

SPORTS EQUIPMENT

SPORT

Equipment



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INDEX

Absorber (Frt. Shock)	41
Absorber (RR Shock)	49
Axle (Rear)	42
<hr/>	
Bearing Unit (Conn. Rod)	23
Bearing Unit (Crankshaft)	25
Belt (Fan & Gen.)	31
Blocks	14-15
Block Repair (Aluminum)	16
Brakes	40
<hr/>	
Caliper Assy.	40
Camshafts	19
Camshaft Gear	19
Carburetor Assy.	35-37
Case (Diff.)	42
Charts	8-13
Cleaner Assy. (Air)	34-36
Clutch	25
Connecting Rod	23
Cooler (Engine Oil)	25
Crankshaft & Gears	24-25
Cylinder Heads	17
<hr/>	
Differential	42
Distributor (Ign.)	31
<hr/>	
Engines & Blocks	14-15
Engine Electrical	31-32
<hr/>	
Fan Blade	31
Flare (Fender)	51-52
Fluid (Hydraulic) (Brake, Trans. & Diff.)	40-41
Flywheel	24
Fuel Lines	33
<hr/>	
Gear (Camshaft)	19
Gear (Crankshaft)	25
Gear (Transmission)	40
Gear Unit (Ring & Pinion)	43
General Information	3-7
<hr/>	
Header & Pipe Unit	38-39
Heads	17-18

INDEX

Hood (Fiberglass)	51
Housing (RR Axle)	42
Hub & Disc	41
<hr/>	
Ignition & Wiring	31-32
<hr/>	
Lamp (Shield)	28
Lubricant	40-41
<hr/>	
Manifold (Intake)	33
Manifold (Exhaust)	38-39
<hr/>	
Oil Pan	31
<hr/>	
Pan (Oil)	31
Pistons	21-22
Piston Rings	22
Plate (Clutch Cover & Press)	25
Pump Assy. (Oil)	31
<hr/>	
Radiator	31
Ring & Pinion	43
Ring Unit (Piston)	22
Rod (Connecting)	23
<hr/>	
Seat (Bucket)	51
Shaft (RR Stabilizer)	49-50
Shaft (Frt. Stabilizer)	41
Spoiler (Frt. & RR)	49
Springs (Frt.)	41
Springs (RR)	43
Stabilizer	41-49-50
Steering Components	40-41
Specifications	8-13
<hr/>	
Transmissions	40
Tube (Crk/Case & Oil Filler)	31
<hr/>	
Unit (Dual Quad Manifold)	33
<hr/>	
Valves & Valve Train	17-20

GENERAL INFORMATION

Data contained in this brochure is intended as an aid in establishing basic engine specifications for special purpose events. The specifications listed are intended as suggestions only; however, all are proven.

Small Block V-8 Series Engines

302-327-350-365-400 Cu. In. Displacement

The 1968-69 302 and 1970 350 cu. in. RPO Z-28 and LT-1 engines are of high performance design featuring: four bolt main bearing caps, forged high compression pistons for 4-inch bore, 3 and 3.48 inch stroke specially heat treated crankshafts with 8-inch harmonic balancers, selected high quality connecting rods, large port cylinder heads with 2.02" dia. inlet valves and 1.6" dia. exhaust valves, aluminum tuned runner design inlet manifold, 800 CFM Holley 4-barrel carburetor, special oil pan baffling, deep groove belt pulleys, and a mechanical lifter camshaft with special push rods and rocker arms.

BASIC INTERCHANGEABILITY FEATURES OF THE SMALL BLOCK SERIES

Since 1968 when all small displacement engines were brought to a common main and connecting rod journal size (2.45 and 2.1" respectively) there has been a basic interchangeability in components that allows building of five (5) engine displacements out of two blocks and three crankshafts. They are as follows:

283	3 7/8" Bore	3" Stroke
307	3 7/8" Bore	3 1/4" Stroke
302	4" Bore	3" Stroke
327	4" Bore	3 1/4" Stroke
350	4" Bore	3.48" Stroke

In 1969, the 4" bore block was updated to incorporate four bolt main bearing caps and increased thickness main bearing webs. Since this is the block of primary interest, the 283 and 307 displacement engines will not be considered in the text.

THE 400 CU. IN. SMALL BLOCK

In 1970, a 4 1/8" bore block was introduced in regular production as a 2 barrel carbureted regular fuel engine at 400 cu. in. displacement. This block features siamesed cylinder bores, (no cooling water between bores) four (4) bolt main bearing caps, and an increase in main bearing diameter to 2.65". It also uses a nodular iron crankshaft and 5.565" length connecting rod (vs. 5.7" for all other small block engines).

Because of the potential for larger displacements and new bore/stroke ratios from the 400 cu. in. block, a great deal of interest has been shown by engine builders in using it. Some parts common to other engines such as camshafts, cylinder heads and intake manifolds are interchangeable. Due to the lack of suitable crankshafts, connecting rods and pistons, no instructions are included on this engine except as follows:

In the event you should attempt to build a high performance engine using the new 4 1/8" bore block, the following cautions should be observed:

1. This engine, at 3.75 stroke, in production is externally balanced with an unbalanced torsional damper and flywheel. These parts or similarly unbalanced parts may be necessary to achieve final engine balance.
2. Because of the siamesed cylinder bores, steam holes are drilled through the cylinder block between

cylinders above and below the siamesed joint. For good cooling water circulation and to relieve steam and air pockets, it is necessary that these holes be matched with similar holes in the head gasket and cylinder heads.

3. To prevent head gasket overhanging into the cylinder bore, the production or other large bore head gasket should be used.

The 4-1/8" bore bare block is available through Dealer Parts Departments.

TWO BASIC POSSIBILITIES FOR CONSTRUCTING A 365 CID ENGINE:

1. CHEAP & EASY: Use a 4" bore block, 350 CID 3.48" stroke crankshaft, 350 CID forged pistons, (.030 O.S.) and small journal pre-1968 connecting rods. Other specialty rods could be used also.
 - a. Block should be bored to 4.030.
 - b. Crankshaft should be reground for 3-9/16" stroke and small journal "302" rods.
 - c. Cut piston tops to establish correct deck height or purchase connecting rods with special length.
 - d. Remainder of parts common to previous special high performance small block V-8 engines.
2. BETTER & MORE EXPENSIVE: Use a 4-1/8" bore block (400 CID) and have a special crank made from a forging to fit the large journal mains and rods of the "400" block (2.1" rod journals and 3.4" stroke).
 - a. Obtain and use 4.125" forged pistons.
 - b. Obtain and use specialty rods of correct length for pistons involved.
 - c. Use red composition cylinder head gaskets and drill steam holes in cylinder heads to match holes in block..
 - d. Same as in (d.) above.

Large Block M-4 Series Engines

396-427-454 CU. IN. Displacement

To build a 396 cu. in. heavy duty engine, it is necessary to start with an RPO L-78 engine which has 4 bolt main bearing caps and oil cooler provisions in the cylinder case. This engine is built with the same large port cylinder heads and inlet manifold as high performance 427's. The RPO L-78 was rated at 375 H.P. in production, and parts for increased performance are available from the heavy duty parts list.

In 1970, the RPO L-78 engine was increased in displacement to 402 cu. in. by increasing the bore size to 4.125" from 4.094". In addition, the engine is now equipped with a low profile aluminum intake manifold for improved hood clearance.

To build a 427 cu. in. heavy duty engine, it is easiest to start with an RPO L-88 engine assembly which comes with aluminum cylinder heads, or an RPO L-88 short block. This includes: 12.5:1 compression ratio piston, connecting rods with 7/16" bolts which are 100% magnafluxed and coplating at the pin end for floating wrist pins and chain drive camshaft. If you procure a complete engine assembly, you also get 7/16" diameter pushrods and guide plates.

To build a 454 cu. in. heavy duty engine, it is easiest to start with an engine assembly which comes with aluminum cylinder heads or use a 427 bare block and build-up. This includes: 12.5:1 compression ratio pistons, connecting rods with 7/16" bolts which are 100% magnafluxed and coplating at the pin end for floating wrist pins and chain driven camshaft. Use 7/16" pushrods as described above for the 427.

The 427 RPO L-88 features "open" combustion chamber aluminum heads introduced first in 1969. The 1968 and earlier aluminum heads and all cast iron heads will not fit on these engines due to piston to head interference.

Additionally available for 1970 was the RPO LS-6 454 cu. in. engine which features 11:1 compression ratio, forged pistons with pressed pins, mechanical valve lifters, and high performance conventional combustion chamber cast iron heads, with a low profile aluminum intake manifold.

Any 427 cu. in. engine with four bolt main bearing caps can be upgraded to RPO L-88 427, or 454 cu. in. heavy duty specifications by using components from the Dealer Catalog having the Heavy Duty Parts Section.

NOTE: Caution should be exercised in increasing displacement to 454 cu. in. Additional connecting rod clearance may be required in the block and the proper torsional damper and flywheel should be used to obtain correct engine balance. Due to the increased stroke, it is not possible to internally balance the engines with the crankshaft counterweights; so part of the balance is included in the damper and flywheel.

LS-7 "454" Heavy Duty Engines were not produced on the assembly line. Those in existence were built-up from service parts.

CARBURETORS

	3957859	3955205	3965736
THROTTLE BORE	1-9/16T-Bore 600	1-3/4T-Bore 850	1-11/16 T-Bore 830
	DUAL PUMP	DUAL PUMP	DUAL PUMP

VALVE SPRINGS

	Z-28 3927142	L-88 ZL-1 3916164	L-88 ZL-1 3989354
TYPE	DUAL	1ST DESIGN TRIPLE	2ND DESIGN TRIPLE
LENGTH			
CLOSED	110 @ 1.7"	75 @ 1.88" OUTER	88 @ 1.90" OUTER
OPEN	260 @ 1.25"	193 @ 1.32" OUTER	226 @ 1.30" OUTER
OPEN		101 @ 1.22" INNER	100 @ 1.20" INNER
CLOSED		41 @ 1.78" INNER	40 @ 1.80" INNER

CAMSHAFT

	Opt. 302-350 3927140	L-88 3925535	L-88 3925533	ZL-1 Base 302 3959180	Base 350 3849346	Base 350 Z/28 3972178
LIFT (ZERO LASH)						
INLET	.492	.562	.579	.4850	.4850	.4850
EXHAUST	.512	.584	.620	.4850	.4850	.4850
VALVE TIMING						
OPENING BTC	53°	61°	62°	60°50'	60°50'	42°40'
CLOSING ABC	100°	113°	105°	105°23'	105°23'	94°20'
DURATION	333°	354°		346°13'	346°13'	317°
LASH	.022	.024 CAST IRON HEADS .022 ALUMINUM HEADS	.022	.030	.030	.024
EXH. OPENING BBC	101°	108°	106°	108°50'	108°50'	112°50'
CLOSING ATC	65°	72°	73°	57°23'	57°23'	53°23'
DURATION	346°	360°		346°13'	346°13'	346°14'
LASH	.024	.026 CAST IRON HEADS .024 ALUMINUM HEADS	.024	.030	.030	.030

DISTRIBUTOR

IGN. TIMING (BTDC)	12°-16°	12°	12°	14°	6°	14°
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CYLINDER HEAD

COMBUSTION CHAMBER VOL.	Z-28 302 3991492 62.07CC	L-88 427 3919838 107.09CC	L-88/ZL-1 427 3946072 116.8CC	LT-1 Z-28 350 3987376 62.07CC	F.I. 327 3958604 62.07CC	LF-6 400 V-8 3977544 75.81CC
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VALVES

	L-88/ZL-1 3969815	L-88 *3879618	L-88 *3879619	L-88/ZL-1 3946077	302-350 3849814	302-350 3849818
SIZE	2.195	2.305	1.845	1.885	2.023	1.605
TYPE	INT.	INT.	EXH.	EXH.	INT.	EXH.

* USED IN CAST IRON HEADS WITH SAME COMBUSTION CHAMBER AS 1967-68 1ST DESIGN ALUMINUM HEADS

CAMSHAFT 3994094

<u>LIFT (ZERO LASH)</u>		
	INLET	.623
	EXHAUST	.621
<u>VALVE TIMING</u>		
INL.	OPENING BTC	72°
	CLOSING ABC	108°
	DURATION	364°
	OVERLAP	148°
LASH		.020
EXH.	OPENING BBC	110°
	CLOSING ATC	76°
	DURATION	362°
	OVERLAP	148°
LASH		.020
<u>DISTRIBUTOR</u>		
IGN. TIMING (BTDC)		14°

RECOMMENDED CLEARANCES FOR SMALL BLOCK V-8 ENGINES

Piston to Bore: .0055 - .0065" measured at centerline of wrist pin hole, perpendicular to pin. Finish bores with #500 grit stones or equivalent (smooth).

Wrist Pin: .0004 - .0008" in piston, (.0005 - .0007" in rod for floating pin. 0 - .005" end play preferred).

Rod Bearing: .002 - .0025", side clearance .010-.020"

Main Bearing: .002 - .003" minimum preferred, .005 - .007" end play.

Piston to Top of Block:
(Deck Height) .012 - .015" average below deck. No part of piston except dome to be higher than deck of block. Deck height specified is for a .020" steel head gasket. If a thicker head gasket is used, a piston to cylinder head clearance of .035 should be considered minimum.

Valve to Piston: .010 Intake, .020 Exhaust checked at zero lash during valve overlap cycle. These are absolute minimum clearances to allow for heat expansion only and will not accommodate valve float from overrevving. Oversized pistons are available through Dealer Parts and Service if needed to restore proper piston to bore clearance when rebuilding.

NOTE: Additional specifications are available in the Dealer Shop Manuals.

RECONDITIONING SPECIFICATIONS:

Connecting rod bearing bore diameter - $\frac{2.2247}{2.2252}$ inch (302-327-350 exc 400)

Main bearing bore diameter - $\frac{2.6406}{2.6415}$ inch (302-327-350 exc 400)

RECOMMENDED BOLT TORQUE FOR SMALL BLOCK V-8 ENGINES

	<u>Torque</u>	<u>Apply the following before installation of part involved</u>
Main Bearing	Inner 70 ft. lb. Outer 65	Molykote Molykote
Conn. Rod Bolt 3/8"	45-50 ft. lb. (.006" stretch preferred)	Oil
Cylinder Head Bolt	65 ft. lb.	Sealant
Rocker Arm Stud (1970 Head)	50	Sealant
Camshaft Sprocket	20	Oil
Intake Manifold	25	Oil
Flywheel	60	Oil
Spark Plugs	25	Dry
Exhaust Manifold	25	Antisieze
Oil Pan Bolt	165 in. lb.	Oil
Front Cover Bolt	75 in. lb.	Oil
Rocker Cover	25 in. lb.	Oil

RECOMMENDED CLEARANCES FOR LARGE BLOCK M-4 ENGINES

Piston to Bore: .0065-.0075" measured at centerline of wrist pin hole, perpendicular to pin. Finish bores with #500 grit stones or equivalent (smooth).

Piston Ring: Minimum end clearance top - .022 second - .016 Oil - .016

Wrist Pin: .0004-.0008" in piston, .0005-.0007" in rod. End play 0-.005" preferred.

Rod Bearing: .002-.003", side clearance .015-.025" minimum preferred.

Main Bearing: .002-.003", minimum preferred, .005-.007" end play.

Piston to Top of Block: (Deck Height) .0-.005" average above deck, with piston centered in bore. Deck height specified is for a .040" (compressed) Victor composition head gasket. If thinner head gasket is used, deck height may be reduced accordingly. For best results, piston deck to cylinder head clearance should be established at .035-.040" with piston centered in bore.

Valve to Piston Clearance: .020" exhaust, .015" intake at 0 valve lash. Note: These are to be considered absolute minimum clearances for an engine to run below the valve train limiting speed of 7600 RPM. If you intend to run up to valve train limiting speed, more clearance should be allowed. Oversized pistons are available through Dealer Parts and Service if needed to restore proper piston to bore clearance when rebuilding.

NOTE: Additional specifications are available in the Dealer Shop Manuals.

RECONDITIONING SPECIFICATIONS:

Connecting Rod Bearing Bore Diameter 2.3247 - 2.3252 Inch

Main Bearing Bore Diameter 2.9371 - 2.9380 Inch

RECOMMENDED BOLT TORQUE FOR LARGE BLOCK M-4 ENGINES

		<u>Torque</u>	<u>Apply the following before installation of part involved</u>
Main Bearing	Inner	110 ft. lb.	Molykote
	Outer	110 ft. lb.	Molykote
Conn. Rod Bolt 7/16"	#3959186	60-65 ft. lb. (.007" stretch preferred)	Oil
	#3969864	67-73 ft. lb. (.009" stretch)	Oil
Cylinder Head Bolt	Long	75	Sealant
	Short	65	Sealant
Rocker Arm Stud		50	Oil
Camshaft Sprocket		20	Oil
Intake Manifold		25	Oil
Flywheel		60	Oil
Spark Plugs		25	Antisieze
Exhaust Manifold		20	Antisieze
Oil Pan Bolt		165 in. lb.	Oil
Front Cover Bolt		75 in. lb.	Oil
Rocker Cover		25 in. lb.	Antisieze

430-465-495 CID

The aluminum block used for the above is special. No relationship with the "427" exists. The bore is 4.44.

:--:~:

It is a good thing to know, the "430" utilizes a special Crank and new longer rods, the "465" utilizes an L-88 Crank and L-88 Rods, the "495" builds-up with a "454" Crank and L-88 Rods.

:--:~:

The "430" Crankshaft has a stroke of 3.470.

:--:~:

The "430"- "465"- "495" bare blocks come without finish hone on the bores. Because of the proximity of the head bolt holes to the cylinders, bore distortion occurs when head bolts closest to the bores are torqued. It is recommended prior to honing 7/16 NC thd. bolts and washers (not regular head bolts) be installed and bolts torqued to 60 ft. lbs. Hone bores with bolts and washers installed, to a #500 grit (smooth) finish.

Some head bolt holes have been counterbored 1/4" on each bank requiring the new extra long bolts.

:--:~:

The "430"- "465"- "495" head gasket has a stainless wire roller inside the head around each hole opening and functions as an "O" ring. Additional reworking of the block for an "O" ring is not required nor recommended with the gasket.

The 4" crankshaft for 495 cu. in. displacement requires the use of a 454 cu. in. unbalanced harmonic dampener and an unbalanced flywheel. If internal crank balance is desired, it is necessary to add heavy metal to crankshaft counterweights.

:--:~:

All other clearances and specifications are based on the ZL-1 aluminum engine instructions.

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3992038	BLOCK (Bare)	1
3976081	GASKET (Cylinder Head)	2
3976082	BOLT (Cylinder Head)	10
3965746	CRANKSHAFT (Semi-Finished, Center Points & Main Journals Machined) (430)	1
3963642	ROD (Connecting) (6.404-6.406 C/L Crank to C/L Pin)	8
3992043	PISTON (Std.) (430-495)	8
3992044	PISTON (.001 O.S.) (430-495)	8
3992045	PISTON (.005 O.S.) (430-495)	8
3992051	PISTON (Std.) (465)	8
3992052	PISTON (Std. Hi Limit) (465)	8
3992053	PISTON (.005 O.S.) (465)	8
3992061	RING UNIT (Piston) (Std.)	8
3992062	RING UNIT (Piston) (.005 O.S.)	8
3964238	RETAINER (Piston Pin) (for floating pin)	AR

430-465-495 CID

6263745	SLEEVE (Cylinder) (Std.) Aluminum Block	AR
6263746	SLEEVE (Cylinder) (.005 O.S.) Aluminum Block	AR
6263747	SLEEVE (Cylinder) (.010 O.S.) Aluminum Block	AR

ENGINES & BLOCKS

350 CID

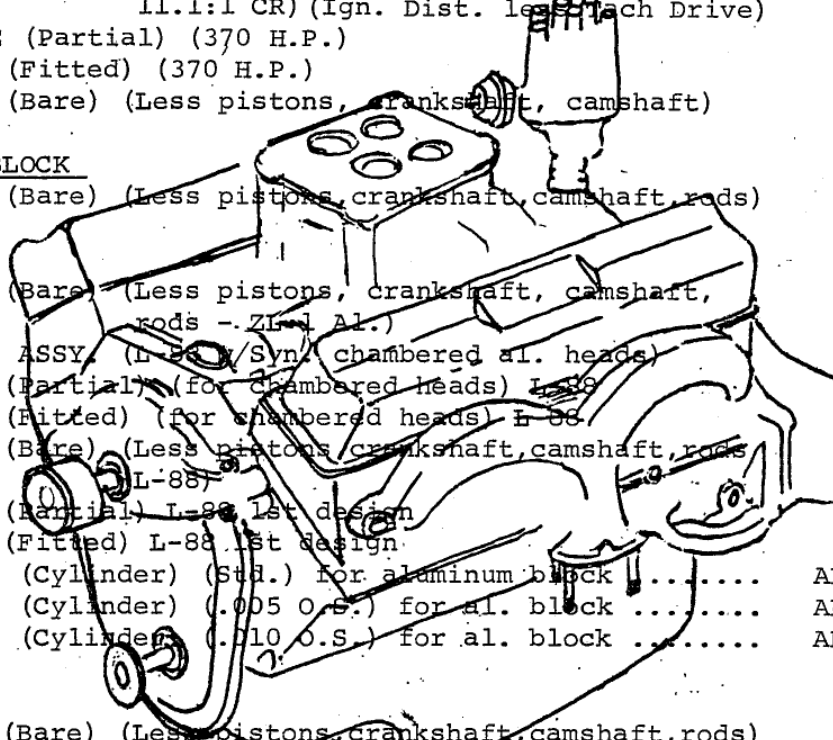
3965748	ENGINE ASSY. (370 H.P. 4 bolt mains) (LT-1 & Z-28 11.1:1 CR) (Ign. Dist. less Flywheel Drive)	
3966921	ENGINE (Partial) (370 H.P.)	
3966920	BLOCK (Fitted) (370 H.P.)	
3970016	BLOCK (Bare) (Less pistons, crankshaft, camshaft)	

400 CID SMALL BLOCK

3951510	BLOCK (Bare) (Less pistons, crankshaft, camshaft, rods)	
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427 CID

3952318	BLOCK (Bare) (Less pistons, crankshaft, camshaft, rods -- ZL-1 Al.)	
3935499	ENGINE ASSY. (L-88 X/Syn/ chambered al. heads)	
3970699	BLOCK (Partial) (for chambered heads) L-88	
3970688	BLOCK (Fitted) (for chambered heads) L-88	
3963516	BLOCK (Bare) (Less pistons, crankshaft, camshaft, rods L-88)	
3974228	BLOCK (Partial) L-88 1st design	
3974227	BLOCK (Fitted) L-88 1st design	
3992009	SLEEVE (Cylinder) (Std.) for aluminum block	AR
3992010	SLEEVE (Cylinder) (.005 O.S.) for al. block	AR
3992011	SLEEVE (Cylinder) (.010 O.S.) for al. block	AR



454 CID

3963516	BLOCK (Bare) (Less pistons, crankshaft, camshaft, rods)	
3952318	BLOCK (Bare) (Less pistons, crankshaft, camshaft, rods ZL-1 al.)	
3981000	ENGINE ASSY. (LS6 1970 450 H.P. 11.1:1 CR) (Auto.)	

302 CID

3970647	BLOCK (Fitted) 1968-70	
3970016	BLOCK (Bare) 1968-70	
3970162	BLOCK (Partial) 1967	
3970657	BLOCK (Partial) 1968-70	

327 CID

3970016	BLOCK (Bare)	
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SLEEVE REPLACEMENT PROCEDURE

FOR ALUMINUM BLOCKS

When replacing a sleeve (liner) in an aluminum block, it is necessary to bore-out the damaged sleeve or cut a slot the full length of the sleeve side wall to relieve the press-fit.

Remove the damaged sleeve without harming the block bore and discard.

The item contained in this package should have been selected on the basis of block bore measurements for size, taper and out of round. Measurements should have been taken at room temperature. Allow .003 - .005 for interference fit of sleeve to block.

Before attempting to install sleeve, pack it in crushed dry ice for approximately two hours. Drop temperature to -30° to -40°F .

Also, heat cylinder wall of bore involved for approximately two hours. Raise temperature slowly to 200° - 300°F . (Infra red lamps are recommended). Then apply a thin film of oil to the walls being serviced.

Now, install sleeve by hammering on a piece of wood placed against the top of the sleeve. This operation should be done quickly to avoid too much temperature change in the parts.

Sleeve (liner) should be $+0.001$ above surface of block. Machine as required.

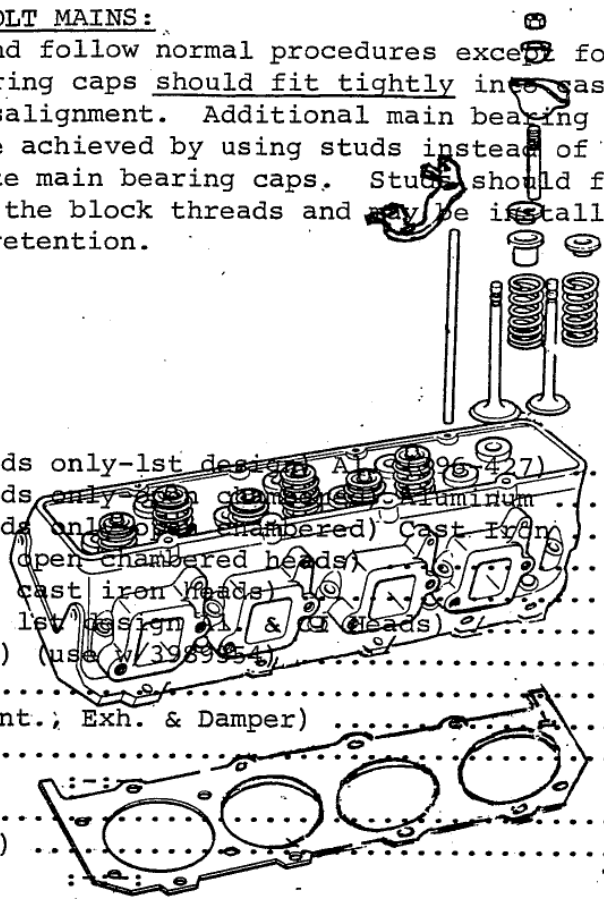
Bore and hone I.D. of sleeve, now in block, to accept piston selected.

:--:~

Some aluminum blocks are known to have been bored to a .030 overbore. This exhausts the potential of the block and it has to be resleeved.

CYLINDER BLOCK WITH TWO BOLT MAINS:

Inspect, clean, de-burr and follow normal procedures except for bore finishing. Main bearing caps should fit tightly into case notches to prevent cap misalignment. Additional main bearing bulkhead durability may be achieved by using studs instead of bolts in the 3 intermediate main bearing caps. Studs should fit snugly the full length of the block threads and may be installed with Loc-Tite for better retention.



