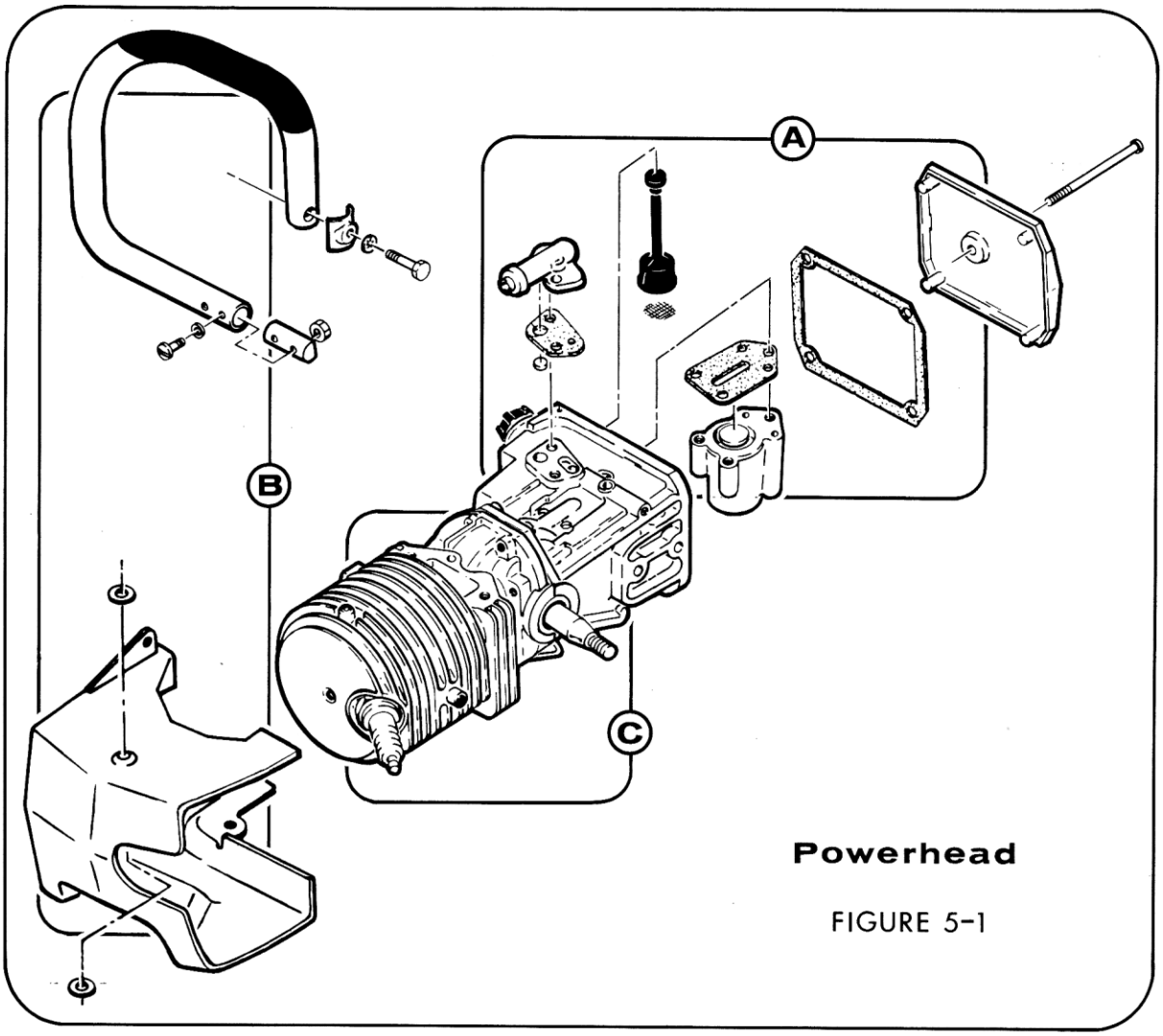
SECTION V - POWERHEAD



Powerhead

FIGURE 5-1

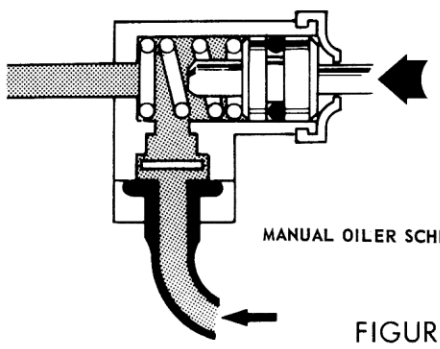
This section covers servicing of the oil system (A, Figure 5-1, frame and shroud (B) and power head (C).

