint and/or rust from inside the base end of the cylinder tube.

DISASSEMBLY

1. After draining the cylinder, push or tap the piston assembly (10) and end cap (13) through the base end of the cylinder.

2. Remove and discard wiper ring (8), back up washers (11) and "O" rings (12).

INSPECTION

1. Thoroughly clean and air dry all parts before inspection.

2. Inspect the cylinder tube and piston rod assembly for score marks or scratches. Light scratches may be removed with a hone or crocus cloth. If scratches cannot be polished out, the affected part must be replaced since the "O" rings will be quickly damaged and leakage will result.

3. To protect the piston and end cap "O" rings during assembly, break the inside sharp edges of the two mounting pin holes in the cylinder tube with crocus cloth. Also check the base of the tube for burrs or sharp edges.

ASSEMBLY

1. Dip all new seals in clean oil.

2. Install new wiper seal (8) into cylinder tube, lip side out.

3. Install new "O" ring (12) and back up washers (11) on piston.

4. Place new "O" ring (12) on end cap.

5. Apply a light coat of grease to the inside of the cylinder tube and the O.D. of the piston with particular attention to the area of the mounting pin holes and the "O" ring.

6. Carefully install the rod and piston assembly into the cylinder tube making certain the "O" ring is not nicked by the mounting pin holes.

NOTE: If an "O" ring particle is observed in either of the cylinder tube mounting pin holes following installation of the piston assembly, the piston must be removed, a new "O" ring installed and step 3 under "Inspection" repeated.

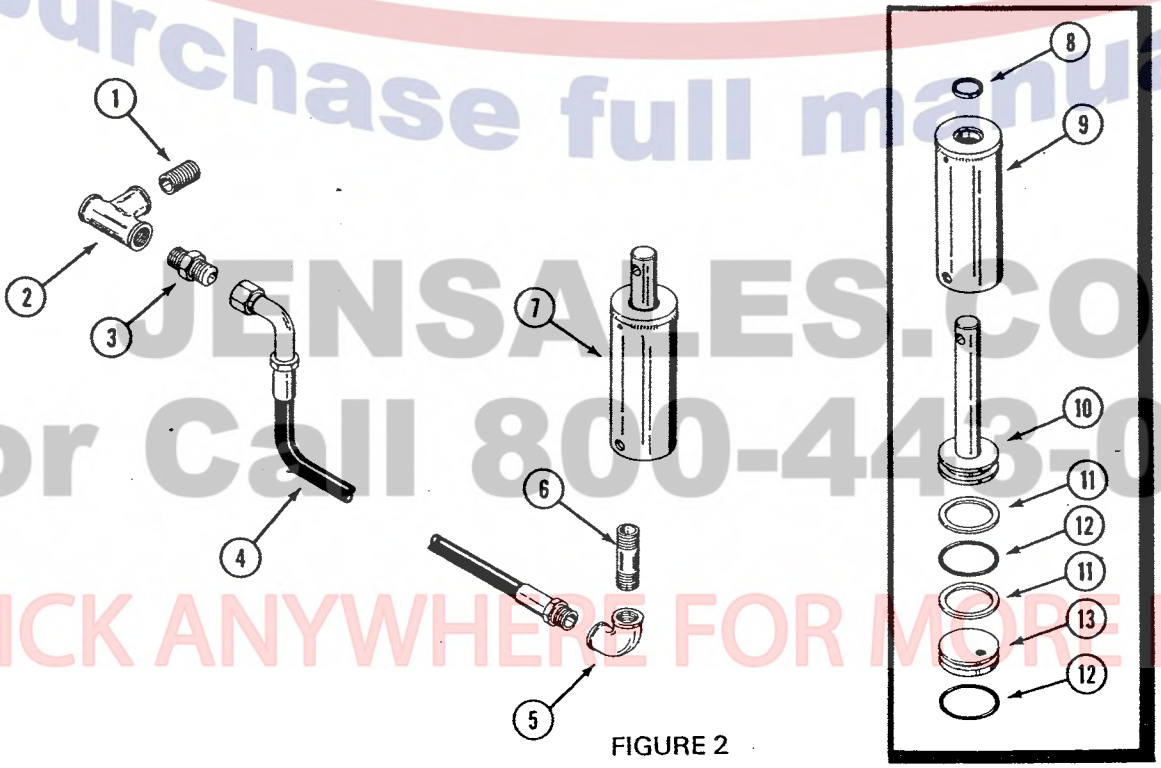


FIGURE 2