

NOTE: Insert this INDEX immediately behind the INDEX FOR 1979
in the "BULLETIN" section of your Service Manual

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(OVER)

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119 South First Street
Winneconne, Wisconsin 54986
Phone 414 582-4455

January 31, 1980

TIMELY OPE TIPS FOR THE MONTH

ISSUE # 71

- TIP # 1 - K1, K2 Cab Installation Tip
- TIP # 2 - New Exhaust Clamp For Model 446 and 448 Tractors
- TIP # 3 - Onan Engine Block Design
- TIP # 4 - Onan Revised Connecting Rod Bolt Torque
- TIP # 5 - O-Ring For Holding Valve Cap Nut
- TIP # 6 - 200-400 Series Attachment Drive Clutch Predelivery
- TIP # 7 - Hydraulic Motor Bolt Removal

TIP # 1 - K1, K2 Cab Installation Tip:

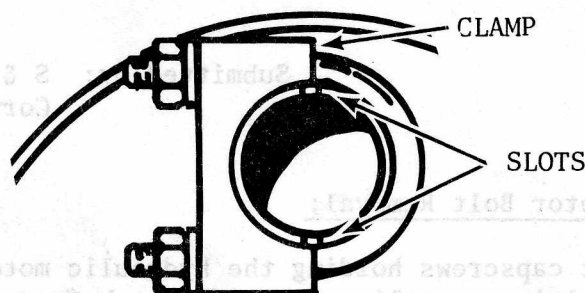
On some units it may appear that the rear mounting panel fits too tightly between the rear fenders.

The fender mounting holes are slotted to allow a small amount of extra clearance. Loosen the fender mounting bolts and push the fenders outward to obtain this clearance.

Tighten the fender mounting bolts after the rear mounting panel is installed.

TIP # 2 - New Exhaust Clamp For Model 446 and 448 Tractors:

A new exhaust pipe clamp, part number D58859, for Model 446 and 448 tractors is now available from your regular parts source. This clamp provides a more positive seal between the exhaust pipe and the muffler. See Illustration for correct installation.



Model 446 and 448 tractors leaving the factory now have this clamp installed at the left side muffler inlet. In the near future, as soon as sufficient quantity is available it will be factory installed at both muffler inlets.

(OVER)



TIP # 3 - Onan Engine Block Design:

Onan Tech Newsletter 6 is enclosed with this issue of the Timely Tips.

Please read this newsletter carefully as it will give you a thorough understanding of Onans Engine Block Design.

This understanding will prove useful in both selling and servicing the Model 446 and 448 Case compact tractors.

#TIP # 4 - Onan Revised Connecting Rod Bolt Torque:

The connecting rod bolt torque value has been reduced to 12-14 foot pounds (16-19 Nm) for all "B" series industrial engines.

These include the BF and B43 engines used on Model 446 tractors and the B48 engine used in Model 448 tractors.

TIP # 5 - O-Ring For Holding Valve Cap Nut:

O-ring, part number A7623, fits the end cap nuts on the holding valves. This O-ring is available from your regular parts source.

Submitted by: Jonmar Associates
Red Hook, N.Y.

TIP # 6 - 200-400 Series Attachment Drive Clutch Predelivery:

One dealer has found that checking and adjusting the attachment drive clutch AFTER run in but BEFORE delivery has greatly reduced the need for further adjustment during the season of use.

The instruction to do this is found on the Predelivery Check Sheet" under the heading "General Checks". The Predelivery Check Sheet is packaged with each tractor.

Submitted by: S & W Sales
Corunna, Mich.

TIP # 7 - Hydraulic Motor Bolt Removal:

The 1/2 inch, 12 point capscrews holding the hydraulic motor to the transmission may be loosened by applying a small amount of heat before removal.

A small amount of heat from a propane torch pencil size flame will soften the paint and thread sealant to permit easier removal.

A 3/8" drive 1/2 inch, 12 point universal socket with appropriate extension and ratchet should be used.

KEEP THE AREA OF OPERATION CLEAR OF ALL PERSONS PARTICULARLY SMALL CHILDREN.

119 South First Street
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January 31, 1980

TIMELY OPE TIPS FOR THE MONTH

ISSUE # 71

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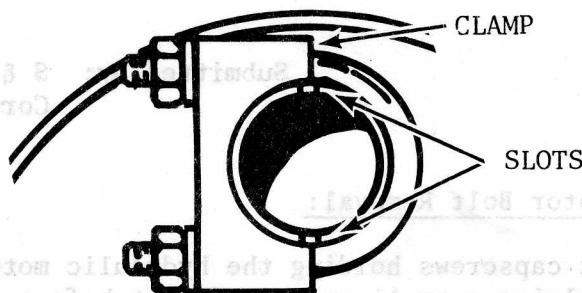
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(OVER)



1/31/80

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Corunna, Mich.

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119 South First Street
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February 29, 1980

TIMELY TIPS FOR THE MONTH

ISSUE # 72

TIP # 1 - 646B Backhoe Hose Routing Change

TIP # 2 - Updating Prior Model Minor Attachments to Fit 1980 400 Series Tractors

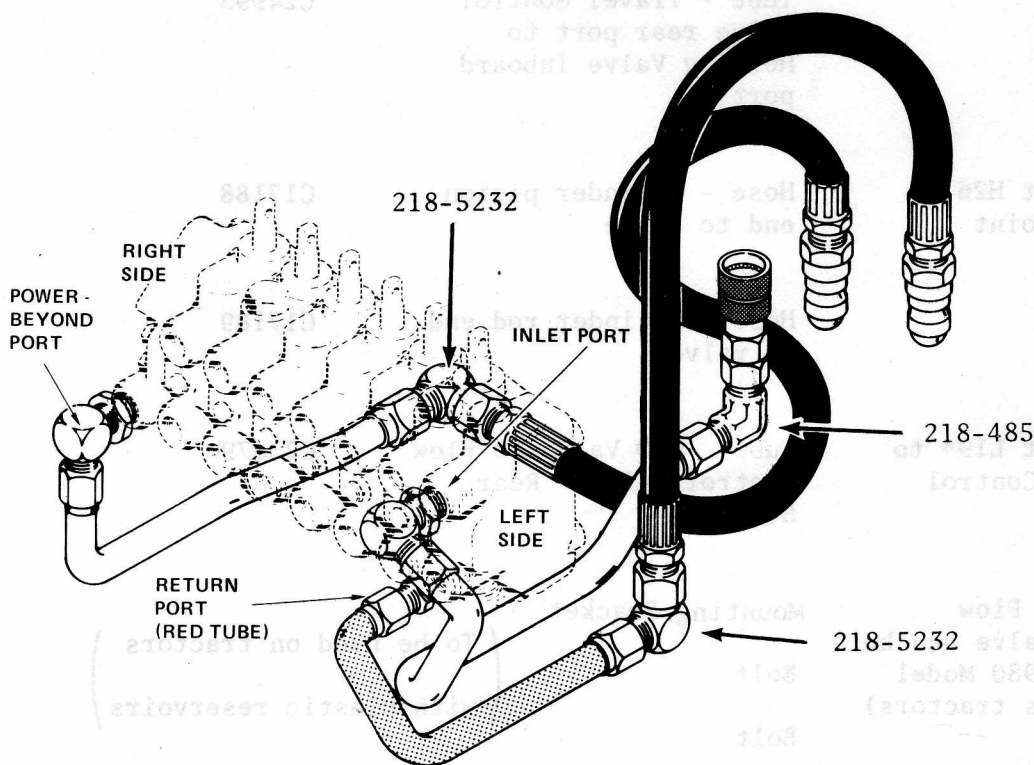
TIP # 1 - 646B Backhoe Hose Routing Change:

The hose routing between the tractor and backhoe has been changed to eliminate interference with the seat. 646B's after PIN 9791000 have this change.

Elbows have been added as illustrated to the tubes at the backhoe valve bank.

PARTS LIST

<u>QUANTITY</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
2	218-5232	Elbow 90°
1	218-485	Elbow 90°



(OVER)

TIP # 2 - Updating Prior Model Minor Attachments to Fit 1980 400 Series Tractors:

The following listing provides the Part Numbers needed to update your surplus inventory of prior model minor attachments to fit the 1980 400 series tractors with the 2 inch (51 mm) longer wheelbase.

Parts can be ordered from your normal parts supply source.

<u>ATTACHMENT</u>	<u>DESCRIPTION OF PART REPLACED</u>	<u>OLD PART NUMBER</u>	<u>NEW PART NUMBER</u>
To convert J17* to L17 Hydraulic PTO	Tube - Pump to PTO Valve	C23962	<u>C25344</u>
(*The J17 PTO is still used on 1980 200 series tractors)	Tube - PTO Valve to Travel Control Valve	C23888	<u>C25343</u>
To convert L9 to M9 Holding Valve	Tube - Travel Control Valve front port to Holding Valve Out-board port	C24992	<u>C25341</u>
	Tube - Travel Control Valve rear port to Holding Valve Inboard port	C24993	<u>C25342</u>
To convert H26 to J26 3 - Point Hitch	Hose - Cylinder piston end to valve	C17188	<u>C25369</u>
	Hose - Cylinder rod end to valve	C17189	<u>C25368</u>
To convert L19* to M19 Flow Control Valve	Tube - PTO Valve to Flow Control Valve - Rear Section	C23879	<u>C25392</u>
(*The L19 Flow Control Valve can be used on 1980 Model 200 series tractors)	Mounting Bracket		<u>C25391</u>
	Bolt	(To be used on tractors with plastic reservoirs)	<u>113-15</u> (2 ea)
	Bolt		<u>113-2</u> (2 ea.)
To convert J24 to K24 Sleeve Hitch	Lift Arm	C14457	<u>C25371</u>
	Lift Lever Plate	C24839	<u>C25382</u>



119 South First Street
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March 31, 1980

TIMELY TIPS FOR THE MONTH

ISSUE # 73

- TIP # 1 - Mod 80 Air Duct Brace - Part Number C25393
- TIP # 2 - Model 108 Traction Drive Kit, Part Number C25259
- TIP # 3 - Remanufactured Starter-Generators Available at SPS
- TIP # 4 - Change in Fuel Recommendations for Briggs & Stratton Engines
- TIP # 5 - Corrosion Inhibitor, Part Number G103012, Available From SPS

TIP # 1 - Mod 80 Air Duct Brace - Part Number C25393:

A brace (P/N C25393) has been added between the engines blower housing (P/N BR393128) and the air intake duct (P/N C24509) beginning with Product Identification Number 9772773.

The purpose of this brace is to prevent failure of the air duct mounting studs on the blower housing.

It is recommended that this brace be added to all Mod 80's prior to P.I.N. 9772773 that you have in dealer stock or units in the shop for service.

The brace should be fastened to the two rear bolts which secure the blower housing to the engine block. Clamp the brace to the air duct and drill 2 holes to receive Number 10 bolts, lockwashers and nuts.