OILER SYSTEM

The chain oiler system consists of the manual oiler pump, the oil tank and on direct drive models so equipped, the automatic oil pump. The automatic oiler pump on gear drive models is covered in Section Two. Because of the number of components which must be removed in order to work on manual and automatic oiler pumps, both pumps and the oil hose should be serviced should either pump require overhaul.

MANUAL OILER PUMP

The manual oiler pump is a simple plunger-type pump (Figure 5-2). When the manual oiler button is pushed, the oiler rod forces the spring-loaded plunger to move



MANUAL OILER SCHEMATIC

FIGURE 5-2

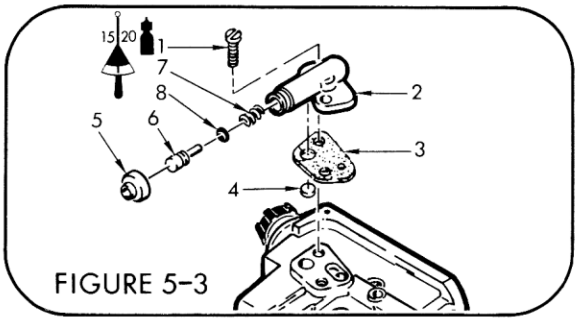


FIGURE 5-3

toward the discharge end of the pump cylinder and push oil into the discharge line. Oil is prevented from flowing back into the oil tank during the pumping stroke by a check valve. When the button is released, the spring returns the plunger to the other end of the pump cylinder and this action draws oil past the check valve to refill the pump cylinder.

Disassembly

The manual oiler pump can be disassembled and serviced after removal of the fan housing, air filter cover and air filter, carburetor and fuel tank. It is not necessary to drain the oil tank in order to work on the manual oiler.

1. Remove the two screws (1, Figure 5-3) attaching the manual oiler housing (2) to the oil tank. Lift off the housing and gasket (3). Be careful not to lose the check valve (4) which may come off with either the housing or the gasket.

2. Carefully pry off the plastic cap (5) and withdraw the plunger (6) and spring (7). The "O" ring (8) should be removed over the shaft end of the plunger.

Servicing the Manual Oiler Pump

Clean the parts in solvent and blow them dry with low pressure (three to five pounds) air. Make sure the oil passages in the housing are clean and free from dirt. Blow out the passages with low pressure air.

If the gasket, check valve or "O" ring is damaged, install a new one. Should the "O" ring be brittle, it should be replaced with a new "O" ring. If the oiler housing is damaged, install a new housing.

Blow out the oil discharge passage between the manual oiler pump mounting pad and the bar mounting pad with low pressure air. If the unit has an automatic oiler pump, it shouldn't be necessary to remove the automatic oiler unless the line is clogged or blocked with dirt, in which case the automatic oiler should also be disassembled and cleaned. Should the oil hose be clogged, try to free it by blowing low pressure air from the pump mounting pad into the oil tank. Remove the oil tank cap before blowing the air. If application of air will not clean the lines or the oil hose screen, drain the oil tank and service the oil hose and the lines.

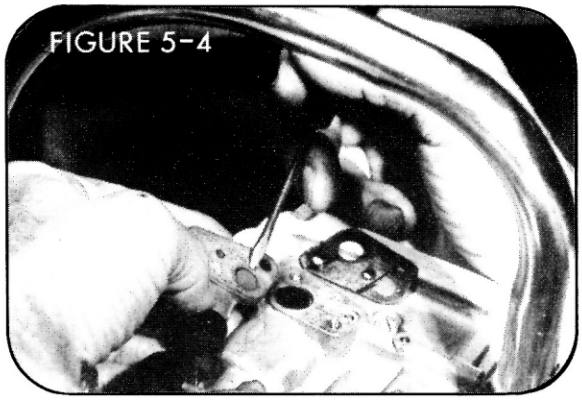
Check operation of the manual oiler button and oil rod. If the rod is bent out of shape or if it does not move freely when the button is pressed, service the button and rod.

Reassembly

1. Coat the "O" ring (8, Figure 5-3) with SAE 30 oil and place it on the plunger (6). Insert the spring (7) and plunger into the housing (2). Make sure the plunger moves freely back and forth in the housing. Install the cap (5) on the housing. Place the check valve (4) in its socket in the housing (Figure 5-4).

2. Make sure the pump mounting pad is clean. Place the gasket (3) in position on the pad. Coat the two screws (1) with Loctite and install the housing and gasket. Tighten the screws to a torque value of 15 to 20 inch pounds.

