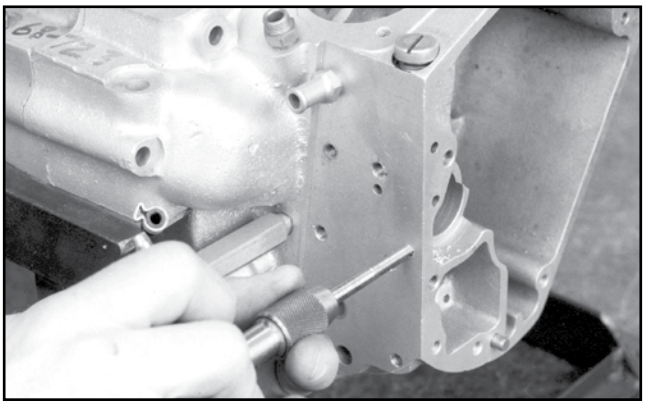
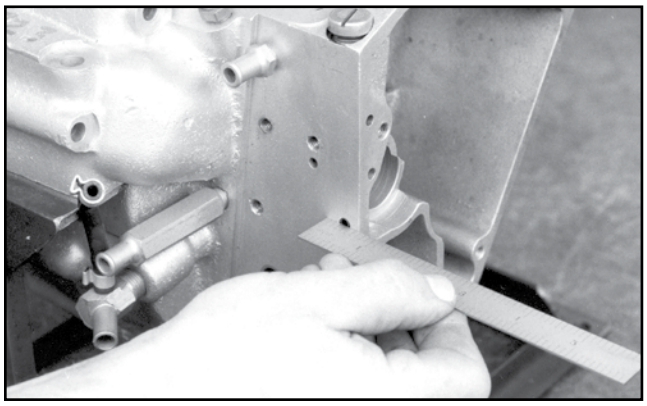


Picture 12



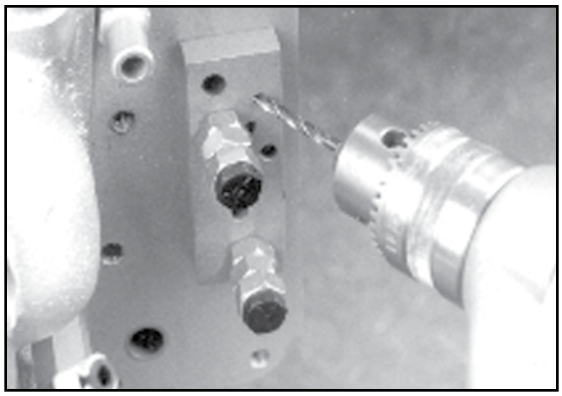
Picture 13

16-0986 Instructions

Crankcase Modification - 1970-1980 Only. Drill Pressure Valve Relief Hole.

A. Install Oil Pump Drill Jig, part 16-0986, on oil pump gasket surface of crankcase.

B. Use .125" (⅛") drill bit to drill pressure relief hole into gear cavity. **See Picture 14.** Apply grease to bit and both sides of case. Withdraw drill frequently during procedure to clear chips.



Picture 14

⚠ CAUTION

Do not perform Step 3 on stock 1936-1969 crankcases or any other crankcase with angled tappet screen passage. Drilled passage will intersect tappet screen oil passage resulting in loss of oil pressure and serious engine damage.

4. Optional Crankcase Modification - 1948-1962 . Plug and Redrill Crankshaft Feed Hole.

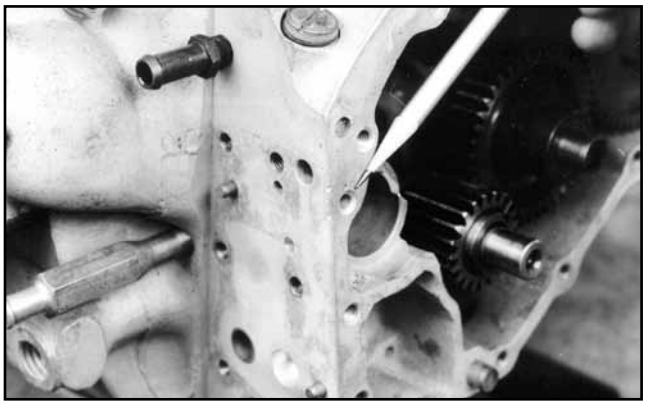
NOTES

- *This modification is recommended only if end oiling is used. Object of modification is to alter 1948-1962 and 1966-1969 crankcases to 1973-later style oiling. With this system heads and lifters get primary, unrestricted oil feed supply. Main and rod bearings in lower end get secondary, low pressure oil after top end is supplied.*
- *1963-1965 and other panheads with outside oilers cannot utilize Step #4, Optional Crankcase Modification, due different oil supply system.*

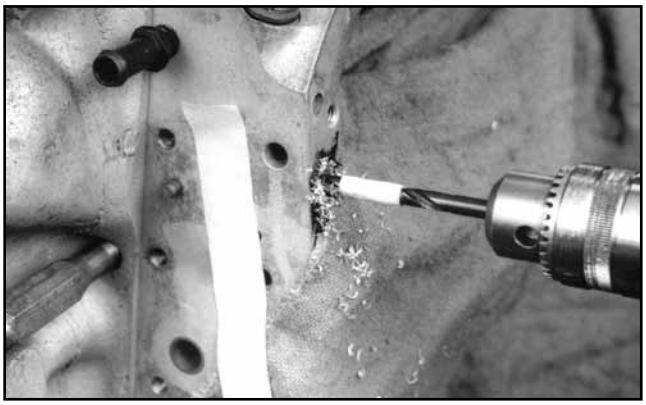
⚠ CAUTION

If performed on outside oiler panhead, modification described in Step 4 will cause oil starvation to top end and extensive engine damage.

A. Wrap masking tape around .203" (13⁄64") drill bit .850" from point to use as depth guide. Carefully drill hole in Picture 15 .850" deep. **See Pictures 15 and 16.**



Picture 15



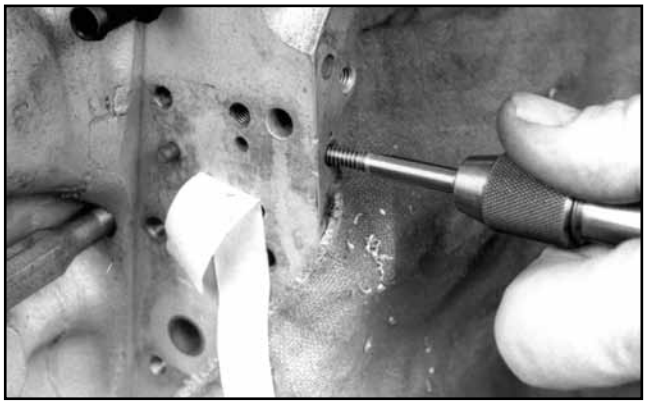
Picture 16

NOTE *- Drill size is very close to hole size and may distort hole if drill is not steadied.*

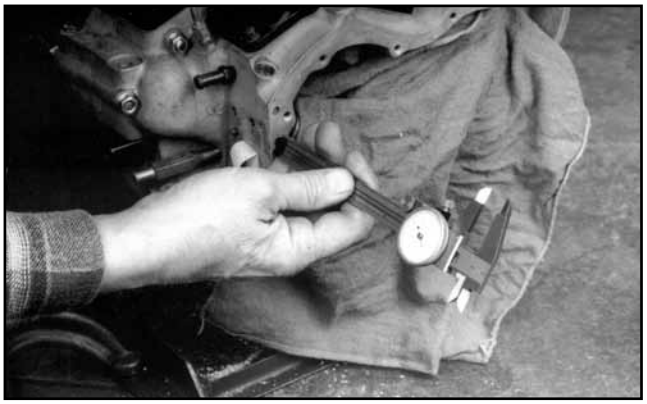
⚠ CAUTION

Distorted hole may cause poor thread fit after hole is tapped.

