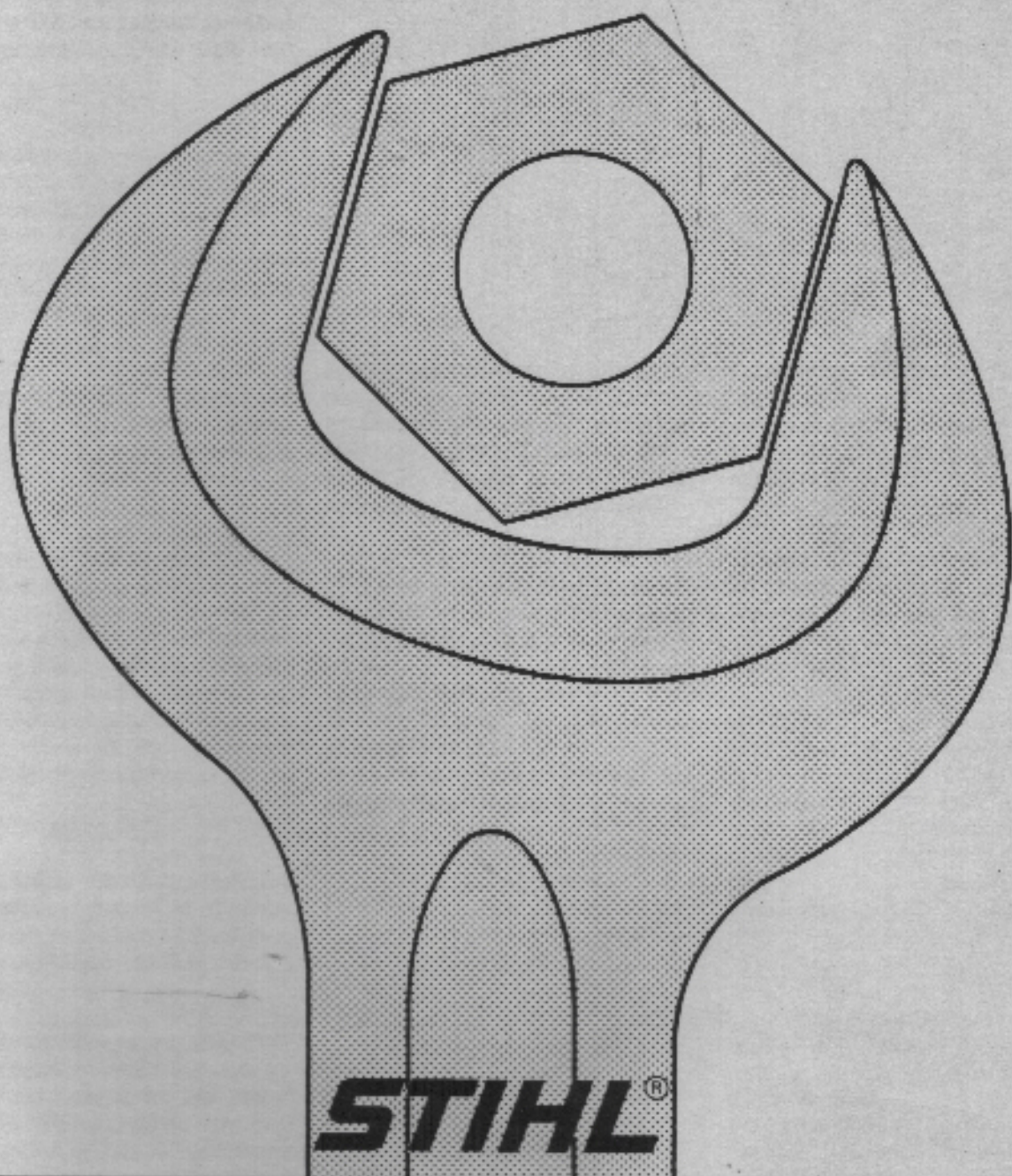


# **STIHL 031, 032**



**SERVICE MANUAL**  
**032 AV (031 AV, 030 AV)**

**SPECIAL TOOL MANUAL**

**FOREWORD**

This service manual covers model 032 chain saws from machine No. 532 9921 onward (start of production) and can thus be used as a basis for professional overhauls and repairs.

The previous service manual for models 030 AV and 031 AV has been discontinued. As the models are substantially identical in their engineering design, the repair procedures in this manual can also be used for models 031/030.