3. Operate the manual oiler pump with a dowel or piece of drill rod inserted through the cap to see if oil is pumped onto the bar mounting pad. Pump gently so as not to damage any parts of the pump. Failure of oil to appear at the bar mounting pad can be caused by an improperly installed check valve (4), clogged oil intake or discharge passages or a clogged oil screen in the oil hose.


FIGURE 5-4

AUTOMATIC OILER PUMP

Many MAC 10 series direct drive models are equipped with a pulse-operated automatic chain oiler pump. The automatic oiler pump is located inside the oil tank and can be adjusted to deliver more or less oil after removing the oil tank cover. The automatic oiler pump for gear drive models is covered in Section Two.

Crankcase pulsations acting against a spring-loaded piston assembly draw oil through the manual oiler pump into the automatic oiler pump (Figure 5-5). The piston assembly consists of a piston head and shaft on which are mounted a teflon washer, a large round piston ring and an "O" ring. During the pressure stroke, the piston forces oil past a ball check valve in the pump housing and out to the bar mounting pad through the discharge line. On the return stroke, the ball check valve closes and oil enters the pumping chamber of the housing. Adjustment of the automatic oiler is made by turning the adjusting screw which moves a sleeve. The sleeve

limits the stroke of the piston and controls the amount of oil delivered on the pressure stroke. The adjusting screw is locked in place with a locknut.

Because the automatic oiler is fed through the manual oiler, the manual oiler should be pumped to prime the automatic oiler after each refilling of the oil tank and in addition, when the engine has not been used for a period of time. Only a few strokes should be required before oil appears at the bar mounting pad.

Disassembly

On all except late model direct drive saws, when servicing the automatic oiler, it is necessary to remove the fan housing, air filter cover and air filter, carburetor, fuel tank and oiler tank. On late model exceptions noted above, the automatic oiler housing is mounted with a single screw inside the oiler tank and it is necessary to remove only the oiler tank cover for servicing the oiler. When only adjustment of the automatic oiler is required, only the oiler tank cover need be removed.

1. Drain the oil from the oil tank. Remove the screw attaching the oil tank cover to the tank and remove the cover. If the cover gasket is damaged, use a new gasket during reassembly.

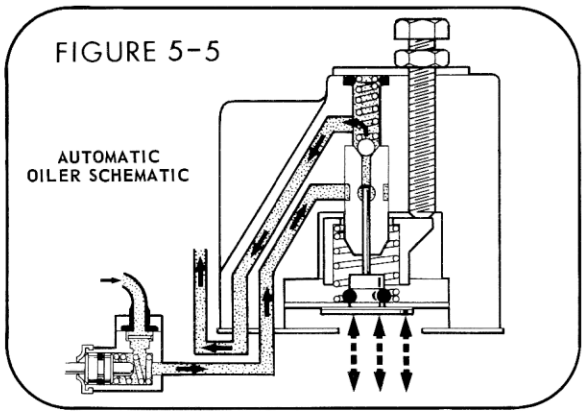


FIGURE 5-5

2. Remove the three screws (1, Figure 5-6) or the single screw (Figure 5-7), as required for the particular model, and remove the automatic oiler housing. If the gasket (3, Figure 5-6) is damaged, install a new gasket during reassembly.

3. Remove the piston assembly, spring (4) and sleeve (5) from the housing. After removing the "O" ring (6), the piston assembly can be disassembled into the large piston ring (7), teflon washer (8) and the piston itself (9).

4. Loosen the locknut (10) and remove the adjustment screw (11) and locknut as an assembly. This will release the outlet valve cover (12), spring (13), ball check valve (14) and "O" ring (15).

5. Check the condition of the oil hose and oil tank.

Servicing the Automatic Oiler Pump

Wash all parts in solvent and blow dry with low pressure (three to five pounds) air. Make sure all the oil passages are clean.