Normal warranty will apply.

TIP # 2 - Model 108 Traction Drive Kit, Part Number C25259:

A traction drive kit (P/N C25259) is now available for Model 108 tractors prior to Product Identification Number 9760351. All Model 110 tractors already include this latest drive system design.

This kit provides for improved declutching, easier shifting and improved traction drive without belt slippage.

Installation involves replacing the clutch pivot bracket (P/N C21626), relocating the clutch actuating arm on the brake and clutch pedal shaft (P/N C21628 and re-locating the rear idler pulley support arm.

Detailed instructions are provided with the kit.

This announcement is for informational purposes only.

(OVER)



TIP # 3 - Remanufactured Starter-Generators Available at SPS:

A remanufactured starter-generator for all prior model tractors using Kohler engines is available from SPS. A substantial savings can be offered to your customers with the remanufactured starter-generator.

For example, New Price \$239.25, Remanufactured Price \$91.25 - Net savings \$148.00 plus a \$15.00 core allowance.

New Replacement Starter-Generator - Part Number A70202.

Remanufactured Replacement Starter-Generators - Part Number C25256.

Core - Part Number C25255.

If you have questions concerning this remanufactured part, contact your Regional SPS Depot.

TIP # 4 - Change in Fuel Recommendations for Briggs & Stratton Engines:

"Use only leaded or low-lead gasolines in Briggs & Stratton Engines".

The use of unleaded fuel, including gasohol, can cause short valve life, and should be avoided.

NOTE: Gasohol is not recommended for use in any of the Case Outdoor Power Equipment engines at this time.

TIP # 5 - Corrosion Inhibitor, Part Number G103012, Available From SPS:

A corrosion inhibitor, BOE Shield T-9, Part Number G103012, has been released by SPS. Engineering tests have proven this product to be far superior to other solvents or rust preventives. This product leaves a protective film which does not harden with age.

BOE Shield T-9 can be sprayed directly onto cylinder rods for extended storage periods in climatic areas where rusting is a problem. When the rod surface is coated with T-9, moisture is displaced and rusting and corrosion are inhibited.

BOE-T9 penetrates and lubricates in cracks and crevices where corrosion often takes place. It is excellent for control linkages which can seize from lack of use during extended storage.

BOE Shield T-9 will not harm paint and can be used wherever a lubricant and corrosion inhibitor is required. It is only available in case quantities consisting of twelve - 12 ounce aerosol cans.

HYDRAULIC SYSTEMS ARE HIGHLY PRESSURIZED. ESCAPING HYDRAULIC OIL, EVEN AN INVISIBLE PINHOLE LEAK, CAN PENETRATE BODY TISSUES CAUSING SERIOUS INJURY. USE A PIECE OF WOOD OR CARDBOARD WHEN LOOKING FOR LEAKS - NEVER USE THE HANDS OR OTHER PARTS OF THE BODY.

IF INJURED BY HYDRAULIC OIL ESCAPING UNDER PRESSURE, SEE A DOCTOR IMMEDIATELY. SERIOUS COMPLICATIONS MAY ARISE IF MEDICAL ATTENTION IS NOT GIVEN AT ONCE.



119 South First Street
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Phone 414 582-4455

April 28, 1980

TIMELY TIPS FOR THE MONTH

ISSUE # 74

- TIP # 1 - Hydraulic PTO Valve Kit Installation
- TIP # 2 - Model 210 Jackshaft Kit, Part Number C25594
- TIP # 3 - Model 108 Front PTO Jackshaft Improvements

TIP # 1 - Hydraulic PTO Valve Kit Installation:

Dealers have reported taking various times to install the PTO Valve Kit.

The installation sequence found in Operator's Manual 9-51202 for the J-17, K-17, and L-17 PTO must be followed.

Key areas in this installation are:

- a. Leaving the valve loosely attached to the fender and the tubes loosely attached to the fittings until all connections are made.
- b. Moving the travel lever to full forward to minimize oil leakage.
- c. Turning the front wheels to the left to move the steering segment to allow more working room at the travel valve.

After installation, turn the steering wheel from full right to full left and check for interference between the sector gear and pump outlet hose. Reposition the hose and tube if interference exists.

The installation time has been confirmed at the two dealerships listed below and confirmed to be approximately 20 minutes.

Submitted by: Pregler Lawn & Garden
Jenks, Okla
Ken Pregler

Sherwood Products
Harrison, Michigan
Fred Guiette

TIP # 2 - Model 210 Jackshaft Kit, Part Number C25594:

A jackshaft improvement kit (P/N C25594) is now available for Model 210 tractors prior to Product Identification Number 9760975.

(OVER)



TIP # 2 - Model 210 Jackshaft Kit, Part Number C25594 (CONTINUED):

It is suggested that this kit be installed when replacement of jackshaft and bearings is required on these tractors.

The kit includes heavy duty bearings, a spacer to lock the inside bearing races, shaft, mounting brackets, hardware and instructions.

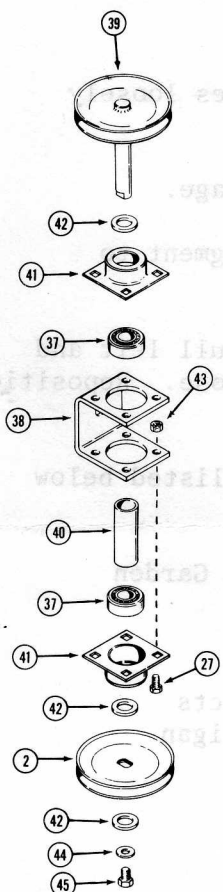
This announcement is for informational purposes only.

TIP # 3 - Model 108 Front PTO Jackshaft Improvements:

Improved parts for the front PTO jackshafts have been in production beginning with P.I.N. 9760351.

These parts can be installed on prior Model 108 or 118 tractors. Parts must be ordered by their individual part numbers from your normal parts source.

This announcement is for informational purposes only.



REF. NO.	PART NO.	DESCRIPTION	QTY.
37	A70280	Bearing	2
38	C25232	Bracket, Mounting	1
39	C25234	Pulley - Top	1
40	C25233	Spacer, bearing	1
41	C23818	Flangette	2
42	C12975	Washer	3
43	131-176	Nut, Lock 5/16"	8
44	D33544	Washer	1
45	113-205	Bolt 3/8" - 16 x 5/8"	1

CLEAR THE LAWN OR AREA TO BE MOWED OF STICKS, STONES OR ANY HARD OBJECTS WHICH COULD COME IN CONTACT WITH THE BLADES AND BE HURLED OUT THE DISCHARGE OPENING.

119 South First Street
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May 27, 1980

TIMELY TIPS FOR THE MONTH

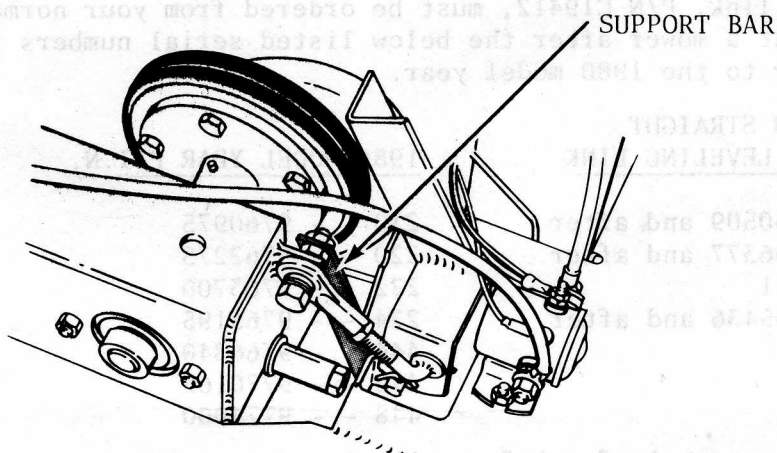
ISSUE # 75

- TIP # 1 - Mod 80 Chain Housing Support Bar**
- TIP # 2 - J-40, J-44, J-45, J-46 Mower Lift Link Change**
- TIP # 3 - J Series Mower Leveling Link Change**
- TIP # 4 - Clearance Between Fan and Oil Cooler - All Hydraulic Drive Tractors**

TIP # 1 - Mod 80 Chain Housing Support Bar:

To prevent the possibility of bending the threaded stud on the front of the chain housing as a result of shock loads and vibrations during shipment this support bar has been installed on this clutch link mounting bolt to hold the chain housing off the pivot plate. This support bar must be removed and discarded during set-up and predelivery in order to make the riding mower operational.

The support bar was first used with Mod 80 Product Identification Number 9775698.



TIP # 2 - J-40, J-44, J-45, J-46 Mower Lift Link Change:

The long mower lift links (for 400 Series Tractors) have been shortened. This provides more ground clearance with the mower in the "Transport" position.

Be sure to check the lift link length when mounting mowers to 446 or 448 tractors. The long straight link packed with the mower and the long offset link packed with the tractor must be the same length.



(OVER)

TIP # 2 - J-40, J-44, J-45, J-46 Mower Lift Link Change: (CONTINUED)

<u>LINK</u>	<u>PART NUMBER</u>	<u>OVERALL NOMINAL LENGTH</u>
Long Straight	C18338	9-1/2" (240 mm)
Shorter Straight	C25703	8-3/4" (220 mm)
Long Offset	C19652	9-1/2" (240 mm)
Shorter Offset	C25702	8-3/4" (220 mm)

The longer link can be shortened:

1. Measure 3/4" (20 mm) up from the center of the bottom hole.
2. Mark with a center punch.
3. Drill a 1/2" (13 mm) hole.
4. Cut the old hole away.
5. Grind the reworked area so about 1/4" (6 mm) of material extends below the new hole.

The short mower lift links (for 200 and 600 Series Tractors) remain unchanged.

This announcement is for informational purposes only.

TIP # 3 - J Series Mower Leveling Link Change:

Effective with the below listed model and serial numbers the offset leveling link is no longer used on the right hand side. The straight leveling link is now used on both sides.

The use of a straight brake rod on all 1980 model year tractors eliminates the requirement for this special offset leveling link.

The offset link, P/N C19412, must be ordered from your normal parts source if you mount a mower after the below listed serial numbers to a tractor built prior to the 1980 model year.

MOWERS WITH STRAIGHT
RIGHT HAND LEVELING LINK

1980 MODEL YEAR P.I.N.

J-40 - - A60509 and after	210 - - 9760975
J-44 - - C66377 and after	220 - - 9762275
J-45 - - All	222 - - 9763700
J-46 - - D65436 and after	224 - - 9765195
	444 - - 9766840
	446 - - 9770165
	448 - - 9774000

This announcement is for informational purposes only.

TIP # 4 - Clearance Between Fan and Oil Cooler - All Hydraulic Drive Tractors:

Oil cooler support brackets are being changed to provide more clearance between the fan and oil cooler. More clearance will permit easier belt installation and less fan breakage.