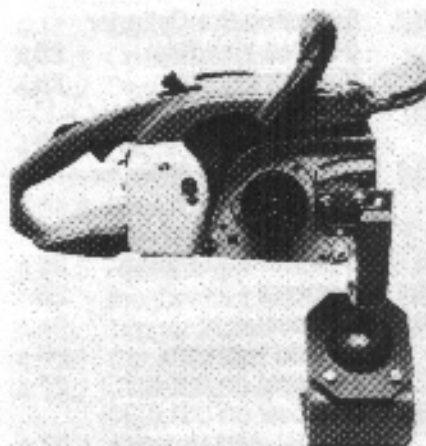
Differences in construction have been dealt with separately and identified by the supplement "031 (030)".

In the event of faults it is quite possible that a single condition may have several causes. It is therefore advisable to consult the "Troubleshooting Charts" in all chapters when tracing faults. We also recommend you make use of the exploded views in the illustrated parts lists when carrying out repairs.

Our technical information bulletins give details of engineering changes which have been introduced since publication of this service manual.

This service manual and all technical information bulletins are intended exclusively for the use of STIHL servicing dealers and staff and must not be passed on to third parties.

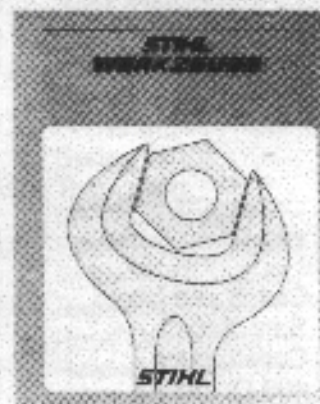
Assembly stand



Repair work is made considerably easier if the chain saw is mounted on assembly stand 5910 850 3100. The saw is quickly attached to the stand by means of the two bar mounting studs and collar nuts.

While on the assembly stand the saw can be swivelled into any required position to suit the repair in question. This not only has the advantage of keeping the component in the best position for the repair but also leaves both hands free for the work and thus effects a considerable time saving.

Special tool manual



Our special tool manual illustrates and lists the part numbers of all available machine-related tools as well as general purpose tools for all machines.

The special tool manual is available in various languages and can be ordered by quoting the appropriate part number listed hereunder.

German	0455 901 0023
English	0455 901 0123
French	0455 901 0223
Spanish	0455 901 0323
Yugoslav	0455 901 0423
Swedish	0455 901 0523
Italian	0455 901 0723
Portuguese	0455 901 1223

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 West Germany

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## 1. SPECIFICATIONS — 032

<b>Engine</b>	Single cylinder two-stroke engine with specially processed cylinder bore.	
	Displacement:	51 cm <sup>3</sup>
	Bore:	45 mm
	Stroke:	32 mm
	Compression ratio:	9,5:1
	Power output:	2.6 kW (3.5 DIN HP) at 10,000 r.p.m.
	Max. torque:	3 Nm at 6,500 r.p.m.
	Max. permissible engine speed:	12,000 r.p.m.
	Mean idle speed:	2,200 r.p.m.
	Crankshaft:	two-part drop forging
	Crankshaft bearings:	2 deep-groove ball bearings
	Crankpin:	14.4 mm diam.
	Big-end bearing:	Needle cage
	Piston pin:	10 mm diam.
	Small-end bearing:	Needle cage
	Rewind starter:	Pawl engagement with automatic starter rope rewind mechanism
	Starter rope:	3.5 mm diam., 1060 mm long
Clutch:	Centrifugal clutch without linings, 69 mm diam.	
Clutch engages at:	3,200 r.p.m.	
Crankcase leakage test with overpressure:	0.5 bar	
with vacuum:	0.5 bar	
<b>Fuel System</b>	Carburetor:	All position diaphragm carburetor with integral fuel pump
	Adjustment:	
	High-speed adjustment screw H:	Open 1½ turns
	Low-speed adjustment screw L:	Open 1½ turns (basic setting with screws initially lightly against their seats)
	Carburetor leakage test with overpressure:	0.4 bar
	Fuel capacity:	0.53 liter
	Fuel mixture:	Regular grade gasoline and two-cycle engine oil Mix ratio 1:40 with STIHL two-cycle engine oil; 1:25 with other branded two-cycle engine oils
Air filter:	Large area, double sided flat wire mesh element	