396-427-454 CID

3919838	HEAD ASSY. (w/Studs only-1st design)	Aluminum	2
3946072	HEAD ASSY. (w/Studs only-2nd design)	Aluminum	2
3994025	HEAD ASSY. (w/Studs only-3rd design)	Cast Iron	2
3946077	VALVE (Exh.) (For open chambered heads)		8
3879618	VALVE (Int.) (For cast iron heads)		8
3879619	VALVE (Exh.) (For 1st design & 2nd design heads)		8
3989353*	CAP (Valve Spring) (use w/3989354)		16
3947880	KEY (Valve Stem)		32
3989354	SPRING (Valve) (Int., Exh. & Damper)		16
3891521	SHIM (Spring)		AR
3969865	GASKET (Head)		2
3974218	GASKET UNIT (Head)		1
3959182	ARM (Rocker)		16
3899622	BALL (Rocker Arm)		16
3921912	STUD (Rocker Arm)		16
3942415	ROD (Push) Exh.		8
3942416	ROD (Push) Int.		8
3879620	GUIDE (Push Rod)		8

302-350 CID

3965742	HEAD ASSY. (w/studs) (casting beefed-up at valve seat area-relocated spark plug holes)		2
3916336	GASKET (Head) (Stainless Steel)		2
3927142	SPRING (Valve-Int. & Exh.)		16

*NOTE: Use PC type seal with clamp on valve guide or use Cap & Seal Assy. 3879613 instead.

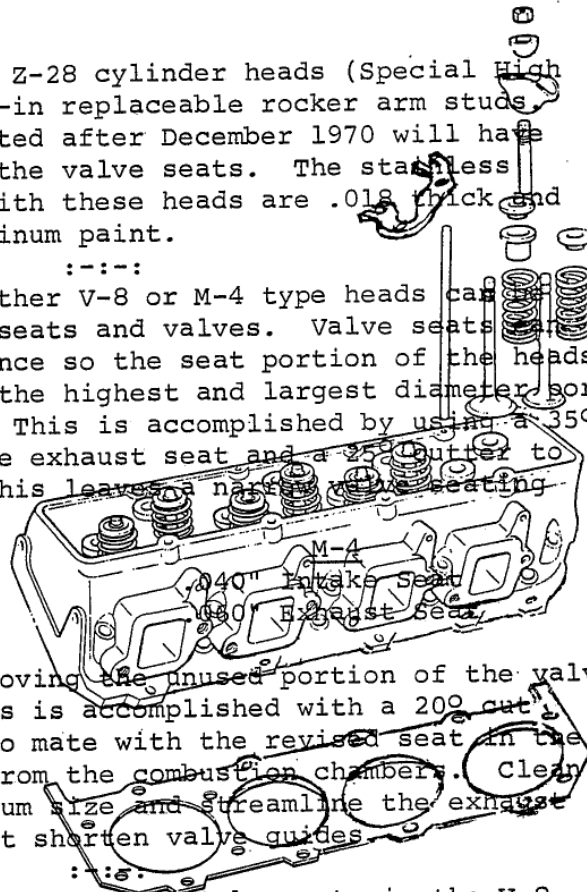
CYLINDER HEADS:

The 1970 and 1971 LT-1 and Z-28 cylinder heads (Special High Performance) feature screw-in replaceable rocker arm studs. Also, any castings fabricated after December 1970 will have the beefed-up area around the valve seats. The stainless steel beaded gasket used with these heads are .018 thick and should be sealed with aluminum paint.

:--:

Improved performance of either V-8 or M-4 type heads can be attained by reworking the seats and valves. Valve seats can be increased in circumference so the seat portion of the heads mates with valve faces at the highest and largest diameter portions of the valve faces. This is accomplished by using a .350 stone cutter to develop the exhaust seat and a .250 cutter to develop the inlet seat. This leaves a narrow valve seating surface for:

- V-8
- .030" Intake Seat
- .050" Exhaust Seat



Valves are modified by removing the unused portion of the valve face and "underhead". This is accomplished with a 200 cut narrowing the valve face to mate with the revised seat in the head. Remove all ridges from the combustion chambers. Clean out exhaust ports to maximum size and streamline the exhaust valve guide bosses. Do not shorten valve guides.

:--:

Repeat the above operations for the intake ports in the V-8 heads, only.

:--:

On the M-4 aluminum heads the intake ports are not enlarged. Fillets should be blended and sharp edges removed, only.

:--:

Refer to chart on Page 8 for related parts and specifications.

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Cylinder head porting and preparation is extremely important in extracting the maximum power from the small block engine.

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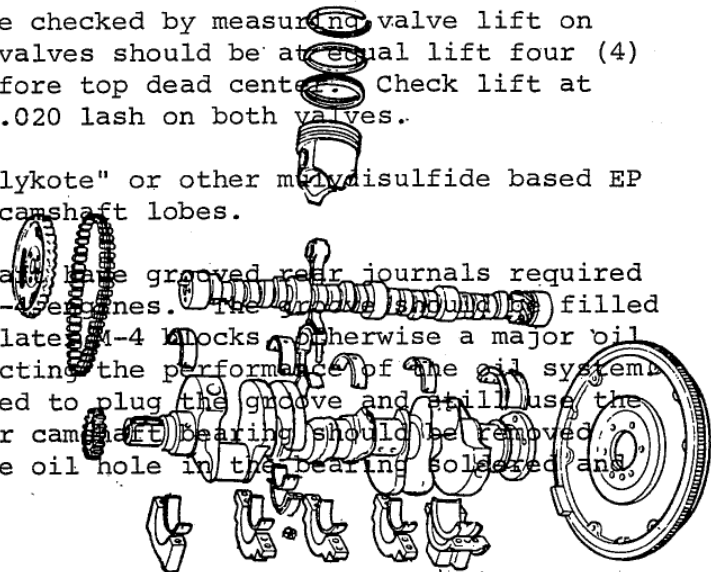
Aluminum 2nd design M-4 heads should have the holes in the underside of the two intake ports plugged when not used in conjunction with the aluminum blocks.

CAMSHAFT:

Camshaft timing can be checked by measuring valve lift on overlap cycle. Both valves should be at equal lift four (4) crankshaft degrees before top dead center. Check lift at valve lifter or with .020 lash on both valves.

It is recommended "molykote" or other molydisulfide based EP lubricant be used on camshaft lobes.

The M-4 service camshaft has grooved rear journals required for 1966 or earlier M-4 engines. The grooves should be filled when used in 1967 or later M-4 blocks. Otherwise a major oil leak would occur affecting the performance of the oil system. Where it is not desired to plug the groove and still use the later blocks, the rear camshaft bearing should be removed from the block and the oil hole in the bearing soldered and redrilled to .060".



396-427-454 CID

3925535	CAMSHAFT (Chain Drive) L-88 (1st design)	.....	1
3925533*	CAMSHAFT (Gear Drive) L-88	.....	1
3959180	CAMSHAFT (Chain Drive) ZL-1 (2nd design)	.....	1
3994094	CAMSHAFT (Chain Drive) (3rd design)	1

:-:-

3887871	BEARING UNIT THRUST (Gear Drive Cam)	1
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302-327-350 CID

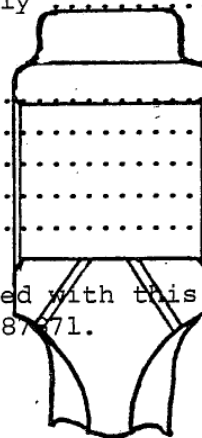
3927144	CAMSHAFT & SPRING UNIT	1
3927140	CAMSHAFT	1

396-427 CID

3856351	GEAR (Camshaft)	.....	1
3856356	SPROCKET (Camshaft)	.....	1
3817006	BOLT (Camshaft Gear) (1/4-20x7/16)	.....	2
3860036	CHAIN (Camshaft Timing)	.....	1
3887871	THRUST UNIT (Camshaft) Gear Drive Only	.....	1

ALUMINUM BLOCK ONLY

3975949	SHIM (Camshaft Spröcket)	.....	1
3952319	PLUG (Camshaft RR Brg.)	.....	1
3952320	LOCK (Camshaft RR Brg. Plug)	.....	1
3783948	SEAL (Camshaft RR Brg. Plug)	.....	1
180020	BOLT (Camshaft RR Brg. Plug Lock)	.....	2



*NOTE: Ball Bearing Distributor should be used with this cam. Also, use with Thrust Bearing Unit 3887871.

VALVE TRAIN:

The small V-8 engines use push rods having hardened steel inserted tips on one end, and should be installed with this end up. M-4 push rods are hardened at both ends.

:--:

New rocker arms and balls will burn sooner than run-in parts. If no used ones are available, move an intake rocker and ball over to the burned exhaust position and install the new parts on an intake position which runs cooler.

:--:

The small block V-8 cast aluminum rocker covers have cast in drippers to improve rocker arm ball lubrication.

:--:

New valve train parts experience considerable valve lash change during run-in and lash should be checked frequently until stabilized.

High lift camshafts make it necessary to check the rocker arm to rocker arm stud clearances. The arm slot should be checked at maximum lift. Many identifiers have been issued to indicate the latest changes incorporated into the rocker arms. Dealers have no means for selection by identifier. Therefore, it may be necessary to grind some additional clearance in the rocker arm slot to avoid interference with the studs rather than attempt to locate newer rocker arms.

Two mechanical valve lifters are explained:
#5232695 over-head oil metering is controlled by an internal inertia flapper valve. This is production in most mechanical lifter engines.

#5231585 meters over-head oil on the basis of lifter to bore clearance orificing and has several desirable features not available with the piddle valve lifter. Lifter #5231585 effects a 10-20% reduction in total oil circulation rate due to its design. This can be a considerable benefit in dry sump and restricted oil pan capacity installations.

:--:

If conventional rocker arms are used, it is necessary to grind a .003-.005 flat on one side of each lifter between the oil feed hole and the existing annular groove around the lifter body. This increases over-head oil to adequately lubricate the production valve train.

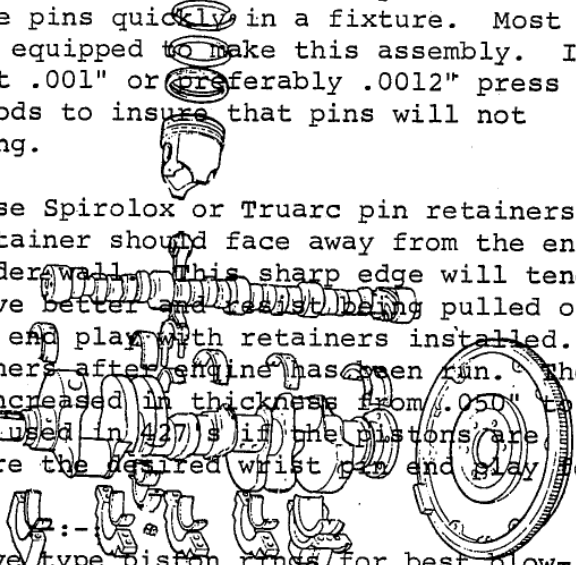
:--:

It is recommended "Molykote" or other molydisulfide based EP lubricant be used on lifters for proper break-in. Also, valve lifters will be more compatible with the camshaft should the tappet contact surface be polished with #600 grit paper. Good used tappets are more desirable.

PISTONS:

Remove sharp edges from head surface of piston. For installation of rods using pressed-in wrist pins, it is necessary to heat the rod small end and install the pins quickly in a fixture. Most automotive machine shops are equipped to make this assembly. It is necessary to have at least .001" or preferably .0012" press fit between wrist pins and rods to insure that pins will not loosen and move during running.

Pistons with floating pins use Spirolox or Truarc pin retainers. The squared off edge of the retainer should face away from the end of the pin towards the cylinder wall. This sharp edge will tend to bite into the piston groove better and resist being pulled out. Make sure there is a 0-.005" end play with retainers installed. Do not reuse wrist pin retainers after engine has been run. The 1970 Spirolox Retainer was increased in thickness from .050" to .072". This retainer can be used in 427's if the pistons are carefully regrooved to restore the desired wrist pin end play for increased durability.



Run the production Moly groove type piston rings for best blow-by control and minimum friction.

:--::

For Heavy Duty operation, it is good practice to allow more than the minimum piston to valve clearances to allow for occasional valve float. A .100" clearance is generally acceptable minimum.

396-427-454 CID

427 CID

3959105	PISTON (Std.) floating pin (use w/3946072 head)	.....	8
3909857	PISTON (Std.) floating pin (use w/3919838 head)	.....	8
3909858	PISTON (.001 O.S.) floating pin (use w/3919838 head)	..	8
3959106	PISTON (.001 O.S.) floating pin (use w/3946072 head)	..	8
3981891	PISTON (.005 O.S.) floating pin (use w/3946072 head)	..	8
3909859	PISTON (.030 O.S.) floating pin (use w/3919838 head)	..	8
3959107	PISTON (.030 O.S.) floating pin (use w/3946072 head)	..	8
3909860	PISTON (.060 O.S.) floating pin (use w/3919838 head)	..	8

:--::

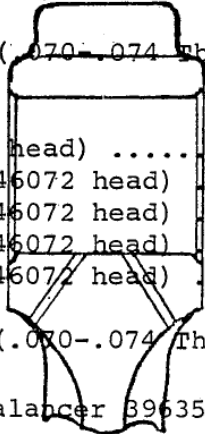
3964238	RETAINER (Piston Pin) floating pin (.070-.074 Thick)	..	AR
---------	--	----	----

454 CID

3976014*	PISTON (Std.) forged (use w/3946072 head)	.....	8
3976018	PISTON (.001 O.S.) forged (use w/3946072 head)	.....	8
3976022	PISTON (.020 O.S.) forged (use w/3946072 head)	.....	8
3976026	PISTON (.030 O.S.) forged (use w/3946072 head)	.....	8
3981075	PISTON (.060 O.S.) forged (use w/3946072 head)	8

:--::

3964238	RETAINER (Piston Pin) floating pin (.070-.074 Thick)	..	AR
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*NOTE: Also, use with Crankshaft 3963524, Balancer 3963530 and Flywheel 3963537.

427-454 CID

3993828	RING UNIT (Piston) (Std.)	.....	1 per cyl.
3981051	RING UNIT (Piston) (.005 O.S.)	.....	1 per cyl.
3993830	RING UNIT (Piston) (.030 O.S.)	.....	1 per cyl.
3993831	RING UNIT (Piston) (.060 O.S.)	.....	1 per cyl.

396 CID

3916147	PISTON (Std.) floating pin-use w/3919838	.....	8
3916150	PISTON (.001 O.S.) floating pin-use w/3919838	.....	8
3916152	PISTON (.030 O.S.) floating pin-use w/3919838	.....	8
3916154	PISTON (.060 O.S.) floating pin-use w/3919838	.....	8

3942423	RETAINER (Piston Pin) for floating pin	AR
---------	--	-------	----

350 CID

3942541	PISTON (Std.) forged (use w/B941184 Crankshaft)	.....	8
3942542	PISTON (.001 O.S.) forged (use w/B941184 Crankshaft)	.....	8
3942543	PISTON (.030 O.S.) forged (use w/B941184 Crankshaft)	8

3946848	RETAINER (Piston Pin) for floating pin	AR
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302-327-350 CID

3995664	RING UNIT (Piston) (Std.) (Low Tension)	1 per cyl.
3995665	RING UNIT (Piston) (.005 O.S.) (Low Tension)	..	1 per cyl.
3995666	RING UNIT (Piston) (.020 O.S.) (Low Tension)	..	1 per cyl.
3995667	RING UNIT (Piston) (.030 O.S.) (Low Tension)	..	1 per cyl.

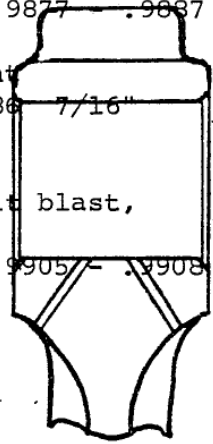
L-88 CONNECTING ROD IDENTIFICATION:

3969804 replaces 3942407 Pink & Green Paint
 3969864 Bolt 7/16" Pin Hole .9905 - .9908

3893260 replaced by 3893261 Pink Paint
 Identical to 3856242 except to pickle, grit blast,
 magna glow and draw
 3862720 Bolt 3/8" Pin Hole .9877 - .9887

3959187 replaced by 3942407 Pink & Green Paint
 Identical to 3969804 except Bolt is 3959186 7/16"

3909846 replaced by 3909848 Pink Paint
 Identical to 3856242 except to pickle, grit blast,
 magna glow and draw
 3893257 Cap 3862720 Bolt 3/8" Pin Hole .9905 - .9908



396-427-454 CID

3969804	ROD (Connecting) for floating pin 7/16" bolt	8
3909846	ROD (Connecting) for floating pin 3/8" bolt	8
3893260	ROD (Connecting) for pressed pin 3/8" bolt	8
	:--:--:	
3965716	BEARING UNIT (Conn. Rod) (.001	AR
	:--:--:	
3969864	BOLT (Conn. Rod) (7/16 - 20)	AR
3942410	NUT (Conn. Rod Bolt) (7/16 - 20)	AR

302-327-350 CID

3965720	BEARING UNIT (Conn. Rod)	AR
	:--:--:	
3977145	ROD (Connecting) for small journal (302-1967)	8

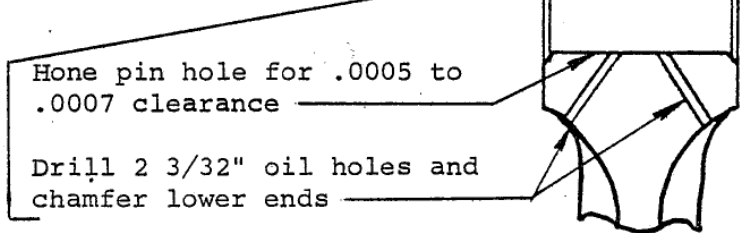
CONNECTING RODS:

Connecting Rods listed here are high quality parts with improved surfaces between rod and cap. In addition, they are heat treated to a higher hardness and 100% magnafluxed for transverse flaws.

Connecting rod durability can be improved by performing the following operations: Round all sharp edges on I-beam of rod and grind off excess flash at forging parting line. It is not necessary to remove all this flash or polish the rod: but, all grinding should be lengthwise of the rod and finish ground very smooth. Round all sharp edges around the rod bolt head and nut seats, and smooth out any nicks in the radius of the bolt and nut seats with a small grinder. Have entire rod, including bolt and nut seats, shot peened. Qualify rod cap similarly. Have big end of rod carefully reconditioned in a rod reconditioner. Install with new magnafluxed bolts and nuts.

A satisfactory shot peening specification for connecting rods is .012-.015" Allmen "A" Arc height using #230 cast steel shot. It is also good practice to hardness test all rods, rod bolts and nuts to insure proper heat treat has been performed at time of manufacture. Correct hardness is Bolts and Nuts 36-40 Rockwell "C", and Rods and Caps 27-34 Rockwell "C". Rods not up to minimum hardness should not be used.

Connecting Rods used for pressed pins can be reworked for full floating pin assemblies as follows.



396-427-454 CID

396 CID

3887114 CRANKSHAFT (3/8 Conn. Rod Bolt) 1

427 CID

3879621 CRANKSHAFT (3/8 Conn. Rod Bolt) 1

3967811 CRANKSHAFT (7/16 Conn. Rod Bolt) 1

3879623 DAMPER (Crankshaft) 1

3899660 PULLEY (Crankshaft) 1

3879625 REINFORCEMENT (Crankshaft Pulley) 1

181629 BOLT (Crankshaft Pulley) (3/8-24-5/8) 1

138542 WASHER (Crankshaft Pulley Bolt) (3/8) 1

3955151 FLYWHEEL (Dual Plate Clutch) 1

454 CID

3963530 DAMPER (Crankshaft) (use w/3963537 Flywheel) 1

3963524 CRANKSHAFT (use w/Pistons 3976014, 3976018, etc.) 1

3963537 FLYWHEEL (12 7/8" dia. 31 lbs.) (use w/3963530 Damper) 1

3963541 FLYWHEEL (Dual Plate Clutch) 1

302 CID

3817173 DAMPER (Crankshaft) 1

3965727 CRANKSHAFT (Semi-Finished) 1

302-396-427 CID

3992094 FLYWHEEL (Dual Plate Clutch) 1

3866735 FLYWHEEL (10 1/2" dia. 15.8 lbs.) 1

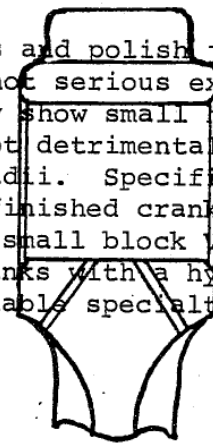
350 CID

3941184 CRANKSHAFT (use w/Pistons 3942541-2-3) 1

3997748 CRANKSHAFT (Semi-Finished) 1

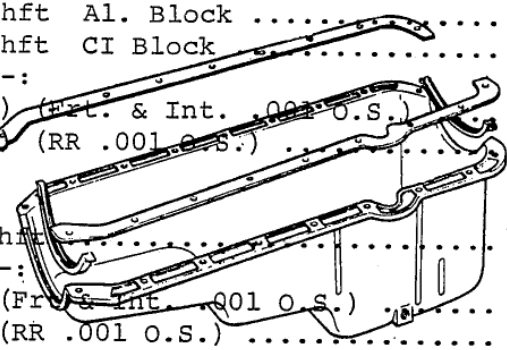
CRANKSHAFT:

Remove any burrs from oil holes and passages and polish journals with #400 sandpaper. Tufftride cracks are not serious except at radii to "throws". Magnaflux inspection may show small heat treat cracks around oil holes. These are not detrimental as long as they do not extend into journal fillet radii. Specifications allow main journal runout (or bend) in the finished crankshaft; .005"-.007" on large block M-4 and .001" on small block V-8. It is not possible to straighten tufftrided cranks with a hydraulic press without causing serious cracks. Reputable specialty shops can correct bend by a peening process.



396-427-454 CID

3952322	STUD (Bearing Cap) Crk/shft Al. Block	4
3902885	STUD (Bearing Cap) Crk/shft CI Block	4
:--:		
3965715	BEARING UNIT (Crankshaft) (Frt. & Int. .002 O.S.)	4
3965717	BEARING UNIT (Crankshaft) (RR .001 O.S.)	1



302-327-350 CID

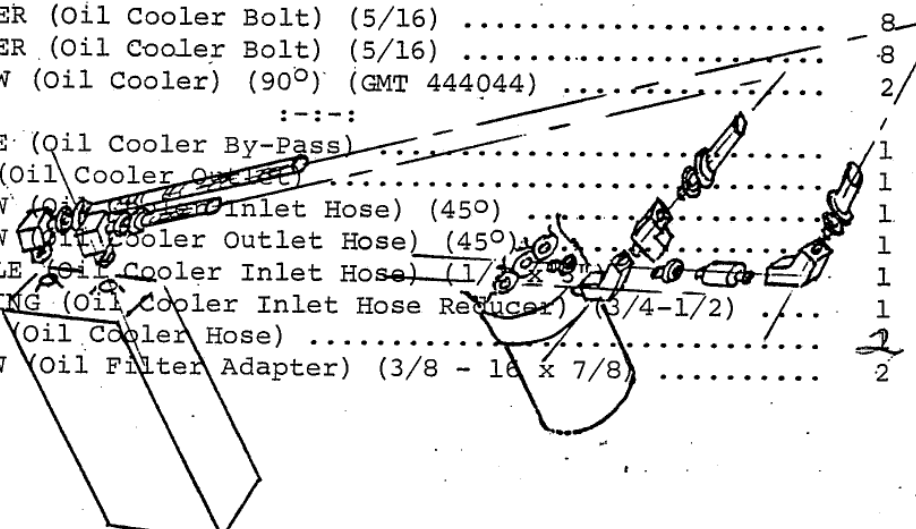
3960312	STUD (Bearing Cap) Crk/shft	5
:--:		
3965718	BEARING UNIT (Crk/shft) (Frt. & Int. .001 O.S.)	4
3965719	BEARING UNIT (Crk/shft) (RR .001 O.S.)	1

396-427-454 CID

3860086	GEAR (Crankshaft)	1
3860035	SPROCKET (Crankshaft)	1
3860036	CHAIN (Timing)	1

302-396-427-454 CID

3886066	PLATE (Clutch Cover & Pressure) (use w/3739423 or 3866735)	1
3886059	PLATE (Clutch Driven)	1
3959175	PLATE (Clutch Cover & Pressure) (Dual Plate Clutch)	1
3959176	PLATE (Clutch Driven) (Dual Plate Clutch)	2
:--:		
3157804	COOLER (Engine Oil)	1
3881803	BRACKET (Oil Cooler)	1
3879938	HOSE (Oil Cooler)	2
X443899	BOLT (Oil Cooler)	8
X180016	BOLT (Oil Cooler)	4
X3958324	NUT (Oil Cooler Bolt) ("J" 5/16 - 18)	8
X124818	NUT (Oil Cooler Bolt) (Jam 1/4 - 20)	4
X120386	WASHER (Oil Cooler Bolt) (5/16)	8
X120638	WASHER (Oil Cooler Bolt) (5/16)	8
	ELBOW (Oil Cooler) (90°) (GMT 444044)	2
:--:		
5575416	VALVE (Oil Cooler By-Pass)	1
3879940	TEE (Oil Cooler Outlet)	1
444215	ELBOW (Oil Cooler Inlet Hose) (45°)	1
444058	ELBOW (Oil Cooler Outlet Hose) (45°)	1
9417840	NIPPLE (Oil Cooler Inlet Hose) (1/2 x 3/4)	1
144042	BUSHING (Oil Cooler Inlet Hose Reducer) (3/4-1/2)	1
3925416	CLIP (Oil Cooler Hose)	2
X217911	SCREW (Oil Filter Adapter) (3/8 - 16 x 7/8)	2



OIL PUMP:

Pumps usually are sold with the oil pick-up welded to the body. This technique is considered necessary to match the oil pick-up with the sump of the oil pan. Because of various opinions surrounding oil pressures and oil starvation, the pick-up and the sump can be modified to suit individual tastes and running conditions.

When reworking a pump pick-up assembly, the pick-up should be welded to the pump body to avoid air leakage at the joint. On the lower end of pick-up tube, a flat round pick-up shield, similar to standard production, should be used to keep from sucking in air along with oil. In some situations, the pick-up should be to the right side of the pan and in others it should be to the rear of the pan. Position and location depend on the specific use the engine will see.

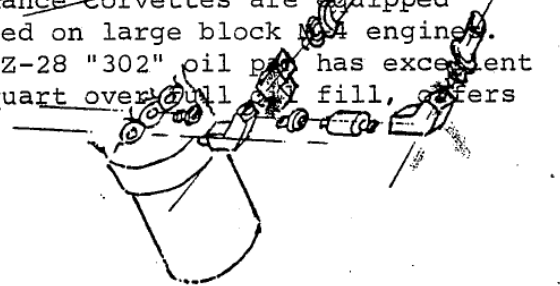
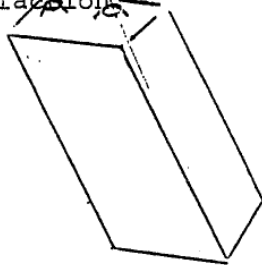
Oil pump pressures should be greater than 50 PSI at speed to be sufficient for heavy duty use. In any case, pressure should not be greater than 80 PSI.

Some pumps develop the necessary pressure even with a remote oil filter and cooler; some might not. To alleviate the problem, it is common practice to insert shims between the oil pressure regulator spring and valve both being located in the pump cover. The shims help stiffen the spring and this causes the oil pressure to be increased.