One dealer has found that adequate clearance can be obtained by installing strips of 3/8 inch belting between the cooler and cooler support.

Submitted by: Benne Hardware, Inc.
St. Charles, Mo.

WATCH OUT FOR TRAFFIC WHEN CROSSING OR NEAR ROADWAYS.

119 South First Street
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Phone 414 582-4455

July 2, 1980

TIMELY TIPS FOR THE MONTH

ISSUE # 76

- TIP #1 - K-41 Mower Drive Belts
TIP #2 - J Series Mower Bearing Shield
TIP #3 - Holding Valve Fitting Change

TIP #1 - K-41 Mower Drive Belts:

Refer to: Issue 68 - Tip #1
Issue 66 - Tip #1
Issue 63 - Tip #1
Issue 62 - TIP #1

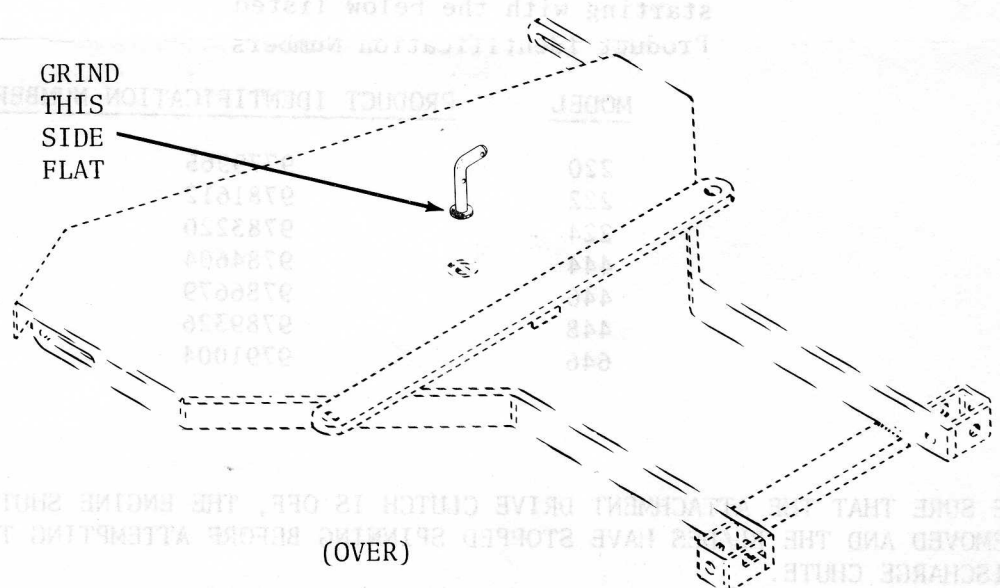
Reports indicate that contact can still exist between the mower drive belt and the lift link.

The washer welded to the bottom of the lift link must be ground flat on one side (illustrated below) to provide adequate clearance.

Make certain that the lift link is installed through the tractor lift lever from the right hand side as illustrated in Figure 8 of Operator's Manual #9-50622.

The resolution of this problem is being expedited by the factory. Information will be forth coming as soon as it is available.

GRIND
THIS
SIDE
FLAT



(OVER)



7/2/80

TIP #2 - J Series Mower Bearing Shield:

Effective with the below listed serial numbers a cup shaped shield is provided to prevent foreign matter from entering the bearing area.

A P/N C25541 spacer and C25543 shield is provided on each spindle.

Shields and spacers can be added to spindles during rebuilding if found to be necessary.

<u>MODEL</u>	<u>SERIAL NUMBER</u>
J-40	A61429
J-44	C67647
J-46	D66800
J-45	W10690

This announcement is for informational purposes only.

TIP #3 - Holding Valve Fitting Change:

Holding Valve Installation Instructions call for replacement of the two straight fittings in the travel valve work ports.

Tractors built after the below listed P.I.N. numbers do not require the replacement of these fittings. Holding valve kits built after June 6, 1980 no longer have the two fittings included.

If installing a holding valve kit built after June 6, 1980 on a tractor built prior to the below listed P.I.N.'s you may have to order 2 each C18321 straight fittings for the travel control valve.

C18321	Straight fitting used in tractors	1.56" (40 mm) long
Subs	prior to below listed P.I.N.'s.	
218-5062	Straight fitting used in tractors	1.70" (43 mm) long
to	starting with the below listed	
	Product Identification Numbers	

<u>MODEL</u>	<u>PRODUCT IDENTIFICATION NUMBER</u>
220	9779965
222	9781612
224	9783220
444	9784604
446	9786679
448	9789326
646	9791004

BE SURE THAT THE ATTACHMENT DRIVE CLUTCH IS OFF, THE ENGINE SHUT OFF, THE KEY REMOVED AND THE BLADES HAVE STOPPED SPINNING BEFORE ATTEMPTING TO CLEAN A PLUGGED DISCHARGE CHUTE.



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July 31, 1980

TIMELY TIPS FOR THE MONTH

Att. Kyle

ISSUE # 77

- TIP #1 - Engine After-Fire All Muffler Under the Hood Tractors
- TIP #2 - Part Number C25608 Spacer for E-Z Adjust Attachment Drive Clutch
Is Available at SPS
- TIP #3 - Muffler Insulating Material
- TIP #4 - Model J-48 Mower Front Caster Spindle Locking Nut
- TIP #5 - Travel Valve Spool Snap Ring Removal Tip

TIP #1 - Engine After-Fire All Muffler Under the Hood Tractors:

The explosion of combustible gases can occur in the muffler after the ignition switch is turned off on muffler under the hood tractors. This characteristic is common with air cooled engines with quiet mufflers and is not unique to Case tractors.

Closing the choke the same instant that the key switch is turned off will reduce the entry of air (needed to permit an explosion) into the engine and, therefore, reduce the possibility of an explosion.

The possibility of after-fire is increased by high idle speeds, therefore, the idle speed should be adjusted to the RPM specified in the tractor operator's manual. The engine should be run at low idle for several minutes after hard usage to allow engine parts to cool evenly before shutting it off.

In addition loose exhaust manifold bolts can allow air to enter the muffler after the engine is shut off. The bolts on the following tractors should be checked and tightened to a torque of 100-120 inch pounds (12 to 13 Nm).

446	Prior to P.I.N. 9787244
448	Prior to P.I.N. 9789590

TIP #2 - Part Number C25608 Spacer for E-Z Adjust Attachment Drive Clutch
Is Available at SPS:

A single spacer, .200 inches (5 mm) thick, is now available for the E-Z Adjust Attachment Drive Clutch.

This spacer replaces the four .050 inch (1.3 mm) spacers located between the pulley and the rear cam.

The C25608 spacer should be used when an E-Z Adjust Clutch is disassembled for major repair and wear is present on the four .050 inch spacers.

This announcement is for information purposes only.



(OVER)

**TIP #2 - Part Number C25608 Spacer for E-Z Adjust Attachment Drive Clutch
Is Available at SPS: CONTINUED**

This change went into effect with the following tractors:

<u>MODEL</u>	<u>PRODUCT IDENTIFICATION NUMBER AND AFTER</u>
210	9778901
220	9779926
222	9781544
224	9783202
444	9784564
446	9786587
448	9789277
646 & 646B	9791018

TIP #3 - Muffler Insulating Material:

Please note that the muffler insulating material used in all 200-400 series garden tractors is a ceramic fiberfrax material and is NOT asbestos.

Several parts catalogs incorrectly list this material as asbestos.

These catalogs will be corrected when they are revised or reprinted.

TIP #4 - Model J-48 Mower Front Caster Spindle Locking Nut:

Front caster spindle locking nuts should be checked for full thread engagement during predelivery.

If full thread engagement is not possible, replace the nut with a P/N 131-164 jam nut.

J-48 mowers after Serial Number V10159 have the new jam nut installed at the factory.

TIP #5 - Travel Valve Spool Snap Ring Removal Tip:

If you don't have the correct snap ring pliers handy to remove the travel control valve spool snap rings, follow this tip.

Thread two pieces of 16 gauge wire through the small holes in the snap ring and pull apart.

The snap ring comes off easily using this method.

Submitted by: Benne Hardware, Inc.
St. Charles, Mo.
David Young

DO NOT ALLOW ANYONE OTHER THAN THE OPERATOR TO RIDE ON THE TRACTOR OR TO BE TOWED BEHIND.



119 South First Street
Winneconne, Wisconsin 54986
Phone 414 582-4455

August 27, 1980

TIMELY TIPS FOR THE MONTH

ISSUE # 78

- TIP # 1 - Improved Hydraulic Reservoir Cap
- TIP # 2 - Onan Engine Carburetor Float Level
- TIP # 3 - Neutral Start Switch Ground Connections at Travel Control Lever
- TIP # 4 - Snow Caster - Tiller Part Number Changes

TIP # 1 - Improved Hydraulic Reservoir Cap:

A hydraulic reservoir cap with improved breather characteristics is available from SPS. This cap has been adopted in production for all hydraulic drive tractors and loaders.

It is important that the vent in the breather cap allow the free passage of air especially for loader and loader-backhoe usage. A hydraulic cylinder displaces more oil from the reservoir when extending than it does when retracting. Therefore, the passage of air through the vent is required to minimize the resulting pressure or vacuum which results in high stress in the reservoir which may cause it to burst or collapse.

Also, the engine must be running when the loader bucket or backhoe is lowered to the ground. Lowering the loader bucket or backhoe with the engine stopped allows oil to enter the reservoir with no oil being removed (that is, the pump is not turning). The reservoir will then overfill, pressurize and may burst.

The above information is provided on the loader instrument panel decal. The new reservoir cap is recommended for installation on all loaders and loader-backhoes built prior to its going into production beginning with Model 646, P.I.N. 9771776 and Model 644 P.I.N. 9771567. Parts cost reimbursement will be allowed for loaders and loader-backhoes within warranty coverage.

<u>PART NUMBER</u>	<u>DESCRIPTION</u>
C25237	Cap Assembly
C25239	Insert
C25240	Element

TIP # 2 - Onan Engine Carburetor Float Level:

Hard starting on several Model 448 tractors has been attributed to improper carburetor float level.

Correct float adjustment is found in Onan Engine Service Manual Section 9-51391, Page 12.



(OVER)

TIP # 2 - Onan Engine Carburetor Float Level: (CONTINUED)

1. Invert float assembly and casting.
2. With the float resting lightly against the needle and seat, there should be 1/8 inch (3.18 mm) clearance between the bowl cover gasket and the free end of float.
3. If it is necessary to reset the float level, bend float tangs near pin to obtain a 1/8 inch (3.18 mm) clearance.

TIP # 3 - Neutral Start Switch Ground Connections at Travel Control Lever:

Intermittant grounding of the travel control lever to the tractor frame to complete the starting solenoid circuit has been reported.