B. Using 1⁄4-20 tap, carefully thread hole deeply enough for 1⁄4 -20 set screw in kit to bottom out with screw head .540" to .600" below gear cover gasket surface. **See Pictures 17 and 18.** Remove tap periodically, clear chips, and install set screw to check depth.



Picture 17



Picture 18

NOTE *- Do not tap hole deeply enough for set screw to block tappet screen oil feed passage. This will restrict oil supply to lifters and cylinder heads.*

⚠ CAUTION

Restricted oil supply may cause extensive engine damage.

C. On 1948-1952 crankcases, blow air into intersecting hole in pump gasket surface to remove chips. On 1953-1969 crankcases, remove oil plug and lifter screen filter assembly and blow air into passage to remove chips. **See Picture 19.**

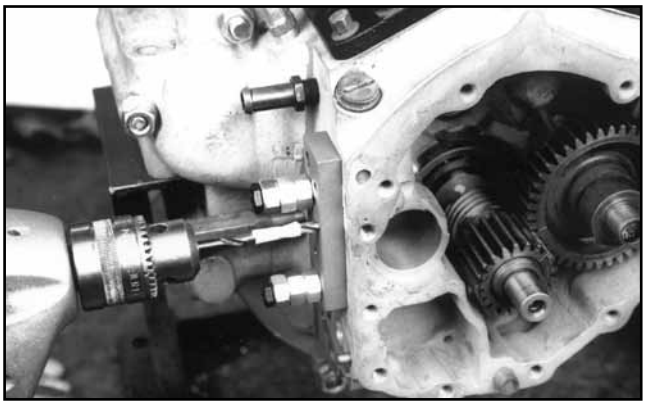
Picture 19

NOTE *- Before attempting to remove chips, remove set screw to allow chips to escape.*

⚠ WARNING

Compressed air and particles dislodged by compressed air are potentially harmful. Wear protective goggles when using compressed air and direct air stream away from yourself and others nearby.

D. Apply Loctite® to threads of ¼ -20 set screw provided and install screw to depth of .540" to .600" below gear cover gasket surface.
E. Install Oil Pump Drill Jig, part 16-0986, on crankcase oil pump gasket surface. **See Picture 20.**



Picture 20

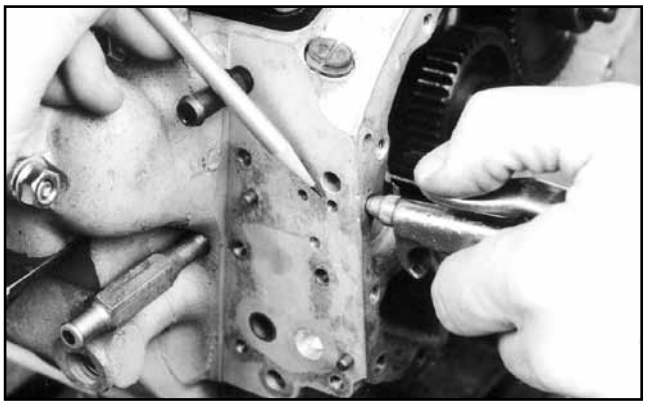
F. Wrap masking tape around .187" (13⁄16") drill bit .750 " (¾") from drill point. Using tape as depth guide, drill hole into pump gasket surface .375" (⅜") deep, until it breaks into passageway just tapped. (Hole to be drilled is ⅜" deep and drill jig is ⅜" thick; ⅜" + ⅜" = ¾"). **See Picture 20.**

NOTE - *Do not drill hole too deep. Hole must not extend into gear cavity side of crankcase.*

⚠ CAUTION

Improperly drilled oil feed hole may cause oil to bleed off into gear cavity resulting in oil pressure loss and possible engine damage.

G. Remove drill jig and blow air into passage to remove chips. **See Picture 21.**



Picture 21

⚠ CAUTION

Metal filings, dirt and other foreign matter can cause extensive damage to oil pump and engine.

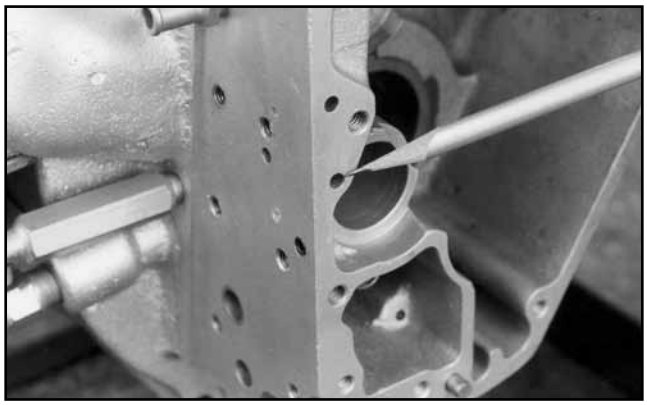
⚠ WARNING

Compressed air and particles dislodged by compressed air are potentially harmful. Wear protective goggles when using compressed air and direct air stream away from yourself and others nearby.

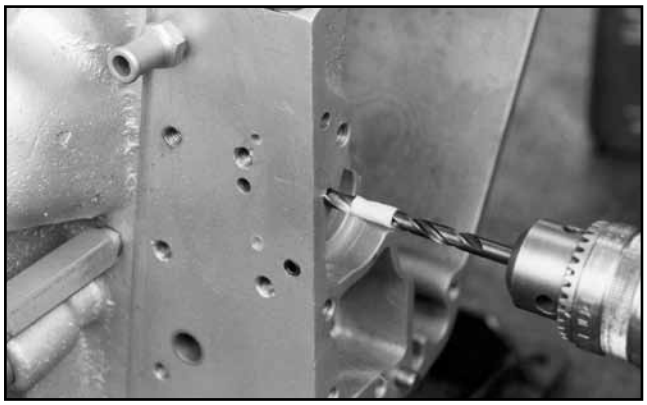
5. Optional Crankcase Modification - 1970-1972 only, Plug and Redrill Crankshaft Feed Hole

NOTE - *This modification is recommended only if hydraulic lifters are used. Object of modification is to convert 1970-1972 cases to 1973 and later oiling to give lifters unrestricted oil pressure first. Then it provides main and rod bearings with lower-pressure oil after top end has been supplied.*

A. Wrap masking tape around .203" (13⁄64") drill bit .375" (3⁄8") from drill point. Carefully enlarge hole in **Picture 22**. Using tape as depth guide, drill hole .375" (3⁄8") deep. **See Pictures 22 and 23.**