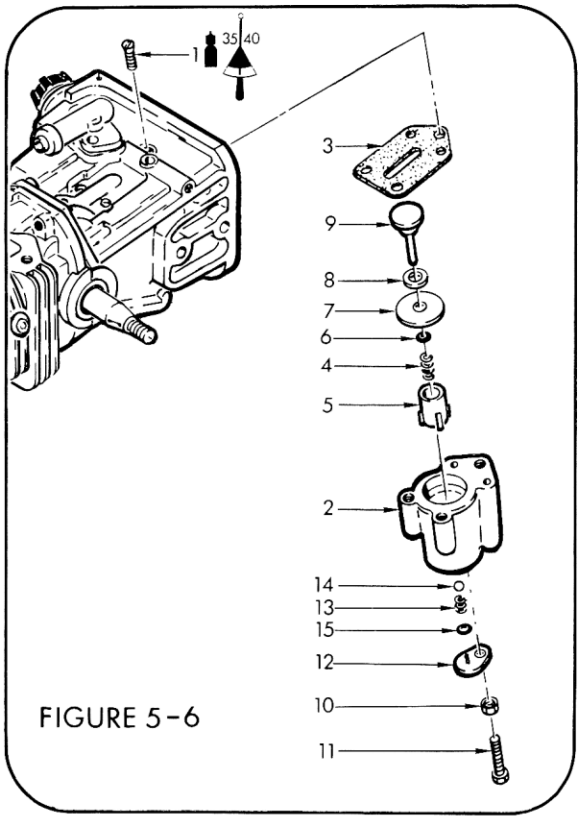


FIGURE 5-6

If either of the "O" rings is stretched, brittle or damaged, install a new "O" ring. If the outer edge of the large piston ring is worn, install a new ring. Replace any worn, cracked or otherwise damaged parts with new parts.

It is advisable to service the oil hose and oil tank while the fuel tank and other parts are removed. See paragraphs below headed "Oil Hose and Oil Tank" for procedures.

Reassembly

1. Coat the "O" rings (6 and 15, Figure 5-6), the outer rim of the piston ring (7) and the shaft of the piston (9) with SAE 30 oil.

2. Turn the locknut (10) onto the screw (11) until the nut is against the screw head.

3. Place the ball check valve (14), spring (13) and the "O" Ring (15) in the outlet passage of the housing (2). Place the outlet cover (12) over the passage and turn the screw (11) into the outlet cover and housing until the screw is flush with the sleeve side of the cavity in the housing. Turn the locknut down the screw until the nut holds the outlet cover securely against the housing.

4. Slide the teflon washer (8) and piston ring (7) up the shaft of the piston (9) until they are against the piston head. Install the "O" ring (6) to hold them in place.

5. Insert the spring (4) into the sleeve (5) and place them in the sleeve cavity of the housing. Carefully insert the shaft of the reassembled piston assembly into the shaft hole of the housing. Make sure the piston moves easily up and down.

6. On models which have the automatic oiler housing mounted with a single socket head screw and washer inside the oiler tank (Figure 5-7) insert the screw with its washer into the housing and the housing gasket, and tighten the screw securely into the top of the oiler tank. If the automatic oiler housing is externally mounted with three screws (Figure 5-6), proceed as follows:

7. Coat the three attaching screws (1) with Loctite. Insert one of the screws through the top of the tank into the tank. Place the gasket (3) inside the tank against the top of the tank with the attaching screw going through the correct screwhole in the gasket. Insert the other two screws through the tank top and gasket. Place the housing on the screws and tighten all three screws to a torque value of 35 to 40 inch pounds.

8. Adjust the automatic oiler (see below).

9. Install the oil tank gasket and cover. Coat the cover attaching screw with Loctite and tighten it to a torque value of 55 to 60 inch pounds.

Automatic Oiler Pump Adjustment - Direct Drive Saws

It is only necessary to remove the oil tank cover in order to adjust the automatic oil pump.

Either mount the saw in a vise with the oil tank cover up or drain the oil from the oil tank. If mounted in a vise, remove the oil tank cover and make sure the tank is filled with clean SAE 30 oil. If the oil is drained from the tank, remove the cover and wipe out the tank with a clean, lint-free cloth.