OIL PAN:

An upper oil pan baffle, attached to the block bearing cap studs, should be used.

As mentioned in the Oil Pump write-up above, oil pans can be modified at will. With this in mind, some small block V-8 pans require an additional horizontal baffle attached to the lower step to retard oil sloshing on brake stops. Otherwise, oil pans such as utilized on Special High Performance Corvettes are equipped with trap door baffle and can be used on large block M4 engines. Also, for the ~~small block~~ V-8, the Z-28 "302" oil pan has excellent baffling and when used with a one quart overfill, offers proven satisfaction.



OIL COOLER:

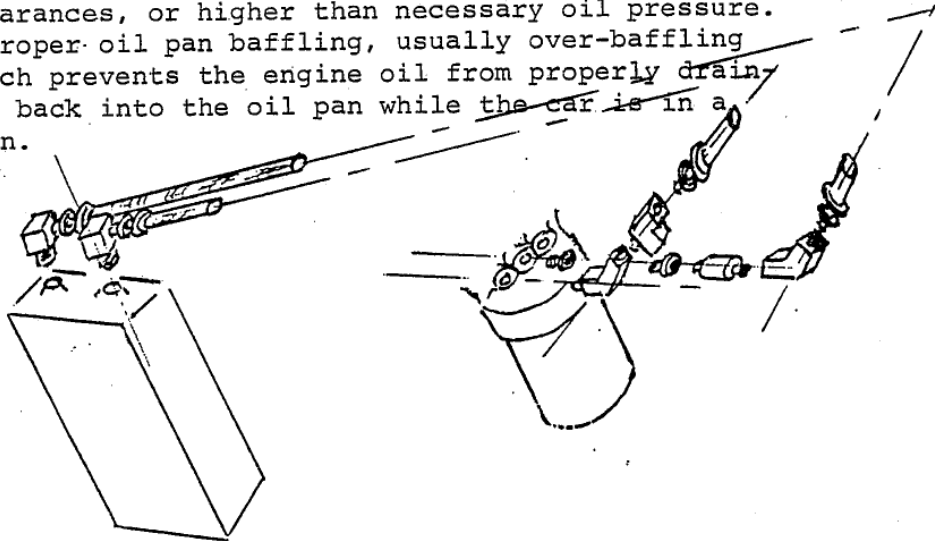
An oil cooler can be plumbed into the engine by using adapters for the small block V-8. These are used at oil filter boxes and are available through high performance and marine parts distributors. On all engines a 1/2 inch ID line, at least, should be used. The oil should be filtered just before returning to the engine. This prevents contamination of engine bearings. The large block M-5 engines do not require an adapter. "In-and-out" and remote filter adapters utilizing an oil filter by-pass valve should be reworked so oil is entirely filtered.

OIL PRESSURE GAUGE:

Oil pressure gauge line should be a minimum of 1/8 inch ID to get good gauge response and help detect any oil pressure losses quickly. NOTE: The majority of engine bearing failures are a direct result of oil pressure loss due to the oil pump picking up air while the car is negotiating turns at racing speeds. This occurs at a time when the driver is busiest and may go unreported, or be reported as a slight drop in oil pressure in the turns. Good gauge response is necessary to trouble shoot this problem; and, the gauge should be mounted as close to the drivers line of vision as is practical.

Oil pressure loss in turns is aggravated by three things:

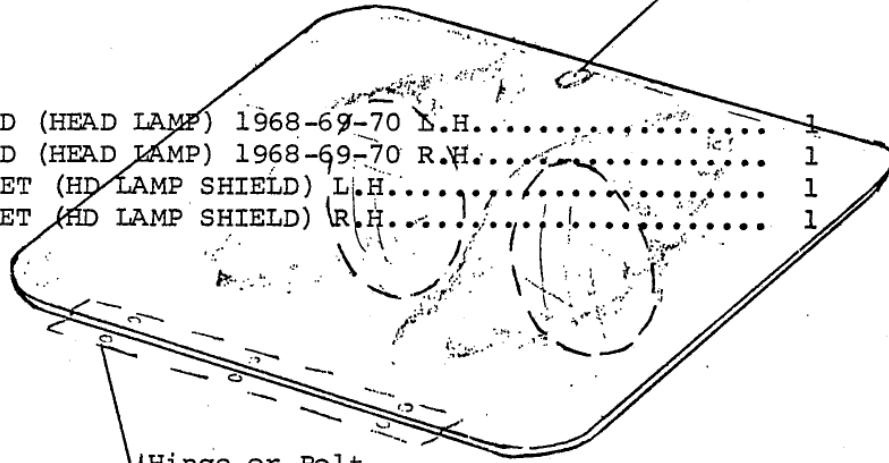
1. Insufficient oil level or capacity.
2. High engine oil flow rates due to excessive bearing clearances, or higher than necessary oil pressure.
3. Improper oil pan baffling, usually over-baffling which prevents the engine oil from properly draining back into the oil pan while the car is in a turn.



Ring & Pin or
Dzus Fastener

CORVETTE

3961465	SHIELD (HEAD LAMP) 1968-69-70 L.H.....	1
3961466	SHIELD (HEAD LAMP) 1968-69-70 R.H.....	1
3961463	BRACKET (HD LAMP SHIELD) L.H.....	1
3961464	BRACKET (HD LAMP SHIELD) R.H.....	1



Hinge or Bolt
to Brackets
(not furnished)

DRY SUMP SYSTEM:

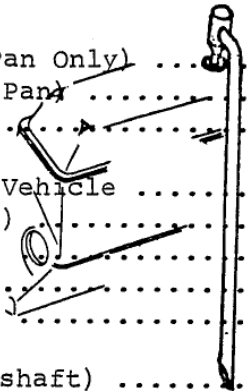
Special purpose engines are being used in installations where a dry sump oiling system is desirable or mandatory. The following tips should assist set-up with any commercially available dry sump unit:

1. If possible, eliminate the engine oil pump completely. On small block V-8, install a non-bypassing in-and-out adaptor to the oil filter pad at the rear of the engine. On the large block M-4, install plugs in the rear oil cooler holes in the block and rear by-pass valve position.
2. The scavenger pump should have three times the capacity of the pressure pump, preferably three stages.
3. Two scavenger stages should scavenge the oil pan and one stage connect to the rear outside of the rocker cover on the predominant outboard side of the car. (This depends on the course and whether it is run clockwise or counter-clockwise).
4. Do not run scavenged oil through the engine oil cooler, return it directly from scavenger pumps to supply tank. Use at least a #12 or 3/4" line.
5. Use a #12 or 3/4" inlet line to the pressure pump from the supply tank. You may wish to install a coarse screen aircraft filter in this line to keep from getting contaminants into the pressure pump and pressure by-pass valve.
6. Pass the oil from the pressure pump through the engine oil cooler(s) and remote oil filter and then into the engine. It is no longer possible to use the original oil filter. Make every effort to reduce restriction in the oil cooler circuit. DO NOT connect oil coolers in series. If more than one oil cooler is used, they should be connected in parallel (i.e. tee the oil line and pass the oil into and out of both coolers simultaneously).
7. Do not try to run more than 55-60 PSI oil pressure hot. This will aggravate oil aeration and scavenging. Oil pressure over 55 PSI is not necessary for good bearing life.

8. Run a full length semi-circular tray baffle under the crankshaft with louvers to draw the oil away from the crank.
9. Design the oil supply tank as tall and as small in diameter as possible, space permitting. It is recommended the tank hold a minimum of 8 quarts of oil with enough air space above the oil to effect oil-air separation.
10. Build the engine with the proper lifters, rocker arms, rear cam bearing and clearances to require a minimum of oil flow. This is the greatest asset to a properly functioning dry sump.
11. Do not over cool the oil. Racing oil requires about 200°F to flow properly. Measure oil temperature between the oil coolers and the engine and try to keep it between 180° and 240° when thoroughly warmed.
12. Vent both the engine and the supply tank, or vent the engine to a properly vented supply tank. Keep vent lines of adequate size (1 #12 or 2 #10 size lines) to keep from causing any pressure build up in the crankcase. This is a common mistake. Breather holes in the engine rocker covers are an excellent place from which to vent. Most covers have oil separators located under the vent holes. These should remain in position.

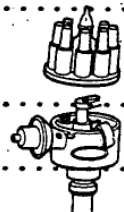
396-427-454 CID

3964255	PUMP ASSY. (Oil) (Deep Oil Pan Only)	1
3969870	PUMP ASSY. (Oil) ZL-1 (Std. Pan)	1
3865886	SHAFT (Dist. to Oil Pump)	1
	:--:--:	
3879941	TUBE (Crankcase Vent) Pass. Vehicle	1
3868832	GROMMET (Crankcase Vent Tube)	1
3894337	GROMMET (Crankcase Vent Cap)	1
6421868	CAP (Crankcase Vent)	1
120383	WASHER (Crankcase Vent Tube)	1
	:--:--:	
591998	BLADE (Fan) (Gear Driven Camshaft)	1
454384	BOLT (Fan Blade)	4
3876828	SPACER (Fan Blade)	1
120638	WASHER (Fan Blade Bolt)	4
	:--:--:	
3878292	BELT (Fan & Gen.)	1
1352212	BELT (Fan & Water Pump)	1
	:--:--:	
3007436	RADIATOR (Aluminum)	1
	:--:--:	
3879633	PAN (Oil) (6 qt.)	1
3879640	BAFFLE (Oil Pan) (Upper)	1
9422297	NUT (Oil Pan Bolt)	4
120382	WASHER (Oil Pan Bolt)	4
120394	WASHER (Oil Pan Bolt)	4
180120	BOLT (Oil Pan)	4



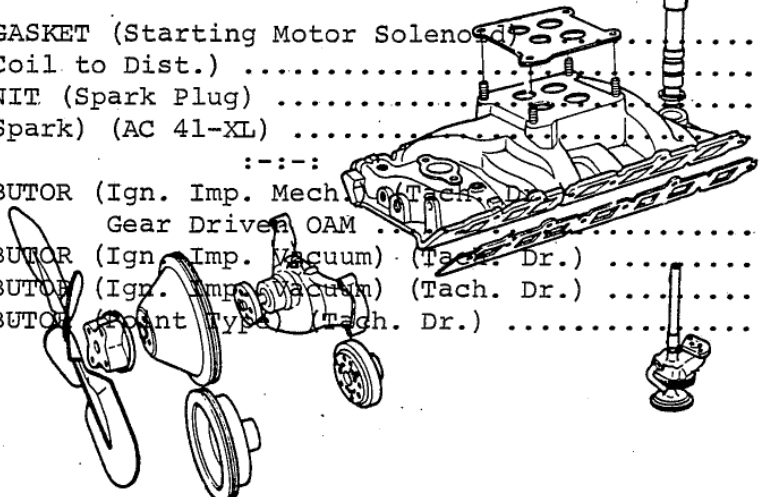
302 CID

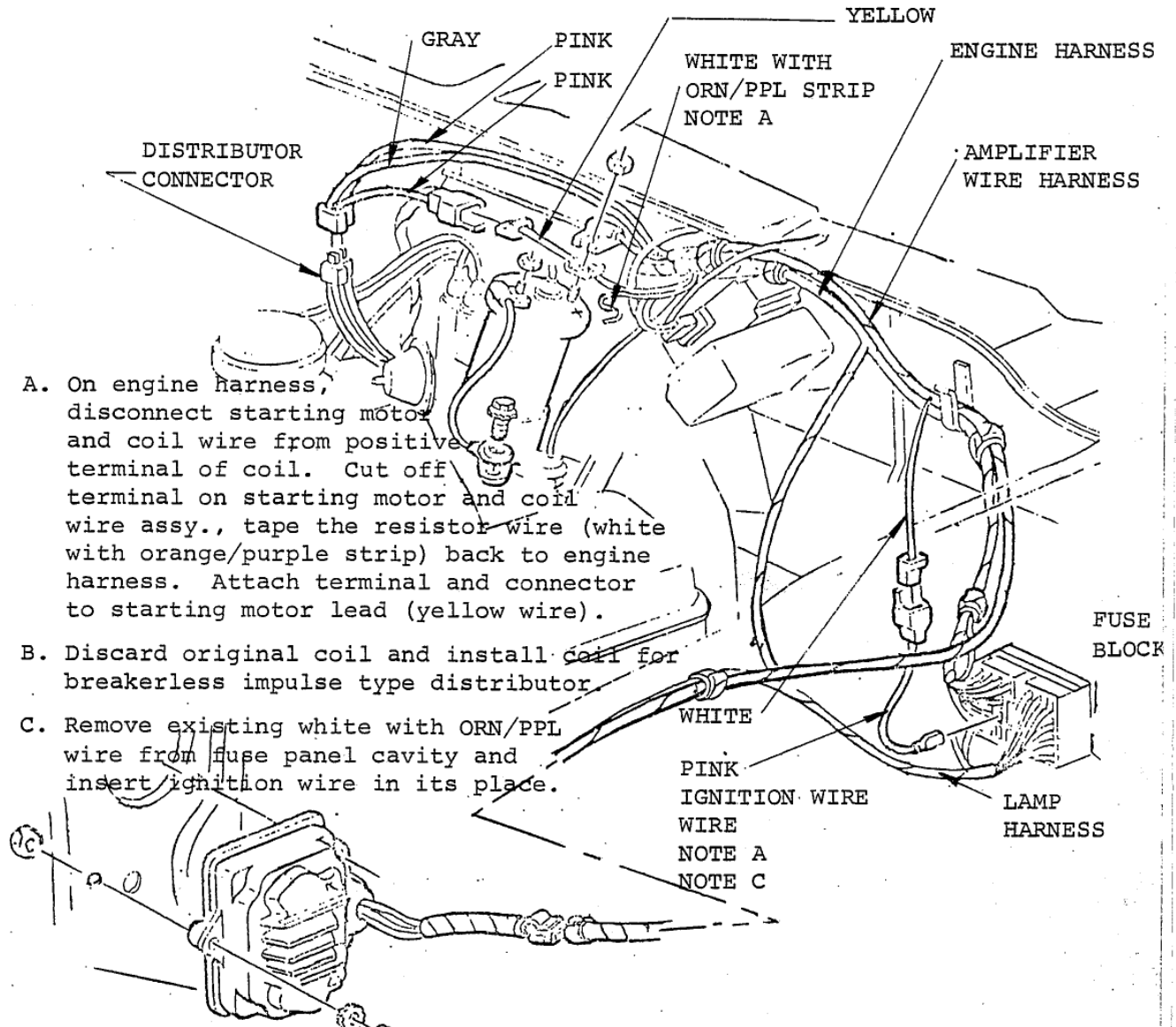
3953864	TUBE (Oil Filler) (2 x 4 BL Intake)	1
	:--:--:	
1111267	DISTRIBUTOR (Ignition Impulse)	1



396-427-454 CID

1966379	CAP & GASKET (Starting Motor Solenoid)	1
6287111	WIRE (Coil to Dist.)	1
6298887	WIRE UNIT (Spark Plug)	1
5613161	PLUG (Spark) (AC 41-XL)	1
	:--:--:	
1111263	DISTRIBUTOR (Ign. Imp. Mech. Gear Driven OAM)	1
1111927	DISTRIBUTOR (Ign. Imp. Vacuum) (Tach. Dr.)	1
1111295	DISTRIBUTOR (Ign. Imp. Vacuum) (Tach. Dr.)	1
1111069	DISTRIBUTOR (Ign. Imp. Vacuum) (Tach. Dr.)	1



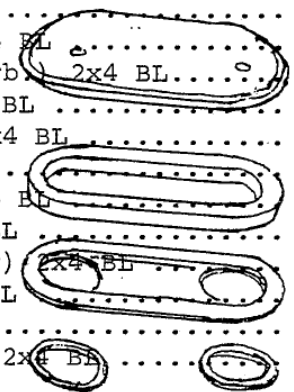


- A. On engine harness, disconnect starting motor and coil wire from positive terminal of coil. Cut off terminal on starting motor and coil wire assy., tape the resistor wire (white with orange/purple strip) back to engine harness. Attach terminal and connector to starting motor lead (yellow wire).
- B. Discard original coil and install coil for breakerless impulse type distributor
- C. Remove existing white with ORN/PPL wire from fuse panel cavity and insert ignition wire in its place.

3997782	TRANSISTOR IGN. UNIT	1
3955511	AMPLIFIER (Impulse) (Part of 3997782)	1
1115207	COIL (Ignition) (Part of Unit 3997782)	1
2977253	CONNECTOR (Amp. Ign. Wire)	1
6297688	HARNESS ASSEMBLY (Ignition Pulse Amp.)	1
8901973	WIRE ASSEMBLY (Pulse Amp. Ignition Feed)	1
2962572	TERMINAL	1

302 CID

3940077	UNIT (Dual Quad Manifold) Consists of carbs linkage and pipes for complete installation	1
3941126	MANIFOLD (Half) (Lower) 2x4 BL	1
3941128	MANIFOLD (Half) (Upper) 2x4 BL	1
3942594	BLOCK (Manifold Fuel) 2x4 BL	1
3941132	GASKET (Intake Man.) 2x4 BL	1
3931600	GASKET UNIT (Intake) 2x4 BL	1
3942593	PIPE (Fuel Pump to Fuel Block) 2x4 BL	1
3942595	PIPE (Fuel Block to RR or Frt. Carb.) 2x4 BL	2
3942596	PIPE (Fuel Block to RR Carb.) 2x4 BL	1
3942597	PIPE (Fuel Block to Frt. Carb.) 2x4 BL	1
3941168	CABLE (Accel. to Carb.) 2x4 BL	1
3941160	ROD (Frt. to RR Carb. Control) 2x4 BL	1
3942592	BRACKET (Accel. Cont. Cable) 2x4 BL	1
3942587	SPACER (Frt. to RR Carb. Rod Lever) 2x4 BL	1
3942584	SCREW (Frt. to RR Carb. Rod) 2x4 BL	1
3939748	SPRING (Accel. Pull Back) 2x4 BL	1
3946081	BRACKET (Accel. Pull Back Spring) 2x4 BL	1



396-427 CID

3947083	MANIFOLD (Intake) Single Quad	1
3931093	GUARD (Oil Splash)	1
3955528	GASKET UNIT (Intake)	1
3879602	GASKET (Intake Man. Side)	1

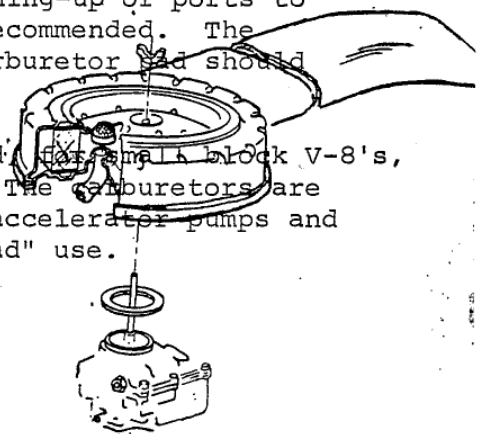


INTAKE MANIFOLDS:

The manifold on "302" engines was an aluminum high rise tuned runner-type for a single 4 BL Holley Carburetor. Any size Holley from 500-960 CFM airflow can be mounted. A 780 CFM Model 4053 or 3943 carburetor was used as "stock" on the 302's. No manifold porting is necessary, but opening-up of ports to match manifold gasket and head ports is recommended. The center divider in the plenum below the carburetor should not be removed to a greater depth than 1".

:-:-:

The latest designed 2x4 BL Intake Manifold for small block V-8's, utilizes two 600 CFM Holley Carburetors. The carburetors are equipped with both primary and secondary accelerator pumps and are jetted satisfactorily for "off-the-road" use.

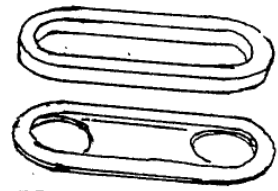


INTAKE MANIFOLDS CONT'D.

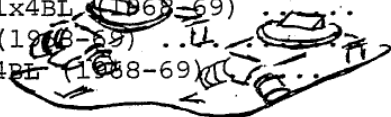
The manifold on the L-88 and ZL-1 Engines was a high rise open plenum type for a single quad carburetor. A 850 CFM Model R-296-A Holley Carburetor with accelerator pumps on both the primary and secondary barrels was used as "stock" on L-88 and ZL-1's. The open plenum of the intake manifold offers a power increase over the divided type. For better torque in the 4000-5200 RPM range, the intake used on the 1969 Passenger 425 H.P. engine should be utilized. An intake manifold oil splash shield is recommended for the M-4 engines. This shield keeps the hot oil off the underside of the manifold.

302 CID

- 6484665 CLEANER ASSY. (To Fire-wall) 1 x 4 BL 1
- 3916621 DUCT (Air Cleaner to Fire-wall) 1 x 4 BL 1
- 6422544 ELEMENT (A/Cl.) 1

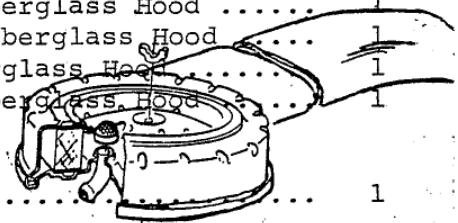


- :--:--:
- 6485788 CLEANER ASSY. (To Fiberglass Hood) 1x4BL (1968-69) 1
 - 3955230 FLANGE (Air Cleaner Adapter) 1x4BL (1968-69) 1
 - 6421746 ELEMENT (Air Cleaner) 1x4 BL (1968-69) 1
 - 3963822 SEAL (Air Cleaner to Hood) 1x4BL (1968-69) 1



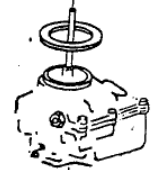
- :--:--:
- 3941146 COVER (Top) A/Cl. (2x4BL) No Plenum 1
 - 3941144 PLATE (Base) A/Cl. (2x4BL) No Plenum 1
 - 3942572 ELEMENT (A/Cl.) (2x4BL) No Plenum 1
 - 3869954 STUD (A/Cl.) (2x4 BL) 1
 - 219281 NUT (A/Cl. Stud) (2x4 BL) 2
 - 3919812 GASKET (A/Cl.) (2x4 BL) 2
 - 3927732 GASKET (Base Plate to Carb. Hose Conn.) (2x4 BL) .. 1

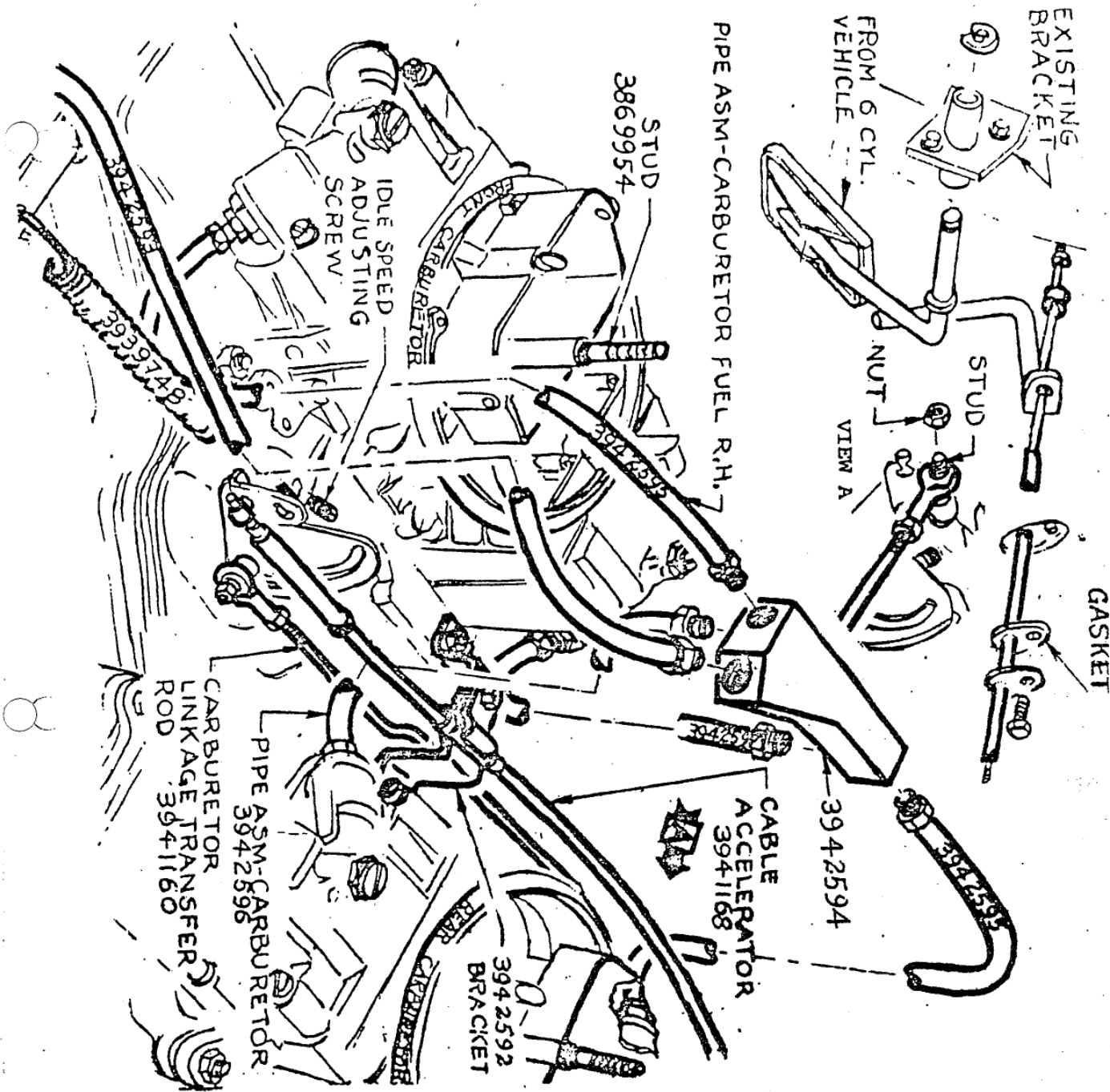
- :--:--:
- 3941146 COVER (Top) A/Cl. (2x4 BL) w/Fiberglass Hood 1
 - 3963824 PLATE (Base) A/Cl. (2x4 BL) w/Fiberglass Hood 1
 - 3963825 ELEMENT (A/Cl.) (2x4 BL) w/Fiberglass Hood 1
 - 3963823 SEAL (Air Cleaner to Hood) w/Fiberglass Hood 1



396-427-454 CID

- 3881804 DUCT (Air Cleaner to Fire-wall) 1





ADJUSTMENT PROCEDURE

Assemble transfer rod to carburetor levers prior to starting engine. Back off both idle screws until both primary throttles are closed. Assemble transfer rod to forward carburetor. Adjust rod to slip over stud on rear carburetor lever. All throttle adjustments to be accomplished on forward carburetor. Idle speed to be between 1000 and 1200 RPM.