Picture 22



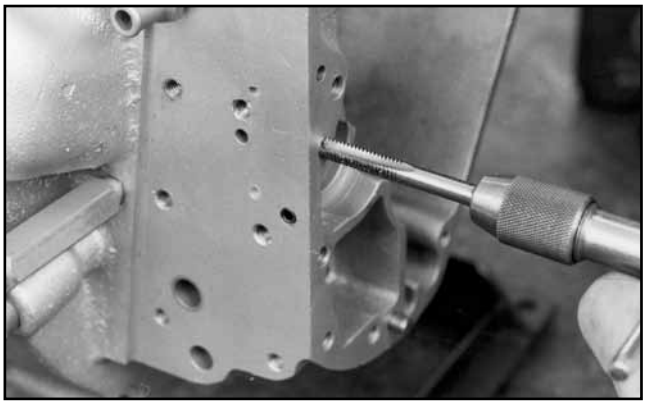
Picture 23

NOTE - *Drill bit size is very close to hole size and may distort hole if drill is not steadied.*

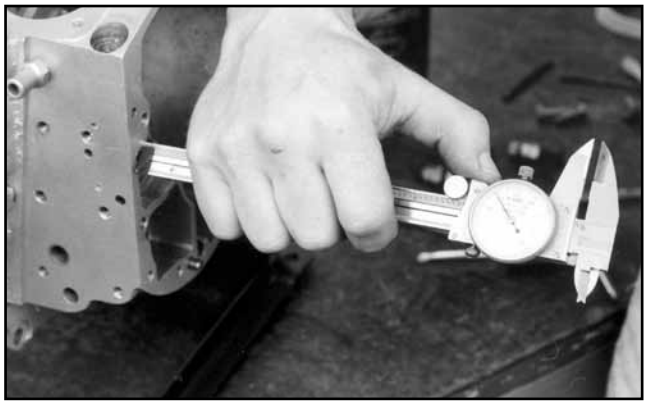
⚠ CAUTION

Distorted hole may cause poor thread fit after hole is tapped.

B. Using ¼ -20 tap, Carefully tap hole deep enough for ¼-20 allen head set screw to bottom out with screw head .125" to .150" below gear cover gasket surface. **See Pictures 24 and 25.** Remove tap periodically, clear chips, and install set screw to check depth.



Picture 24



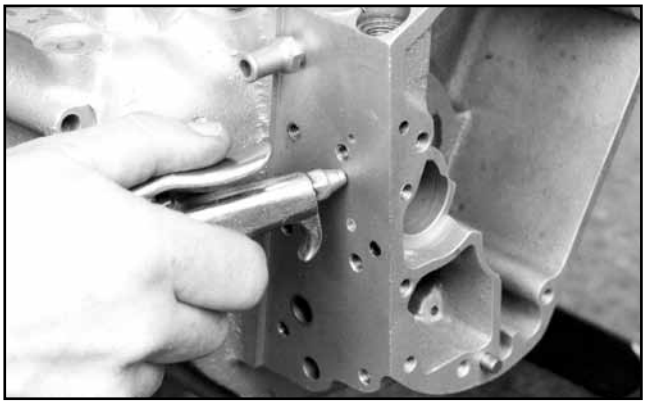
Picture 25

NOTE - *Do not tap hole so deep that screw blocks tappet screen oil feed passage, inadvertently restricting oil supply to lifters and cylinder heads.*

⚠ CAUTION

Restricted oil supply may cause extensive engine damage.

C. Remove oil plug and lifter screen filter assembly. Blow air in top end supply hole directly below top right pump mounting bolt hole to remove chips and ensure that passage is not blocked. **See Picture 26.**

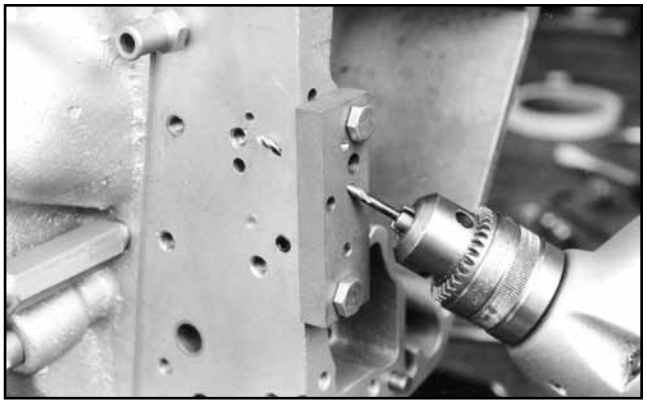


Picture 26

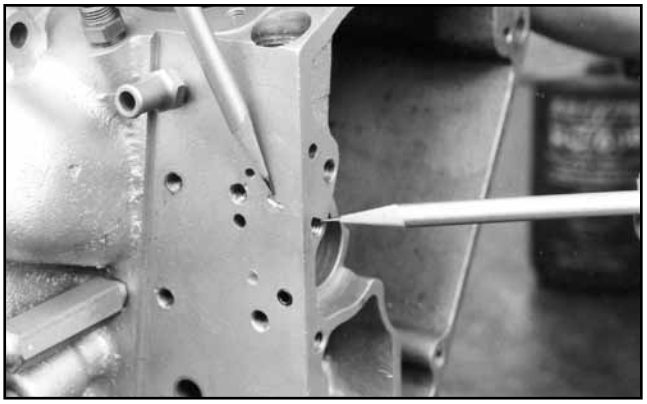
⚠ WARNING

Compressed air and particles dislodged by compressed air are potentially harmful. Wear protective goggles when using compressed air and direct air stream away from yourself and others nearby.

D. Remove ¼ -20 set screw, apply Loctite® to threads and install screw to depth of .125" to .150" below gear cover gasket surface.
E. Install Oil Pump Drill Jig part 16-0986 on gear cover gasket surface. **See Picture 27.**
F. Using a .125" (⅛") bit, drill angled hole from passage just plugged until it breaks through pump gasket surface. **See Pictures 27 and 28.** While drilling hole, withdraw drill frequently to clear chips.



Picture 27



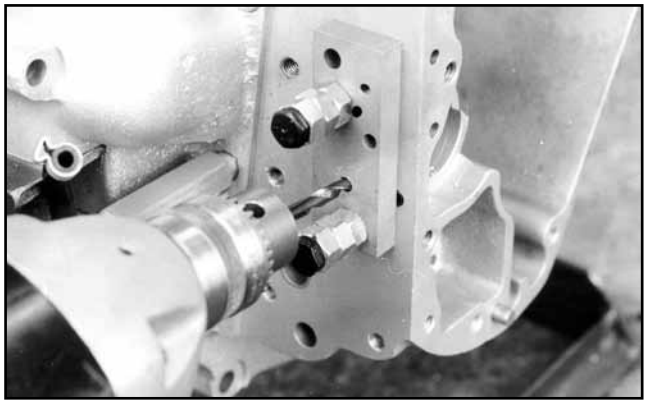
Picture 28

G. Remove drill jig and blow compressed air into passage to remove chips. Note previous cautions regarding compressed air.

6. Crankcase Modification - 1966-1969 or 1970-1972- Drill Primary Chain Oil Supply Hole.

NOTE *- Object of Modification 6 is to update early engines to meter primary chain oil automatically through breather gear rather than manually through external screw in pump body. Update requires use of 1973-later style breather gear such as S&S #33-4239. Gear is not included in kits #31-6202, #31-6203, or #31-6204 but may be purchased separately.*

A. Install Oil Pump Drill Jig, part 16-0986, on oil pump gasket surface as shown in photo. **See Picture 29.**



Picture 29

B. Using .187" (13⁄16") drill bit CAREFULLY drill hole into pump gasket surface until bit breaks out in breather valve gear cavity. **See Picture 29.** If modification is done while engine is still assembled, apply grease to both sides of case to help catch chips.