Beginning with the below listed P.I.N.'s, a new P/N C25595 travel lever compression spring with a grounding prod has been used. This spring assures a good ground connection between the travel control lever and the steering gear support in the tractor frame.

Units prior to the below listed P.I.N.'s exhibiting this problem can be fixed by adding a small ground wire between the travel control lever (near the return to neutral spring connection) and tractor frame. Some dealers have used a small worm-drive hose clamp to secure the wire to the lever.

<u>MODEL</u>	<u>P.I.N. AND AFTER</u>
--------------	-------------------------

220	9779872
222	9781487
224	9783143
444	9784527
446	9786385
448	9789187

TIP # 4 - Snow Caster - Tiller Part Number Changes:

Effective with the following serial numbers the bearings, flangettes, and locking collars have changed on the snow casters (L81, L80, L84) and tiller (J72). These parts are not interchangeable.

<u>MODEL</u>	<u>SERIAL NUMBER AND AFTER</u>
--------------	--------------------------------

L81	Q10050
L84	S13196
L80	R11815
J72	P31425

The new numbers are as follows:

<u>DESCRIPTION</u>	<u>NEW NUMBER</u>	<u>OLD NUMBER</u>
Bearing	T10700	C14419
Locking Collar	T10662	N/A
Flangette	F13360	C15514



119 South First Street
Winneconne, Wisconsin 54986
Phone 414 582-4455

October 28, 1980

TIMELY TIPS FOR THE MONTH

ISSUE # 80

- TIP # 1 - J48 Mower Blade Nut Change and Torque Specification
- TIP # 2 - Part Number C25927 Service Bushing Kit For Model 80 Rear Engine Rider
- TIP # 3 - Parker-Hannifin Pump Warranty
- TIP # 4 - Model K41 Mower Lift Link Change
- TIP # 5 - Mod 80 Final Drive Chain - P/N C25094

TIP # 1 - J48 Mower Blade Nut Change and Torque Specification:

The mower blade nut must be replaced and tightened in accordance with the following specifications during predelivery or when retailed mowers are serviced (blades sharpened).

On all J48 mowers prior to Serial Number V10554 replace original Grade A blade nuts with Grade B nuts, Part Number 131-933.

Tighten the new nuts to a torque of 40 to 43 ft. lb. (54 to 54 Nm).

Mowers, Serial Number V10554 and after, have the new nuts installed at the factory.

Normal warranty will apply.

TIP # 2 - Part Number C25927 Service Bushing Kit For Model 80 Rear Engine Rider:

A service bushing kit, Part Number C25927, is now available to replace the Part Number C24182 transmission drive pivot bushings on Model 80 rear engine riding mowers prior to P.I.N. 9775430.

The holes for the bushings in the engine mounting plate must be drilled oversize to accommodate the larger diameter service bushing. This is covered by installation instructions which are included with the kit.

On mowers, P.I.N. 9775430 and after the holes in the engine plate have a closer tolerance for improved support and seating of the bushings, Part Number C24182.

Normal warranty will apply.



(OVER)

TIP # 3 - Parker-Hannifin Pump Warranty:

Effective immediately, Parker-Hannifin pumps replaced during the warranty period must not be disassembled. No warranty service is to be performed on these pumps including shaft seal replacement.

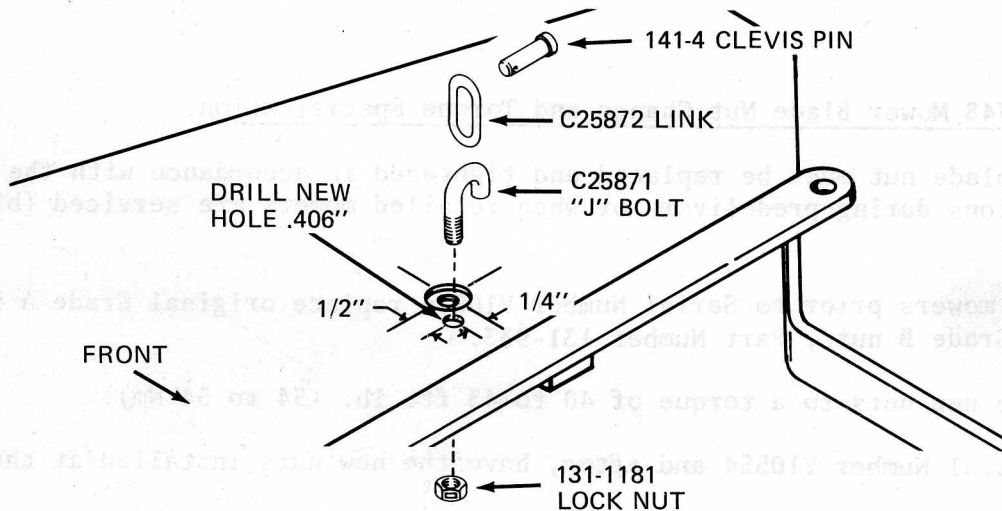
This notice affects the following pump part numbers: C24828, C24868, C25053.

Warranty will be denied on pumps that have been disassembled even though they have been reassembled prior to returning.

TIP # 4 - Model K41 Mower Lift Link Change:

Model K41 mowers serial number E53241 and after have an improved lift link.

This improved design prevents possible contact between the link and the mower drive belt.



Model K41 mowers prior to serial number E53241 can be modified if interference between the mower drive belt and old style lift link exists.

Drill the cover as illustrated and order Part Numbers C25871 - J bolt and C25872 - link, 131-1181 Locknut, and 141-4 - clevis pin.

Normal warranty will apply.

TIP # 5 - Mod 80 Final Drive Chain - P/N C25094:

An endless final drive chain for the Mod 80 riding lawn mower is now available at SPS.

The part number is C25094. Mark your Parts Catalog Number B1300, Page 35.

This announcement is for informational purposes only.



119 South First Street
Winneconne, Wisconsin 54986
Phone 414 582-4455

December 1, 1980

TIMELY TIPS FOR THE MONTH

ISSUE # 81

- TIP # 1 - Tire Chain to Fender/Seat Support Clearance
- TIP # 2 - N-90 Sweeper Brush Bearing
- TIP # 3 - Travel Valve Spool Adjustment/Holding Valve Installation
- TIP # 4 - Holding Valve Kit Application
- TIP # 5 - 646 B Elbow Added to Dipper Cylinder
- TIP # 6 - Use of Correct Replacement Part Air Cleaner Element

TIP # 1 - Tire Chain to Fender/Seat Support Clearance:

Interference between the tire chains and seat supports can occur if the seat supports are not properly centered.

If interference exists when mounting tire chains, center the seat supports.

Tractors built after the following product identification numbers have the seat supports centered at the factory.

<u>MODEL</u>	<u>P.I.N.AND AFTER</u>
210	9779244
220	9780510
222	9782200
224	9783730

TIP # 2 - N-90 Sweeper Brush Bearing:

The N-90 sweeper brush bearing is available at SPS. The part number is C25588.

TIP # 3 - Travel Valve Spool Adjustment/Holding Valve Installation:

Several reports have been received indicating that the travel valve spool is misadjusted after the installation of the holding valve.

It is possible that the installation of the holding valve can shift the travel control valve causing it to be out of adjustment.

Neutral adjustment of the travel valve spool must be checked after installation of the holding valve.



(OVER)

TIP # 4 - Holding Valve Kit Application:

The holding valve kits listed below readily fit on Models and Product Identification Numbers listed.

Holding valves will function on Case hydraulic drive tractors prior to those listed but special hoses and/or tubes will have to be made by the installing dealer. Also the L.H. mounting lug for the utility blade undercarriage will have to be cut off the tractor main frame.

HOLDING VALVE MODELTRACTOR MODEL AND P.I.N.

L-7	220-222-224 P.I.N. 9646801 and after
L-9	442 P.I.N. 9646801 and after
	444 P.I.N. 9646801 to 9766839
	446 P.I.N. 9646801 to 9770164
M-9	444 P.I.N. 9766840 and after
	446 P.I.N. 9770165 and after
	448 All
LL-9	644, 646, 646B All

NOTE: Model 644 P.I.N. 9771567 and after and Model 646 P.I.N. 9771784 and after have the holding valve installed at the factory.

TIP # 5 - 646 B Elbow Added to Dipper Cylinder:

A 45° elbow is being shipped with all 646 B's beginning with P.I.N. 9791040. This elbow must be installed in the dipper (crowd) cylinder piston end port. This elbow eliminates hose interference when the backhoe is swung full left.

The P/N 218-5136 elbow is available from your normal parts source and may be added to prior model 646 B's.

This announcement is for informational purposes only.

TIP # 6 - Use of Correct Replacement Part Air Cleaner Element:

At least one dealer has reported that the NAPA Air Filter #2110 used in place of the Case Part Number C20398, air filter, is about 1/16" too short. This filter is used on Onan 16 H.P. and 18 H.P. engines.

As a result of being too short, the filter does not seal properly in the air filter housing. Unfiltered air can then enter and ruin the engine.

NEVER ALLOW CHILDREN OR YOUNG TEENAGERS TO OPERATE THE TRACTOR AND SNOW CASTER.

NOTE: Insert this INDEX immediately behind the INDEX FOR 1980
in the "BULLETIN" section of your Service Manual

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		3	1980 Model 210 Tractor With J-40, J-44, or J-45 Mower
		4	Onan Engine Carburetor - Loose Needle Valve Seats
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(OVER)

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119 South First Street
Winneconne, Wisconsin 54986
Phone 414 582-4455

January 30, 1981

TIMELY TIPS FOR THE MONTH

ISSUE #83

- TIP # 1 - L-80, L-84 Snow Caster Pulley and Belt
- TIP # 2 - "Snow Zone" Spray to Free Frozen Control Cables
- TIP # 3 - 1980 Model 210 Tractor With J-40, J-44, or J-45 Mower
- TIP # 4 - Onan Engine Carburetor - Loose Needle Valve Seats
- TIP # 5 - Onan Engine Valve Clearance Adjustment

TIP # 1 - L-80, L-84 Snow Caster Pulley and Belt:

- A. Some L-80 and L-84 snow casters have been assembled with an oversize drive pulley. This will make the belt seem too short when installation is attempted. Also, auger speed will be too slow.

The correct drive pulley diameter is 6" (152 mm) outside diameter.

The correct drive pulley part number is C23541.

If an incorrect 6-1/2" (165 mm) outside diameter pulley is installed, replace it. Normal warranty will apply.

- B. Some L-80 and L-84 snow caster mounting brackets interfere with the spring loaded idler pulley.

The spring loaded idler pulley must be able to move freely up through the slot in the reinforcing plate of the mounting bracket. If the pulley hits the plate, the belt will seem too short.

If the pulley hits the plate, make the slot wider. Normal warranty will apply.

- C. The end of the PTO rod which protrudes through the PTO clutch engaging arm on some tractors is too long and interferes with the belt.