CAMARO

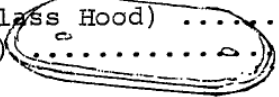
DUAL FOUR BARREL CARBURETOR LINKAGE

396-427-454 CID

6422373	CLEANER ASSY. (To Fire-Wall) (1 x 4 BL)	1
6422544	ELEMENT (A/Cl.)	1
3873852	STUD (A/Cl.) (1/4-20-20 x 1 1/2)	1
273697	SCREW (A/Cl.) (#10-12 x 3/4)	6

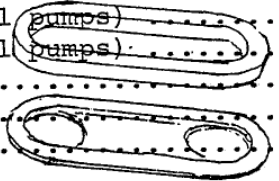
:--:--:

3965700	ADAPTER (Plate Hood) (1 x 4 BL) (w/Fiberglass Hood)..	1
3965710	PLATE (A/Cl. Base) (1 x 4 BL) (w/Fiberglass Hood) ...	1
3789362	STUD (A/Cl.) (1 x 4 BL) (w/Fiberglass Hood)	1
6421832	COVER (A/Cl.) (1 x 4 BL) (w/Fiberglass Hood)	1
3854532	HOSE (1 x 4 BL) (w/Fiberglass Hood)	1



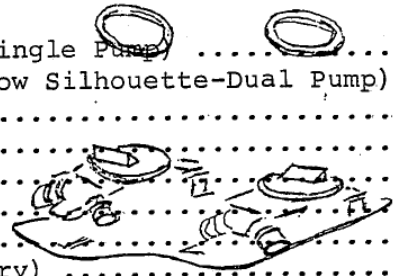
302-350 CID

3957859	CARBURETOR ASSY. (2 x 4 BL) (w/dual pumps)	2
3965736	CARBURETOR ASSY. (1 x 4 BL) (w/dual pumps)	1
3964569	GASKET UNIT (Carb.)	1
3964570	REPAIR UNIT (Carb.) (Major)	1
3964571	REPAIR UNIT (Carb.) (Minor)	1



396-427-454 CID

3887147	CARBURETOR ASSY. (1x4 BL) (Single Pump)	1
3955205	CARBURETOR ASSY. (1x4 BL) (Low Silhouette-Dual Pump)	1
3881847	GASKET (Carb.) (1x4 BL)	1
3901072	REPAIR UNIT (Carb.) (Major)	1
3901073	REPAIR UNIT (Carb.) (Minor)	1
3901071	GASKET UNIT (Carburetor)	1
3917925	BODY ASSY. (Carb. Throttle)	1
3898993	BODY PLUGS (Carb. Main Primary)	1
3898994	BODY & PLUGS (Carb. Main Secondary)	1
3898995	ROD (Carb.) (Choke)	1
3889776	SHAFT (Carb.) (Choke)	1
3898990	JET (Carb.) (Main)	1
3917927	SPRING (Carb.) (Fuel Pump Diaphragm)	1
3904603	VALVE ASSY. (Carb.) (Power)	1
6415748	PUMP ASSY. (Fuel)	1

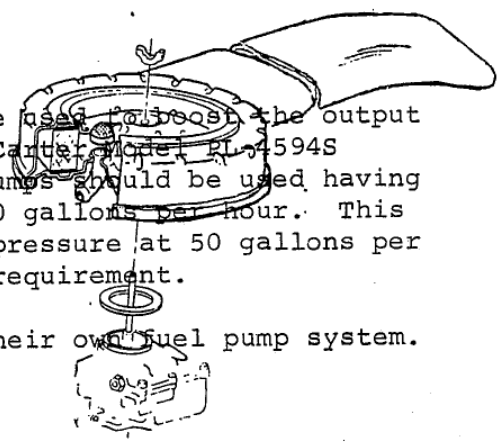


FUEL PUMP:

Where desired, electric fuel pumps can be used to boost the output of the engine's mechanical pump. (Ref: Carter Model PL-4594S Electric). Single or a combination of pumps should be used having an advertised free flow capacity of 75-80 gallons per hour. This is necessary for a 3-4 PSI minimum fuel pressure at 50 gallons per hour typical of the maximum engine fuel requirement.

:--:--:

Fuel Injection systems usually require their own fuel pump system.



CARBURETORS:

302-350

The stock 1 x 4 BL carburetors on the small block 302-350 Special High performance engines are 780-800 Holley's. Throttle bores are 1-11/16". Satisfactory jetting for most running conditions is the #73 jets in the primary and secondaries. If richer or leaner mixture is desired, jet sizes can be selected numerically up or down. A 850 CFM Holley from the "427" can be used provided the mixture distribution tabs are removed from the LH Primary and RH Secondary main discharge nozzles. Jets #73 or #74 should be used in the primaries and #76 in the secondaries. Refer to the chart on page 8 for other applicable carburetors.

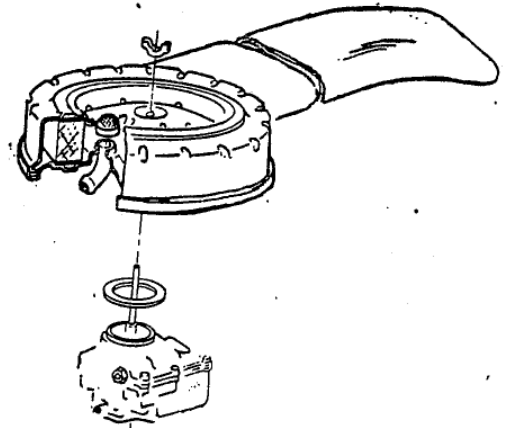
396-427-454

The stock 1 x 4 BL carburetor on the large block Heavy Duty engines was the 850 CFM Holley with throttle bore of 1.75". This carburetor has mechanically actuated secondaries and an independent accelerator pump for them. To run with open plenum intake manifold, the jetting should be staggered "left front" #80, "right front" #76, "left rear" #76 and "right rear" #78. If richer or leaner mixture is desired, jets can be selected up or down in size. The 800 CFM carburetor (Holley R-4346) also can be used with the jetting staggered same as on the 850 CFM except using larger primary jets and connecting the secondaries to operate mechanically; can be done by inserting a bolt in the secondary return quadrant located on the left side of the carburetor.

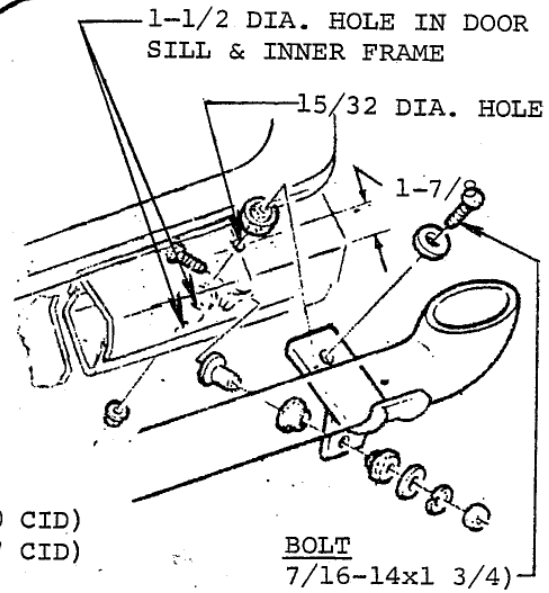
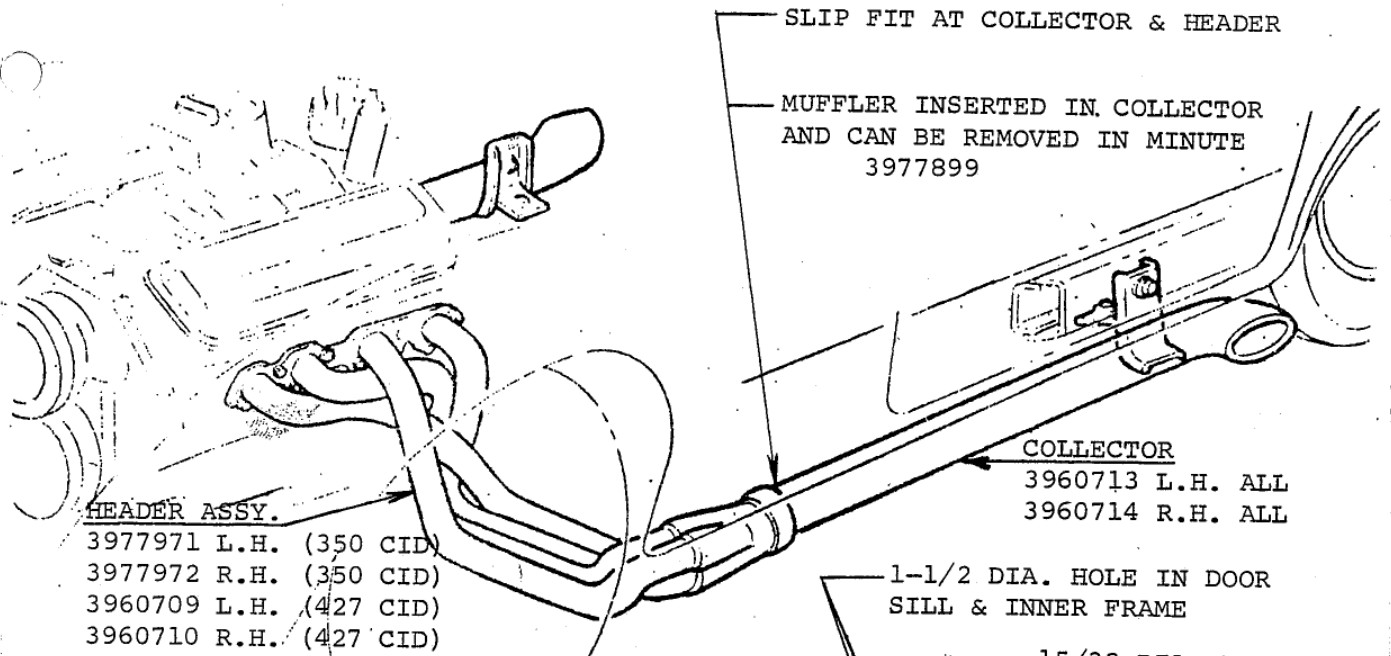
:-:-:

Bronze fuel filters located at the carburetor fuel inlet should be removed and discarded. Instead, use a separate filter unit with replaceable paper element. Fuel pressure drop occurs with bronze filters and is not detectable because of the gauge location. Many engine difficulties can be attributed to filters.

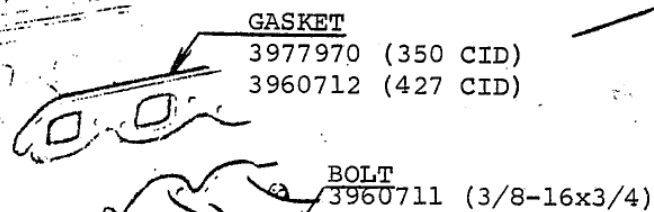
80 76
76 78



CORVETTE 1963-1971



Headers must be installed from the bottom up. The following items should be removed before installation: L.H. & R.H. exhaust manifolds, complete exhaust system, alternator, spark plugs & spark plug heat shields, clutch linkage, oil dip stick & oil



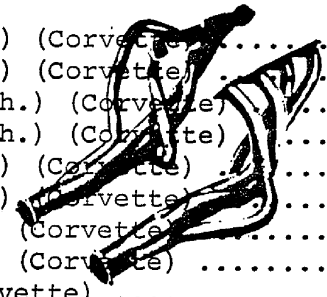
dip stick tube. CAUTION: Remove tube carefully to avoid crushing. When slipping R.H. header into position, turn steering wheel all the way to the left. For L.H. header, turn steering wheel all the way to the right. Install all items previously removed except exhaust system. When tightening header to cylinder head start with center bolts and work towards the outside. After engine has been run for between fifteen minutes to one hour, retighten bolts to be sure gasket has not shrunk from heat.

CAUTION: Failure to retighten at this time may cause the gasket to "blow out".

PART NO. 3983339 L.H. 3983340 R.H. "350"
3981591 L.H. 3981592 R.H. "427"

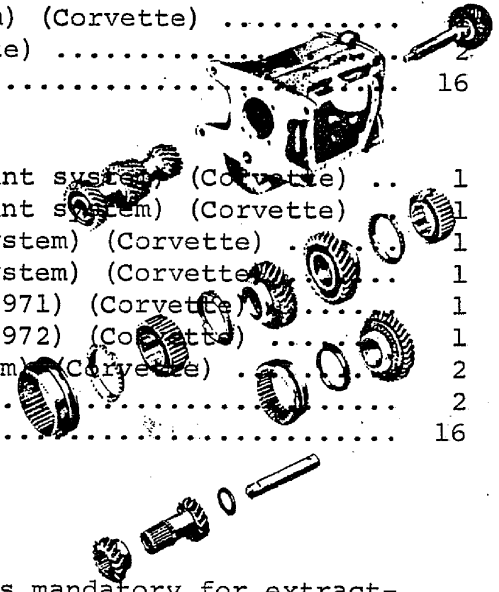
396-427 CID

3981591	HEADER & PIPE UNIT (side mount system) (Corvette)	1
3981592	HEADER & PIPE UNIT (side mount system) (Corvette)	2
3893617	HEADER ASSY., L.H. (used w/regular exh.) (Corvette)	1
3893618	HEADER ASSY., R.H. (used w/regular exh.) (Corvette)	1
3960709	HEADER ASSY., L.H. (side mount system) (Corvette)	1
3960710	HEADER ASSY., R.H. (side mount system) (Corvette)	1
3960713	COLLECTOR ASSY., L.H. (use w/3960709) (Corvette)	1
3960714	COLLECTOR ASSY., R.H. (use w/3960710) (Corvette)	1
3910287	PIPE ASSY., L.H. (use w/3893617) (Corvette)	1
3910288	PIPE ASSY., R.H. (use w/3893618) (Corvette)	1
3977899	MUFFLER (EXH.) (side mount system) (Corvette)	1
3960712	GASKET (Header to Block) (Corvette)	2
3960711	BOLT (Header) (Corvette)	16



327-350 CID

3983339	HEADER & PIPE UNIT, L.H. (side mount system) (Corvette)	1
3983340	HEADER & PIPE UNIT, R.H. (side mount system) (Corvette)	1
3977971	HEADER ASSY., L.H. (side mount system) (Corvette)	1
3977972	HEADER ASSY., R.H. (side mount system) (Corvette)	1
3960713	COLLECTOR ASSY., L.H. (use w/3977971) (Corvette)	1
3960714	COLLECTOR ASSY., R.H. (use w/3977972) (Corvette)	1
3977899	MUFFLER (Exh.) (side mount system) (Corvette)	2
3977970	GASKET (Header to Block)	2
3960711	BOLT (Header)	16

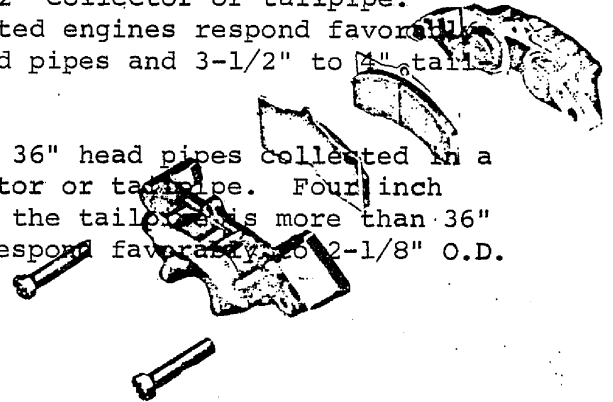


EXHAUST SYSTEM:

A satisfactory tuned open exhaust system is mandatory for extracting maximum torque and horsepower from engines.

Small Block V-8 uses 1-3/4" O.D. x 30" head pipes collected in a group into 3-1/4" to 3-1/2" collector or tailpipe. Fuel injected or Weber carbureted engines respond favorably to 1-7/8" O.D. x 32" to 34" head pipes and 3-1/2" to 4" tailpipe.

Large Block M-4 uses 2" O.D. x 36" head pipes collected in a group into 3-1/2" to 4" collector or tailpipe. Four inch tailpipes are preferable where the tailpipe is more than 36" long. Fuel injected engines respond favorably to 2-1/8" O.D. x 36" to 40" head pipes.



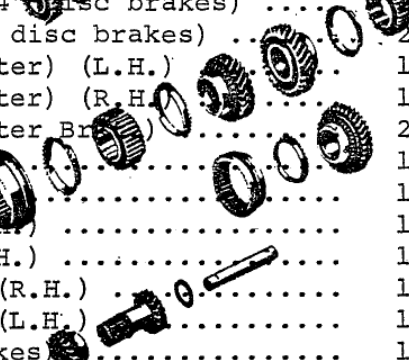
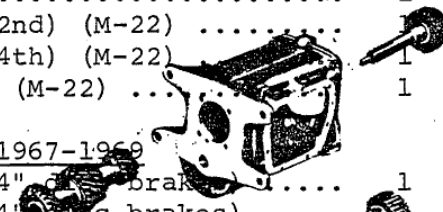
302-327-350-396-427-454 CID

3964507	TRANSMISSION ASSY. (4 Speed) (H.D.) (M-22) (Coarse 10 Spline Input Shaft)	1
	:--:--:	
1051024	LUBRICANT (Trans. & Diff.)	1 gal.
	:--:--:	
3925691	GEAR (Trans.) (Clutch) (M-22)	1
3879999	GEAR (Trans.) (2nd Speed) (M-22)	1
3880845	GEAR (Trans.) (3rd Speed) (M-22)	1
3924796	GEAR (Trans.) (1st Speed) (M-22)	1
3905466	GEAR (Trans.) (Counter) (M-22)	1
3879997	GEAR (Trans.) (Reverse Idler) (M-22)	1
3864850	SHAFT (Trans.) (Counter) (M-22)	1
3924112	SYNCHRONIZER UNIT (Trans.) (1st & 2nd) (M-22)	1
3924113	SYNCHRONIZER UNIT (Trans.) (3rd & 4th) (M-22)	1
3880850	RING (Trans.) (Synchro. Blocking) (M-22)	1



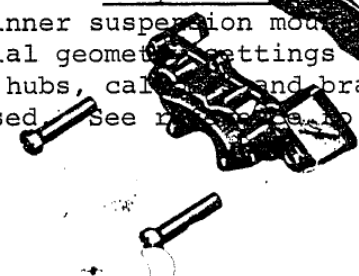
CAMARO FRONT BRAKES, STEERING & SUSPENSION 1967-1969

5463775	CALIPER ASSY. L.H. (Frt.) (w/11 3/4" disc brakes)	1
5463776	CALIPER ASSY. R.H. (Frt.) (w/11 3/4" disc brakes)	1
3991041	HUB & DISC ASSY. (Frt.) (w/11 3/4" disc brakes)	2
3947289	BRACKET (Frt.) (Brake Caliper Adapter) (L.H.)	1
3947290	BRACKET (Frt.) (Brake Caliper Adapter) (R.H.)	1
3945125	SUPPORT (Frt.) (Brake Caliper Adapter)	2
3947283	BRACKET (Frt.) (Brake Hose) (L.H.)	1
3947284	BRACKET (Frt.) (Brake Hose) (R.H.)	1
3947037	PIPE ASSY. (Frt.) (Brake Cal.) (L.H.)	1
3947038	PIPE ASSY. (Frt.) (Brake Cal.) (R.H.)	1
5463856	CONNECTOR (Frt.) (Brk. Cal. Pipe) (R.H.)	1
5463857	CONNECTOR (Frt.) (Brk. Cal. Pipe) (L.H.)	1
5468886	CALIPER ASSY. L.H. (w/11" disc brakes)	1
5468887	CALIPER ASSY. R.H. (w/11" disc brakes)	1
3966151	KNUCKLE (Steering)	2
3916237	ARM (Steering Knuckle) (L.H.)	1
3916238	ARM (Steering Knuckle) (R.H.)	1



3965737*	KNUCKLE (Steering) (L.H.) 1970-71	1
3965738*	KNUCKLE (Steering) (R.H.) 1970-71	1

*NOTE: The knuckles can be safely used only after frame rails have been properly reworked and inner suspension mounting points correctly relocated. Also, special geometry settings are necessary. Related items such as redesigned hubs, calipers and brake lines listed in this catalog must be used. See note on Front Springs.



CAMARO FRONT BRAKES, STEERING & SUSPENSION 1967-1969 CONT'D.

9748406	STUD (Strg. Knuckle Upper Control Arm Ball)	2
3875067	STUD (Strg. Knuckle Lower Control Arm Ball)	2
	:-:-:	
3930028	SOCKET ASSY. (Tie Rod Inner)	1
3930030	SOCKET ASSY. (Tie Rod Outer)	1
3958493	ROD (Steering Relay)	2
	:-:-:	
9777477	BOLT (Wheel Hub)	10
	:-:-:	
5468882	PAD (Brake) (w/Disc Brakes)	1
5470991	PAD (Brake) (w/Disc Brakes)	1
	:-:-:	
3927510	HUB & BTSC (Front Wheel)	1
	:-:-:	
5464591	FLUID (Hydraulic Brake #550)	1 gal.
	:-:-:	
3962799	SHAFT (Front Stabilizer) (1 1/16")	1
3962795	SHAFT (Front Stabilizer) (3/4")	1
3962796	SHAFT (Front Stabilizer) (7/8")	1
3961763	SHAFT (Front Stabilizer) (1")	1
3962797	SHAFT (Front Stabilizer) (15/16")	1
3935743	BRACKET (Front Stabilizer Shaft)	2
3927506	BUSHING (Front Stabilizer Shaft)	2
	:-:-:	
9791593	AIR SPR (Front Shock)	2
	:-:-:	
3948989	SPRING (Front) (Load/rate 500 lb. in.)	2
3948984	SPRING (Front) (Load/rate 501 lb. in.)	2
3935784	SPRING (Front) (Load/rate 615 lb. in.)	2
3935785	SPRING (Front) (Load/rate 723 lb. in.)	2
3948988	SPRING (Front) (Load/rate 777 lb. in.)	2

CORVETTE

3986032 SPRING (Front) (Load/rate 860 lb. in.)

FRONT SPRINGS: CAMARO

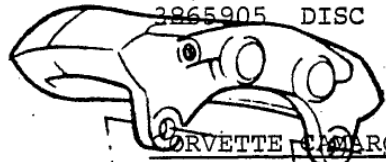
The 1967-1969 average load/rate for base front springs is 341 lbs. Comparison can be made with the following special springs.

* The 1970-71 off-the-road front springs are to be fabricated by the customer using .75 diameter wire. Coil spring to a 5.58" O.D. and 7.67 coils at a free height of 12.17"; load/rate will be 650 lb. in. An optional spring already fabricated can be obtained from independent sources. This optional spring has a load/rate of 600 lb. in., 5.50" diameter, 8 coils and a free height of 12.50". Adjust bump rubber height to limit spring travel so tie rod does not contact frame.

*Should be used with related components as noted on Page 41 and referenced to the knuckles.

CAMARO REAR AXLE, BRAKES & SUSPENSION 1967-69 CONT'D.

3945131	AXLE (Rear) (3.73:1 Ratio) (w/Disc Brakes)	1
	:-:-:	
3953697	HOUSING (RR Axle) (w/Disc Brakes)	1
3945184	SHAFT (RR Axle) (w/RR Whl. Disc Brakes)	2
3927508	SHAFT (RR Axle) (w/Drum Brakes)	2
3959068	LOCK (Shaft) (.155 Thick) (w/RR Disc Brakes)	2
3959067	LOCK (Shaft) (.160 Thick) (w/RR Disc Brakes)	2
3945189	SPACER (Caliper) (w/RR Disc Brakes)	2
3945186	FLANGE PLATE (Parking Brake RR) (w/RR Disc Brakes)	2
3865905	DISC (RR Brake) (11 3/4")	2

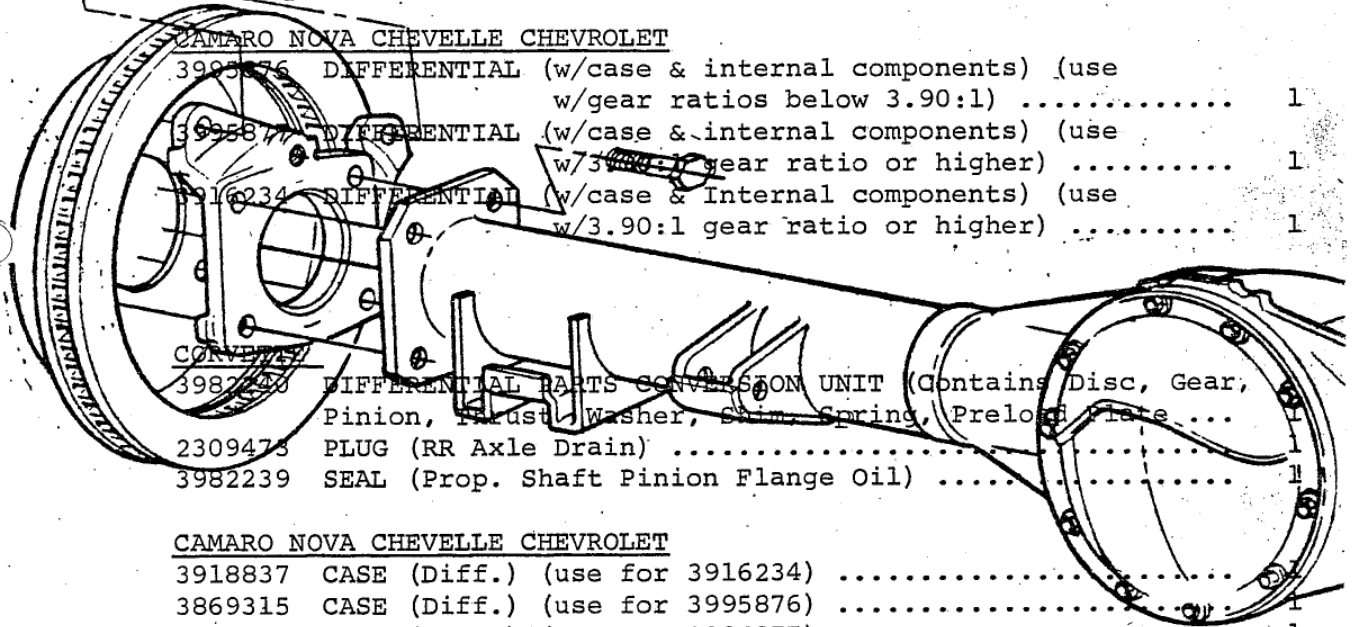


CORVETTE CAMARO

5469499	CALIPER ASSY. (RR Brake)	2
5470399	PAD (Brake) (w/Disc RR Brakes)	1

CAMARO NOVA CHEVELLE CHEVROLET

3995875	DIFFERENTIAL (w/case & internal components) (use w/gear ratios below 3.90:1)	1
3995877	DIFFERENTIAL (w/case & internal components) (use w/3.90:1 gear ratio or higher)	1
3916234	DIFFERENTIAL (w/case & internal components) (use w/3.90:1 gear ratio or higher)	1



CORVETTE

3982233	DIFFERENTIAL PARTS CONVERSION UNIT (Contains Disc, Gear, Pinion, Thrust Washer, Shim Spring, Preload Plate) ...	1
2309473	PLUG (RR Axle Drain)	1
3982239	SEAL (Prop. Shaft Pinion Flange Oil)	1