NOTE - *Drill hole slowly and carefully to avoid contacting opposite wall of cavity when drill breaks through.*

⚠ CAUTION

Contacting breather cavity wall with drill may damage machined surface and make crankcase unusable.

C. Remove drill jig and clear chips away.
D. Carefully debur hole in breather valve gear cavity.

receive a 33% increase in supply oil volume over the stock cast iron pump. In addition, that volume can be increased 25% if the optional S&S pinion and oil pump drive shaft drive gears are installed on engines from 1939 to 1972. *NOTE - If you purchased a kit that does not include these gears, it is recommended that they be considered as the additional oil volume and engine cooling over stock are beneficial.*

IMPORTANT NOTES

● *Chrome Plating the Oil Pump - S&S does not recommend chrome plating the pump. Proper preparation to achieve a good chrome finish requires polishing using buffing compounds. This process using these materials may plug passageways and feed holes and damage the oil pump body and cover. Also, it is extremely difficult to chrome plate an oil pump without getting chrome on the machined surfaces and in the passageways and cavities where the gears and check ball and pressure valve operate. Chrome in these areas as well as on the gasket surfaces impairs the pump's performance by altering the operating tolerances machined into the parts. In addition chrome may break loose causing damage to the pump and the engine.* ***S&S voids its warranty if the pump is chrome plated.***

CAUTION - The processes required to chrome plate an oil pump and chrome plating on critical areas of the pump may cause irreversible damage to the pump and/or impair it's function. Damage to the pump may result in improper oil flow to the engine causing damage to the bearings and other moving internal components.

● *There are important differences in the machining of the oil pump bodies in each kit. Before starting work, compare the pump body you received with those in* ***Picture 1.*** *Each kit is designed to fit a specific year group/s and must not be interchanged.*

Some oil pump kits include other parts such as a drive shaft drive gear, pinion drive gear and/or breather gear kit as well as the oil pump assembly itself. The accompanying chart lists the part numbers of the oil pump body (for identification) and the main components included in each kit whenever applicable.

● *Installation of this oil pump kit may require modification to the engine crankcases where metal filings are generated. It is imperative that these filings, dirt or any other foreign contamination be removed from the oil passageways in the crankcases, oil pump and other engine components prior to final assembly. Compressed air works well to blow out oil passageways.*

CAUTION - Metal filings, dirt and any other foreign contamination in the engine oil may cause premature wear and/or irreversible damage to the oil pump, bearings and other internal engine components.

WARNING - Compressed air and particles dislodged by compressed air are harmful to eyes and body. Wear protective goggles when using compressed air and always direct air stream away from body parts such as hands and eyes and other people near you.

Pump Kit part no.	Pump Body part no.	Drive Shaft Drive Gear part no.	Pinion Shaft Drive Gear part no.	Breather Gear part no.
31-6250	31-6001			
31-6260	31-6003			
31-6270	31-6073			
31-6262	31-6003			33-4239
31-6272	31-6073			33-4239
31-6263	31-6001	33-4230	32-4237§	33-4239
31-6264	31-6001	33-4230	33-4232	33-4239
31-6265	31-6073	33-4230	33-4232	33-4239
31-6266	31-6003	33-4230	33-4232	33-4239
31-6267	31-6003	33-4230	33-4232	33-4251†

§Pinion shaft drive gear, Part 33-4237 for 1939 to 1953 engines is easily distinguishable from 1954 and later gears by the inside diameter splines machined to fit early pinion shafts.
†Breather valve gear, Part 33-4236 for 1977 and later engines has a different pitch diameter from 1977 and earlier gears and can be identified by a circular groove machined in the gear face.

Pump Installation

Read the instructions completely before starting work to familiarize yourself with the installation procedure.

To simplify installation we have provided an installation step summary chart. All S&S oil pump kits available are listed along with the specific year groups they fit followed by the required steps for proper installation. Select the Kit Part # that corresponds with the one you purchased and follow the required steps.

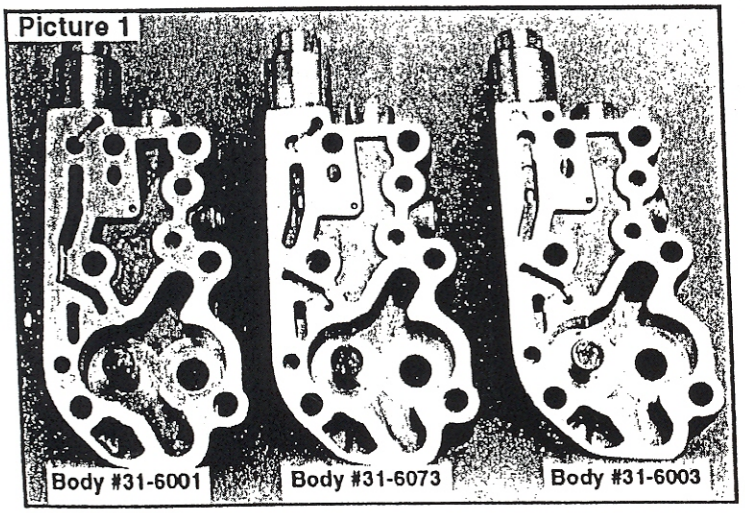
NOTES

● *Only perform the required steps listed for oil pump kit you intend to install.*

CAUTION - Failure to perform all of the required steps may result in damage to the engine.