Inspect this area after the belt is installed. Clearance can be increased by:

1. Cutting off excess material from the end of the PTO rod that extends beyond the cotter pin hole.
2. Bending the guide (under the engine) which locates the PTO rod to center the clutch engaging arm with the belt.



(OVER)

TIP # 2 - "Snow Zone" Spray to Free Frozen Control Cables:

Several dealers have reported success in freeing frozen choke and throttle cables with "Snow Zone".

This aerosol product is made by Mac's Super Gloss Co. and sold by NAPA stores.

TIP # 3 - 1980 Model 210 Tractor With J-40, J-44, or J-45 Mower:

Interference can exist between the primary drive belt on the 210 tractor and the mower mounting bracket when mower is in the 3-1/2" (High) cutting position or the transport position.

(Refer to Timely Tip Issue 70, Tip #1).

As a positive solution to this situation, it is recommended that all 1980 and later model year 210 tractors be equipped with the newly released K-40, K-44, or K-45 mowers. The K series mowers have a new mounting bracket which will not interfere with the tractor drive belt.

J series mowers in stock can be used with hydraulic drive tractors.

TIP # 4 - Onan Engine Carburetor - Loose Needle Valve Seats:

Several 446 and 448 tractors have been reported with loose needle valve seats. The loose seat will hold the needle closed and prevent the carburetor bowl from filling with gasoline.

Check the needle valve seat (and tighten if necessary) if a "lack of fuel" symptom appears during your predelivery check.

Normal warranty will apply.

TIP # 5 - Onan Engine Valve Clearance Adjustment:

Onan engines on Model 446, 448 and 648 tractors require the valve clearance checked and adjusted if necessary after the first 50 hours of usage. Valve clearance should be checked at 200 hour intervals thereafter.

Dealers, please make arrangements with your customers to have this service performed as close to the specified 50 hour limit as possible. This service is considered regular maintenance and warranty does not apply.

Premature valve failure can occur if the above schedule is not observed. Refer to the Onan Service Manual Section (Form No. 9-51391) in your OPE Master Service Manual for the specifications.

NEVER DIRECT SNOW DISCHARGE AT PEOPLE OR BUILDINGS.



119 South First Street
Winneconne, Wisconsin 54986
Phone 414 582-4455

February 27, 1981

TIMELY TIPS FOR THE MONTH

ISSUE # 84

- TIP # 1 - Model 646 Hard Starting
- TIP # 2 - Use of Mobil 1 Synthetic Lubricant in the Hydraulic System
- TIP # 3 - Kohler Engine Oil Recommendations
- TIP # 4 - Log Splitter Use with 200-400-600 Series Tractors

TIP # 1 - Model 646 Hard Starting:

Hard starting on 646 loader tractors may be caused by the fuel line draining back to the fuel tank. Excessive cranking time is then required to prime the fuel line and carburetor.

A fuel line check valve, P/N C26143, is now available from SPS to correct this condition. The check valve must be installed between the fuel tank and fuel pump.

This announcement is for informational purposes

TIP # 2 - Use of Mobil 1 Synthetic Lubricant in the Hydraulic System:

Mobil 1 Synthetic Lubricant is approved for use in all 200-400-600 series tractor hydraulic systems in all applications except roto-tilling. More information will be provided regarding roto-tilling after more testing is done during the tilling season.

The primary benefit in using Mobil 1 is improved cold weather starting ability.

VERY IMPORTANT: DO NOT USE IN COMPACT TRACTOR ENGINES

TIP # 3 - Kohler Lubricating Oil Recommendations:

Oils meeting the requirements of SAE service class SC, SD, SE and SF are recommended for use in Kohler engines. Select oil viscosity based on the air temperature at the time of operation, as shown below:

AIR TEMPERATURE

OIL VISCOSITY

Above 32°F (0° C)
Below 32°F (0° C)

SAE30
SAE5W20 or 5W30

Use straight weight oils as specified. Do not use multi-viscosity oils above 32° F as considerable increases in oil consumption and combustion deposits will result.



(OVER)

TIP # 3 - Kohler Lubricating Oil Recommendations: CONTINUED:

The oil should be changed after 25 hours of operation on all Kohler engines.

On overhauled engines or those rebuilt with new short blocks or mini blocks, use SAE 30W Class SB or SC oil during summer and SAE 10W Class SB or SC oil during winter for the first five hours of operation to promote seating of the piston rings. If these oils are unavailable, any 30W oil may be used. After this initial run-in period, change to the oils listed on page 1.

TIP # 4 - Log Splitter Use with 200-400-600 Series Tractors:

It must be recognized that the use of a hydraulic log splitter with a Case Compact Tractor is an unauthorized modification.

The following areas must be considered before advising a customer about the use of a log splitter on his tractor.

1. **Safety:** The PTO control valve turns the roto-tiller on and off. It is not self centering.

Therefore, this valve will not stop cylinder movement if the operator is unable to reach it. (ie the operator slips or falls or gets caught in a moving part of the splitter).

2. **Relief Valve Pressure Setting:**

The PTO control valve relief valve is set at 2500 PSI. This is the best pressure for roto-tiller hyd. motor performance. It is too high for cylinder applications, such as, a log splitter. Pressure shock loads from the cylinder reaching the end of its stroke will damage the system. Pressures must be reduced to a maximum of 2,000 PSI.

3. **Contamination:**

Years of experience indicate that a hydraulic oil filter is not required on our drive system. The possibility of contamination from old or used cylinders often used on homemade log splitters exists and will be harmful to the drive system.

4. **Reservoir Capacity:**

A cylinder will displace more oil from the reservoir on its power stroke than it displaces on its speed stroke.

MUH tractors built in 1976 and 1977 with the smaller metal reservoir under the battery may not have enough capacity to accommodate this difference in displacement. If the reservoir is run dry on the power stroke, cavitation and damage to the pump will occur.

On all Case Compact Tractors, following initial splitter operation, check and add SAE 20W40 motor oil to bring the hydraulic reservoir to the recommended level with the cylinder in the closed position.

Failure of hydraulic components resulting from log splitter usage will not be allowed under warranty.



119 South First Street
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Phone 414 582-4455

April 30, 1981

TIMELY TIPS FOR THE MONTH

ISSUE # 86

- TIP # 1 - Engine Exhaust Pop - All Muffler Under the Hood Tractors
- TIP # 2 - Replacement Ignition Coil Clarification
- TIP # 3 - Onan Carburetor Kit
- TIP # 4 - Tractor Display Stand
- TIP # 5 - Rebin Stock

TIP # 1 - Engine Exhaust Pop - All Muffler Under the Hood Tractors:

Refer to Issue #77, Tip #1.

Engine after exhaust pop can be prevented by using either of the following techniques when switching off the ignition:

- a.
 - 1. Move the throttle to the low idle position for 30 seconds.
 - 2. Close the choke the instant the ignition is switched off.
- b.
 - 1. Move the throttle to the low idle position for 30 seconds.
 - 2. Depress brake or engage the parking brake.
 - 3. Turn the ignition off and immediately move the travel control lever to a drive position to snub the engine.

TIP # 2 - Replacement Ignition Coil Clarification:

Automotive style ignition coils not designed for tractor application must not be used on tractor engines.

Only coils designed with high resistance primary windings and to withstand the heat and vibration of tractor operation should be used.

It is highly recommended to use only genuine Case replacement parts.

TIP # 3 - Onan Carburetor Kit:

C24665 is a Gasket Kit consisting of seven (7) items, including a needle and seat. . . see model 446 - 448 compact tractor catalog #8-1240, page 7, item 27. If your Gasket Kits are missing the needle and seat, submit form 2128 to your servicing depot and reference T/S 45-81D for return authorization. NOTE: Racine area dealers must immediately return subject Gasket Kits, using the above T/S number plus Q.C. #5684. . . no additional authorization necessary. All returns must arrive at your servicing depot no later than 5/29/81.



(OVER)

TIP # 4 - Tractor Display Stand:

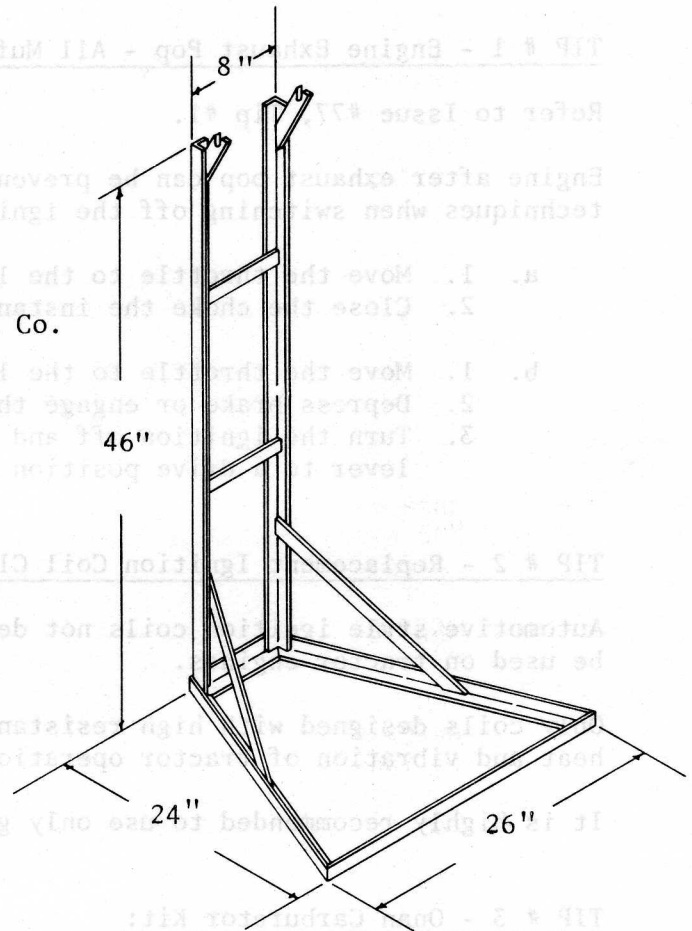
The diagram below illustrates a 200 series tractor display stand you can easily make in your shop. The stand holds the tractor at a 60° angle which allows easy viewing of the underside by potential customers.

Engine and hydraulic oil can be left in the tractor. Gasoline should be drained and the battery left dry.

The front support bracket should be about 46" (1170 mm) high when used with 200 series tractors with slots at the top for the tractor anchor pins.

The base should extend about 24" (610 mm) under the tractor to provide adequate stability. Use 1-1/8" (28 mm) angle iron.