CAMARO NOVA CHEVELLE CHEVROLET

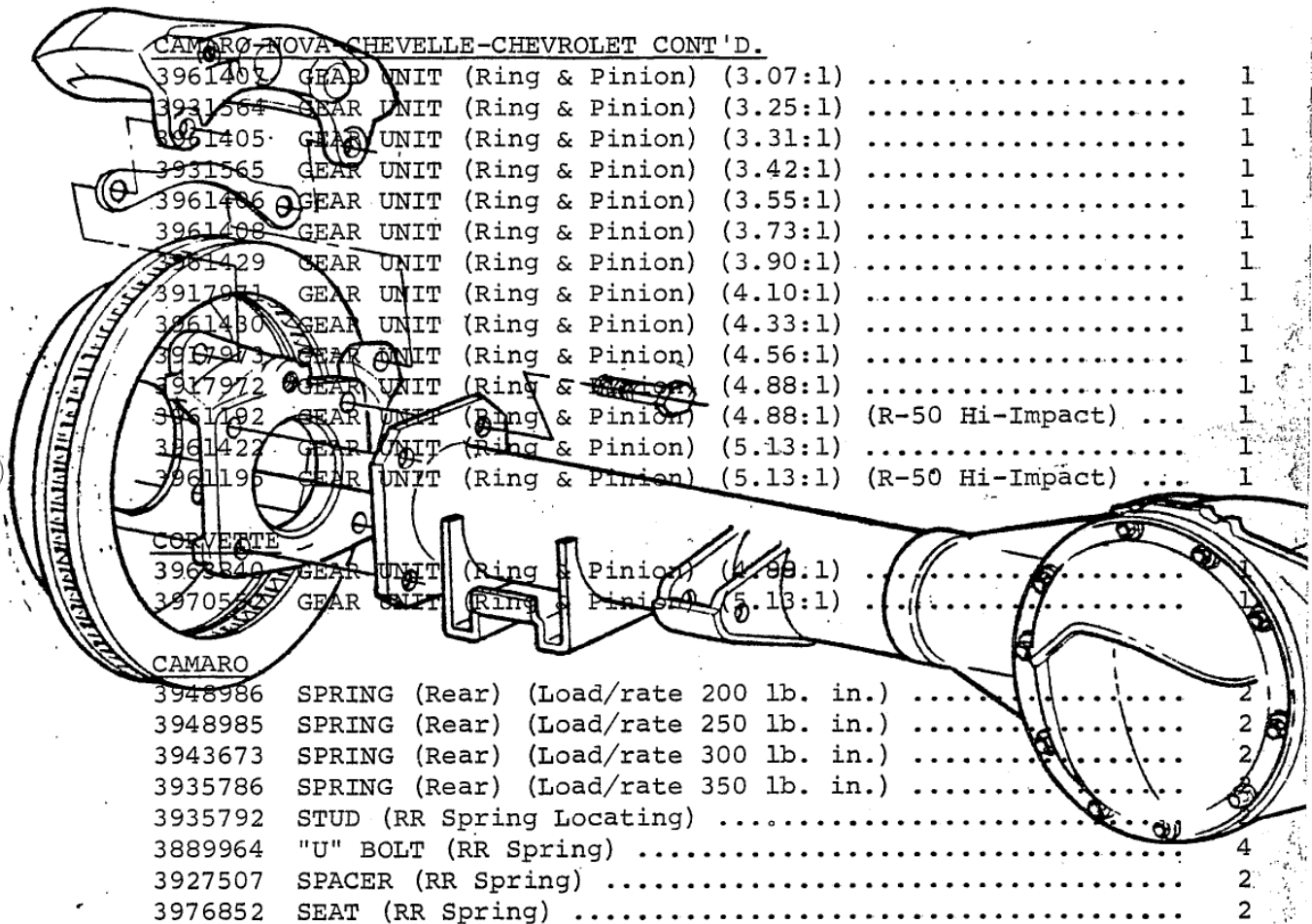
3918837	CASE (Diff.) (use for 3916234)	1
3869315	CASE (Diff.) (use for 3995876)	1
3869316	CASE (Diff.) (use for 3995877)	1
3918834	PLATE (Diff. Clutch Press) (use for 3916234)	AR
3957939	SPRING (Diff. Pinion Pin)	4
3957941	PLATE (Diff. Clutch Press) (use for 3995876-7)	AR
3880140	PINION (Diff.) (use for 3916234)	2
3957938	PINION (Diff.) (use for 3995876-7)	2
3880141	WASHER (Diff. Pinion Thrust) (use for 3916234)	AR
3957940	WASHER (Diff. Pinion Thrust) (use for 3995876-7)	AR
3918831	GEAR (Diff.) (use for 3916234)	2
3957937	GEAR (Diff.) (use for 3995876-7)	2

REAR AXLE:

For the 1970 Camaro, a full size passenger car axle with 8 7/8" ring gear should be used. The unit can be modified for disc brakes and to utilize the 1969 springs. Refer to sketches that follow.

:--:

Axle assemblies without parking brake provisions must not be installed in vehicles that will be driven on public highways or streets. State laws in many States will hold the vehicle operator responsible for operating his vehicle without parking brakes in addition to the regular service brakes.



CAMARO-NOVA-CHEVELLE-CHEVROLET CONT'D.

3961407	GEAR UNIT (Ring & Pinion)	(3.07:1)	.....	1
3931564	GEAR UNIT (Ring & Pinion)	(3.25:1)	.....	1
3961405	GEAR UNIT (Ring & Pinion)	(3.31:1)	.....	1
3931565	GEAR UNIT (Ring & Pinion)	(3.42:1)	.....	1
3961406	GEAR UNIT (Ring & Pinion)	(3.55:1)	.....	1
3961408	GEAR UNIT (Ring & Pinion)	(3.73:1)	.....	1
3961429	GEAR UNIT (Ring & Pinion)	(3.90:1)	.....	1
3917971	GEAR UNIT (Ring & Pinion)	(4.10:1)	.....	1
3961430	GEAR UNIT (Ring & Pinion)	(4.33:1)	.....	1
3917973	GEAR UNIT (Ring & Pinion)	(4.56:1)	.....	1
3917972	GEAR UNIT (Ring & Pinion)	(4.88:1)	.....	1
3961492	GEAR UNIT (Ring & Pinion)	(4.88:1)	(R-50 Hi-Impact) ...	1
3961422	GEAR UNIT (Ring & Pinion)	(5.13:1)	.....	1
3961195	GEAR UNIT (Ring & Pinion)	(5.13:1)	(R-50 Hi-Impact) ...	1
<u>CORVETTE</u>				
3963840	GEAR UNIT (Ring & Pinion)	(4.99:1)	.....	1
3970522	GEAR UNIT (Ring & Pinion)	(5.13:1)	.....	1
<u>CAMARO</u>				
3948986	SPRING (Rear)	(Load/rate 200 lb. in.)	.....	2
3948985	SPRING (Rear)	(Load/rate 250 lb. in.)	.....	2
3943673	SPRING (Rear)	(Load/rate 300 lb. in.)	.....	2
3935786	SPRING (Rear)	(Load/rate 350 lb. in.)	.....	2
3935792	STUD (RR Spring Locating)	.....	.....	4
3889964	"U" BOLT (RR Spring)	.....	.....	2
3927507	SPACER (RR Spring)	.....	.....	2
3976852	SEAT (RR Spring)	.....	.....	2

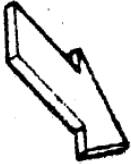
CORVETTE

3986033	SPRING (Rear) (6 leaf) (Design load 1325 lbs. at -.330 camber)	2
---------	---	-------	-------	---

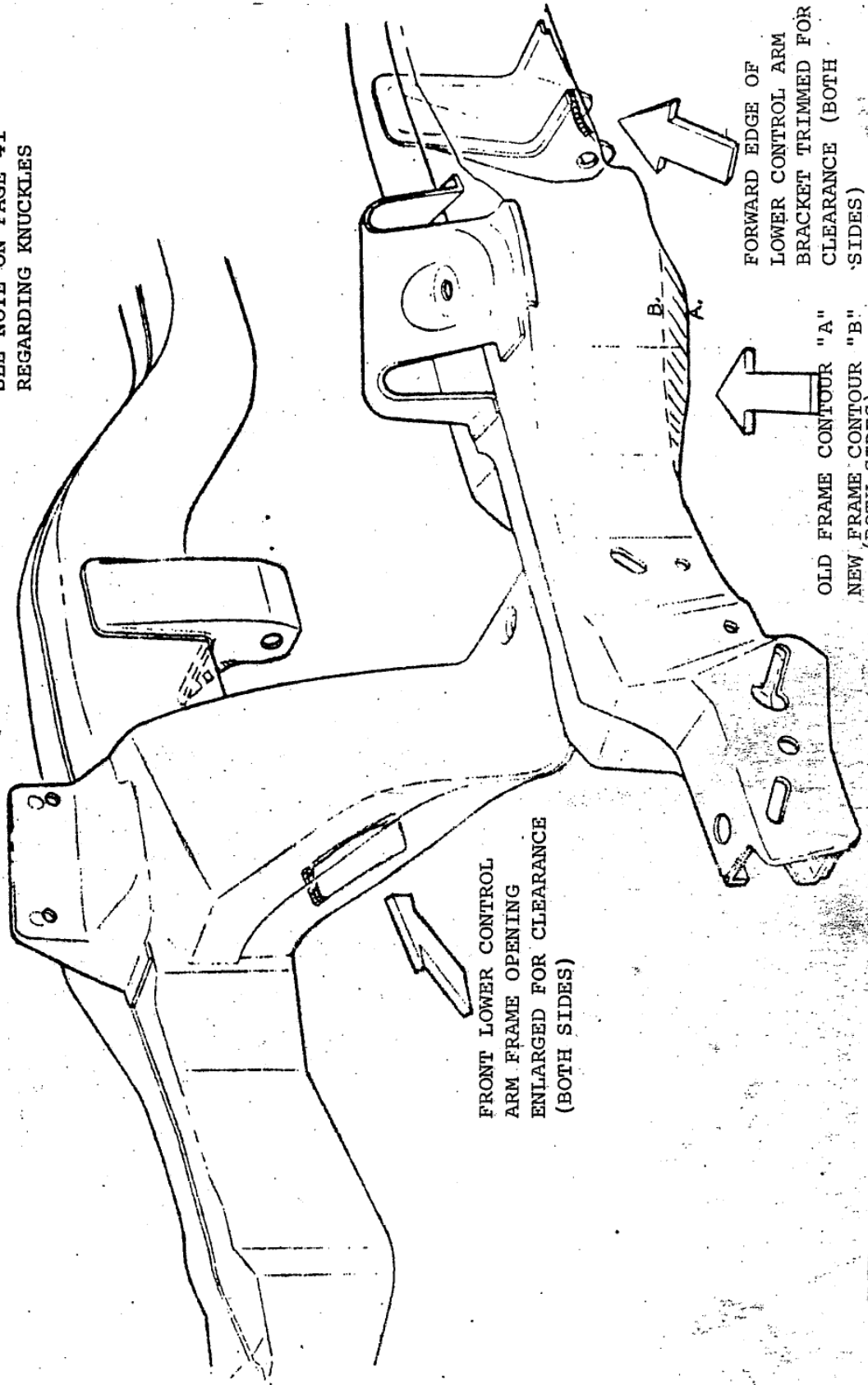
REAR SPRINGS:

The 1967-69 average load/rate for base rear springs is 125 lb. in. See following sketches for adaptation of 1969 Springs to the 1970-1971 Camaros.

UPPER CONTROL ARM BOLT
HOLES RELOCATED (BOTH SIDES)

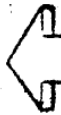


SEE NOTE ON PAGE 41
REGARDING KNUCKLES



FRONT LOWER CONTROL
ARM FRAME OPENING
ENLARGED FOR CLEARANCE
(BOTH SIDES)

FORWARD EDGE OF
LOWER CONTROL ARM
BRACKET TRIMMED FOR
CLEARANCE (BOTH
SIDES)

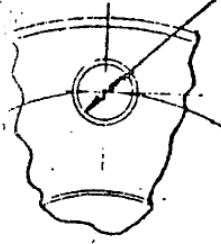


OLD FRAME CONTOUR "A"
NEW FRAME CONTOUR "B"
(BOTH SIDES)

A

B

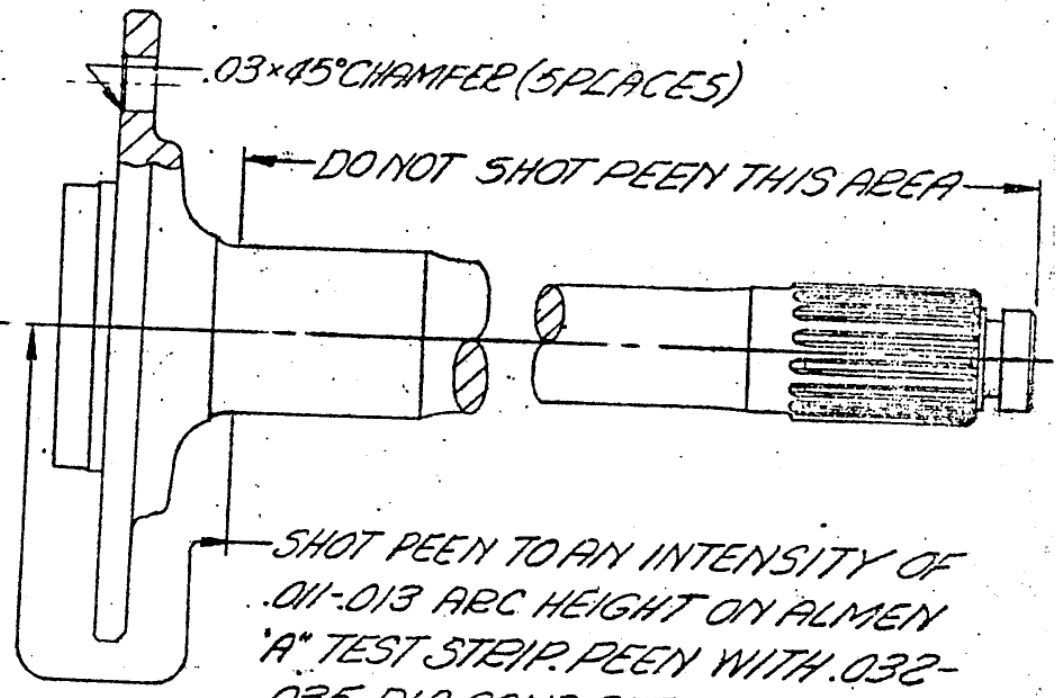
.535 DIA 5 HOLES
.540 DIA 5 HOLES
EQUALLY SPACED
(ENLARGE EXISTING HOLES)



.03 x 45° CHAMFER (5 PLACES)

DO NOT SHOT PEEN THIS AREA

SHOT PEEN TO AN INTENSITY OF
.011-.013 ARC HEIGHT ON ALMEN
'A' TEST STRIP. PEEN WITH .032-
.035 DIA. COND CUT WIRE SHOT.



.657 ± .04

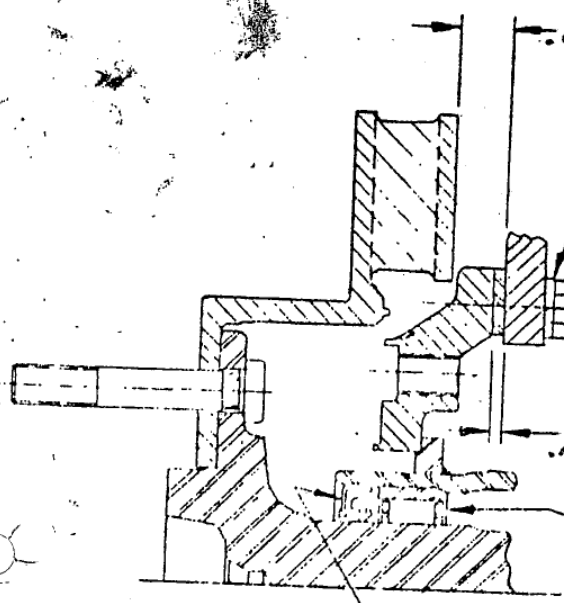
USE SPACER TO
MAINTAIN ABOVE
DIMENSION

-103322 L.V. MED. SPEG.

-186645 BOLT 7/16-20 x 1 1/4

.15 APPROX

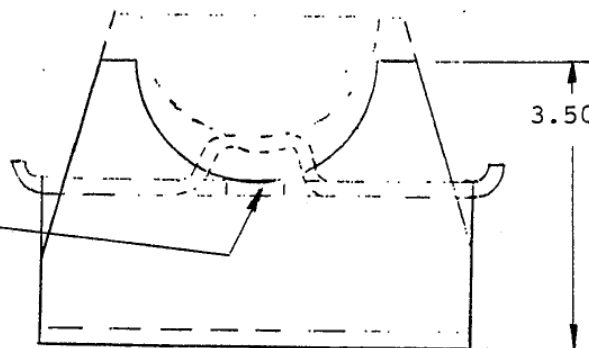
7451275



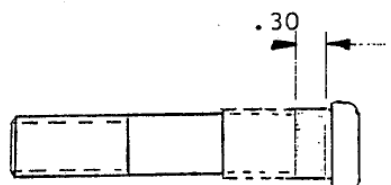
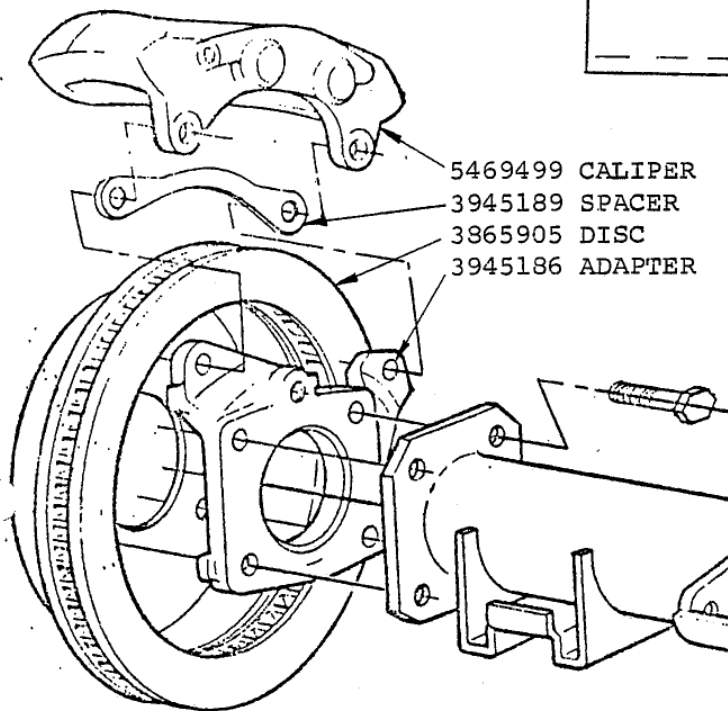
SEAL

1.50 R
1.52

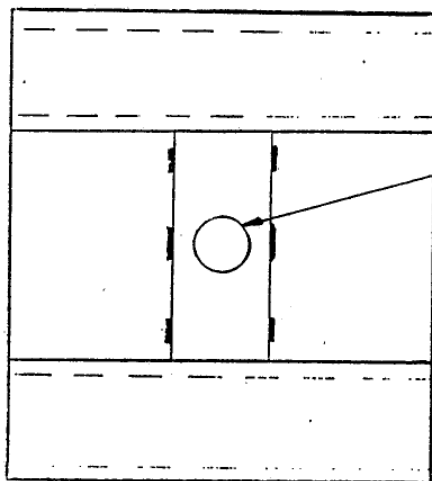
SPRING LOCATING
HOLE IN HANGER
3976852
SEE VIEW "B" BELOW



VIEW A



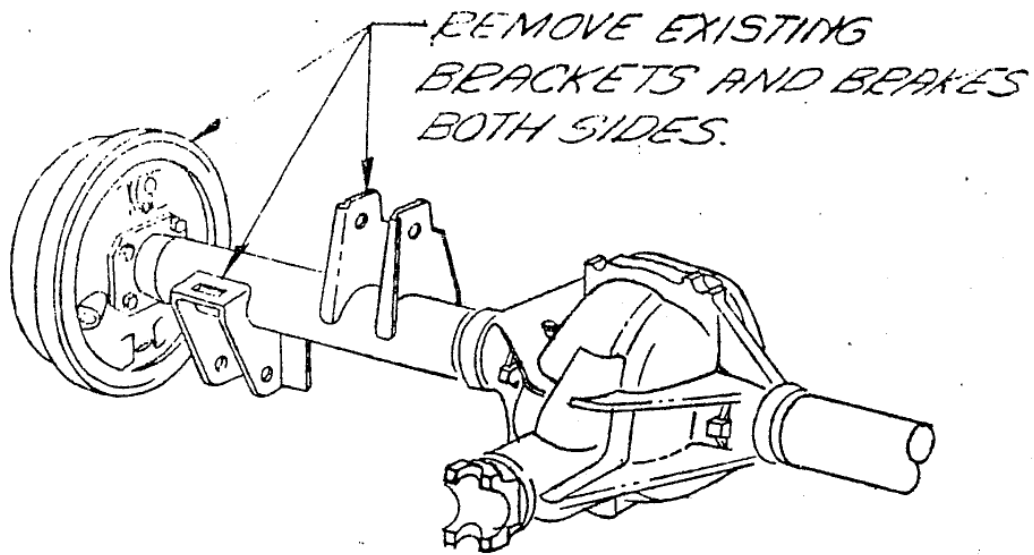
REWORK WHEEL BOLT 3819780
BY REMOVING EXISTING
SERRATIONS TO DIMENSION SHOWN



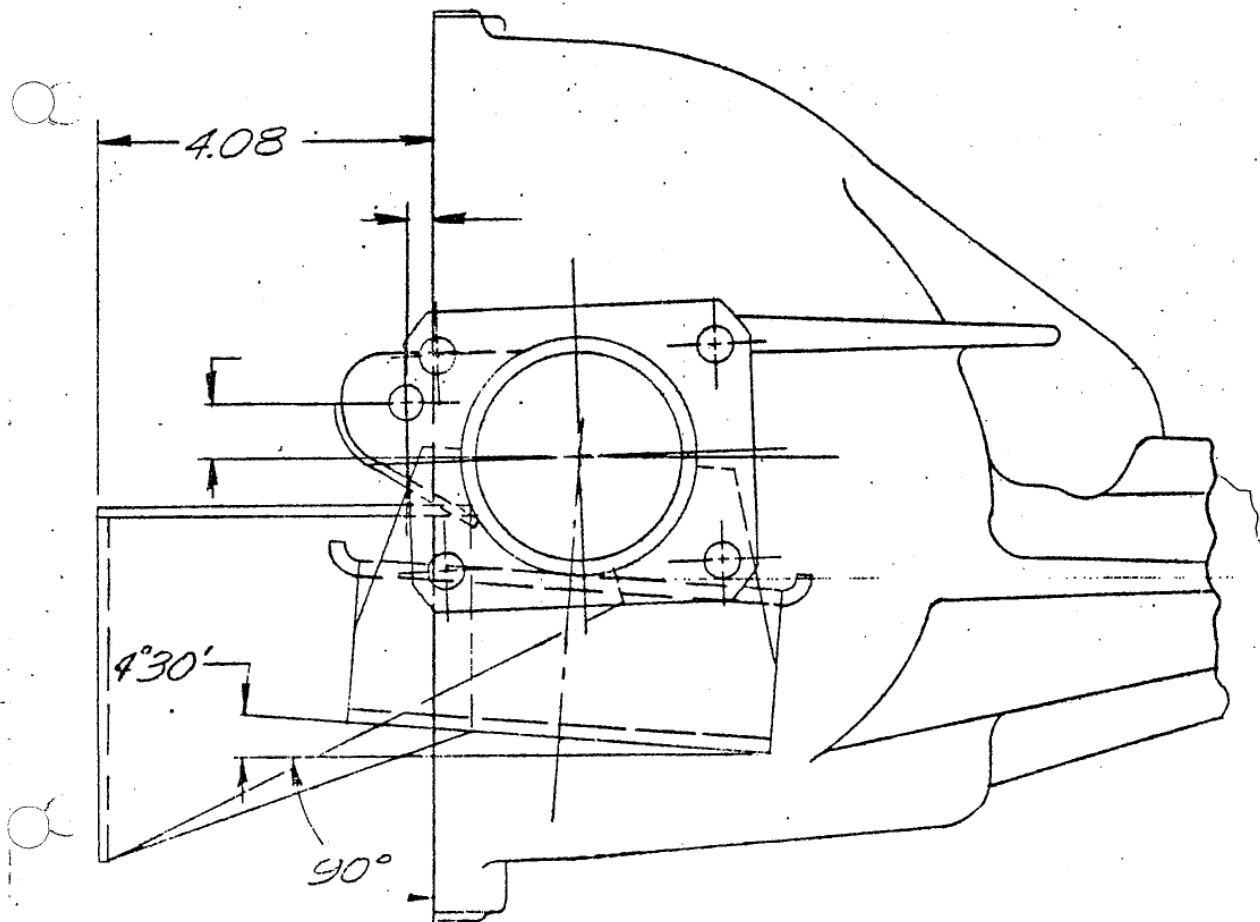
REPLACE SPRING LOCATING
HOLE 1/2" DIA. AS SHOWN
FOR SPRING HANGER 3976852
SEE VIEW "A" ABOVE