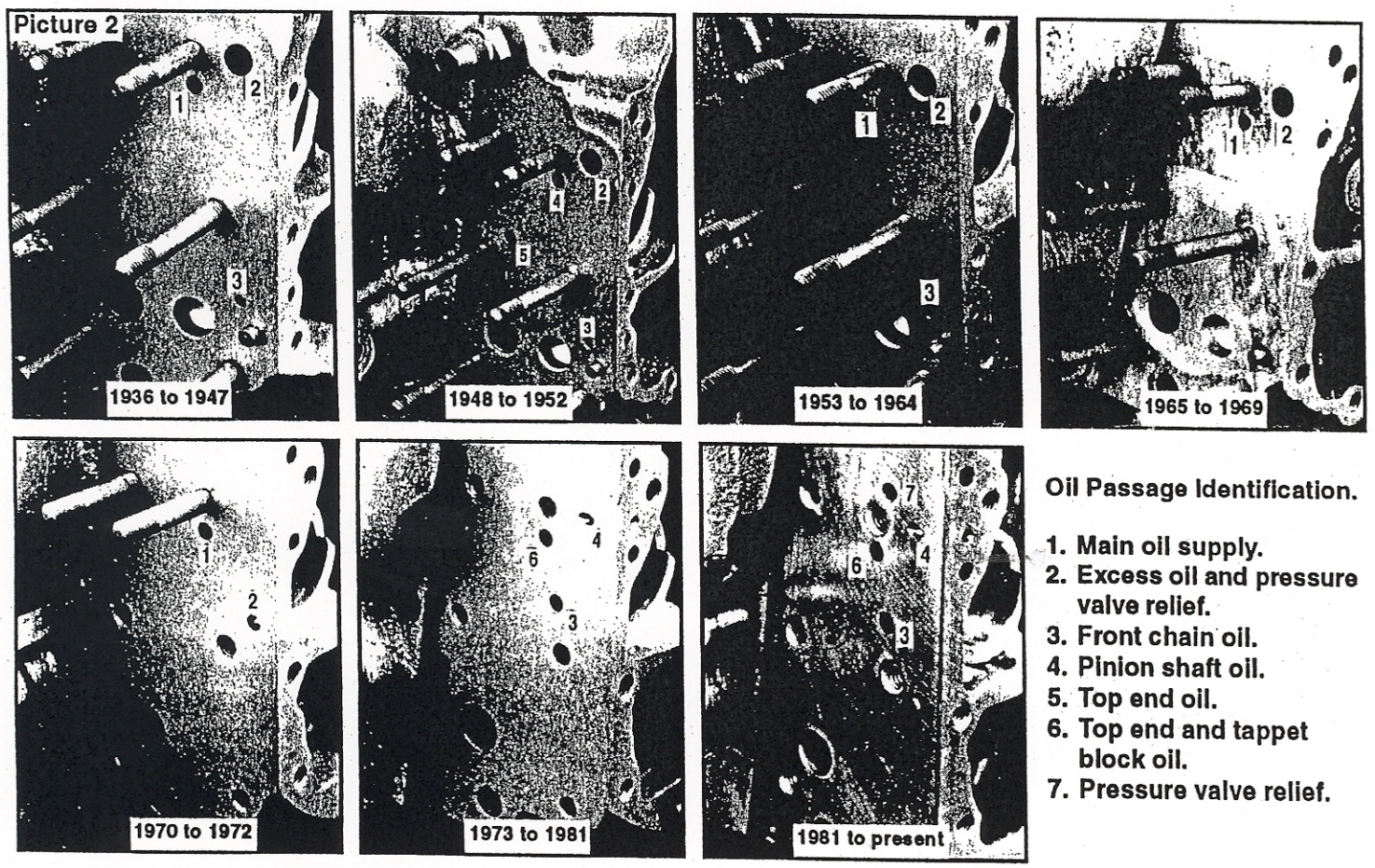
● *We have included a column listing optional steps which may be applied depending upon your requirements. Steps 4 and 5 are designed to update 1948 to 1972 crankcases to 1973 and later oiling. This separates the flow of oil supplied to the top and bottom ends which increases oil pressure to the hydraulic lifters and top end at low engine speeds. While it is not necessary to perform either of these optional steps, S&S strongly recommends that this modification be performed particularly when hydraulic lifters are to be used. It is also suggested that S&S higher speed oil pump drive gears be used.*

Picture 1



Kit Part No.	Year Group	Required Steps	Optional Steps
31-6250	fits 1936 to 1972	1, 2, 3, 8, 9,12, 14	4 ('48 to '69 only - see §), 7, 11
31-6260	fits 1970 to present (see †)	1, 2, 3, 6, 10, 12, 14	5 ('70 to '72 only - see §), 7, 11
31-6262	fits 1970 to 1972	1, 2, 3, 6, 10, 12, 13, 14	5 (see §) 7, 11
31-6263	fits 1948 to 1953	1, 8, 12, 13, 14	4 (see §) 7, 11
31-6264	fits 1954 to 1964	1, 8, 12, 13, 14	4 (see §), 7, 11
31-6265	fits 1965 to 1969	1, 6, 10, 12, 13, 14	4 (see §), 7, 11
31-6266	fits 1970 to 1977	1, 2, 3, 6, 10, 12, 13, 14	5 ('70 to '72 only - see §), 7, 11
31-6267	fits 1977 to present	1, 3, 12, 13, 14	7, 11
31-6270	fits 1965 to 1969 (see †)	1, 6, 10, 12, 14	4 (see §), 7, 11
31-6272	fits 1965 to 1969	1, 6, 10, 12, 13, 14	4 (see §), 7, 11

§ *S&S* recommends this optional step be performed if hydraulic lifters are to be used.
† Installation of this kit requires the use of a 1973 and later breather gear such as *S&S* part 33-4239 or 33-4251 to provide oil to the primary chain. Kits #31-6260 and #31-6270 do not include either of these breather gears. Be sure that correct year breather gear, cam gear and pinion gear combination is used.

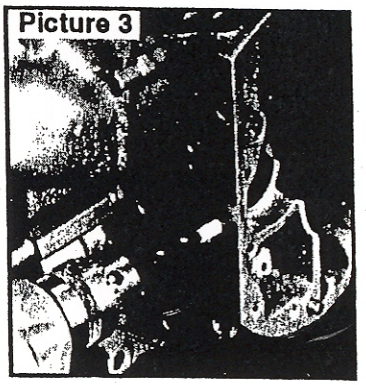


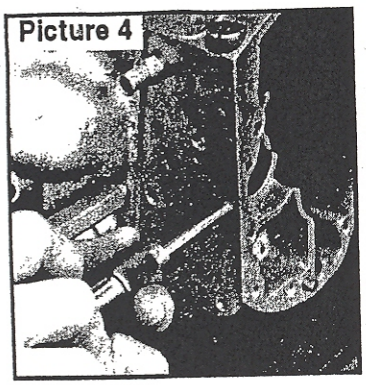
Oil Passage Identification.

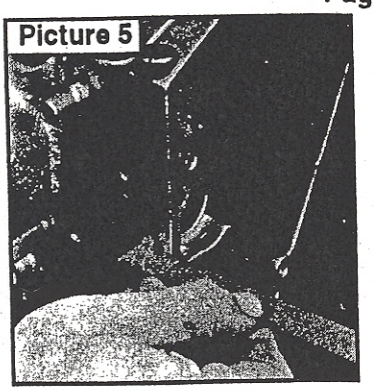
1. **Main oil supply.**
2. **Excess oil and pressure valve relief.**
3. **Front chain oil.**
4. **Pinion shaft oil.**
5. **Top end oil.**
6. **Top end and tappet block oil.**
7. **Pressure valve relief.**

1. **Disassembly and Crankcase Identification - All Years.**
   A. Remove old pump and pump mounting studs from crankcase.
   B. Identify your crankcases by comparing them with those in **Picture 2**. Circle year group below picture that matches your crankcases.
   NOTE - It is very important to correctly identify the type of crankcases to insure that the correct assembly steps are followed.
2. **Crankcase Modification - Plug 3/16" Oil Overflow Hole - 1970 to 1972 Only.**
   A. If engine has been removed from chassis, CAREFULLY enlarge hole in **Picture 3** with .203" (13/64") drill. Grease may be applied to both ends of hole to catch chips if engine has not been disassembled.

Wrap masking tape around drill .225" from drill point to use as a depth guide. If engine is in chassis, do not enlarge hole - go on to Step B.
NOTE - Drill bit size is very close to hole size and may tend to "screw" into hole if drill is not steadied. If drill screws into hole, hole may become slightly larger than desired making thread fit loose.







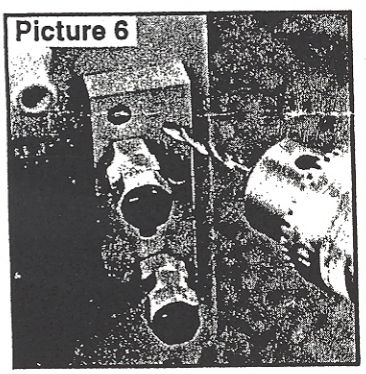
B. Using a 1/4-20 tap, CAREFULLY tap hole deep enough so 1/4-20 allen head set screw provided is flush or slightly below gasket surface. See **Pictures 4** and **5.** Grease may be applied to both ends of hole to catch chips.
NOTE - Do not tap hole so deep that screw can be threaded completely through hole. Objective is to have screw tighten in threads just as it becomes flush with or slightly below oil pump gasket surface.