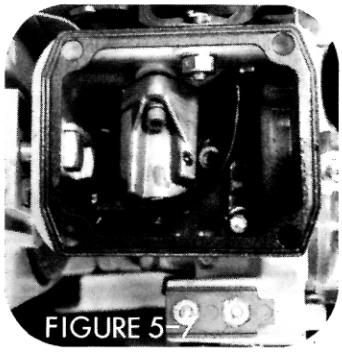


FIGURE 5-7

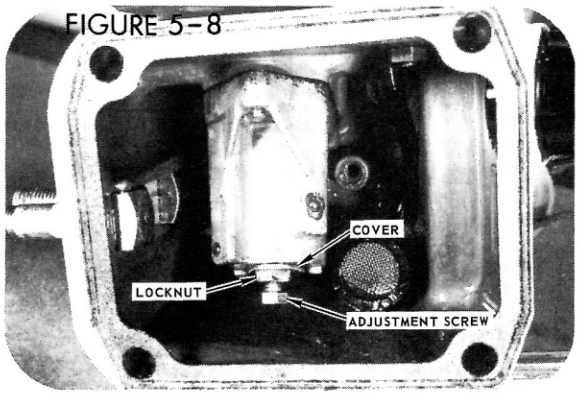


FIGURE 5-8

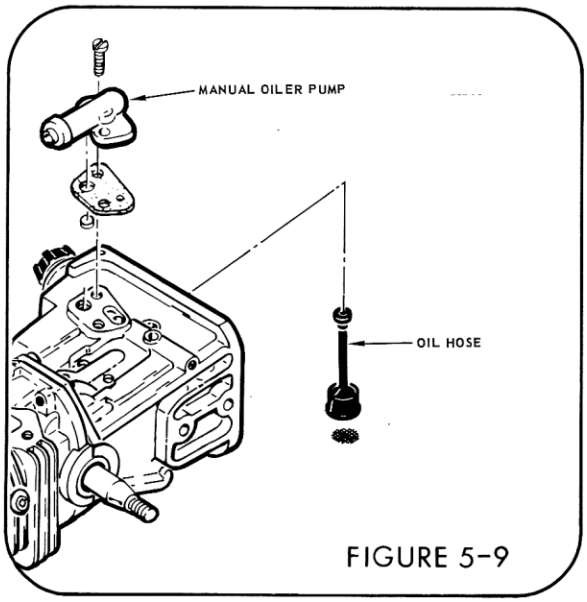


FIGURE 5-9

1. Loosen the locknut (Figure 5-8). Hold the pump cover against the housing so as to prevent loss of the ball check valve which is inside the cover. Loosening the locknut will free the cover so that it can come away from the pump housing to the limit set by the loosened position of the locknut. Turn the adjustment screw clockwise until the threaded end of the screw bottoms inside the housing. Continue to loosen the locknut as necessary so the locknut doesn't prevent the screw from bottoming.

2. Now turn the screw counterclockwise 1-1/2 to 2 turns. This adjustment is not critical. Tighten the locknut against the cover. This is the basic adjusted position of the screw and should provide adequate oil for all average cutting conditions.

3. Reinstall the oil tank cover and tighten the cover screw to a torque value of 55 to 60 inch pounds. Test the flow of oil by running the saw on the woodpile. If more oil is required, remove the cover and turn the adjusting screw counterclockwise from the basic position in small steps. Test the flow of oil after each adjustment until the oil flow is adequate for the purpose the saw is to be used. It is usually not a good idea to reduce the flow of oil below the basic position since this will reduce oil flow to a point at which the chain and bar may not be adequately lubricated by the automatic oiler.

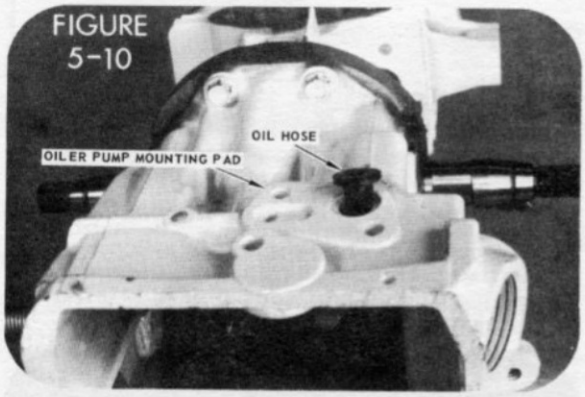
   If oil does not appear on the chain and bar within a few seconds after starting the saw for the woodpile test, pump the manual oiler button until oil does appear. This pumping will prime the automatic oiler. Run the saw for ten to fifteen seconds and then check the automatic oil flow.

   If oil flow is increased past the basic position, the quantity of oil in the oil tank should be checked more frequently when the saw is in use. Caution the owner not to wait until the fuel tank is empty

because the oil tank can have run dry and the chain and bar be already damaged. If additional oil is needed for a short period only, it is better to supplement the automatic oiler by using the manual oiler than to readjust the automatic oiler.

OIL HOSE AND OIL TANK

The oil hose and oil tank (Figure 5-9) should always be inspected and, if necessary, serviced whenever the automatic oiler pump is serviced. It is also a very good idea to inspect and service these parts whenever the manual oiler pump is serviced. Removal and installation of the hose requires removal of the manual oiler pump.



The oil hose has a bell at one end which contains a filter screen. The other end of the hose has a molded flange which seats under the manual oiler check valve on the pump mounting pad on top of the oil tank (Figure 5-10).

To remove the oil hose, press the flanged end of the hose through the top surface of the oil tank while pulling gently on the hose at a point just under the top of the tank. If the screen is damaged, remove the screen from the bell end of the hose and after cleaning the hose, install a new spring.