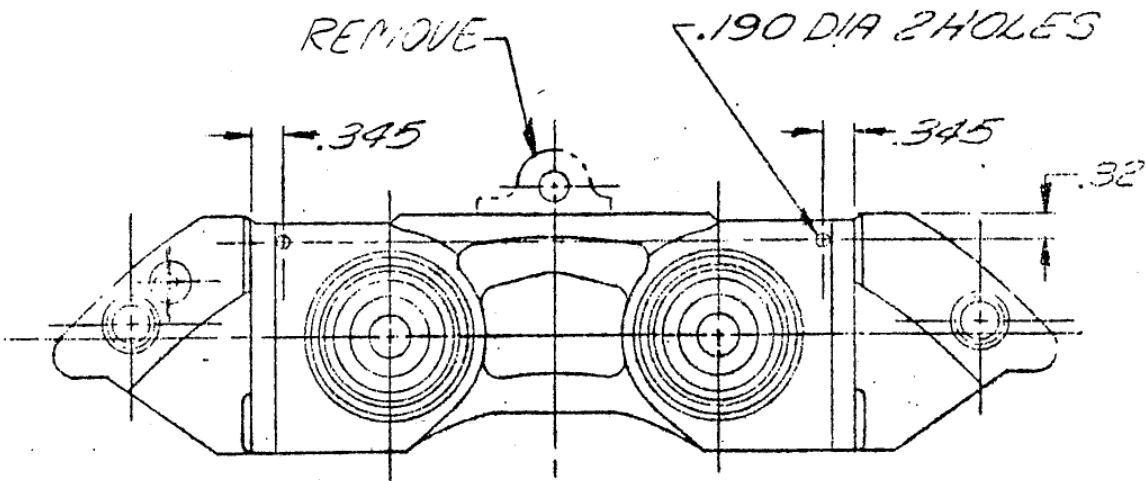
SEE NOTE ON PAGE 42
REGARDING LAW

VIEW B

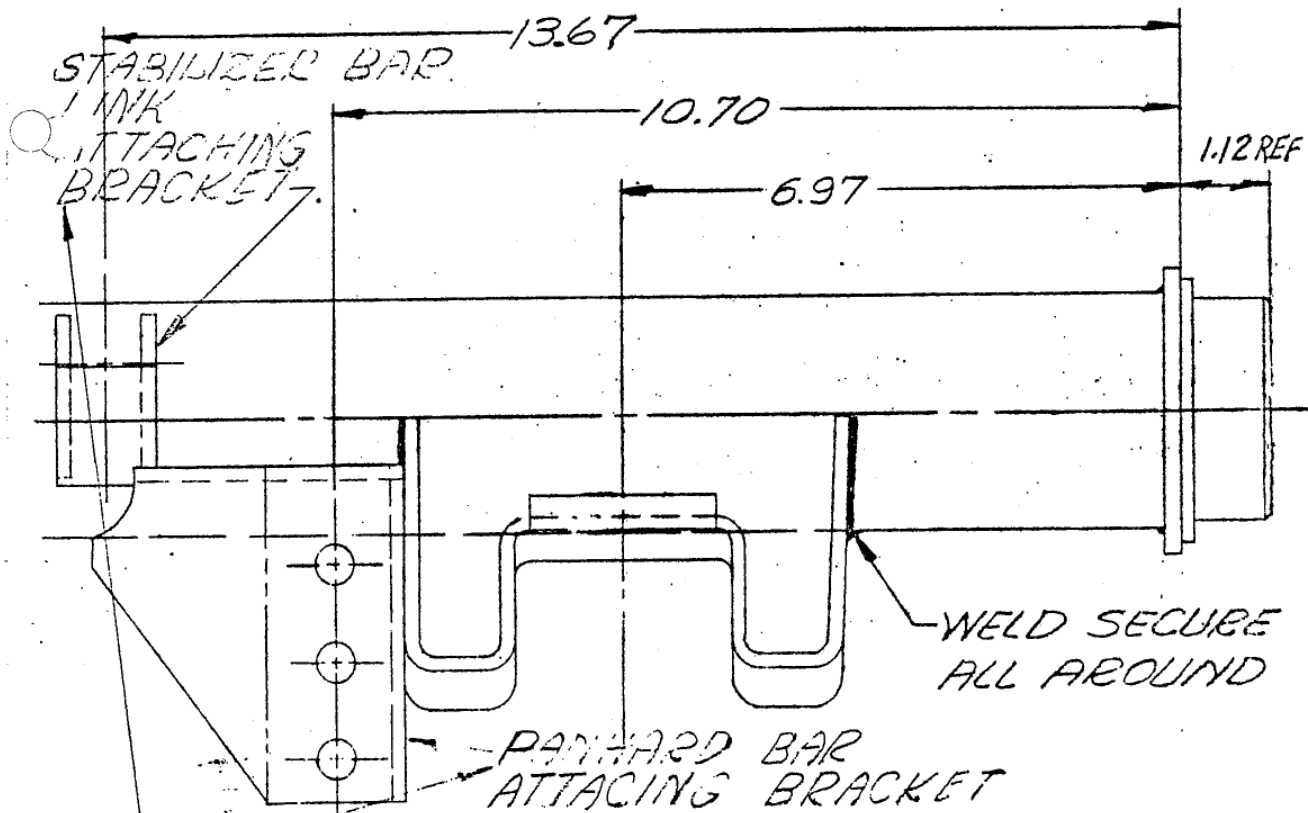


1969-70 FULL SIZE PASSENGER AXLE
WITH 8.875 DIA RING GEAR





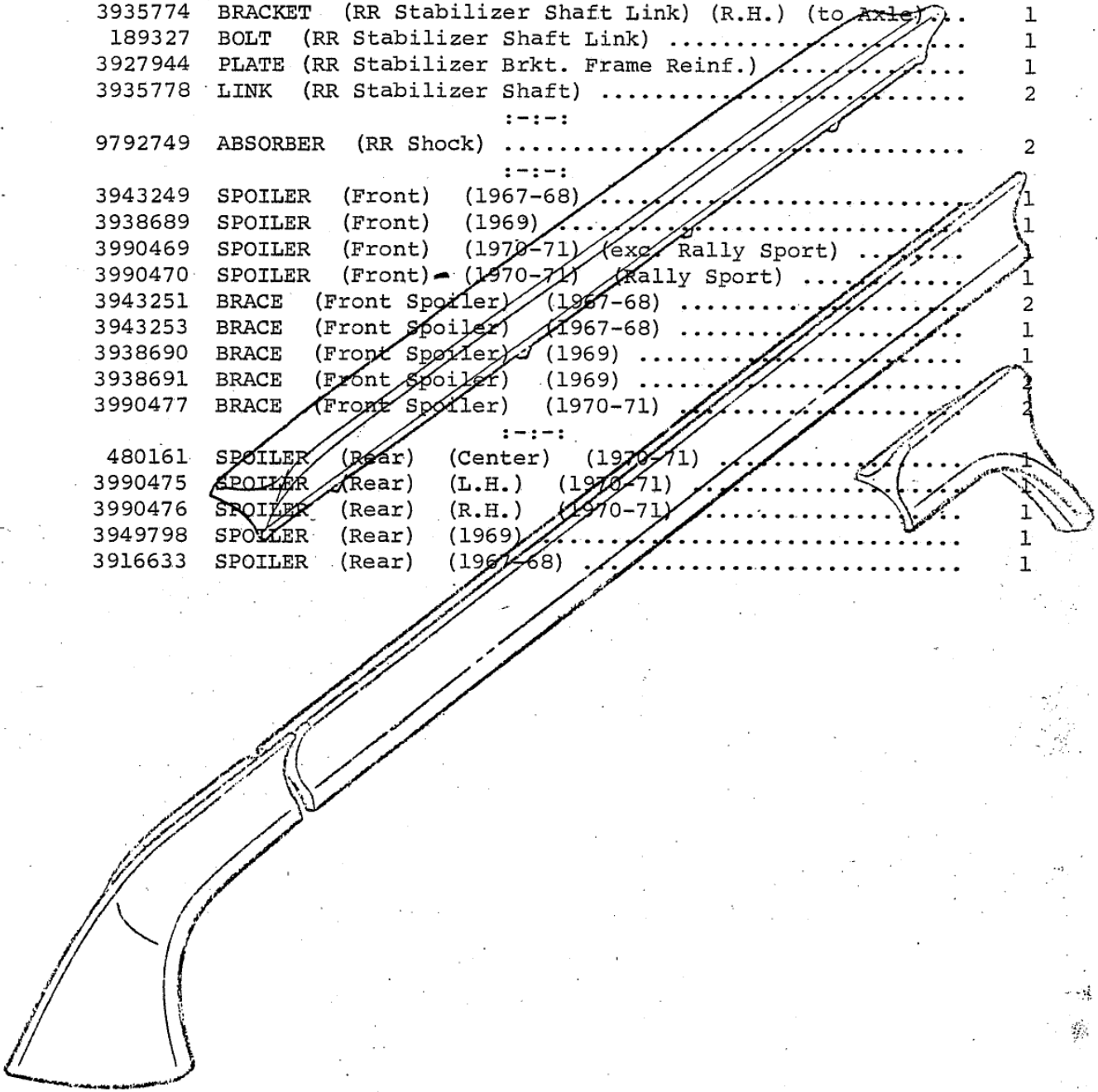
REWORK CALIPER AS SHOWN
 FOR USE WITH 5470991 SHOE
 ASS'Y. (H.R.)

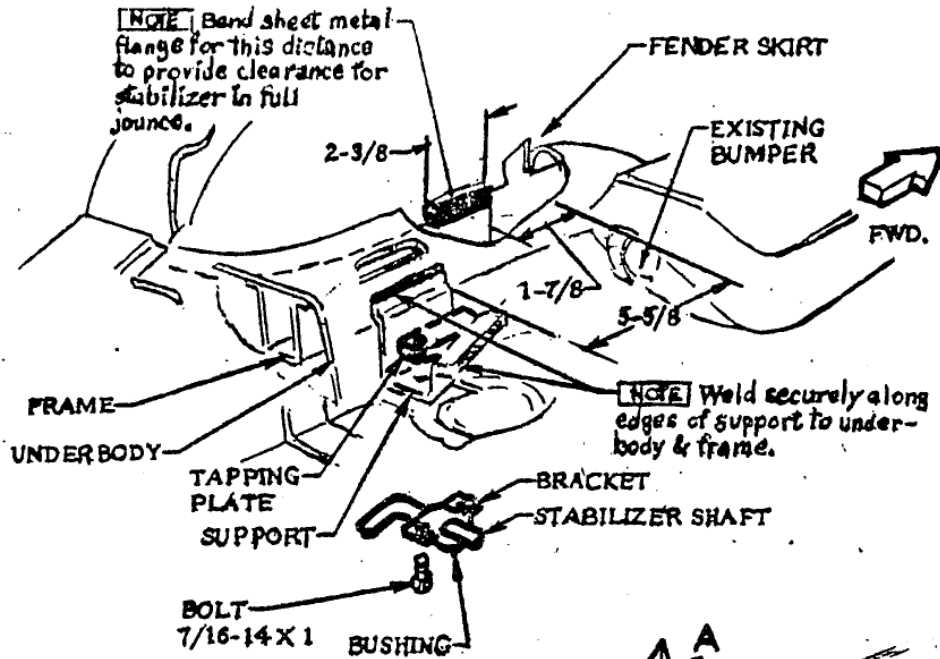


LOCATION SHOWN OPTIONAL
 BRACKETS MAY BE ADDED IF DESIRED

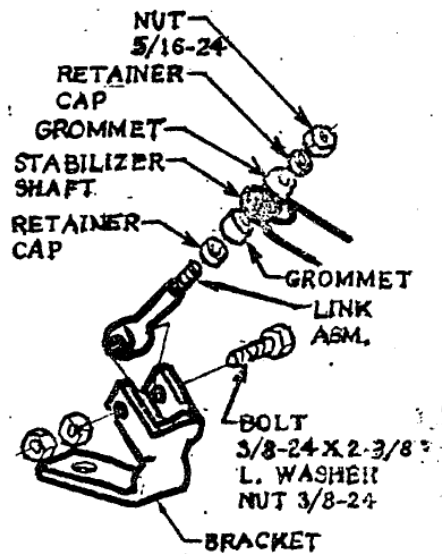
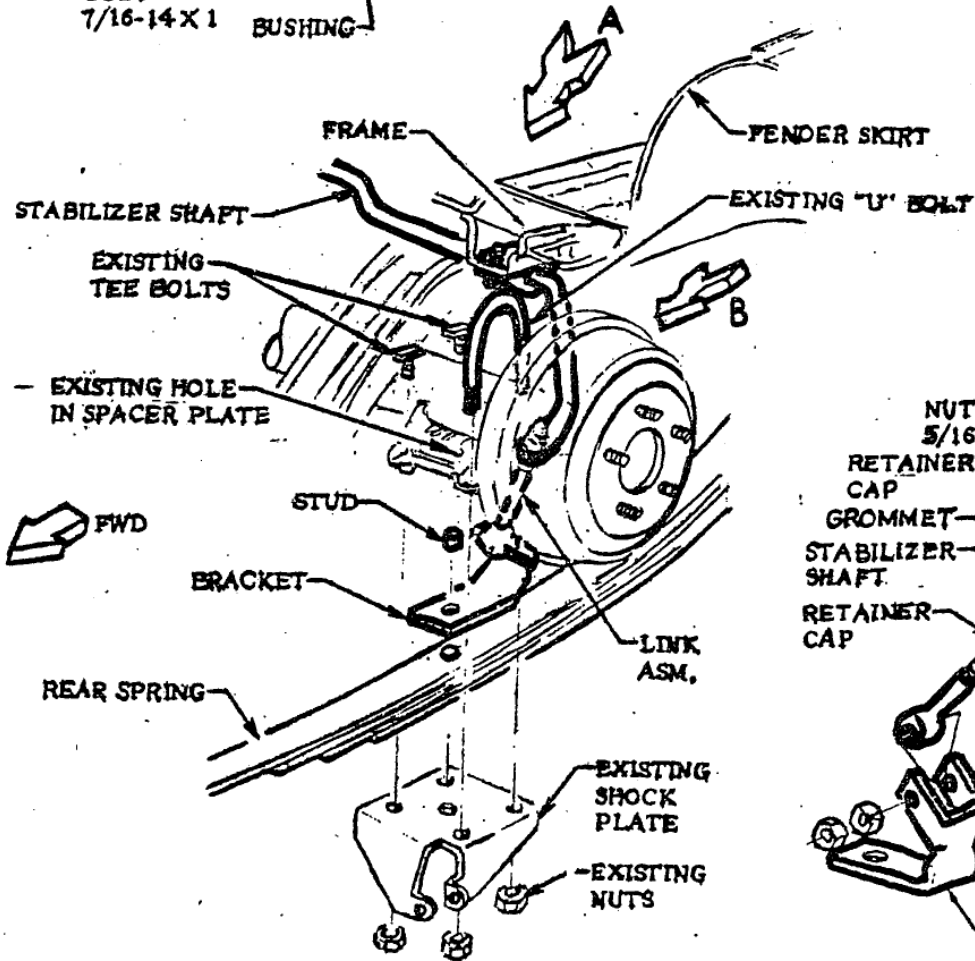
CAMARO 1967-69

3935776	SHAFT	(RR Stabilizer)	(5/8")	.....	1
3935771	SUPPORT	(RR Stabilizer Shaft)	(L.H.)	.....	1
3935772	SUPPORT	(RR Stabilizer Shaft)	(R.H.)	.....	1
3935773	BRACKET	(RR Stabilizer Shaft Link)	(L.H.) (to Axle)	...	1
3935774	BRACKET	(RR Stabilizer Shaft Link)	(R.H.) (to Axle)	...	1
189327	BOLT	(RR Stabilizer Shaft Link)		.....	1
3927944	PLATE	(RR Stabilizer Brkt. Frame Reinf.)		.....	1
3935778	LINK	(RR Stabilizer Shaft)		.....	2
				:-:-:	
9792749	ABSORBER	(RR Shock)		.....	2
				:-:-:	
3943249	SPOILER	(Front)	(1967-68)	.....	1
3938689	SPOILER	(Front)	(1969)	.....	1
3990469	SPOILER	(Front)	(1970-71) (exc. Rally Sport)	.....	1
3990470	SPOILER	(Front)	(1970-71) (Rally Sport)	.....	1
3943251	BRACE	(Front Spoiler)	(1967-68)	.....	2
3943253	BRACE	(Front Spoiler)	(1967-68)	.....	1
3938690	BRACE	(Front Spoiler)	(1969)	.....	1
3938691	BRACE	(Front Spoiler)	(1969)	.....	1
3990477	BRACE	(Front Spoiler)	(1970-71)	.....	1
				:-:-:	
480161	SPOILER	(Rear)	(Center) (1970-71)	.....	1
3990475	SPOILER	(Rear)	(L.H.) (1970-71)	.....	1
3990476	SPOILER	(Rear)	(R.H.) (1970-71)	.....	1
3949798	SPOILER	(Rear)	(1969)	.....	1
3916633	SPOILER	(Rear)	(1967-68)	.....	1





REAR
 STABILIZER
 SHAFT
 1967 - 1969
 CAMARO

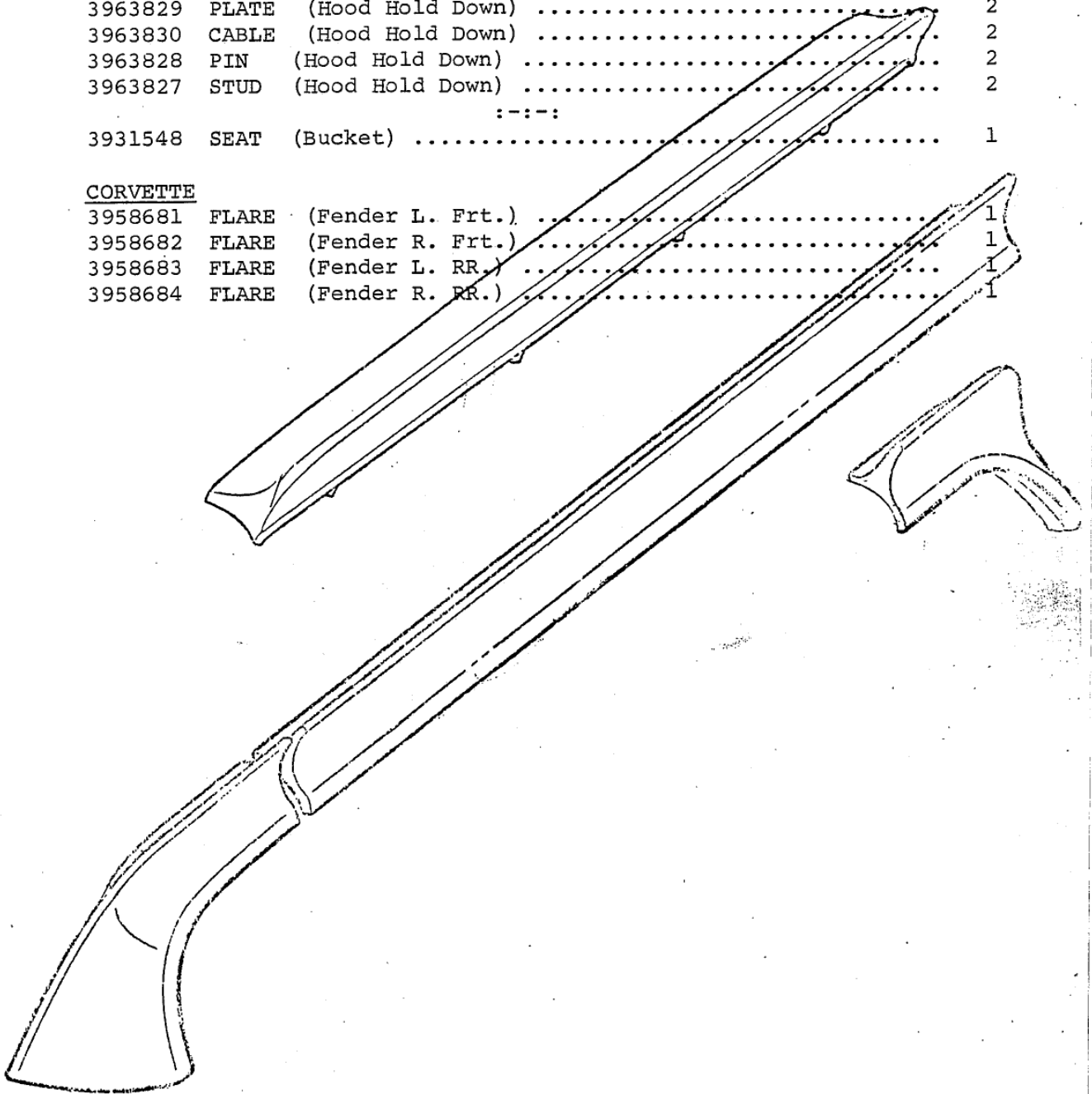


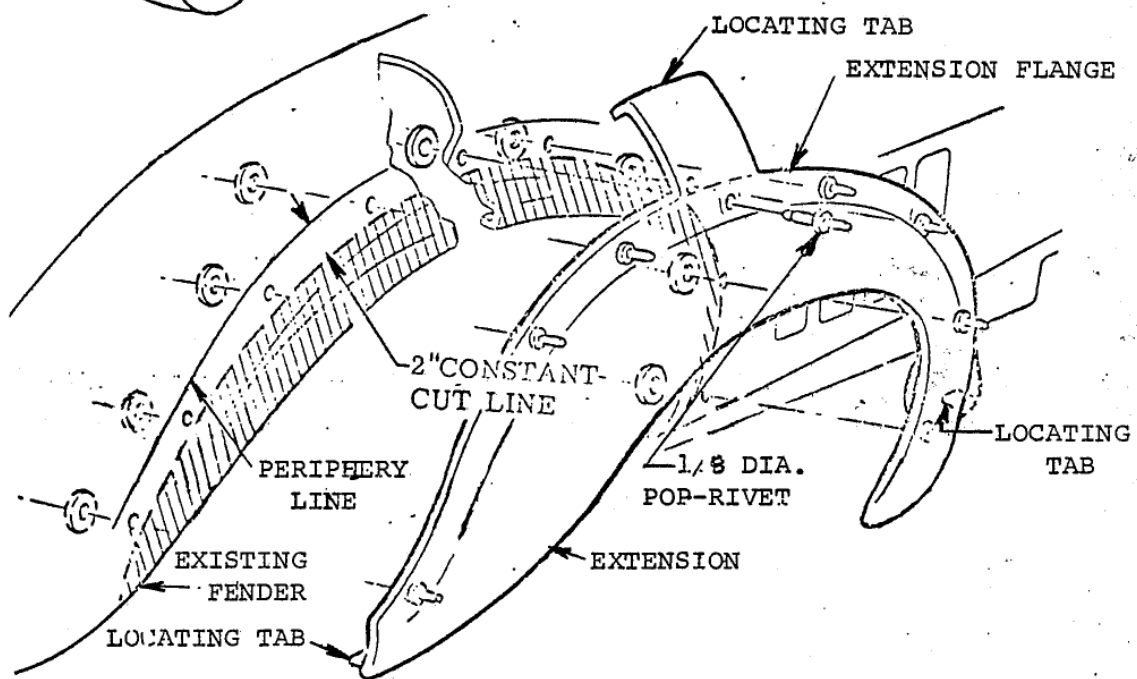
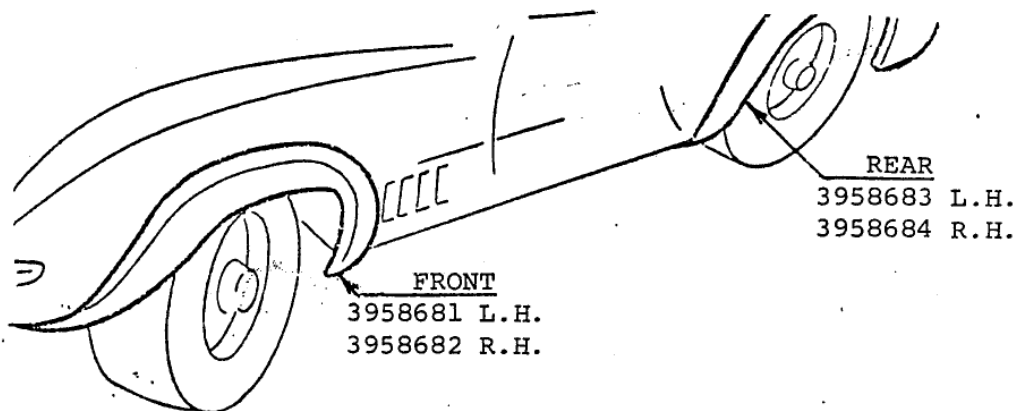
CAMARO

3963862	HOOD (Fiberglass) (w/air plenum 2x4 BC & 1x4 BC).....	1
3965713	ROD (Hood Support) (w/fiberglass hood)	1
	:-:-:	
3963829	PLATE (Hood Hold Down)	2
3963830	CABLE (Hood Hold Down)	2
3963828	PIN (Hood Hold Down)	2
3963827	STUD (Hood Hold Down)	2
	:-:-:	
3931548	SEAT (Bucket)	1

CORVETTE

3958681	FLARE (Fender L. Frt.)	1
3958682	FLARE (Fender R. Frt.)	1
3958683	FLARE (Fender L. RR.)	1
3958684	FLARE (Fender R. RR.)	1





Locate Fender Extension Tabs on body, use extension as template to mark periphery.

Scribe line 2 inches inside of periphery line, cut away unwanted portion of fender.

Apply suitable bond to entire length of extension flange after locating on body with tabs and drilling holes.

Then rivet, starting at top center, each side until all attachments are made.

After bond has set, remove locating tabs.

Apply bond or resin filler to blend with normal fender surface. Finish, sand and prepare body for paint.

CORVETTE

1968-71 Fender
EXTENSION—FILLER

**CHEVROLET • PONTIAC • OLDSMOBILE • BUICK
• CADILLAC • CHEVROLET LT. DUTY TRUCKS**

VEHICLE, CAUTIONARY AND INFORMATIONAL LABEL ORDER FORM

CUT ALONG PERFORATIONS

DESCRIPTION	MAKE OF VEHICLE	MODEL YEAR	PART NUMBER	QTY.
			TOTAL LABELS	
			TOTAL DOLLARS @ \$1.50 EACH	

ORDERING INSTRUCTIONS:

1. Figure the total for all labels required.
2. Multiply this total by \$1.50.
3. Make check or money order payable to Helm Incorporated, for total amount.
4. Mail order form and check or money order to:

AMOUNT ENCLOSED

HELM INCORPORATED
P. O. BOX 5396 DEPT. ML
DETROIT, MICHIGAN 48211

5. Mail labels to:

NAME _____

ADDRESS _____

CITY _____

STATE _____ ZIP CODE _____

Price subject to change without notice. Orders filled based on material availability. If your order cannot be filled, monies for non-available material will be returned.

<u>GROUP</u>	<u>PART NO.</u>	<u>USAGE</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
0.439	3879620	396, 427	GUIDE...valve push rod.....	8
519	3925535	396, 427 ^{Phase III}	CAMSHAFT ASSY...(chain driven operation) (duration Inst. 354, Exh. 360).....	1
0.519	3925533*	396, 427	CAMSHAFT ASSY...(Gear driven operation) (duration Inst. 354, Exh. 360).....	1
0.519	3927144	302 ^{Phase III}	CAMSHAFT UNIT.....	1
0.519	3927140+	302 " "	CAMSHAFT ASSY.....	1
0.519	3959180	396, 427 " "	CAMSHAFT ASSY...(600 lift).....	1
0.533	3887871#	396, 427	BEARING UNIT...camshaft thrust.....	1
0.603	3959187**	396, 427	ROD ASSY...Conn. (floating pin) 7/16 bolt.....	8
0.603	3893260	396, 427	ROD ASSY... Conn. (pressed pin).....	8
0.603	3909846	396, 427	ROD ASSY...Conn. (floating pin) 3/8 bolt.....	8
0.603	3927145	302 (1967)	ROD ASSY....Connecting.....	8
0.616	3965720	302, 350, 327	BEARING UNIT..Conn. Rod .001 O.S.....	AR
0.616	3965716	396, 427	BEARING UNIT..Conn. Rod .001 O.S.....	AR
0.623	3959186	396, 427	BOLT..Conn. Rod (use w/3959187) 7/16-20	AR
0.626	3942410	396, 427	NUT..Conn. Rod Bolt (7/16-20).....	AR
0.629	3909857	427, 1967-8	PISTON ASSY..w/pin (STD) (floating pin)	3
0.629	3909858	427, 1967-8	PISTON ASSY..w/pin (.001 O.S.) (floating pin).....	8
0.629	3909859	427, 1967-8	PISTON ASSY..w/pin (.030 O.S.) (floating pin).....	8
0.629	3909860	427, 1967-8	PISTON ASSY..w/pin (.060 O.S.) (floating pin).....	8
0.629	3959105	427, 1969	PISTON ASSY..(3947884) L-88, ZL-1.....	1

*NOTE: Used in conjunction with 3927142 Valve Spring and Damper Assy.