C. Install 1/4-20 set screw using Loctite on threads.

3. Crankcase Modification - Drill Pressure Valve Relief Hole - 1970 to 1980 Only.

A. Install *S&S* Oil Pump Drill Jig, Part #53-0013, or H-D Crankcase Oil Passage Drilling Jig, Part #94461-81, on crankcase oil pump gasket surface.

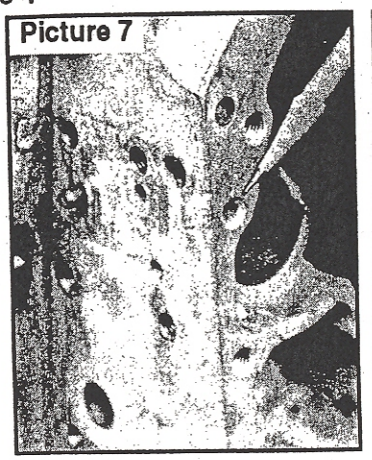
B. Use .125" (1/8") drill bit and drill pressure relief hole into gear cavity. See **Picture 6.** As hole is being drilled, withdraw drill frequently to clear chips. Grease may be applied to both sides of case to catch chips.

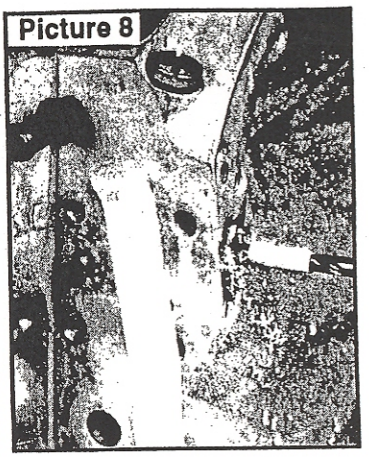


4. Optional Crankcase Modification - Plug and Redrill Crankshaft Feed Hole - Generator Crankcases Only From1948 to 1969.
NOTE - Objective of this modification is to alter cases to 1973 and later style oiling so heads and lifters get primary, unrestricted oil pressure first and lower end main and rod bearings get secondary, lower oil pressure after the top end is supplied. This modification is recommended if hydraulic lifters are to be used.

A. CAREFULLY enlarge hole in **Picture 7** with .203" (13/64") drill .850" deep. Wrap masking tape around drill ***.850" from drill point*** to use as a depth guide. See **Picture 8.**
NOTE - Drill bit size is very close to hole size and may tend to "screw" into hole if drill is not steadied. If drill screws into hole, hole may become slightly larger than desired making thread fit loose.

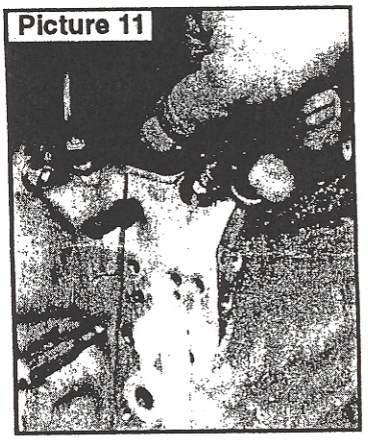
B. Using a 1/4-20 tap, CAREFULLY tap hole deep enough so 1/4-20 allen head set screw supplied in kit bottoms out with screw head 540" to .600" below gear cover gasket surface. See **Pictures 9** and **10.**





Remove tap periodically and screw set screw in place to check depth.
NOTE - Do not tap hole so deep that screw partially or completely blocks original oil feed hole inadvertently restricting oil to the lifters and cylinder heads. This defeats the purpose of the modification.
CAUTION - Severely restricted oil or no oil to the cylinder heads may cause damage to the top end components.

C. On 1948 to 1952 crankcases blow air into intersecting hole in pump gasket surface to remove chips. On 1953 to 1969 crankcases remove oil plug and lifter screen filter assembly and blow air into passage to remove chips. See **Picture 11.**
NOTE - Set screw must not be installed when blowing chips out to prevent chips from getting trapped in passageways.
WARNING - Compressed air and particles dislodged by compressed air are harmful to eyes and body. Wear protective goggles when using compressed air and always direct air stream away from body parts such as hands and eyes and other people near you.



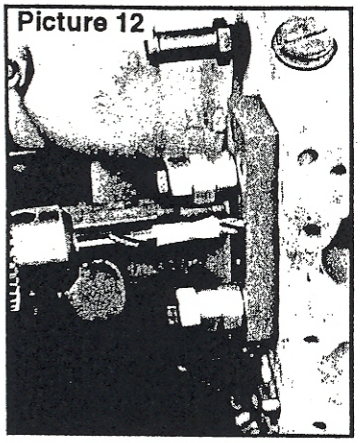
D. Install 1/4-20 allen set screw provided with drop of

loctite on threads to depth of .540" to .600" below gear cover gasket surface.

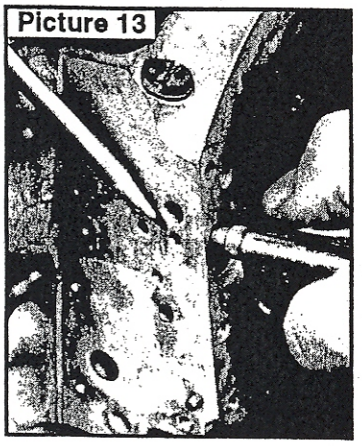
E. Install ***S&S*** Oil Pump Drill Jig, Part #53-0013, on crankcase oil pump gasket surface. See **Picture 12.**

F. Using a .187" (3/16") drill bit drill hole into pump gasket surface 3/8" deep until it breaks into passageway just tapped. Wrap masking tape around drill ***.750 " (3/4") from drill point*** to use as a depth guide. (Hole to be drilled is 3/8" deep and drill jig is 3/8" thick - 3/8" + 3/8" = 3/4"). See **Picture 12.**

Picture 12



Picture 13



NOTE - Do not drill hole too deep. Hole must not extend into gear chest side of crankcases.

CAUTION - Improperly drilled oil feed hole may cause oil to inadvertently bleed off into gear chest cavity resulting in oil pressure loss and possible damage to bearings and other engine components.

G. Remove drill jig and blow air into passage to remove chips. See **Picture 13.**

WARNING - Compressed air and particles dislodged by compressed air are harmful to eyes and body. Wear protective goggles when using compressed air and always direct air stream away from body parts such as hands and eyes and other people near you.

5. Optional Crankcase Modification - Plug and Redrill Crankshaft Feed Hole - Alternator Crankcases Only From1970 to 1972.

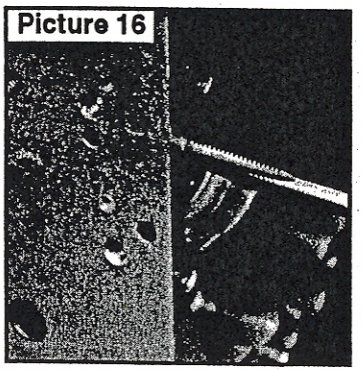
NOTE - Objective of this modification is to alter cases to 1973 and later style oiling so heads and lifters get primary, unrestricted oil pressure first and lower end main and rod bearings get secondary, lower oil pressure after the top end is supplied. This modification is recommended if hydraulic lifters are to be used.