Clean the hose by flushing it out with solvent and low pressure (three to five pounds) air. A soft bristle brush and solvent will clean any dirt from the screen. Clean all dirt from the oil tank, oil tank cover, cap and gasket. If much dirt is found in the tank, show the owner how to clean off the oil tank and oil cap before he removes the oil tank cap to refill the oil tank and instruct him to use only clean oil.

To install the hose in the top of the oil tank, reach through the hole for the hose in the mounting pad with a hooked tool similar to a button hook. Catch the hook under the flanged end of the hose and pull the hose up through the hole. Then seat the flange in its proper position. The screen can be installed by spreading the bell and inserting the screen.

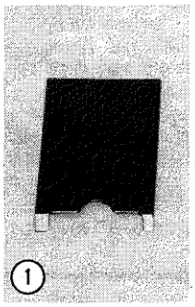
Bar mounting bolts can be pressed out or removed by tapping the threaded ends gently with a plastic hammer. Support the side of the tank when using either an arbor press or hammer. Press the new bolts into place. The use of Loctite on the shaft just under the bolt heads will assist in locking the bolts into place.

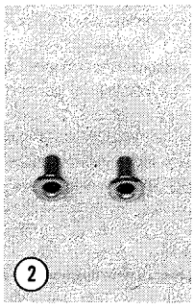
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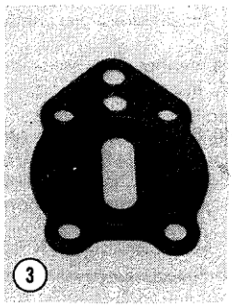
Oil Pump Kit, P/N 215246

This kit is furnished as service replacement on all 10 series chain saws (except units equipped with the three oiler hold down screws).

Included in this kit is a Clip Spring (1), two Eyelets (2), and a Pulse Pump Seal, P/N 92818 (3).







Installation

Note: Remove all the oil from the saw. Drain the fuel tank in a safe area.

1. Turn the saw upside down and remove the oiler assembly.

Assembly Note: Remove and discard the old pump pulse seal, and Pump Clamp, P/N 89114, if so equipped. If pump clamp is removed, reinstall the oiler adjustement screw and nut to its original setting.

Proper adjustment of the oiler adjustment screw can only be determined after the first tank of fuel has been used. Under normal cutting conditions, a tank of chain oil and a tank of fuel should empty at approximately the same time.

2. Insert the two eyelets into the holes located at the base of the oiler body (4).

3. Place the clip spring tabs into the eyelets and lean the clip spring against the oiler body. Make certain that the tabs angle away from the oiler body, as shown in Figure 5

Note: A rubber band will keep the spring properly positioned during installation.

4. Brace the rear of saw against the back wall of the workbench.

5. Place the seal on the oiler body and align the oiler assembly to the mounting pad hole. Install the hold down screw snug but not tight (6).

6. With the oiler properly positioned, remove the rubber band.

7. Using a screwdriver, apply pressure at the middle of the spring clip. Use even force on both sides of the spring until the bend in the spring rests against the back of the oil tank (7).

8. With the spring properly installed, torque the oiler hold down screw 25 to 30 inch x pounds.

9. Check the edges of the oiler to make sure it is seated completely all around the mounting pad.

10. Metal shavings may accumulate in the oil tank during installation. Using low pressure air, blow all debris out of oil tank. Eye protection must be worn during this operation.

Instruction sheet, P/N 96267

Kit pour pompes à huile, P/N 215246

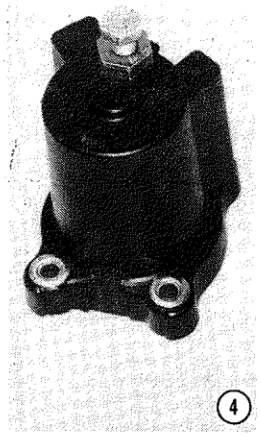
Ce kit est livré en tant que jeu de pièces de rechange pour toutes les tronçonneuses de Série 10 (sauf celles qui sont équipées de trois vis de maintien pour du graisseur).

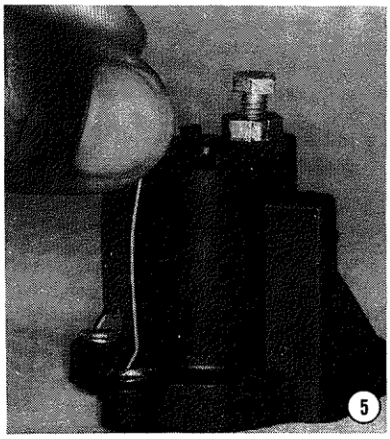
Ce cit comporte un Ressort de Bride (1), deux Oeillets (2), et un Joint de Pompe Pulsant P/N 92818 (3).