**Ignition System****032 AV and 032 AVQ**

Type:	Breaker-controlled magneto ignition
Magneto edge gap:	4.7-8.5 mm
Air gap:	0.2-0.3 mm
Ignition timing:	2.1-2.3 mm before T.D.C.
Advance angle:	27-28°
Breaker point gap:	0.3-0.4 mm
Condenser:	Capacitance 0.15-0.19 $\mu$ F
Ignition armature:	Coil winding resistances
	Primary                      Secondary
	0.7-1.0 $\Omega$ 7.7-10.3 k $\Omega$

**032 AVE**

Type:	Transistor-controlled (breakerless) magneto ignition with automatic advance
Air gap:	0.2-0.3 mm
Ignition timing:	2.7 mm before T.D.C. at 8,000 r.p.m.
Advance angle:	30° at 8,000 r.p.m.
Ignition armature:	as 032 AV/032 AVQ

**All models**

Spark plug (suppressed):	Bosch WSR 6 F or Champion RCJ 6 Y Heat range 200 Electrode gap 0.5 mm Spark plug thread M 14 x 1.25, 9.5 mm long
--------------------------	---

**Tightening torques**

Crankshaft nut (ignition side) M 8 x 1:	30 Nm
Hub/clutch carrier (sprocket side):	40 Nm
M 5 socket head screws:	8 Nm
M 5 pan head screws:	5 Nm
M 4 pan head screws:	2.5 Nm
M 5 nuts:	5 Nm
Spark plug:	25 Nm

CHAIN DRIVE AND  
CHAIN BRAKE

SHOIFACHIDING  
NR 000 10 100

Chain and Chain  
Sprocket

STIHL Chain

STIHL Chain

STIHL Chain and Chain Sprocket

STIHL Chain

STIHL Chain

STIHL Chain and Chain Sprocket

### Cutting Attachement

Guide bars:

STIHL Duromatic guide bars with stellite-tipped nose.  
STIHL Rollomatic guide bars with sprocket nose.  
Both types with corrosion-resistant finish and induction hardened rails.

Bar lengths:

Duromatic 40, 45 and 50 cm  
Rollomatic 32, 37, 40 and 45 cm

Chain:

8.25 mm (0.325") Oilomatic  
Rapid-Micro  
8.25 mm (0.325") Oilomatic  
Rapid-Micro S

Chain sprocket:

9.32 mm (3/8") Oilomatic  
Rapid-Standard  
9.32 mm (3/8") Oilomatic  
Rapid-Standard S

Chain speed:

7-tooth for 3/8" pitch  
8-tooth for 0.325" pitch  
18.5 m/s at 8,500 r.p.m.

Chain lubrication:

Fully automatic speed-controlled oil pump with plunger; operative only when chain is running.  
Additional flow quantity control by means of adjusting screw.

Oil delivery rate:

10 cm<sup>3</sup> at 6,000 r.p.m.

Oil tank capacity:

0.31 liter

### Weights

Model:

AV/AVE/  
AVEW

AVQ/AVEQ/  
AVEQW

Dry powerhead less  
bar and chain:

5.6 kg

6.0 kg

Dry powerhead with  
32 cm bar and chain:

6.5 kg

6.9 kg

### Special Accessoires

STIHL repair kit 032

1113 900 5001

STIHL repair kit 030

1113 900 5000

and 031

Gasket set 032

1113 007 1051

Gasket set 031

1113 007 1050



**SPECIFICATIONS**  
**031 AV (030 AV)**

<b>Engine</b>	Displacement:	48 cm <sup>3</sup> (45 cm <sup>3</sup> )
	Bore:	44 mm (42 mm)
	Power output:	2.4 kW/3.2 DIN HP (2.2 kW/3.0 DIN HP) at 8,500 r.p.m.
	Max. torque:	2.85 Nm at 6,000 r.p.m.
	Rewind starter:	Two-pawl starter with automatic starter rope rewind mechanism
	Starter rope:	3.5 mm diam., 960 mm long
<b>Fuel System</b>	Carburetor setting:	
	High-speed adjustment screw H:	Open 1/4 turns
	Low-speed adjustment screw L:	Open 1/4 turns
<b>Ignition System</b>	Type:	Breaker-controlled magneto ignition
	Magneto edge gap:	3.5–7.5 mm
	Ignition timing:	2.0–2.3 mm before T.D.C.
	Ignition armature:	Coil winding resistance Primary            Secondary 0.8–1.1 Ω        6.5–8.0 kΩ
	<b>031 AVE</b>	
	Type:	Transistor-controlled (breakerless) magneto ignition
Magneto edge gap:	0.15–0.25 mm	
Ignition timing:	2.5 mm before T.D.C. at 8,000 r.p.m.	
Advance angle:	25° at 8,000 r.p.m.	