A. CAREFULLY enlarge hole in **Picture 14** with .203" (13/64") drill .375" (3/8") deep. Wrap masking tape around drill ***.375" (3/8") from drill point*** to use as a depth guide. See **Picture 15.**

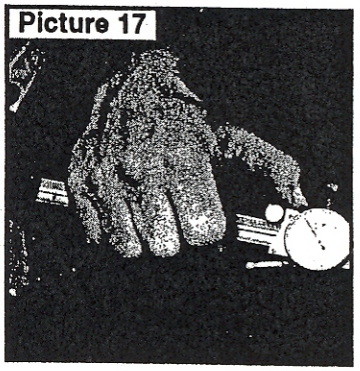
NOTE - Drill bit size is very close to hole size and may tend to "screw" into hole if drill is not steadied. If drill screws into hole, hole may become slightly larger than desired making thread fit loose.

B. Using a 1/4-20 tap, CAREFULLY tap hole deep enough so 1/4-20 allen head set screw supplied in kit bottoms out with screw head .125" (1/8") to .150" below gear cover gasket surface. See **Pictures 16** and **17.** Remove tap periodically and screw set screw in place to check depth.

Picture 16



Picture 17



*NOTE - Do not tap hole so deep that screw partially or completely blocks original oil feed hole to filter assembly above inadvertently restricting oil to the lifters and cylinder heads. This defeats the purpose of the modification. See **Picture 18.***

CAUTION - Severely restricted oil or no oil to the cylinder heads may cause damage to the top end components.

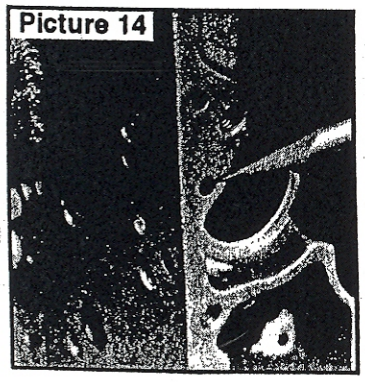
C. Remove oil plug and lifter screen filter assembly and blow air in top end feed hole directly below top right pump mounting bolt hole to remove chips. See **Picture 18.**

WARNING - Compressed air and particles dislodged by compressed air are harmful to eyes and body. Wear protective goggles when using compressed air and always direct air stream away from body parts such as hands and eyes and other people near you.

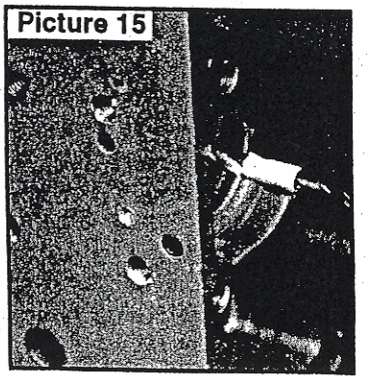
D. Remove 1/4-20 set screw and reinstall with drop of loctite on threads to depth of .125" to :150" below gear cover gasket surface.

E. Install ***S&S*** Oil Pump Drill Jig, Part #53-0013, on gear cover gasket surface as in **Picture 19.**

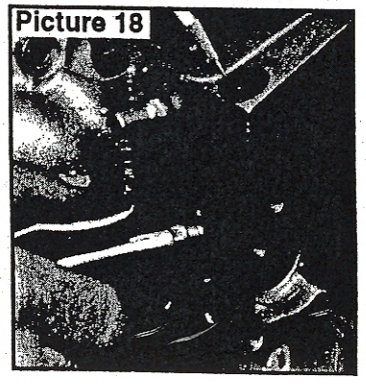
Picture 14



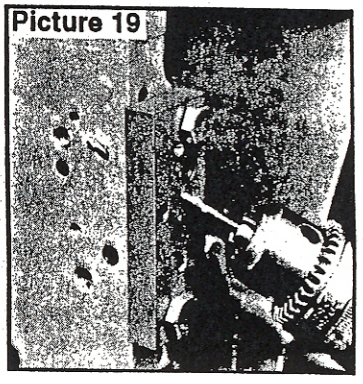
Picture 15



Picture 18



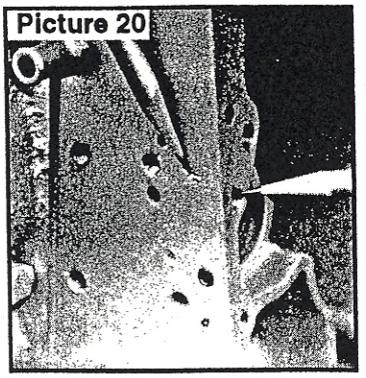
Picture 19



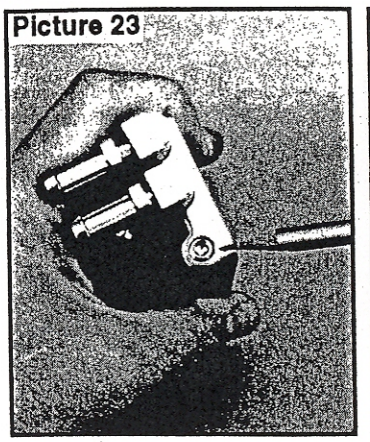
F. Using a .125" (1/8") drill bit drill angle hole from passage just plugged until it breaks out on pump gasket surface. See **Pictures 19** and **20.** As hole is being drilled, withdraw drill frequently to clear chips.

G. Remove drill jig and blow air into passage to remove chips.

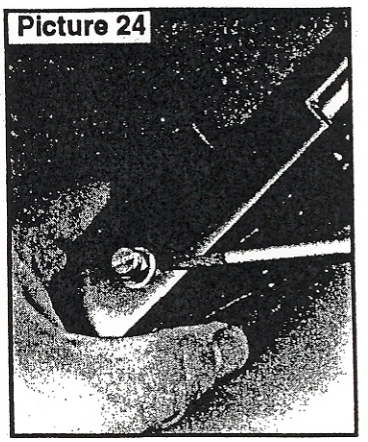
Picture 20



Picture 23



Picture 24



6. Crankcase Modification - Drill Primary Chain Oil Supply Hole - 1965 to1969 with kits using #31-6073 body or 1970 to 1972 with kits using #31-6003 body.

NOTE - Objective of this modification is to update early engines and meter oil automatically to primary chain through breather gear rather than manually through metering screw device in pump body. This update requires use of 1973 and later style breather gear such as S&S #33-4239 This gear is not included in kits #31-6260 or #31-6270

A. Install S&S Oil Pump Drill Jig, Part #53-0013, on oil pump gasket surface as in **Picture 21.**.

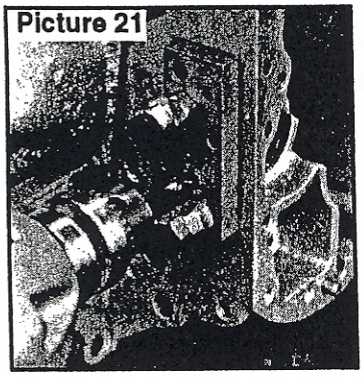
B. Using a .187" (3/16") drill bit drill hole into pump gasket surface until it breaks out in breather valve gear cavity. See **Picture 21.** If modification is done while engine is still assembled, grease may be applied to both sides of case to catch chips.

NOTE - Be careful when breaking out not to contact opposite cavity wall.