Submitted by: Hahn Farm Equipment Co.
Millbury, Ohio

**TIP # 5 - Rebin Stock:**

C22293 as C16714
C24175 as C25846
C24312 as C25575
C25470 as C26193

C20220 as C22500
C24286 as C25908
C24945 as C25223

119 South First Street
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May 29, 1981

TIMELY TIPS FOR THE MONTH

ISSUE # 87

- TIP # 1 - Supplemental Products Parts Ordering Procedure
- TIP # 2 - Street Pads for D-100 Backhoe Stabilizers
- TIP # 3 - Tractor Crate Skid
- TIP # 4 - Kohler Engine Governor Shaft Change
- TIP # 5 - Mod 80 Battery Terminal Corrosion

TIP # 1 - Supplemental Products Parts Ordering Procedure:

Parts for Case supplemental products including walk-behind mowers, blowers, tillers, shredders and riding mowers are to be ordered from:

Mr. Dick Reynard, Parts Manager
ROPER LAWN PRODUCTS
Box 349
Orangeburg, South Carolina 29115
Phone: 803-536-0772

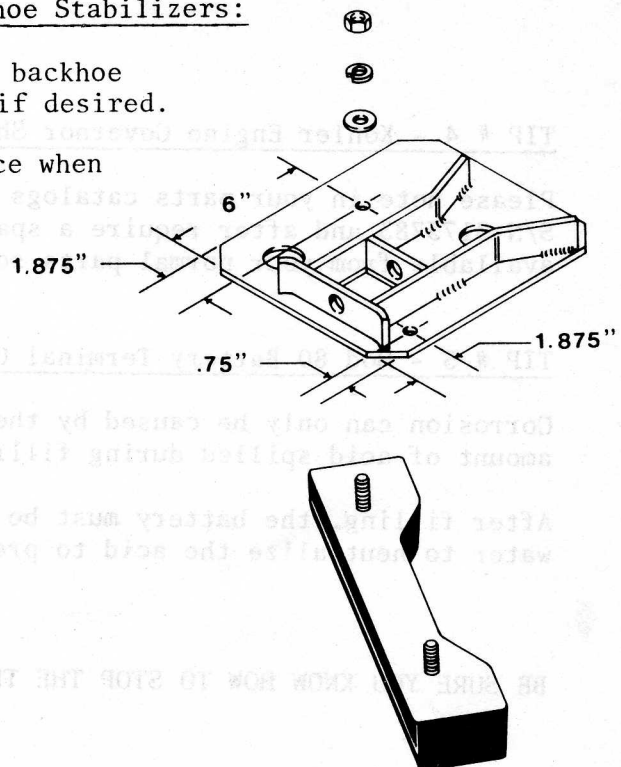
Parts for these products are no longer available from the J I Case Outdoor Power Equipment Division.

TIP # 2 - Street Pads for D-100 Backhoe Stabilizers:

Steel pads can be added to the D-100 backhoe stabilizer pads at customer expense if desired.

The pads prevent damage to the surface when working on concrete or asphalt.

Use part number R31222, one per stabilizer. Install according to the diagram.



(OVER)

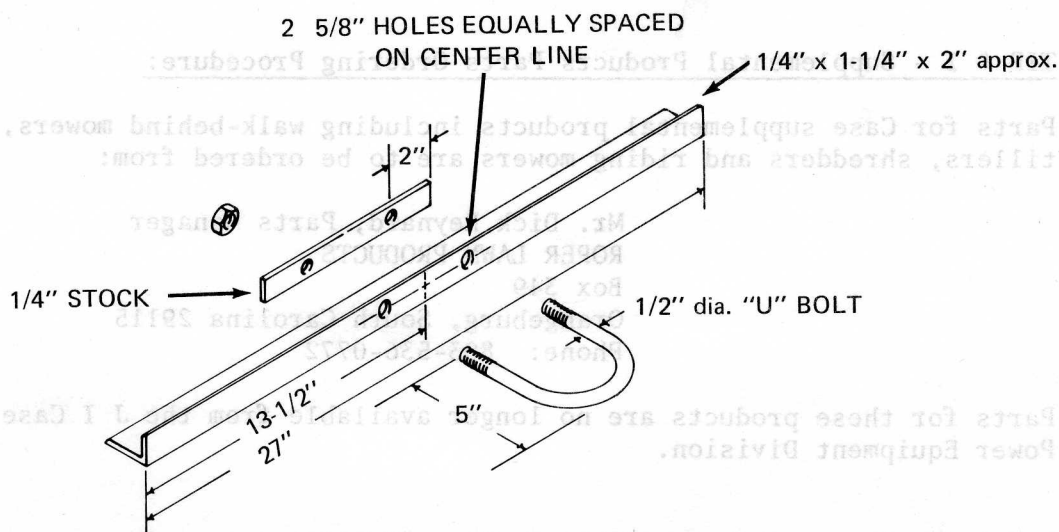
TIP # 3 - Tractor Crate Skid:

The device pictured below can be used to move tractor crates from the front to the rear of a semi-trailer or other truck. It can be easily fabricated in your dealership shop.

The angle iron is slipped behind the front wooden blocks on the shipping crate and then towed with a tractor or fork lift (either in the trailer or from the ground).

Once at the rear of the trailer, the tractors can be easily unloaded with a forklift.

Refer to Timely Tip Issue #7, Tip #1, for recommended modification to forklift forks for handling tractor crates.

TIP # 4 - Kohler Engine Governor Shaft Change:

Please note in your parts catalogs that the governor shaft on Kohler engines S/N 3173783 and after require a spacer, Part Number E78369. This part is available from your normal parts source.

TIP # 5 - Mod 80 Battery Terminal Corrosion:

Corrosion can only be caused by the presence of acid. Even the smallest amount of acid spilled during filling can start corrosion.

After filling, the battery must be washed with a solution of baking soda and water to neutralize the acid to prevent corrosion.

BE SURE YOU KNOW HOW TO STOP THE TRACTOR AND MOWER AT A MOMENTS NOTICE.



119 South First Street
Winneconne, Wisconsin 54986
Phone 414 582-4455

June 29, 1981

TIMELY TIPS FOR THE MONTH

ISSUE # 88

- TIP # 1 - Warranty Reminder for Combination Dealers
- TIP # 2 - New Front Spindles for 400 Series Tractors
- TIP # 3 - New Brush Shaft Bearing for N-90 Sweeper
- TIP # 4 - Price of P/N C13047 Hydraulic Motor Reduced
- TIP # 5 - New Steering Gear Support for 200-400 Series Tractors
- TIP # 6 - WARNING - Use Correct Air Filter Element

TIP # 1 - Warranty Reminder for Combination Dealers:

Combination dealers with Branch 25 contracts must hold Service Adjustment Requests for the OPE Service Representative to review and approve.

SAR's mailed directly to Racine will be charged back and will have to be resubmitted to the OPE Service Representative for approval on his next regularly scheduled call.

TIP # 2 - New Front Spindles for 400 Series Tractors:

Shorter spindles for 400 series tractors to allow more clearance between the front tires and Model J-48 60" mower deck were adapted beginning with the following P.I.N.'s

444	P.I.N. 14008720
446	P.I.N. 14010486
448	P.I.N. 14012997

New spindles should be installed on tractors prior to the above listed P.I.N.'s which exhibit interference between the front wheels and the Model J-48 mower deck. Dealers in the United States should contact the OPE Service Department in Winneconne, Wisconsin to have the spindles exchanged. Canadian and International dealers should order through SPS and submit SAR.

C26205 - Right Spindle

C26206 - Left Spindle

TIP # 3 - New Brush Shaft Bearing for N-90 Sweeper:

An improved brush shaft bearing, Part Number C26289, is now available from SPS. List Price .85, Net Price .51.

The new bearing offers improved service life and must be used if the original bearing fails.



NOTE: If an SAR is submitted be sure to list the old bearing part number C25588 as the Prime Part.

(OVER)

TIP # 4 - Price of P/N C13047 Hydraulic Motor Reduced:

The list price of the Char-Lynn brand hydraulic motor, Part Number C13047, used on early production 200 series tractors has been reduced to \$178.60.

This has been done as a special service to our customers since some repair parts for this motor are no longer available.

TIP # 5 - New Steering Gear Support for 200-400 Series Tractors:

Field reports indicate that some of the bolts holding the steering sector gear will not remain tight. If, after applying loctite and retightening, the bolt continues to loosen, a new steering gear support should be installed.

The following part numbers are required:

<u>QUANTITY</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1	C25788	Support, steering gear
1	C25287	Pin, pivot
2	195-2029	Washer 7/16" x 1.25"
1	113-248	Bolt - 3/8" - 16 x 2-3/4" hex
1	129-103	Nut - 3/8" - 16 hex
1	192-21	Lock Washer 3/8"

The new steering gear support went into production effective with the following Product Identification Numbers:

220 - P.I.N. 14004820	444 - P.I.N. 14008850
222 - P.I.N. 14006200	446 - P.I.N. 14010760
224 - P.I.N. 14007472	448 - P.I.N. 14013156

This notice is for informational purposes only.

TIP # 6 - WARNING - Use Correct Air Filter Element:

Refer to Issue 81, Tip #6

This is a repeat warning. A second dealer has reported that a NAPA brand air cleaner element does not seal properly when installed in the Onan 16 H.P. and 18 H.P. engines. This allows unfiltered air to enter and ruin the engine.

It is urged to use genuine Case replacement parts. Part Number C20398 air filter should be used.

NEVER GET ON OR OFF THE TRACTOR WHILE THE MOWER IS RUNNING.



119 South First Street
Winneconne, Wisconsin 54986
Phone 414 582-4455

July 29, 1981

TIMELY TIPS FOR THE MONTH

ISSUE # 89

- TIP # 1 - 648 Loader Muffler Installation
- TIP # 2 - D-100 Backhoe Transport Link Kit
- TIP # 3 - Onan Engine Oil Capacity
- TIP # 4 - Mod 80 Fuel Tank Kit
- TIP # 5 - Two Speed Transaxle Gear Shift Rod
- TIP # 6 - Correction To Timely Tips, Issue #88, Tip #4
- TIP # 7 - Corrections to Timely Tips, Issue #79, Tip #5
- TIP # 8 - Tractor Drawbar Extension for Use with Model 90 Lawn Sweeper

TIP # 1 - 648 Loader Muffler Installation:

Model 648 loader tractor mufflers can be installed so far on the exhaust pipe that exhaust restriction can occur. This will cause poor engine performance.

Correct installation calls for the pipe to extend 1-1/2 inches (38 mm) into the muffler.

TIP # 2 - D-100 Backhoe Transport Link Kit:

Links that hold the boom in the "raised" position are available from your normal parts source.

Order P/N H905380 Kit, Transport Link. Refer to D-100 Parts Catalog B1275, Page 32.

This optional kit can be purchased by the customer if desired.

TIP # 3 - Onan Engine Oil Capacity:

<u>ENGINE MODEL</u>	<u>TRACTOR MODEL</u>	<u>CAPACITY</u>
B43M	446	1.75 quarts (1.6 l)
B48M	448, 648	2.0 quarts (1.9 l) when filter is changed 1.75 quarts (1.6 l) when filter is not changed

Please mark these corrections on pages 7 and 9 in your 446, 448 and 648 operator's manual.

(OVER)



TIP # 4 - Mod 80 Fuel Tank Kit:

The early style fuel tank P/N C23671 is no longer available.