## 2. CLUTCH, CHAIN DRIVE AND CHAIN BRAKE

### 2.1 Clutch and Chain Sprocket

#### 2.1.1 Construction and Operation

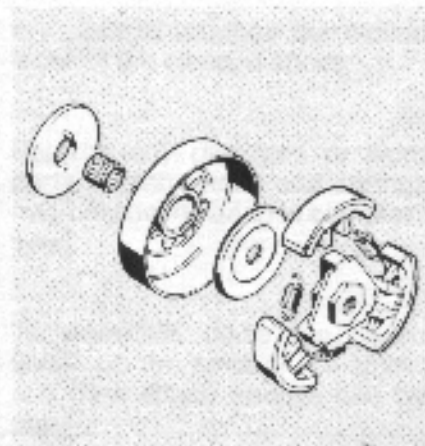
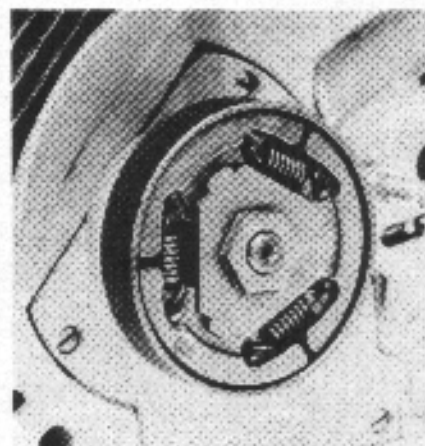
The transmission of power from the engine to the saw chain is effected via a centrifugal clutch. On "Quickstop" models (up to machine No. 6375950) the centrifugal clutch incorporates an isolating clutch which is actuated by the chain brake.

On the **standard clutch** the carrier screwed to the crankshaft is the clutch element which absorbs the torque and acceleration of the crankshaft. It is essential that the carrier is always tightened down to the specified torque load.

On **Quickstop models with an isolating clutch** the driving plate is the element which absorbs the torque and acceleration of the crankshaft and must, therefore, always be tightened down to the specified torque load. The clutch spider is supported on the hub of the driving plate by a plain bearing bush, but not connected to it in any other way. The release plate and locking ring are positively connected to the driving plate, but free to move radially.

When the chain brake is disengaged the release plate is moved radially into its normal position by the cam of the actuating lever, while the locking ring is moved into mesh with the lugs of the clutch spider by spring force. The engine torque is transmitted positively to the clutch spider in this way. To sa-

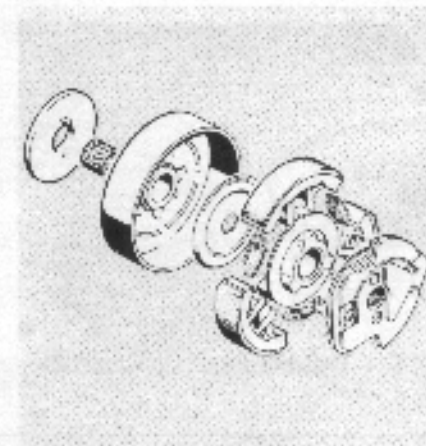
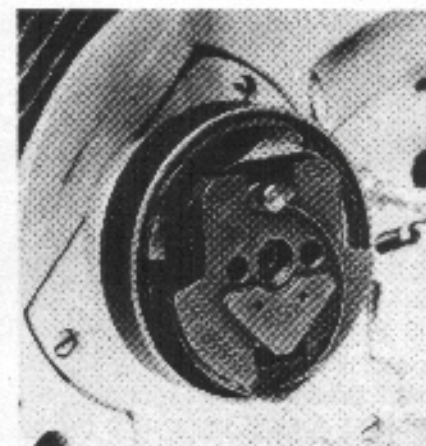
Top:  
Standard Clutch  
Bottom:  
Component parts of standard clutch



eguard against wear the shape of the locking ring and strength of the springs are designed so that the locking ring only engages below approx. 3,500 r.p.m. At higher speeds the centrifugal force of the asymmetric locking ring acts against the spring force - the locking ring does not engage.

When the chain brake is activated, the cam of the actuating lever disengages the release plate and thus the locking ring from the

Top:  
Isolating clutch  
Bottom:  
Component parts of isolating clutch



clutch spider. The clutch spider and driving plate can then rotate independently.