+NOTE: Use Thrust Bearing 3887871.

#NOTE: Used with Gear Driven Operation.

**NOTE: Use with crankshaft 3942411 and with block 3942412.

**NOTE: When using this item on blocks where 3/8 bolt has been used make sure block has clearances for the connecting rod cap.

<u>GROUP</u>	<u>* PART NO.</u>	<u>USAGE</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
0.629	3916147	396	PISTON ASSY,,,w/pin (STD) (floating pin).....	8
0.629	3916150	396	PISTON ASSY...w/pin (.001 O.S.) (floating pin).....	8
0.629	3916152	396	PISTON ASSY...w/pin (.030 O.S.) (floating pin).....	8
0.629	3916154	396	PISTON ASSY...w/pin (.060 O.S.) (floating pin).....	8
0.629	3942541+	350	PISTON..(STD)..forged.....	8
0.629	3942542+	350	PISTON...(.001)..forged.....	8
0.629	3942543+	350	PISTON...(.030)..forged.....	8

+NOTE: Use with Crankshaft 3941184

0.639	3942423	396, 427	RETAINER..piston floating pin.....	16
0.643	3879912	427	RING UNIT...piston (STD).....	1
0.643	3879913	427	RING UNIT...piston (.030 O.S.).....	1
0.643	3879914	427	RING UNIT...piston (.060 O.S.).....	1
0.646	3887114	396	CRANKSHAFT ASSY..3/8 Conn. rod bolts....	1
0.646	3879621	427	CRANKSHAFT ASSY..3/8 Conn. rod bolts....	1
0.646	3941184#	350	CRANKSHAFT (ring wt. 4.118 lbs).....	1
0.646	3942411	396, 427	CRANKSHAFT (floating pin 2nd design 7/16 Conn rod bolts.....	1
0.659	3817173	302	DAMPER ASSY.....	1
0.659	3879623	396, 427	DAMPER ASSY... Torsional.....	1
0.659	3899660	396, 427	PULLEY...cr/shf.....	1
0.660	3879625	396, 427	REINFORCEMENT..crankshaft pulley.....	1
0.662	181629	396, 427	BOLT...crankshaft pulley (3/8-24, 5/8 (8.900).....	3
0.662	138542	396, 427	WASHER..crankshaft pulley (3/8) (8.932).....	3
0.666	3866735++	302, 396, 427	FLYWHEEL ASSY...(15.850 lbs.).....	1

#NOTE: Use with Pistons 3942541-2-3

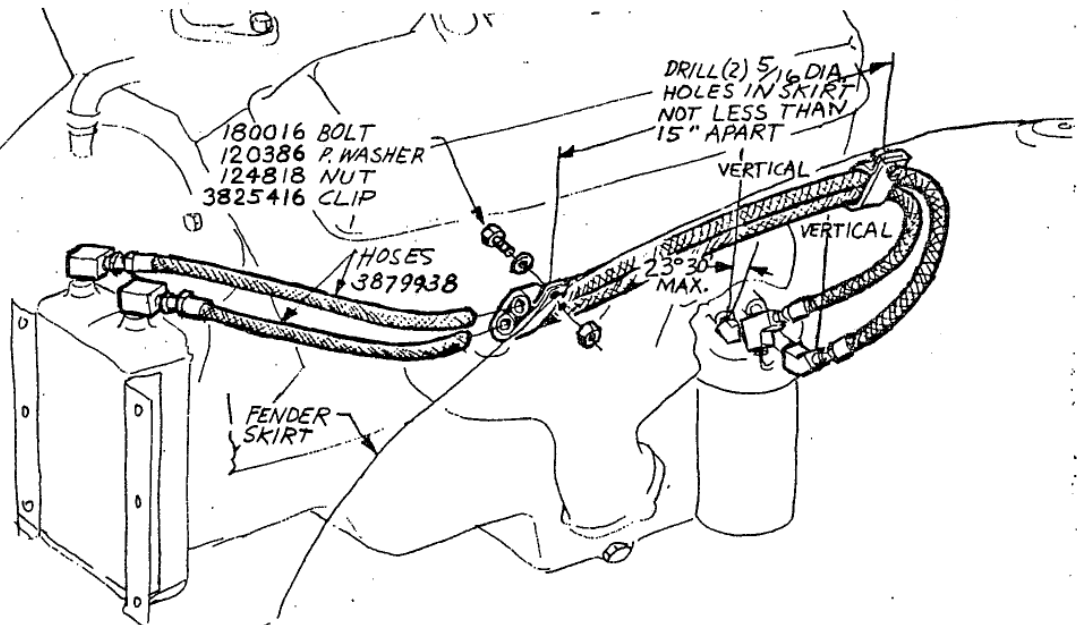
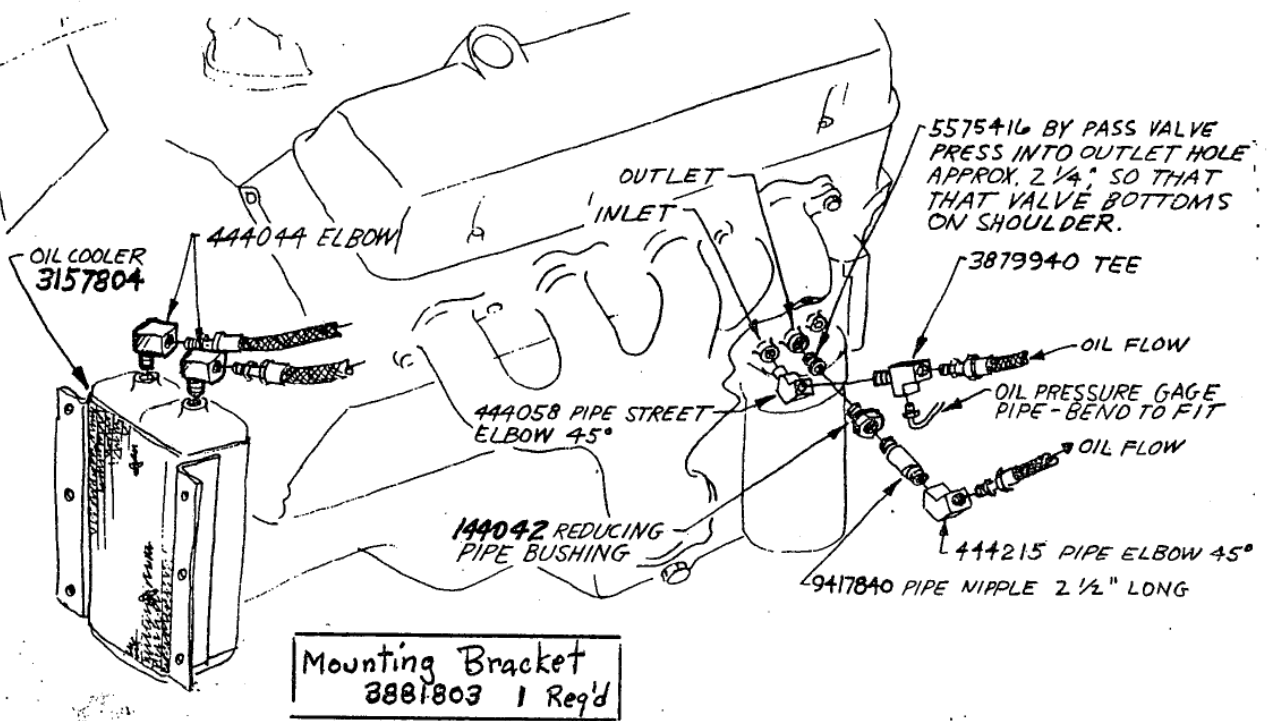
++NOTE: When changing from large dia. flywheel, use 3858403 Bell Hsg.,
3788422 Dust Shield and 1957885 Starter Hsg. (396, & 427 only).

343710

<u>GROUP</u>	<u>PART NO.</u>	<u>USAGE</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
.724	3860036	396,427	CHAIN...camshaft timing.....	1
0.728	3860086	396,427	GEAR...crankshaft.....	1
0.728	3860035	396,427	SPROCKET...crankshaft.....	1
0.736	3856351	396,427	GEAR...camshaft.....	1
0.736	3856356	396,427	SPROCKET...camshaft.....	1
0.738	3817006	396,427	BOLT..camshaft gear (¼-20x7/16)0.679	2
0.738	3975949	ZL-1	SHIM...camshaft sprocket.....	AR
0.859	3886066	302,396,427	PLATE ASSY..w/cover, clutch pressure	1
0.886	3886059	302,396,427	PLATE ASSY...clutch driven.....	1
1.064	591998+	396,427	BLADE ASSY...fan.....	1
1.064	454384	396,427	BOLT..fan blade (5/16-24x3¼).....	4
1.064	3876828	396,427	SPACER...fan blade.....	1
1.064	187119	396,427	WASHER..fan blade (8.931).....	4
1.066	3878292	396,427	BELT...fan and generator.....	1
1.066	3879614	396,427	BELT...fan and water pump.....	1
1.219	3007436	396,427	RADIATOR... (aluminum).....	1
1.426	3879633	Pass,396,427	PAN ASSY...oil (6 qt.).....	1
1.428	9422297	396,427	NUT..oil pan (3/8-16)..(8.917).....	1
1.428	120382	396,427	LOCKWASHER...oil pan..(8.931).....	4
1.428	120394	396,427	WASHER...oil pan (3/8..(8.929).....	4
1.428	180120	396,427	BOLT..oil pan (3/8-16x3/4) (8.900)	4
1.430	3879640	Pass.396,427	BAFFLE ASSY..oil pan upper.....	1
1.540	3881803	Pass.396	BRACKET...oil cooler.....	1
1.540	443899	396,427	BOLT...oil cooler 5/16-18x7/8.....	8

+NOTE: For Gear Driven Operation

OIL COOLER INSTALLATION

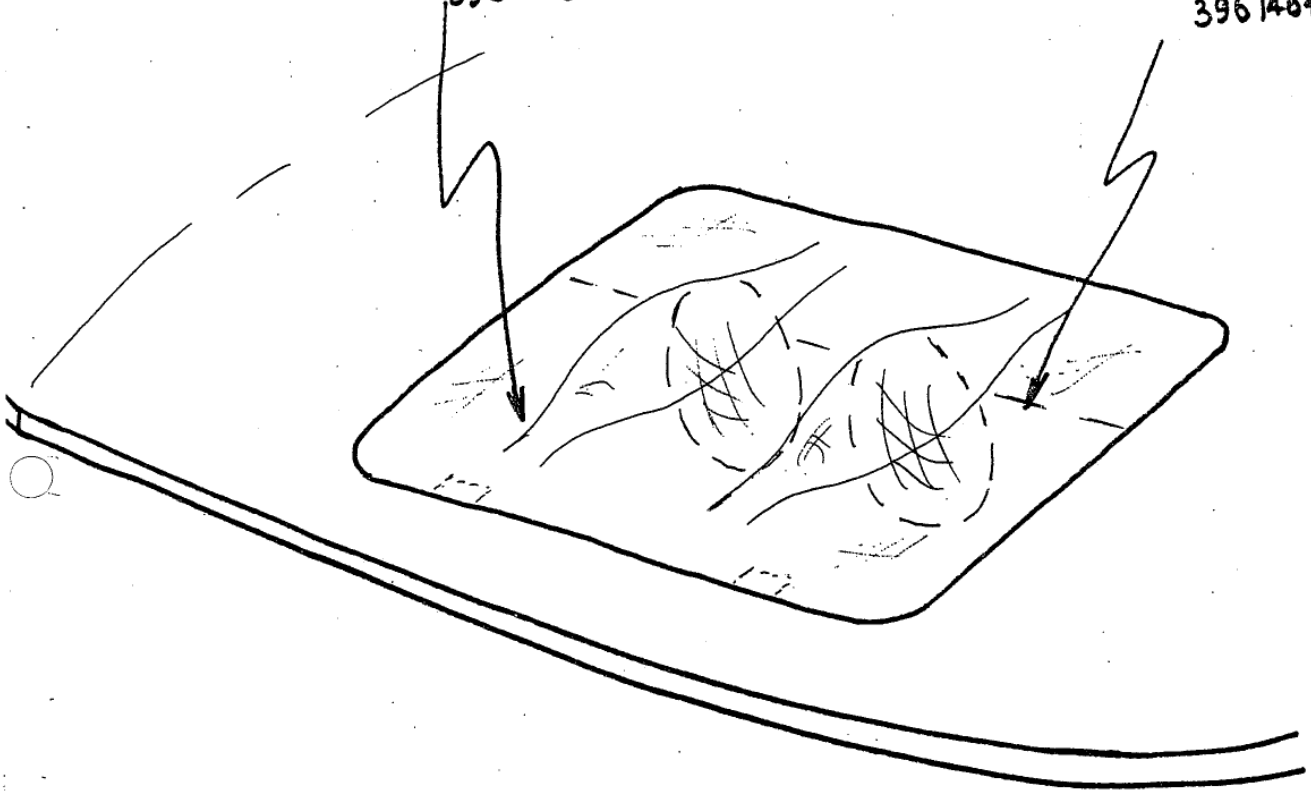


NOTE: Small block engines require marine adapter to connect at the oil filter area.

<u>GROUP</u>	<u>PART NO.</u>	<u>USAGE</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1.540	3157804	396,427	OIL COOLER ASSY.....	1
1.540	3879938	Pass. 396,427	HOSE ASSY..oil cooler.....	1
1.540	3879940	Pass.396, 427	TEE..oil cooler outlet.....	1
1.540	444215	396,427	ELBOW..oil cooler inlet hose (45°).....(8.963).....	1
1.540	444058	396,427	ELBOW..oil cooler outlet hose (45°).....(8.963).....	1
1.540	444044	396,427	ELBOW..engine oil cooler hose (90°).....(8.963).....	2
1.540	9417840	396,427	NIPPLE..oil cooler inlet hose ($\frac{1}{2}$ x 3).....(8.963).....	1
1.540	144042	396,427	BUSHING..oil cooler inlet hose reducer (3/4 x $\frac{1}{2}$)....(8.963).....	1
1.540	180016	396,427	BOLT..oil cooler ($\frac{1}{4}$ -20 x $\frac{1}{2}$) (8.900)..	4
1.540	3792259	396,427	NUT..oil cooler ("J") (5/16-18) (8.143).....	8
1.540	124818	396,427	NUT..oil cooler (Jam) ($\frac{1}{4}$ -20) (8.916).....	4
1.540	120386	396,427	WASHER..oil cooler (5/16)..(8.929)..	8
1.540	187119	396,427	LOCKWASHER..oil cooler (5/16) (8.931).....	8
1.540	3925416	396,427	CLIP..oil coolerhose..(9.242).....	1
1.652	3946023	Pass. 396, 427	PUMP ASSY..oil.....	1
1.745	3879941	Pass. 396, 427	TUBE ASSY..w/oil separator crankcase	1
1.745	3883265	Corvette 396,427	TUBE ASSY..w/oil separator crankcase.....	1
1.745	3868832	396,427	GROMMET..crankcase vent tube.....	1
1.745	3894337	396,427	GROMMET..crankcase vent breather cap...(0.386).....	1
1.745	120383	396,427	LOCKWASHER..vent tube and oil separator...(8.931).....	1
1.745	3953864	302	TUBE..oil filler (2 x 4 BL).....	1
1.748	6421868	396,427	CAP ASSY..crankcase vent breather...	1
1.837	5575416	396,427	VALVE..oil cooler by-pass.....	1
1.837	217911	396,427	SCREW..oil filter cover and insert adapter (to cylinder and case) (3/8-16 x 7/8)...(8.900).....	1

Headlamp Shield
3961465
3961466

Headlamp Shield
Bracket 3961463
3961464

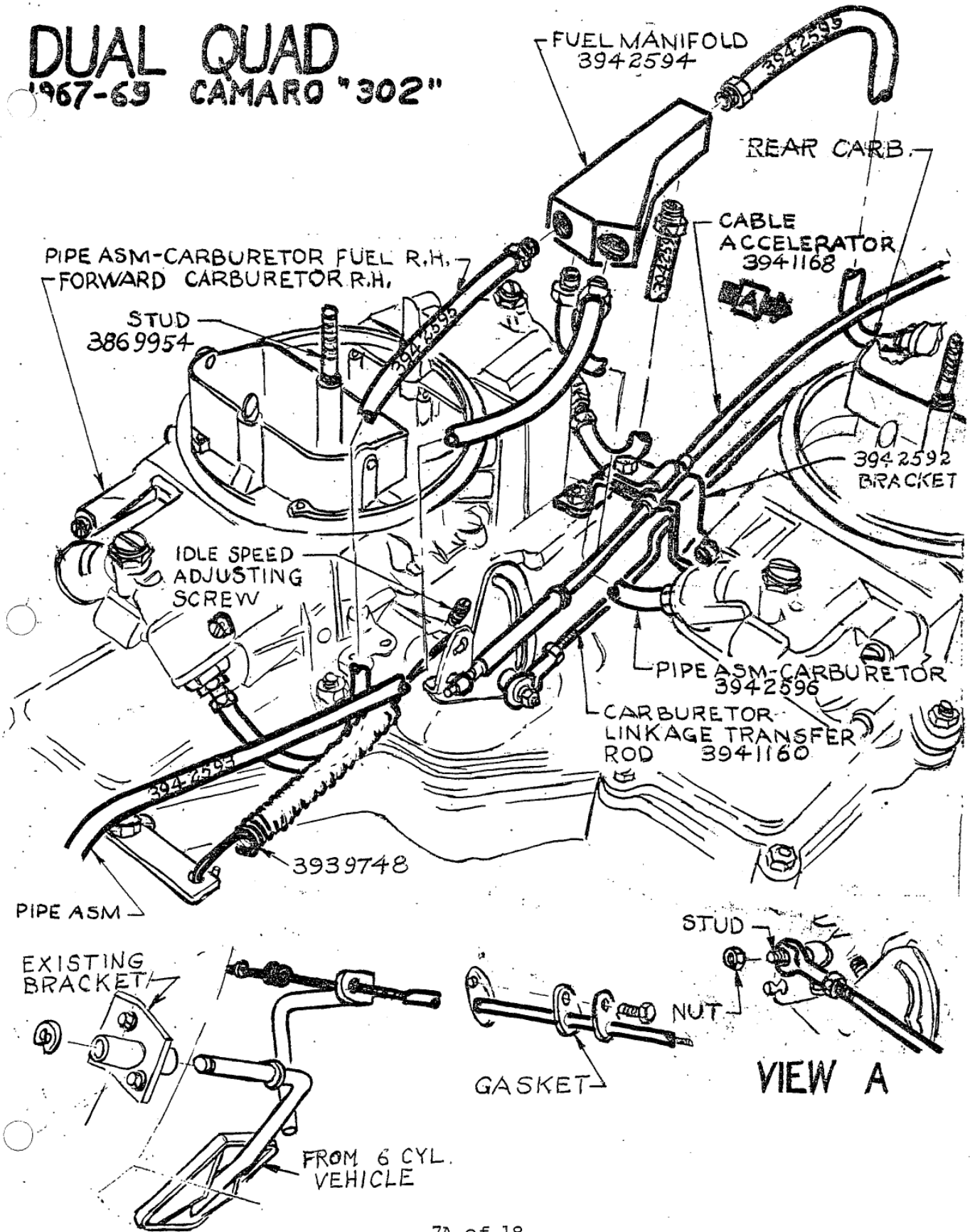


1968-69 CORVETTE
HEADLAMP
STREAMLING
SHIELD ~

<u>GROUP</u>	<u>PART NO.</u>	<u>USAGE</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
2.104	1966379	Pass.396,427	CAP & GASKET UNIT...starting Motor Solenoid.....	1
2.170	1115207	302	COIL ASSY...ignition.....	1
2.171	6287111	396,427	WIRE ASSY...coil to distributor....	1
2.240	6298887	396,427	WIRE UNIT SPARK PLUG.....	1
2.270	5613161	396,427	SPARK PLUG ASSY...(AC 41-XL).....	1
2.361	1111095	396,427	DISTRIBUTOR ASSY...(gear Driven Cam Operation)...(Impulse).....	1
2.361	1111267	302	DISTRIBUTOR ASSY..(Impulse).....	1
2.372	3865886	396,427	SHAFT ASSY...Distributor to oil pump...(1.639).....	1
2.383	3921048*	302	TRANSISTORIZED IGN. UNIT.....	1
2.383	1115005	302,396,427	AMPLIFIER...impulse.....	1
2.383	3816659	396,427	RETAINER..Strap..Amplifier(9.242)..	1
2.383	2988219	396,427	HARNES ASSY..ign..impulse amp. ext.	1
2.383	6287841	302	HARNES ASSY..ign..impulse amp. ext.	1
2.383	3916730	302	PLATE...ign..impulse amp.....	1
2.383	9422176	396,427	SCREW..ign..impulse amp..(1/4-14x7.8) (8.977).....	3
2.383	6300109	302,396,427	HARNES ASSY..ign. imp. amp.....	1
2.383	3954206	302,396,427	PLATE...ign. imp. amp.....	1
2.383	121753	396,427	LOCKWASHER..ign. impulse..amp (1/4)...	3
2.500	3883343	396,427	SPACER..voltage regulator.....	1
2.505	2986913	396,427	WIRE ASSY..ign. switch to ign. pulse amp.....	1
2.530	2977253	396,427	CONNECTOR..ign. switch to ign. pulse amp..wire.....	1
2.726	3961465	1968-9 CORVETTE	SHIELD...headlamp L.H.....	1
2.726	3961463	1968-9 Corvette-BRACKET..	headlamp, mtg. L.H.....	1
2.726	3961464	1968-9 Corvette-BRACKET..	headlamp, mtg. R.H.....	1
2.726	3961466	1968-9 Corvette-SHIELD..	headlamp, R.H.....	1
2.859	6287635	Pass.396,427	WIRE ASSY..horn relay ext..(6 1/2"long)	1

*NOTE: Includes ignition coil, amplifier, harnesses, plate, wire assy., grommet and connector.

DUAL QUAD 1967-69 CAMARO "302"



<u>GROUP</u>	<u>PART NO.</u>	<u>USAGE</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
.859	6287636	Pass.396,427	WIRE ASSY..horn relay ext. (7"long)	1
3.163	3942593	302	PIPE ASSY...fuel pump.....	1
3.163	3942594	302	MANIFOLD...carb. fuel.....	1
3.163	3942596	302	PIPE ASSY..carb. fuel to L.H. carb...	1
3.163	3942597	302	PIPE ASSY..carb. fuel to R.H. carb...	1
3.163	3942595	302	PIPE ASSY..carb. fuel.....	1
3.265	3941126	302 (2x4BL)	MANIFOLD..intake (lower half).....	1
3.265	3941124	302 (2x4BL)	MANIFOLD..intake (upper & lower halves.....	1
3.265	3947083	396,427 1969	MANIFOLD...intake.....	1
3.265	3941128	302 (2x4BL)	MANIFOLD..intake (upper half).....	1
3.265	3941134	302 (2x4BL)	GUARD...oil splash.....	1
3.265	3931093	396,427	GUARD...oil splash.....	1
3.270	3941132	302	GASKET..int..man..cover 2x4BL:.....	1
3.270	3879602	396,427	GASKET ASSY..inlet manifold side.....	2
3.270	3910214	CORVETTE 396,427	GASKET...tuned exhaust manifold header.....	8
		CAMARO 396		
3.270	3955528	396,427	GASKET UNIT...Inl. Manifold.....	1
3.275	3942506	302 (1968)	BOLT..exh. man. (3/8-16x3/4).....	12
3.275	3942507	302 (1968)	BOLT...adapter 3/8-16x $\frac{1}{2}$	8
3.275	3942508	302 (1968)	WASHER...adapter bolt.....	8
3.275	3942509	302 (1968)	NUT...adapter bolt.....	8
3.402	6422373	Pass.	CLEANER ASSY..air (use w/duct assy.)	1
3.402	6424495	CAMARO (302)	CLEANER ASSY... (use w/duct).....	1
3.402	6485788	CAMARO (302)	CLEANER ASSY...air.. (1x4BL) w/fiber-glass hood.....	1
3.403	3873852	396,427	STUD...air cleaner ($\frac{1}{4}$ -20-20x1 $\frac{1}{2}$).....	1
3.403	273697	396,427	SCREW..air cleaner (#10-12x3/4) (8.977).....	6
3.403	3869954**	302	STUD...A/CL.....	2
3.403	219281**	302	NUT...A/CL.....	2
3.403	3919812	302	GASKET...A/CL.....	2
3.405	3941144**	302	PLATE...A/CL base.....	1
3.405	3963824	CAMARO (302)	PLATE..A/CL base (2x4BL) w/fiber-glass hood.....	1
3.410	3941146**	302	COVER..A/CL.....	1
3.410	3942572	302	ELEMENT...A/CL.....	1

*NOTE: Use with Cylinder Head - 3946072

**NOTE: Use with 3940077 Carb. & Int. Unit

<u>GROUP</u>	<u>PART NO.</u>	<u>USAGE</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
3.410	6422544	396, 427, 302	ELEMENT..w/silencer (use w/6422373-2288) (1x4BL).....	1
3.410	3963825	302	ELEMENT..(2x4BL w/hood plenum).....	1
3.417	3965710	CAMARO (396 427)	PLATE...A/CL Base (1x4BL) w/fiber-glass hood.....	1
3.417	3881804	P-396, 427	DUCT ASSY..air cleaner to dash.....	1
3.417	3963823	CAMARO	SEAL...A/CL to hood..2x4BL w/fiber-glass hood.....	1
3.417	3963822	CAMARO	SEAL...A/CL to hood..2x4BL w/fiber-glass hood.....	1
3.417	3927732	CAMARO	GASKET..base plate to carb. hose conn. (2x4BL).....	1
3.417	3916621	CAMARO (302)	DUCT ASSY...air cleaner to dash single carb.....	1
3.430	3941168	CAMARO	CABLE ASSY..accel. control (2x4BL)...	1
3.430	3941160	CAMARO	ROD ASSY..frt.to rr carb. (2x4BL)....	1
3.431	3942584	CAMARO	SCREW..frt. to rr. carb.rod(2x4BL)...	2
3.431	3942587	CAMARO	SPACER...frt. to rr. carb. rod lever (2x4BL).....	2
3.431	3942592	CAMARO	BRACKET...accel. control cable (2x4BL).....	1
3.454	3939748	CAMARO	SPRING...accel. pullback spring (2x4BL).....	1
3.459	3946801	302	BRACKET..accel. pullback spring.....	1
3.601	3910287	CORVETTE 396, 427	PIPE ASSY...exhaust (tuned exh.) L.H.....	1
3.601	3910288	CORVETTE 396, 427	PIPE ASSY...exhaust (tuned exh.) R.H.....	1
3.601	3893617	CORVETTE 396, 427	MANIFOLD...tuned exhaust L.H.....	1
3.601	3893618	CORVETTE 396, 427	MANIFOLD...tuned exhaust R.H.....	1
3.724	3901071	396, 427	GASKET UNIT...carburetor.....	1

NOTE: Heavy Duty Operation Components not listed in this section will be found in the regular carburetion groups of P&A 30 and designated as Heavy Duty (H.D.)