P/N C25230 fuel tank kit should be ordered if a replacement tank is required.

This kit adapts the current style fuel tank to prior model units.

TIP # 5 - Two Speed Transaxle Gear Shift Rod:

The old gear shift rod (P/N C14519) must be saved if replacing the transmission case on 200 - 400 series tractors prior to P.I.N. 9646801.

Use the following procedure to make the original gear shift rod work in the current C24843 transmission case:

1. Cut 1/2" (13 mm) from the inboard end of the gear shift rod.
2. Chamfer the cut end slightly.

If the original gear shift rod requires replacement, order C14519 and modify as described.

TIP # 6 - Correction to Timely Tips, Issue #88, Tip #4:

An incorrect part number was listed for the pivot pin. The correct part number is C25787 Pin, pivot.

TIP # 7 - Corrections to Timely Tips, Issue 79, Tip #5:

Timely Tips, Issue #79, Tip #5 incorrectly listed a "Top Adjust" breaker point box for the 646 loader.

Onan does not currently supply a top adjust breaker point box for the Model CCKA engine used in our 646. Please disregard Issue #79, Tip #5.

TIP # 8 - Tractor Drawbar Extension for Use with Model 90 Lawn Sweeper:

The tractor drawbar can be extended by bolting the slotted end of a mower lift link to it.

Lengthening the drawbar will reduce the chance of the tractor rear tires hitting the sweeper tow frame in sharp turns.

This extended drawbar is intended only for light duty towing such as with the sweeper.

Submitted by: Oxbow Power Center
Vista, New York

119 South First Street
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Phone 414 582-4455

August 28, 1981

TIMELY TIPS FOR THE MONTH

ISSUE # 90

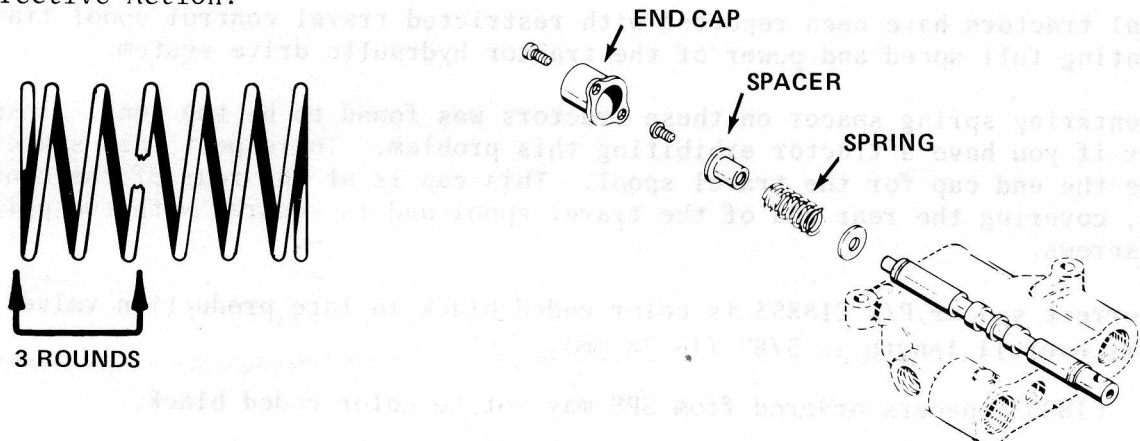
TIP # 1 - Tractor Travel Control Valve - Self-Return to Neutral
TIP # 2 - Tractor Travel Control Valve - Restricted Spool Travel

TIP # 1 - Tractor Travel Control Valve - Self-Return to Neutral:

Effective with the P.I.N.'s listed below, a centering spring was added to the travel control spool. The purpose of the centering spring is to prevent the spool from moving past the neutral position when applying the brake from either the forward or reverse position.

Some valves were assembled with the wrong spring. The wrong spring has more tension than specified and causes the travel control lever to return to neutral by itself.

Corrective Action:



NOTE: The travel control valve does not have to be removed to shorten the spring as described.

1. Remove the end cap for the travel spool. This cap is at the rear of the control valve, covering the rear end of the travel spool and is secured with two phillips head screws.
2. Cut 3 rounds from one end of the spring with a good pair of wire cutting pliers.

(OVER)



TIP # 1 - Tractor Travel Control Valve - Self-Return to Neutral - CONTINUED:

3. Remove the 3 round portion of the of the spring. Make certain that the clipped end of the shortened spring seats properly against the end of the spacer and does not interfere with the inside of the end cap.
4. Install the cap and its screws and internal tooth lockwashers.

CAUTION: Do not omit or cut more than 3 rounds from the spring. It is required for safe control of the tractor drive system.

The correction to this problem is in process with the valve manufacturer.

Normal warranty will apply.

MODEL	P.I.N. AND AFTER
220	9780390
222	9782106
224	9783598
444	9785020
446	9787653
448	9789869

TIP # 2 - Tractor Travel Control Valve - Restricted Spool Travel:

Several tractors have been reported with restricted travel control spool travel preventing full speed and power of the tractor hydraulic drive system.

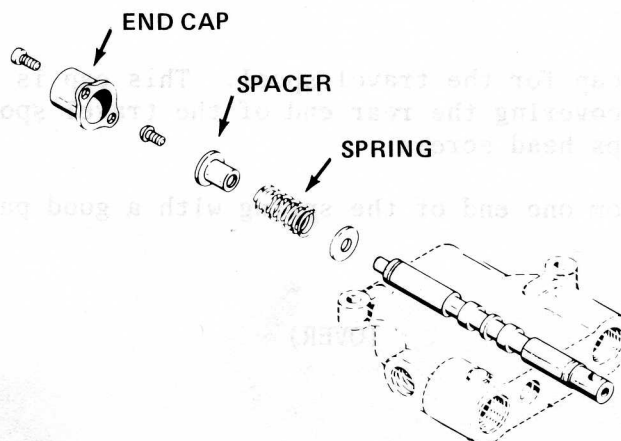
The centering spring spacer on these tractors was found to be too long. Inspect the spacer if you have a tractor exhibiting this problem. To inspect this spacer, remove the end cap for the travel spool. This cap is at the rear of the control valve, covering the rear end of the travel spool and is secured with two phillips head screws.

The correct spacer P/N C18853 is color coded black in late production valves and its overall length is 5/8" (15.88 mm).

NOTE: C18853 spacers ordered from SPS may not be color coded black.

Remove the control valve and replace the spacer if the wrong spacer is found.

Normal warranty will apply.





119 South First Street
Winneconne, Wisconsin 54986
Phone 414 582-4455

September 29, 1981

TIMELY TIPS FOR THE MONTH

ISSUE # 91

- TIP # 1 - Tractor Travel Control Valve - Self Return to Neutral
- TIP # 2 - 648 Loader Power Steering Control Valve Mounting
- TIP # 3 - Teflon Tape
- TIP # 4 - List Attachment Serial Numbers on Owner Warranty Registrations
- TIP # 5 - Warning - Use Correct Air Filter
- TIP # 6 - C22620 Rear Main Bearing For Onan Engine
- TIP # 7 - Part Number Change

TIP # 1 - Tractor Travel Control Valve - Self Return to Neutral:

Refer to Issue #90, Tip #1

A new centering spring with less tension which will prevent the Self Return to Neutral was first used in production with the following Product Identification Numbers:

220	P.I.N. 14005143	444	P.I.N. 14009166
222	P.I.N. 14006593	446	P.I.N. 14011451
224	P.I.N. 14007729	448	P.I.N. 14013635

Follow the instructions provided in Timely Tips Issue #90, Tip # 1 to correct any self return to neutral situations encountered in the field.

TIP # 2 - 648 Loader Power Steering Control Valve Mounting:

Early production 648's used one or two bolts to fasten the power steering control valve to it's mounting plate. Later production loaders used no bolts. The use of mounting bolts is not required and can cause distortion of the valve body and subsequent sticking of the valve spool. The bolts must be removed if the control valve sticks.

The power steering control valve mounting plate has been eliminated beginning with P.I.N. 14014396.

TIP # 3 - Teflon Tape:

Teflon tape, purchased locally, is an expedient way of resealing leaks at pipe thread connections. Wrap the tape carefully on the male fitting so that no tape can get free and enter the hydraulic system.

(OVER)



TIP # 4 - List Attachment Serial Numbers on Owner Warranty Registrations:

Attachments with serial numbers (rotary mowers, snow blowers, roto tillers and utility blades) sold and delivered the same date as the tractor must be listed on the Owner Warranty Registration Form. The complete model and serial number of each attachment must be listed including alpha prefixes.

Attachments with serial numbers sold separately must have a separate Owner Warranty Registration Form. List the attachment model and serial number in the Product ID and Model spaces on the Owner Warranty Registration Form.

If no attachment is sold with the tractor enter the word "NONE" in the first attachment model space on the Owner Warranty Registration Form.

Owner Warranty Registration Forms received without attachment information provided will be returned for correction.

TIP # 5 - Warning - Use Correct Air Filter:

Refer to Issue 81, Tip # 6 and Issue #88, Tip #6

This is a third warning. A third dealer has reported that an off brand air cleaner element installed in a Model 224 does not seal properly. The filter is not "tall" enough to seal with the cover, allowing dirt to enter and ruin the engine.

It is urged that genuine Case replacement parts be used.

TIP # 6 - C22620 Rear Main Bearing For Onan Engine:

An undetermined number of C22620 .010" undersize main bearing kits were packaged incorrectly and contain C22618 standard main bearings.

Visually inspect any C22620 bearing kits in your dealer parts stock. The bearing in the kit is marked with the proper size and can be easily identified.

<u>MARK ON BEARING</u>	<u>SIZE</u>	<u>CASE PART NUMBER</u>
449	Standard	C22618
449-10	.010" undersize	C22620

Incorrectly marked boxes can be remarked and returned to your stock or you can return unwanted bearings in the usual manner to your servicing SPS Depot.

TIP # 7 - Part Number Change:

Rebin C20349 as N7480

C24806 as C26255

119 South First Street
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October 29, 1981

TIMELY TIPS FOR THE MONTH

ISSUE # 92

- TIP # 1 - Failure Analysis-Bendix Drive Starters**
- TIP # 2 - Model 108 and 110 - Changes In Ground Speed**
- TIP # 3 - Parts Catalog Corrections**

TIP # 1 - Failure Analysis Bendix Drive Starters:

An increasing number of failed bendix drive starters are being repaired or replaced under warranty, when, in fact, analysis indicates the starter component failure was the result of improper use. To aid in the analysis of failed bendix drive starters, the following information and guidelines are offered.

Starter failures from overcranking* or cranking with an abnormal parasitic load** on the engine, will display one or a number of the following signs:

1. The armature wire insulation or coating will appear discolored and may be swollen. In many cases, you will be able to detect an odor from the burnt wire coating or see it oozing from the starter housing.
2. One or a number of the armature windings may have wires or wire connections that have burnt through. Wires may have insulation missing or be partially fused together.
3. The starter brushes will show heavy surface galling and brush material transfer. Additionally, in many instances the starter brushes will be welded or stuck in the brush holders.