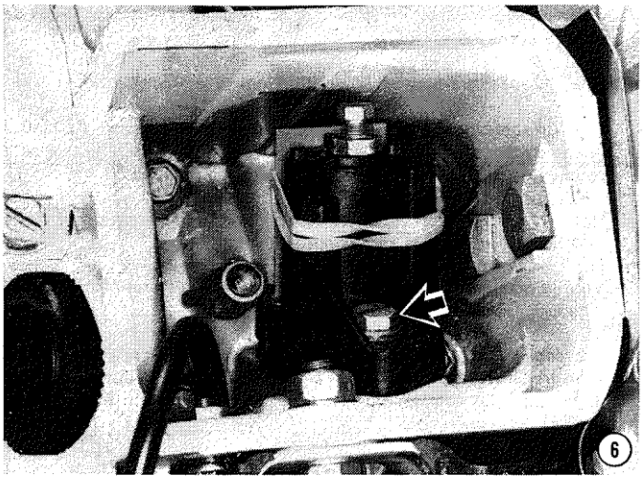
Kit para Bomba de Aceite, N/P 215246

Este kit se suministra como repuesto de servicio para todas las motosierras de la Serie 10 (excepto aquellas unidades equipadas con tres tornillos de sujeción de aceitador).

Este kit incluye un resorte sujetador (1), dos ojetes (2), y un sello de bomba de impulso, N/P 92818 (3).







Instalación

Nota : Extraiga todo el aceite de la motosierra. Vacíe el tanque de combustible en un área que provee seguridad.

1. Invierta la motosierra y retire el conjunto aceitador.

Nota de armado : Retire y deseche el sello usado de la bomba, y la abrazadera de la bomba, N/P 89114, si la bomba va equipada con dicha abrazadera. Si se retira la abrazadera, vuelva a colocar el tornillo y la tuerca de ajuste del aceitador en su posición original.

El ajuste adecuado del tornillo de ajuste del aceitador sólo puede determinarse una vez usado el primer tanque de combustible. En condiciones normales de aserrado, un tanque de aceite y un tanque de combustible deberán consumirse en aproximadamente el mismo tiempo.

2. Introduzca los dos ojetes en los orificios ubicados en la base del cuerpo del aceitador (4).

3. Introduzca las lengüetas del resorte sujetador en los ojetes y ubique el resorte sujetador contra el cuerpo del aceitador. Asegúrese de que las lengüetas se abran en ángulo alejándose del cuerpo del aceitador, tal como se muestra en la Figura 5.

Nota : Una banda elástica mantendrá el resorte posicionado en forma adecuada durante la instalación.

4. Asegure la parte posterior de la motosierra contra la pared trasera de la mesa de trabajo.

Installation

Note : Eliminez toute l'huile de la tronçonneuse. Videz le réservoir d'essence dans un lieu sûr.

1. Retournez la tronçonneuse et retirez l'assemblage du graisseur.

Note de montage : Retirez et jetez l'ancien joint de pompe et Collier de Pompe, P/N 89114, s'il y en a un. Si vous retirez le Collier de Pompe, replacez la vis de réglage du graisseur et son écrou dans leur position d'origine.

Un réglage correct de la vis de réglage du graisseur peut seulement être déterminé après l'utilisation du contenu du premier réservoir d'essence. Dans des conditions normales de coupe, un réservoir d'huile et un réservoir d'essence devraient se vider approximativement en même temps.

2. Insérez les deux oeillets dans les trous situés à la base du corps du graisseur (4).

3. Placez les attaches de la bride à ressort dans les oeillets et penchez le ressort de bride vers le corps du graisseur. Assurez-vous que les attaches sont inclinées dans la direction opposée du corps du graisseur, comme montré en Figure 5.

Note : Un ruban élastique peut maintenir le ressort en position correcte pendant l'installation.

4. Appuyez l'arrière de la scie contre la mur arrière de l'établi.

5. Placez le joint sur le corps du graisseur et alignez l'assemblage du graisseur avec le trou de la plaque de fixation. Vissez bien la vis de maintien mais pas à fond (6).

6. Une fois que le graisseur est en position, retirez le ruban élastique.

7. Avec un tornevis, appuyez sur le centre de la bride à ressort. Appliquez une pression constante sur les deux côtés en ressort jusqu'à ce que le courbe du ressort soit contre l'arrière du réservoir d'huile (7).

8. Une fois que le ressort est en place, appliquez une torsion sur la vis de maintien du graisseur de 25-30 pouce x livres.