The centrifugal clutch has three clutch shoes; the clutch drum is rigidly connected to the chain sprocket.

When the engine is running at idle speed the clutch shoes are in a state of rest because the tension of the clutch spring(s) is greater than the centrifugal force. As engine speed increases the centrifugal force presses the clutch shoes outward against the clutch drum and thus transmit engine torque via

the clutch drum and chain sprocket to the saw chain.

The preload and strength of the clutch spring(s) are designed so that the clutch shoes begin to make contact with the clutch drum at an engine speed of approx. 3,200 r.p.m. (engagement speed). The clutch engages fully above this speed. It is therefore very important to set the carburetor to the correct idle speed in order to ensure that the clutch engagement

speed is not reached when the engine is idling.

### 2.1.2 Troubleshooting Chart

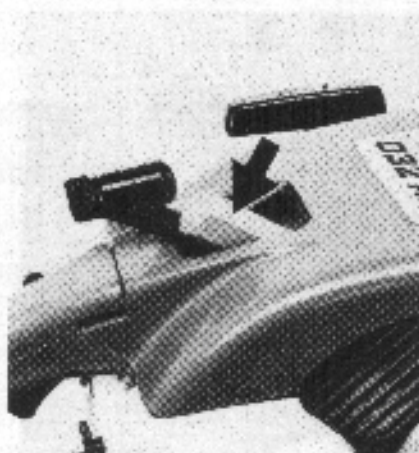
Condition	Cause	Remedy
Saw chain turns at idle speed	Engine idle speed too high	Readjust at idle speed adjusting screw
	Clutch spring(s) stretched or fatigued, spring hooks broken	Replace spring(s)
Isolating clutch does not engage when chain brake is released	Engine idle speed too high	Readjust at idle speed adjusting screw
	Locking ring, release plate or spring broken	Fit new locking ring, release plate or spring
Chain wears at high rate	Incorrect chain tension	Tension chain correctly

## 2.1.3 Disassembly and Repair

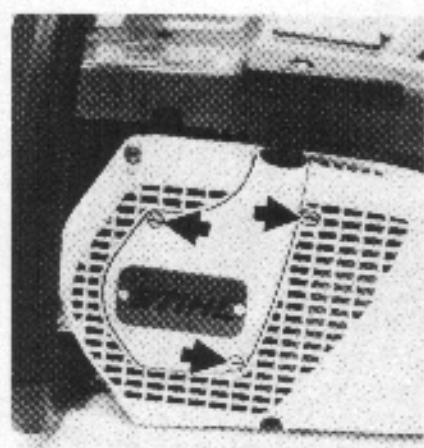
Disengage chain brake



Locking screw in position



Top:  
Unscrew starter cover on 031  
Center:  
Unscrewing clutch spider  
Bottom:  
Refitting clutch shoes



### 2.1.3.1. Standard Clutch with 3 Springs

First disengage the chain brake on Quickstop models and take off the sprocket cover, saw chain and bar. Remove the spark plug and fit the locking screw in its place – screw down by hand as far as it will go. On model 031 it is necessary to remove the starter cover as well.

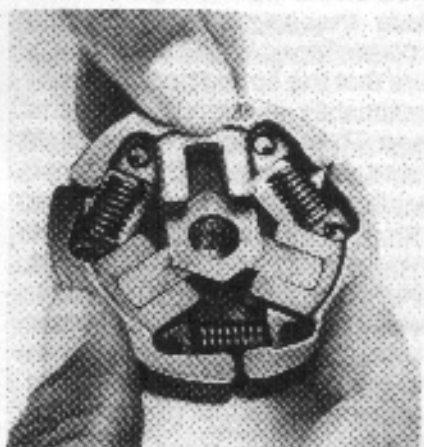
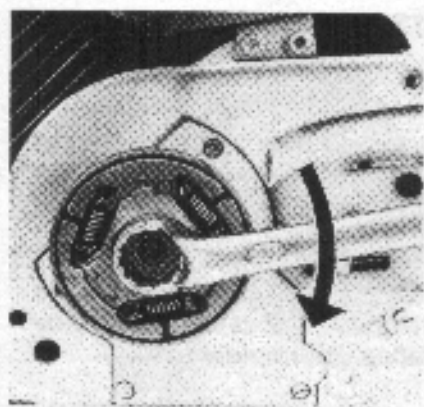
Use a ring or socket wrench to release the clutch spider (left-hand thread – turn clockwise) and unscrew it from the crankshaft. Then take the support washer, chain sprocket with needle cage and cover plate off the crankshaft.