Some of the frequent causes of abnormal parasitic load at cranking are:

1. Improper viscosity engine crankcase oil.
2. Incorrect viscosity oil in hydraulic system during winter starting. SAE 5W20 motor oil is recommended for the hydraulic system when operating below 32° F. (0° C.)
3. Engaged Hydraulic PTO valve.

Starter failures from overcranking or cranking against an abnormal parasitic load are not covered by Case Warranty. We would recommend that you identify the root of the problem and advise the engine owner of your findings.



(OVER)

TIP # 1 - Failure Analysis-Bendix Drive Starters: CONTINUED:

The starter bendix drive is designed and manufactured to withstand forces far in excess of those required for normal operation when the recommended starter procedures are followed. Missing or damaged teeth on the bendix drive gears are not being caused by a defect in material or workmanship. Rather, our testing and analysis of returned failed starter drives has shown that bendix drive damage is being caused by engaging the starting motor while the flywheel is still in motion. For this reason, warranty claims for a failed bendix drive with damaged or missing teeth will no longer be accepted.

* Overcranking - cranking the starter continuously for more than the recommended period and/or not allowing a sufficient cool down period between starting attempts.

**Parasitic Load at cranking - a load or force on the engine at cranking that opposes normal engine rotation.

TIP # 2 - Model 108 and 110 - Changes In Ground Speed:

The maximum ground speed in each gear on Model 108 and 110 lawn tractors has been reduced.

The slower first gear will provide improved performance when the snow caster attachment is used or whenever very slow ground speed is required.

The new ground speeds @ 3600 engine RPM are as follows:

First Gear	1.7 MPH (2.8 Km/hr)
Second Gear	3.4 MPH (5.5 Km/hr)
Third Gear	4.8 MPH (7.7 Km/hr)
Reverse	2.4 MPH (3.8 Km/hr)

The change is effective with:

108 P.I.N. 14001711

110 P.I.N. 14002627

TIP # 3 - Parts Catalog Corrections:

200 - 400 Tractors Catalogs - A1278, B1255

Page 73 - Call out #7 should be Order (1) C19476 and (1) S10817

200 - 400 Tractors Catalog - A1322

Page 83 - Call out #7 should be Order (1) C19476 and (1) S10817

J, K, L 41 Mower, J, K, L 81 Snow Caster Catalog - C1232

Page 9J - Call out #14 should be C26087 (includes C16745 bushing)

119 South First Street
Winneconne, Wisconsin 54986-9576
Phone 414 582-4455

November 23, 1981

TIMELY TIPS FOR THE MONTH

ISSUE # 93

- TIP # 1 - Engine Warranty
- TIP # 2 - XC 100 Counterweight Kit Instruction Correction
- TIP # 3 - Tractor Steering Wheel Change
- TIP # 4 - Two Speed Transaxle Oil Level Change 200 - 400 Series Tractors

TIP # 1 - Engine Warranty:

A garden tractor engine is normally used in severe conditions and requires careful and regularly scheduled maintenance by the customer. If air cleaner and oil change maintenance is not properly and regularly performed, rapid cylinder and piston ring wear will occur resulting in high oil consumption and loss of power.

This can occur in less than 12 months use depending on the number of hours and extent of the maintenance (if any) that is performed on the engine.

Recent experience reveals that repairs for engine wear resulting from improperly fitting air cleaners (will-fit brands), punctured air filters and inadequate oil changes are being presented for warranty reimbursement.

Warranty coverage includes failures that result from defective material or workmanship, not wear as a result of lack of maintenance.

As with any repair work (whether warranty or not), an accurate failure analysis must be performed by the servicing technician. Warranty will be denied on engines that are worn as a result of poor or lack of maintenance.

If you are in doubt of the cause of the failure, your Field Service Representative will assist you in failure analysis.

It is recommended that you not commit warranty repair to your customer until you have a clear understanding that a defect in materials and/or workmanship is the cause of the failure.

Engine component failures which are submitted on Service Adjustment Requests are subject to Case OPE Division and engine manufacturer inspection for final approval.

TIP # 2 - XC 100 Counterweight Kit Instruction Correction:

The following step was omitted from the XC 100 Counterweight Kit Instruction Sheet Form #9-51630.

10. Remove and discard the four engine stabilizer straps and associated hardware.

Experience to date with the new XC engine installation is showing a reduction in service adjustments.



(OVER)

TIP # 3 - Tractor Steering Wheel Change:

Beginning with the Product Identification Numbers listed below, the tractor steering wheels are attached with a roll pin.

210	PIN 14003693	444	PIN 14009250
220	PIN 14005231	446	PIN 14011642
222	PIN 14006712	448	PIN 14013773
224	PIN 14007811		

Use the following installation procedure:

1. Pull the steering shaft up as far as it will go. Keep the steering shaft in this position while performing the following steps.
2. Clean the exposed end of the shaft and apply a coating of anti-seize compound.
3. Temporarily install the steering wheel and insert a punch (or similar tool) through the roll pin hole.
4. Select shim washers from the hardware bag.
5. Use the shim washers as a gauge to determine how many washers are required to shim between the bottom of the steering wheel and the steering support. Use enough shim washers to reduce end play to a minimum.
6. Remove the steering wheel and place the shim washers over the shaft.
7. Install the steering wheel with one spoke pointing forward.
8. Install the roll pin.

TIP # 4 - Two Speed Transaxle Oil Level Change 200 - 400 Series Tractors:

Extensive Engineering testing has confirmed that the two speed transmission oil level can be reduced while maintaining adequate lubrication to all gears and bearings.

Beginning with the following Product Identification Numbers, the two speed transmission oil level is one pint. An oil level check plug is located on the right hand side of the transaxle housing just above the drain plug. The oil fill plug is still provided at the rear of the transaxle housing for convenience.

220	PIN 14005237	444	PIN 14009274
222	PIN 14006717	446	PIN 14011675
224	PIN 14007819	448	PIN 14013792

NOTE: The oil level for 600 series tractors remains at 3 quarts. This level is even with the fill and check plug at the rear of the transaxle housing.

119 South First Street
Winneconne, Wisconsin 54986-9576
Phone 414 582-4455

December 23, 1981

TIMELY TIPS FOR THE MONTH

ISSUE # 94

- TIP # 1 - Loose Snow Caster Auger Mounting Bolts**
TIP # 2 - Snow Caster Lift Arm Interference 446 - 448 Tractors
TIP # 3 - Shop Labor Rates - Combination Dealers

TIP # 1 - Loose Snow Caster Auger Mounting Bolts:

Check all M80, M84, and M81 snow caster auger center mounting bolts (one each side) for tightness during your predelivery inspection.

Hold the hex surface of the stub shaft with a thin 3/4" wrench and tighten the bolt to a torque of 35 - 42 lb. ft. (48 - 57 Nm).

Snow casters after the below listed serial numbers have been checked for tightness at the factory.

M80 - S/N X10270 and after
M84 - S/N Z10322 and after
M81 - S/N Y10260 and after

TIP # 2 - Snow Caster Lift Arm Interference 446 - 448 Tractors:

Interference between the support for the chute crank on the lift arm and engine baffles can occur when mounting L80 and L84 snow casters prior to the serial numbers listed below on 446 and 448 tractors.

L80 - S/N R14530
L84 - S/N S17291

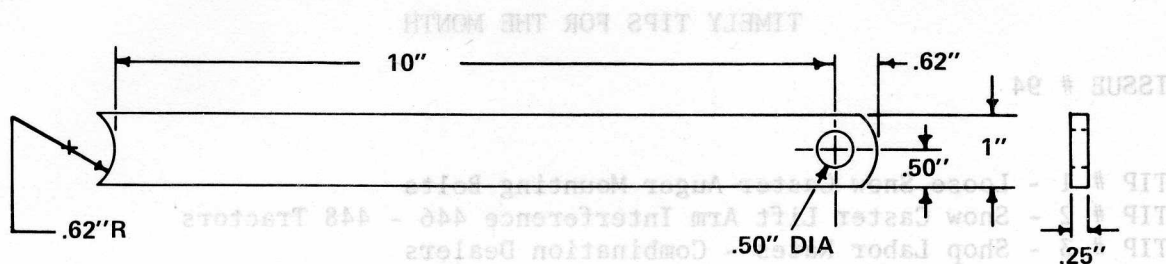
This interference has been eliminated on snow casters after the above listed serial numbers by shortening the support and moving it forward on the lift arm.

If this interference occurs, use the following procedure to insure proper alignment of the chute crank support.

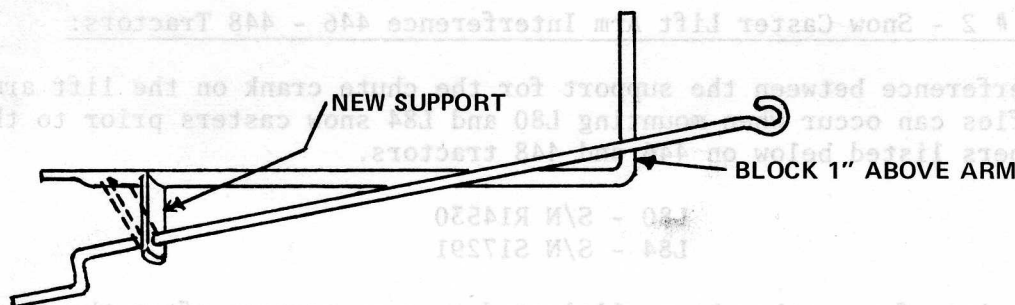
1. Fabricate a chute crank support according to the diagram on Page 2.
2. Place the lift arm on the welding table with the chute crank support facing up.
3. Thread the new chute crank support on to the crank, then thread the crank through the chute crank support on the lift arm.

(OVER)



TIP # 2 - Snow Caster Lift Arm Interference 446 - 448 Tractors: (CONTINUED)

4. Support the hooked end of the crank approximately 1 inch above the lift arm. See illustration below.
5. Hold the top of the new chute crank support close to and in alignment with the support on the lift arm.
6. Allow the bottom of the new chute crank support to swing forward until it contacts the lift arm.
7. Weld the new chute crank support to the lift arm.
8. Cut the old support off. Grind and paint as required. Save the old support for use on other snow casters you may have in stock.
9. Normal warranty will apply.

TIP # 3 - Shop Labor Rates - Combination Contract Dealers:

For combination contract dealers with a separate OPE Dealer Code:

You must notify your OPE Service Representative of your intent to change your shop labor rate to insure that Service Adjustment Requests submitted under your "05" code will be paid at the correct rate. (Your OPE Service Representative will then notify the Winneconne Service Office.)

Rate changes reported to other divisions are NOT automatically picked up by the OPE Division.