9. Vérifiez les bords du graisseur pour vous assurer qu'il est bien assis tout autour de la plaque de fixation.

10. Des copeaux de métal peuvent s'accumuler dans le réservoir d'huile pendant l'installation. Avec de l'air à basse pression, soufflez tous les débris pour les éliminer du réservoir. Les yeux doivent être protégés pendant cette opération.

Fiche d'instruction, P/N 96267

5. Coloque el sello en el cuerpo del aceitador y alinee el conjunto aceitador con el orificio del cojín de montaje. Introduzca el tornillo de sujeción apretado pero no a fondo.

6. Con el aceitador en la posición apropiada, retire la banda elástica.

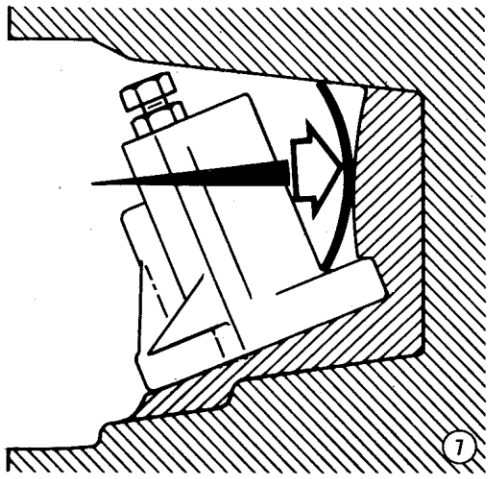
7. Utilizando un destornillador, aplique presión en el centro del resorte sujetador. Aplique fuerza pareja sobre ambos lados del resorte hasta que el codo del mismo se apoye contra la parte trasera del tanque de aceite (7).

8. Una vez que el resorte se ha instalado correctamente, apriete el tornillo de sujeción a una presión torsiométrica de 25 a 30 pulgadas x libras.

9. Verifique las orillas del aceitador para asegurarse que está completamente asentado en todo el perímetro del cojín de montaje.

10. Es probable que se acumulen virutas metálicas en el tanque de aceite durante la instalación. Utilice aire comprimido a baja presión para quitar los desechos del tanque de aceite. Debe usarse protección ocular al realizar esta operación.

Hoja de instrucciones, N/P 96267



Ölpumpen-Bausatz, P/N 215246

Dieser Bausatz wird beim Kundendienst für alle Kettensäge der Serie 10 (bis auf die Geräte mit den drei Öler-Haltesschrauben) als Ersatz geliefert.

Der Bausatz enthält eine Federklammer (1), zwei Ösen (2) und eine Stoßpumpen-Dichtung, P/N 92818 (3).

Einbau

Anmerkung: Alles Öl aus der Säge ablassen. Treibstofftank an einem sicheren Ort entleeren.

1. Drehen Sie die Säge um und entfernen Sie den Ölersatz.

Anmerkung zum Einbau: Entfernen Sie die alte Stoßpumpen-Dichtung sowie die Pumpenklammer, P/N 89114, falls diese eingebaut ist. Werfen Sie beide weg. Wenn die Pumpenklammer entfernt wird, setzen Sie die Ölereinstellschraube und -mutter wieder auf ihre ursprüngliche Einstellung.

Die richtige Einstellung der Ölereinstellschraube läßt sich erst nach Verbrauch der ersten Treibstoffüllung ermitteln. Unter normalen Sägebedingungen sollten sich der Kettenöltank under der Treibstofftank zu etwa gleicher Zeit leeren.

2. Setzen Sie die zwei Ösen in die Bohrungen im Socket des Ölerkörpers (4).

オイル ポンプ キット　　部品番号（P/N）215246

このキットは10番台のすべてのチェイン ソー修理交換用に用意されております。但し3個のオイラー抑え付け スクリューが 装備されているユニットを除く。

このキットの中には ①クリップ スプリング1個、②アイレット 2個、③パルス ポンプ シール1個、部品番号92818が含まれています。

使用方法

注意: のこぎりからオイルを全部取り除き燃料タンクを安全な場所で空にします。

1. のこぎりをさかさまにし、オイラー組み立て部品を取り去ります。

組み立て上の注意: 古くなったポンプ パルス シールと、もしポンプ締め金が付いていたらそれも取り去り、捨てます。部品番号（P/N）89114。ポンプ締め金が除去された後、元の装置にオイラー調節スクリューとナットを再び取り付けます。オイラー調節スクリューの正確な調整は必ず最初の燃料タンクが使用された後にだけ行うようにして下さい。正常の切断状況に於ては、チェイン オイル タンクと燃料タンクは必ず同時に空にします。