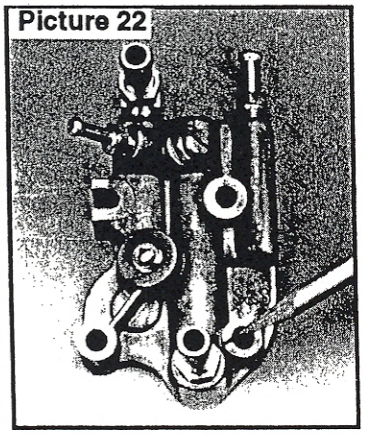
C. Remove drill jig and clear chips away.

D. CAREFULLY debur hole in breather valve gear cavity.

Picture 21



Picture 22



7. Optional Bottom Supply - All Years.

A. Determine whether you wish oil supply to feed in top or bottom of pump cover.

B. Remove and position "S" (supply) fitting accordingly. See **Picture 22.**

8. Primary Chain Oil Supply - 1936 to 1964 Only.

A. Remove small hose fitting to the right of "S" fitting on top of pump cover.

B. Install 1/16" pipe plug provided in hardware package. See **Picture 23.**

C. Install brass washer, 10-32 locknut and adjuster screw provided in hardware package into threaded hole in side of pump body and bottom screw two or three times to seat screw properly. See **Picture 24.**

NOTE - installing plug screw instead of needle valve adjusting screw will not shut off flow of oil, resulting in excess oil blown from the breather

NOTE - Do not overtighten adjusting screw.

CAUTION - If screw is over tightened, damage to threads in pump body and/or adjusting screw seat may result.

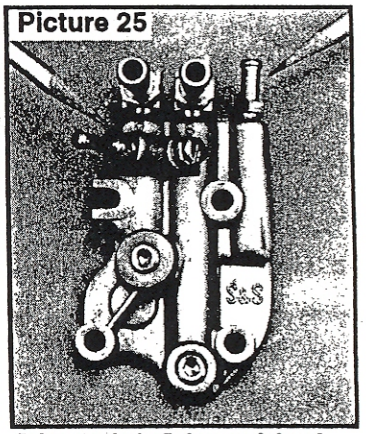
D. Turn screw out about 1/2 turn and tighten locknut against brass washer and body.

NOTE - After engine has been run for a period of time it may be necessary to readjust screw to achieve desired oil volume to primary chain. More often than not, final screw setting will be set closer to the fully closed position.

9. Primary Chain Oil Supply - 1965 to 1972 Only.

A. Use small hose fitting to the right of "S" fitting on top of pump cover for primary chain oil supply. See **Picture 25.**

Picture 25



Primary chain fitting to right of Supply "S" fitting. Rear chain fitting and adjusting screw on left.

B. Install brass washer, 10-32 locknut and adjuster screw provided in hardware package into threaded hole in side of pump body and bottom screw two or three times to seat screw properly. See **Picture 24.**

NOTE - Do not over tighten adjusting screw.

CAUTION - If screw is over tightened, damage to threads in pump body and/or adjusting screw seat may result.

C. Turn screw out about 1-1/2 turns and tighten locknut against brass washer and body.

NOTE - This setting should provide about 1 to 1-3/4 Ozs./minute of flow to primary chain @ 2500 RPM. This can be checked by disconnecting hose to primary chain and measuring delivery of pump into measuring container for one minute @ 2500 RPM after engine has been warmed to operating temperature.

10. Primary Chain Oil Supply - 1965 to Present Only.

A. Use small hose fitting to the right of "S" fitting on top of pump cover for primary chain oil supply for engines from 1965 to 1984. See **Picture 25.**

B. For engines with wet clutch from 1984 to present, remove small hose fitting to the right of "S" fitting on top of pump cover Install 1/16" pipe plug provided in hardware package. See **Picture 23.**

11. Optional Rear Chain Oiler - All Years.

A. Use fitting with adjusting screw in **Picture 25** if rear chain oiler is desired.

B. If rear chain oiler is not to be used, remove hose fitting and replace with 1/16" pipe plug. Remove adjuster screw and replace with 10-32 slotted screw and washer provided in hardware package.

12. Oil Pump Installation - All Years.

A. Thoroughly clean complete pump assembly of all contamination. Recoat all moving parts with oil. **CAUTION - Metal filings, dirt and any other foreign contamination in the engine oil may cause premature wear and/or irreversible damage to the oil pump, bearings and other internal engine components.**

B. Install ***S&S*** oil pump in a normal fashion following standard H-D procedures. Use black 1/4-24 mounting bolts provided for 1948 to 1978 installations and plated 1/4-20 mounting bolts provided for 1979 to present installations. Use flat washers provided only on 2-3/4" bolts and lock washers only on 1-1/2" bolts. Final torque specifications of 90-120 in. lbs. are recommended with paper gaskets.
*NOTE - **S&S** pump bodies, covers and gaskets look similar to stock H-D parts but are unique. THEY MUST NOT BE MIXED WITH STOCK H-D PARTS.*
CAUTION - Improper combinations of oil pump parts may impair the overall function of the pump resulting in oil leaks, improper oil pressure and possible damage to engine.

13. Gear Installation in Gearcase - All Years.

A. Thoroughly clean all gears of contamination. Recoat with clean assembly oil.

B. Install gears in gearcase.
NOTE - Be sure drive shaft key and snap ring are installed properly paying particular attention to snap ring. If not installed correctly, snap ring may come off.
CAUTION - Loss of oil pump drive shaft snap ring may result in disengagement of oil pump drive gear and pinion shaft oil pump drive gear causing loss of oil pressure and damage to the engine.

14. Initial Startup and Post Run Checks - All Years.

A. Prime pump before initial startup.
NOTE - Upon initial startup, be sure oil pressure registers and no "air lock" in supply line has occurred. If there is no oil pressure at initial startup , SHUT ENGINE OFF IMMEDIATELY and locate source of problem before restarting engine.
CAUTION - No oil pressure to engine will cause damage to internal engine components.

B. Run engine for several minutes and check for leaks.

C. Readjust primary and rear chain oilers as needed.

ADDITIONAL NOTES

● ***Mylar gaskets*** *- Paper type gaskets are supplied standard with each kit. **S&S** has high quality mylar gaskets available if they are preferred.*

● ***Excess oil in Knuckleheads*** *- Due to the method of removal of rocker arm oil in Knuckleheads, the increased oil volume generated by the **S&S** pump may be more than the removal system can scavenge. If returning oil in these engines becomes a problem, it can be corrected by metering the flow of oil to the heads through the oil line fitting in the gear cover. **S&S** has performed tests and has successfully run engines (Panheads and Shovelheads as well) with metered oil to the heads using metering holes as small as .060".*

● ***Belt drive primarys*** *- Installation of a primary belt drive on an **S&S** oil pump equipped engine is not a problem.*

1936 to 1964 crankcases using S&S body #31-6001 *- Shut off metering screw on side of pump body. See **Picture 24.***

1965 to 1969 crankcases using S&S body #31-6073- *Remove fitting in pump cover and replace with 1/16" pipe plug provided. See **Picture 23.** Pre-1973 breather gear may be used since oil provided by breather gear to oil primary chain is no longer needed.*

1965 to 1972 crankcases using S&S body #31-6001 *- Shut off metering screw on side of pump body and remove fitting in pump cover and replace with 1/16" pipe plug provided. See **Pictures 23** and **24.***

1970 to present crankcases using S&S body #31-6003- *Remove fitting in pump cover and replace with 1/16" pipe plug provided. See **Picture 23.** Pre 1973 breather gear may be used since oil provided by breather gear to oil primary chain is no longer needed. Be sure correct year breather gear, cam gear and pinion gear combination is used.*