Pull the clutch shoes off the spider and detach the clutch springs. Wash out component parts of the clutch, including the clutch drum and the needle cage, in clean gasoline and blow out with compressed air, if available. If the clutch shoes have linings, use em-

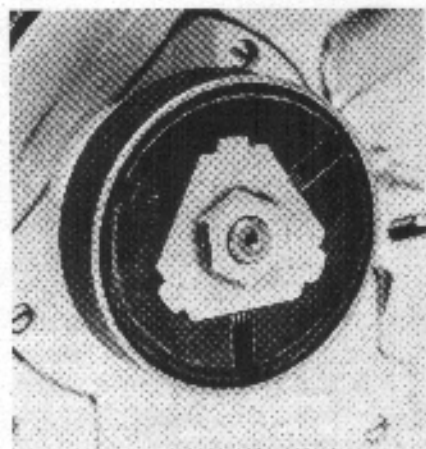
ery cloth to roughen the friction faces of the cleaned shoes.

Replace any damaged or worn parts. Clutch shoes and springs may only be replaced **in complete sets!**

To assemble, place the clutch shoes on the arms of the spider and then attach springs one by one.



Standard clutch with ring spring



### 2.1.3.2 Standard Clutch with Ring Spring

Proceed as described under 2.1.3.2 for removal and disassembly.

Replace damaged or worn parts. The clutch shoes may only be replaced **in complete sets**.

To assemble, first hook the two ends of the spring together and place the spring in the spring groove of one clutch shoe, making sure that the spring hooks are approximately in the center of the shoe. Then place all three clutch shoes on the arms of the spider so that the spring grooves face away from the triangular plate on the spider. Now press the ring spring into the spring grooves of the other two clutch shoes with both your thumbs. Use a blunt tool to push the whole length of the spring down to the bottom of the clutch shoes.

Pressing ring spring into position



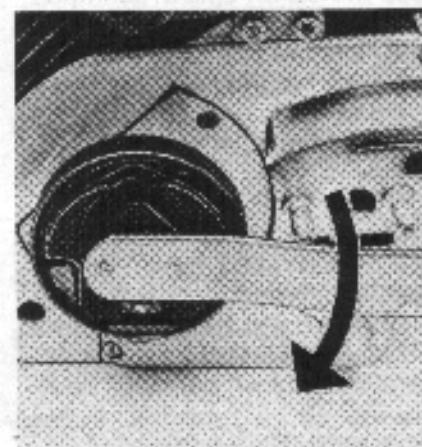
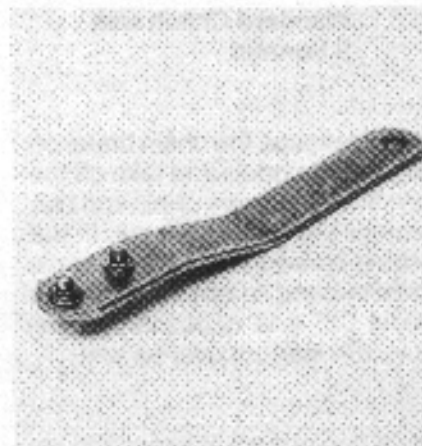
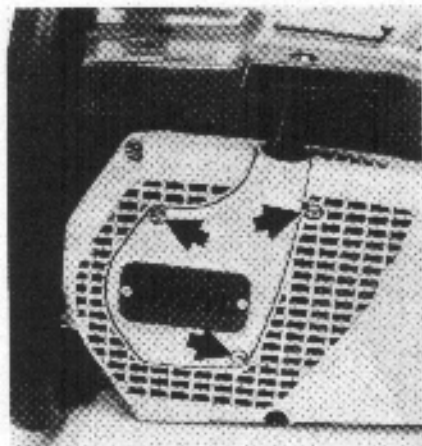
### 2.1.3.3 Quickstop Clutch (with Isolating Clutch)

First disengage the chain brake and take off the sprocket cover, chain and bar. Remove the spark plug and fit the locking screw in its place - screw down by hand as it will go. On model 031 it is necessary to remove the starter cover as well.

Use the face wrench to release the driving plate (left-hand thread - turn clockwise) and unscrew it together with the centrifugal clutch from the crankshaft.

The repair procedure is otherwise as described under 2.1.3.1.

Top:  
Unscrew starter cover on 031  
Center:  
Face wrench 11138903600  
Bottom:  
Releasing the driving plate





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