<u>GROUP</u>	<u>PART NO.</u>	<u>USAGE</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
3.724	3964569	302	GASKET UNIT...carb. (w/3957859).....	1
3.725	3964571	302	UNIT...carb. minor repair (3957859)..	1
3.725	3964570	302	UNIT...carb. major repair (w/3957859)	1
3.725	3887147	PASS. 396,427	CARBURETOR ASSY.....	1
3.725	3955205			
3.725	3901072	396,427	REPAIR UNIT...carb..(major).....	1
3.725	3901073	396,427	REPAIR UNIT...carb..(major).....	1
3.725	3941140	302	CAEBURETOR ASSY... (2x4BL) 1st Design.	1
3.725	3957859	302	CARBURETOR ASSY... (3x4BL) 2nd Design	1

<u>GROUP</u>	<u>PART NO.</u>	<u>USAGE</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
3.726	3881847	396,427	GASKET...carburetor (use w/3887147-3886091).....	1
3.729	3917925	396,427	BODY ASSY...carb. throttle (use w/3887147-3886091).....	1
3.734	3898993	396,427	BODY...w/plugs, carb.main motor primary (use w/3887147-3886091).....	1
3.734	3898994	396,427	BODY...w/plugs, carb..main motor secondary (use w/3887147-3886091).....	1
3.752	3898995	396,427	ROD..carb..choke..(use w/3887147-3886091).....	1
3.752	3898996	396,427	SHAFT..carb..choke (use w/3887147-6091).....	1
3.792	3898990	396,427	JET..carb..main motor (use w/3887147-3886091).....	1
3.841	3917927	396,427	SPRING..carb..fuel pump diaphragm ret..(use w.3887147-3886091).....	1
3.858	3904603	396,427	VALVE ASSY...carb..power (use w/3887147-3886091).....	1
3.900	6415748	396,427	PUMP ASSY...fuel.....	1
4.003	3964507	302,396,427	TRANSMISSION ASSY. (H.D. 4dps) M-22....	1
4.101	1051024	ALL	LUBRICANT...Trans. & Diff. (.D.).....	1gal.
4.115	8625975	CHEVYII CORVETTE	CONVERTER ASSY.....	1
4.162	8626372	CHEVYII	" WASHER..thrust.....	1
4.163	8623150	CHEVYII	" PLATE..intermediate clutch.....	3
4.163	8625197*	CHEVYII	" PLATE..clutch.....	6
4.163	8626363	CHEVYII	" PLATE ASSY..intermediate clutch.....	3
4.163	8623483	CHEVYII	" PLATE..assy..clutch.....	6
4.164	8624073	CHEVYII	" SPRING..piston release.....	16
4.256	8626364	CHEVYII	" GOVERNOR ASSY.....	1
4.265	8626367	CHEVYII	" VALVE ASSY..control.....	1
4.166	8626544	CHEVYII	" PISTON ASSY..direct clutch.....	1

*NOTE: Change quantity to agree with amount shown when making conversion.

<u>GROUP</u>	<u>PART NO.</u>	<u>USAGE</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
4.169	8625756	CHEVY II CORVETTE	HOUSING & RACE ASSY.. direct clutch.....	1
4.343	8623311	CHEVY II "	GEAR..speedometer drive (16T) replaces 8623313 (18T) Chevy II COPO.....	3
4.351	3880846	396,427	GEAR..trans..clutch.....	1
4.380	3914115	396,427	SYNCHRONIZER UNIT..trans..1st and 2nd.....	1
4.380	3914116	396,427	SYNCHRONIZER UNIT..trans..3rd and 4th.....	1
4.383	3880850	396,427	RING..trans..synchro.blocking....	4
4.395	3879999	396,427	GEAR...trans..2nd speed.....	1
4.415	3880845	396,427	GEAR...trans..3rd speed.....	1
4.417	3879998	396,427	GEAR...trans..1st speed.....	1
4.421	3905466	396,427	GEAR...trans..counter.....	1
4.428	3864850	396,427	SHAFT..trans. counter.....	1
4.430	3879997	396,427	GEAR...trans. reverse..idler.....	1

NOTE: Clutch Plate 8623851 contained in transmission not used when making conversion.

<u>GROUP</u>	<u>PART NO.</u>	<u>USAGE</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
4.615	3945186	CAMARO	FLANGE PLATE & PARKING BRAKE RR (4 wheel disc brakes H.D.).....	1
4.650	5463751*	CAMARO	MASTER CYLINDER (w/4 whl disc brakes)	1
4.665	3957992	CAMARO	FRONT BRAKE...caliper & disc L.H.....	1
4.665	3957993	CAMARO	FRONT BRAKE...caliper & disc R.H.....	1
4.665	5468886	CAMARO	CALIPER ASSY...frt. disc brakes: (w/11" disc).....	1
4.665	5468887	CAMARO	CALIPER ASSY...frt. disc brakes: (w/11" disc).....	1
4.665	3945125	CAMARO	SUPPORT-frt brk caliper adapter bracket (H.D. 4 whl disc brakes).....	1
4.680	3947038	CAMARO	PIPE ASSY...frt. brk. caliper R.H. (4 wheel disc brakes).....	1
4.680	3947037	CAMARO	PIPE ASSY...frt. brk. caliper L.H. (4 wheel disc brakes).....	1
4.681	3947283	CAMARO	BRACKET...frt. brk. hose (11 3/4" disc) L. H.....	1
4.681	3947284	CAMARO	BRACKET...frt. brk. hose (11 3/4" disc) R.H.....	1
4.683	5464591	ALL	FLUID..hydraulic brake #550.....	1gal
4.686	5463856	CAMARO	CONNECTOR...frt. brk. caliper pipe (11 3/4" disc.) R.H.....	1
4.686	5463857	CAMARO	CONNECTOR...frt. brk. caliper pipe (11 3/4" disc.) L.H.....	1
5.001	3947289	CAMARO	BRACKET-front brake caliper adapter R.H.....	1
5.001	3947290	CAMARO	BRACKET-front brake caliper adapter L.H.....	1
5.002	3945189	CAMARO	SPACER..RR brk. caliper (11 3/4" disc)	2
5.017	5468882+	CORVETTE CAMARO	SHOE AND LINING UNIT (pads) (4 per set).....	2
5.420	3927508	CAMARO	SHAFT ASSY..rear axle (w/drum brakes).	2
5.420	3945184	CAMARO	SHAFT ASSY..rear axle (w.disc brakes).	2

*NOTE: Use with 3941917 or 3941918 Axle.

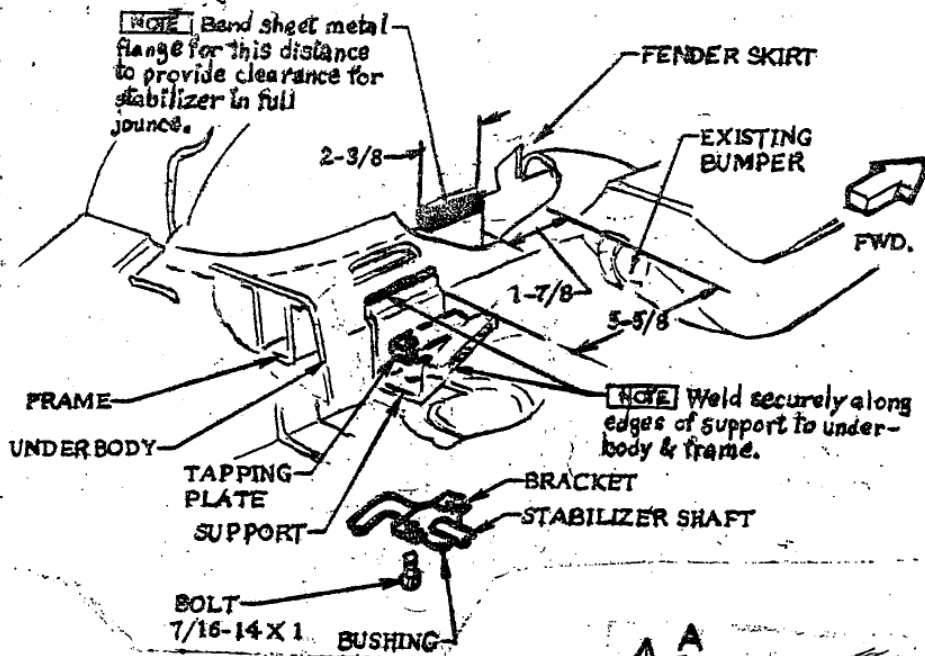
NOTE: Rework calipers or use with 5468886-7 Calipers on Camaro only.

<u>GROUP</u>	<u>PART NO.</u>	<u>USAGE</u>	<u>DESCRIPTION</u>	<u>QTY</u>
5.386	3945131 *	CAMARO	RR AXLE ASSY..(3.73:1).....	1
5.387	3953697	CAMARO	HOUSING..rear axle (w/disc brakes).....	1
5.422	3959068	CAMARO	LOCK..shaft (disc brakes w/3959065).....	2
5.422	3959067	CAMARO	LOCK..shaft (disc brakes w/3959065).....	2
5.510	3959063	CAMARO	DIFFERENTIAL..w/case (use w/* and disc brakes & 3959065).....	1
5.510	3959064	CAMARO	DIFFERENTIAL..w/case (use w/# and disc brakes & 3959065).....	1
5.510	3945176	CAMARO	DIFFERENTIAL..w/case (use w/* and disc brakes).....	1
5.510	3945177	CAMARO	DIFFERENTIAL..w/case (use w/# and disc brakes).....	1
5.510	3918837	PASS & CAMARO	CASE..differential (w/3933094).....	1
5.510	3916234	PASS & CAMARO	DIFFERENTIAL..w/case (use w/3933095 & 3917971-2-3 only).....	1
5.511	3918834	PASS & CAMARO	PLATE..diff. clutch press.....	2
5.511	3957939	CAMARO	SPRING..diff..pinion pin spring (use w/3945776-7).....	4
5.511	3957941	PASS & CAMARO	PLATE..differential clutchpress (use 2/3945176-7).....	2
5.526	3957938	PASS & CAMARO	PINION..differential (use w/3945176-7).....	2
5.526	3918832	PASS &	PINION..differential (use w/3916234).....	2
5.528	3918831	PASS & CAMARO	GEAR...differential (use w/3916234).....	2
5.528	3957937	PASS & CAMARO	GEAR...differential (use w/3945176-7)	2
5.529	3917971#	CAMARO (302) PASS 396,427	GEAR ASSY...(ring & pinion) (4.10 ratio) (use w/3916234 & 3945177).....	1

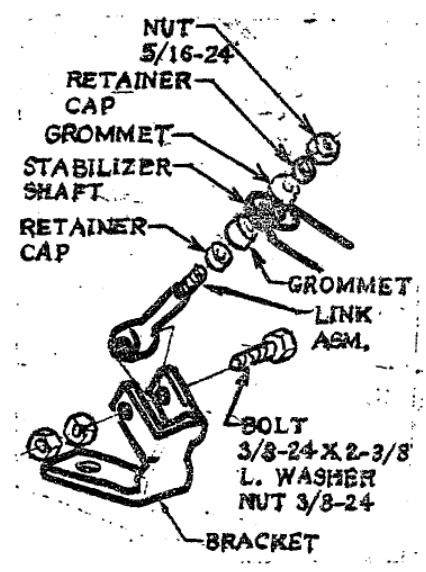
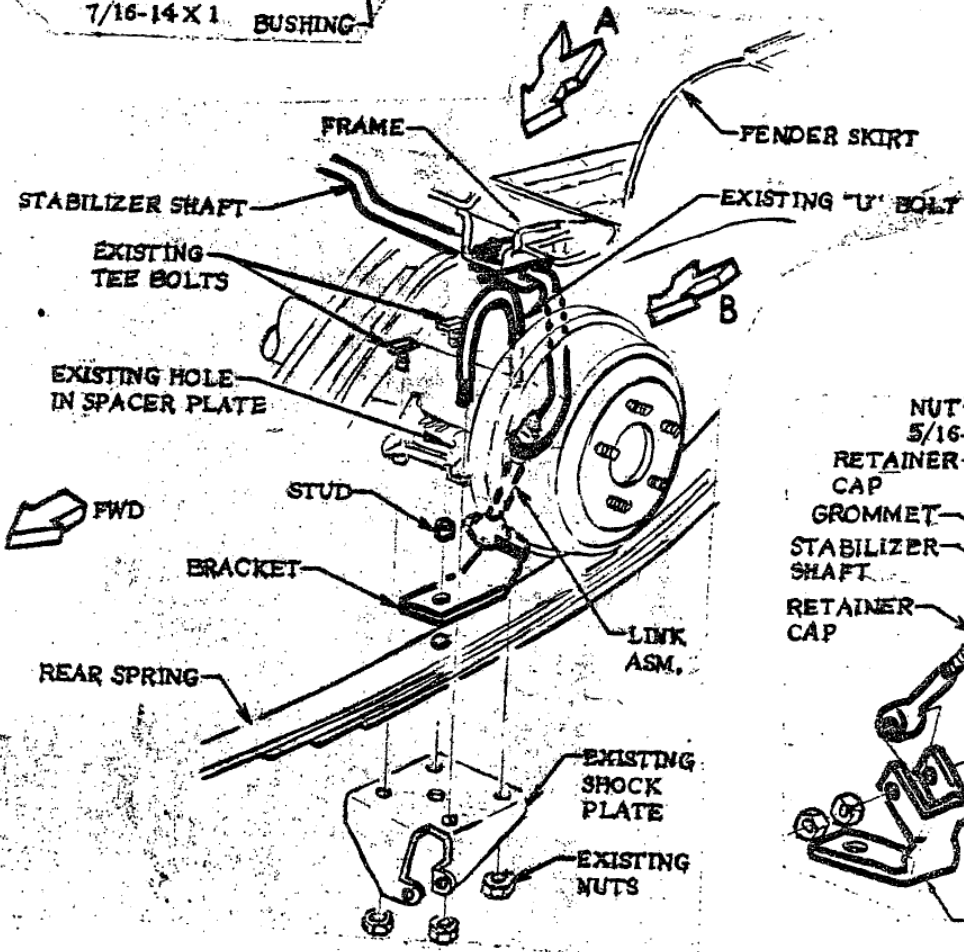
*NOTE: This is a complete axle with disc brakes and 7/16" wheel studs.

<u>GROUP</u>	<u>PART NO.</u>	<u>USAGE</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
5.529	3917972#	CAMARO(302 PASS 396,427	GEAR ASSY... (ring & pinion) (4.88 ratio).. (use w/3916234 & 3945177).....	1
5.529	3917973#	CAMARO(302) PASS. 396,427	GEAR ASSY... (ring & pinion) (4.56 ratio) (use w/3916234 & 3945177)...	1
5.529	3931564*	PASS.CAMARO	GEAR ASSY... (ring & pinion) (3.25:1 ratio) (use w/3945176).....	1
5.529	3931565*	PASS.CAMARO	GEAR ASSY... (ring & pinion) (3.42:1 ratio) (use w/3945176).....	1
5.529	3931566#	PASS.CAMARO	GEAR ASSY... (ring and pinion) (3.90:1 ratio) (use w/3945177).....	1

<u>GROUP</u>	<u>PART NO.</u>	<u>USAGE</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
5.529	3961430#	PASS CAMARO	GEAR ASSY...(ring and pinion) (4.33:1 ratio) (Use w/3945177).....	1
5.529	3961422#	PASS CAMARO	GEAR ASSY...(ring and pinion) (5.13:1 ratio) (use w/3916234 & 3945177).....	1
5.529	3961195	PASS CAMARO	GEAR ASSY...(ring and pinion) (5.13:1 R-50) High Impact (use with 3916234 3945177).....	1
5.529	3865995*	CAMARO	GEAR ASSY..(ring and pinion) (3.44:1 ratio) (use w/3945176).....	1
5.529	3865997*	CAMARO	GEAR ASSY..(ring and pinion) (3.73:1 ratio) (use w/3945176).....	1
5.529	3865994*	CAMARO	GEAR ASSY..(ring and pinion) (3.31:1 ratio) (use w/3945176).....	1
5.529	3865996*	CAMARO	GEAR ASSY..(ring and pinion) (3.07:1 ratio) (use w/3945176).....	1
5.529	3963840	CORVETTE	GEAR ASSY..(ring and pinion) (4.88:1 ratio) (use with 4.56 diff case	1
5.529	3961192#	PASS CAMARO	GEAR ASSY..(ring and pinion) (4.88:1 ratio) (R-50 High Impact use w/3916234 & 3945177).....	1
5.542	3918833	PASS CAMARO	WASHER...diff. pinion thrust.....	2
5.542	3957940	PASS CAMARO	WASHER...diff. pinion thrust (use w/3945176-7).....	2
5.809	3945118	CAMARO	HUB & DISC..frt. wheel 11 3/4" (use w/4 w/disc brake).....	2
5.809	3945190	CAMARO	DISC. RR brake 11 3/4" (use w/4 w/disc brake).....	2
5.812	9777477	302	BOLT...wheel hub.....	20
6.020	3954886	302	KNUCKLE...steering.....	2
6.103	3916237	CAMARO 1967-8	ARM...steering knuckle..L.H.....	1
6.103	3916238	CAMARO 1967-8	ARM...steering knuckle..R.H.....	1
6.103	3954879	CAMARO 1969	ARM...steering knuckle..L.H.....	1
6.103	3954879	CAMARO 1969	ARM...steering knuckle..R.H.....	1
6.164	974806	302	STUD ASSY..w/seal..strg. knuckle upper contr. arm ball.....	1
6.174	3875067	302	STUD ASSY..w/seal..strg. knuckle lower contr. arm ball.....	1
6.233	3930028	302	SOCKET ASSY...tie rod inner.....	1
6.233	3930030	302	SOCKET ASSY...tie rod outer.....	1
5.307	3927510	302	HUB ASSY..(use w/11" disc frt. brake)..	2
6.870	3923589	302	ROD...STEERING RELAY.....	1



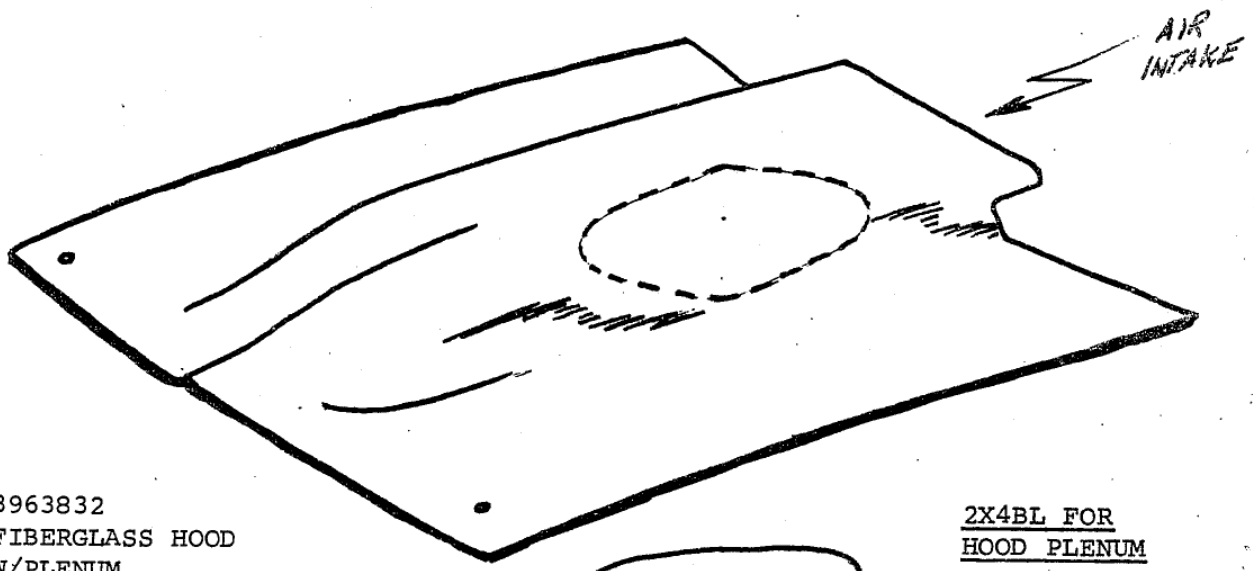
REAR
 STABILIZER
 SHAFT
 1967 - 1969
 CAMARO



<u>GROUP</u>	<u>PART NO.</u>	<u>USAGE</u>	<u>DESCRIPTION</u>	<u>QTY</u>
7.240	3935778	CAMARO 1967-9	RR. STABILIZER SHAFT..Link.....	2
7.241	3935776	CAMARO 1967-9	RR. STABILIZER SHAFT..5/8".....	1
7.241	3927505	CAMARO 1967-8	SHAFT...frt..stab..1 1/16".....	1
7.241	3948987	CAMARO 1967-8	SHAFT...frt..stab..1.0".....	1
7.241	3892735	CAMARO 1967-8	SHAFT...frt..stab..3/4".....	1
7.241	3895235	CAMARO 1967-8	SHAFT...frt..stab..7/8".....	1
7.241	3935783	CAMARO 1967-8	SHAFT...frt..stab..15/16".....	1
7.241	3962795	CAMARO 1967-9	SHAFT...frt..stab.. 3/4" (replaces 3892735).....	1
7.241	3962796	CAMARO 1967-9	SHAFT...frt..stab..7/8" (replaces 3895235).....	1
7.241	3962797	CAMARO 1967-9	SHAFT...frt..stab..15/16" (replaces 3935783).....	1
7.241	3961763	CAMARO 1967-9	SHAFT...frt..stab..1" (replaces 3948987).....	1
7.241	3962799	CAMARO 1967-9	SHAFT...frt..stab..1 1/16" (replaces 3927505).....	1
7.242	3927944	CAMARO 1967-9	PLATE...stab..bracket.frame.reinf.....	2
7.242	3935771	CAMARO 1967-9	RR. STABILIZER SHAFT..support L.H.....	1
7.242	3935772	CAMARO 1967-9	RR. STABILIZER SHAFT..support R.H.....	1
7.242	3935743	CAMARO 1967-9	RR. STABILIZER SHAFT...bracket.....	2
7.242	3935773	CAMARO 1967-9	RR. STABILIZER SHAFT...link..brkt.L.H.	1
7.242	3935774	CAMARO 1967-9	RR. STABILIZER SHAFT...link..brkt.R.H.	1
7.242	189327	CAMARO 1967-9	BOLT...REAR STABILIZER SHAFT..link....	AR
7.243	3927506	CAMARO	BUSHING...frt..stab..shaft.....	2
7.345	9792749	CAMARO	ABSORBER...frt..shk.....	2
7.345	9791593	CAMARO	ABSORBER...frt..shk.....	2
7.412	3935784	CAMARO	SPRING...frt..615#.....	2
7.412	3935785	CAMARO	SPRING...frt..723#.....	2
7.412	3948984	CAMARO	SPRING...frt..561#.....	2
7.412	3948988	CAMARO	SPRING...frt..777#.....	2
7.412	3948989	CAMARO	SPRING...frt..507#.....	2
7.503 *	3953673	CAMARO	SPRING...rear..300#.....	2
7.503	3935786	CAMARO	SPRING...rear..350#.....	2
7.503	3948985	CAMARO	SPRING...rear..250#.....	2
7.503	3948986	CAMARO	SPRING...rear..200#.....	2
7.506	3935792	CAMARO 1967	RR. STABILIZER...link..brkt..locating stud.....	2
7.516	3889964	CAMARO	"U" BOLT...rear spring.....	4
7.518	3927507	CAMARO	SPACER...rear spring.....	2

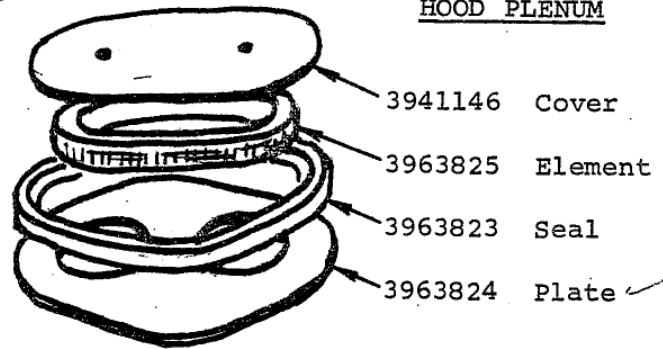
*NOTE: When using in place of 3935755 remove 3935787 spacer and two 3935789 shims, together with bolts. Replace with 3935788 center bolt, 3790992 bolt, 2394722 washer and 3925834 Nut

<u>GROUP</u>	<u>PART NO.</u>	<u>USAGE</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
7.833	3938691	CAMARO 1969	BRACE...frt. bpr. valance panel deflector	2
7.833	3938690	CAMARO 1969	BRACE...frt. bpr. valance panel deflector	1
7.833	3938689	CAMARO 1969	EXT..frt..bpr..valance panel deflector...	1
8.000	3963832	CAMARO	HOOD ASSY. (UNIT)..w/air plenum fiberglass (2x4BL).....	1
8.009	3963817	CAMARO (302)	ADAPTER...plate (1x4 BL).....	1
8.009	3965700	CAMARO (396, 427)	ADAPTER...plate (1x4BL) use w/fiberglass hood.....	1
8.013	3965713	CAMARO	ROD...Hood Support.....	1
8.015	3963829	CAMARO	PLATE...hood hold down.....	2
8.015	3963830	CAMARO	CABLE...hood hold down.....	2
8.015	3963828	CAMARO	PIN...hood hold down.....	2
8.015	3963827	CAMARO	STUD...hood hold down.....	2
8.800	1051024	ALL	LUBRICANT..Trans. & Diff. (.D.).....	1 gal.
9.917	9416980	CAMARO	NUT..carb. rod to lever screw.....	AR
9.775	3723235	302	GROMMET...ign. switch to ign. pulse amp. wire.....	1
9.775	3723225	CAMARO	GROMMET...ign. switch to ign. pulse amp. wire.....	1
12.181	3916633	302 1968	EXTENSION ASSY..w/aux. panel and val. (rr. compt. lid) spoiler.....	1
12.181	3949798	CAMARO 1969	EXTENSION ASSY..w/aux. panel and val. (rr. compt. lid) Spoiler.....	1



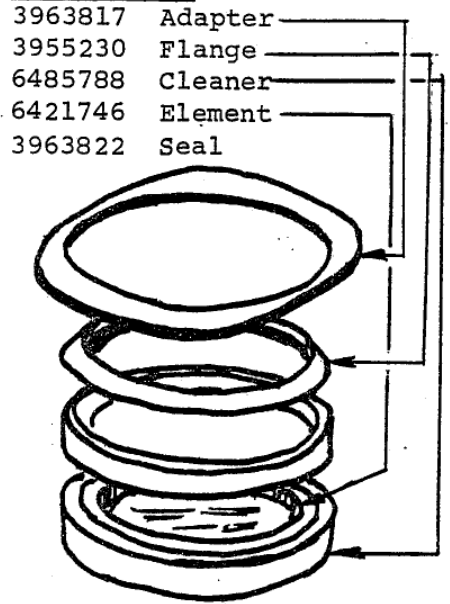
3963832
FIBERGLASS HOOD
W/PLENUM

2X4BL FOR
HOOD PLENUM



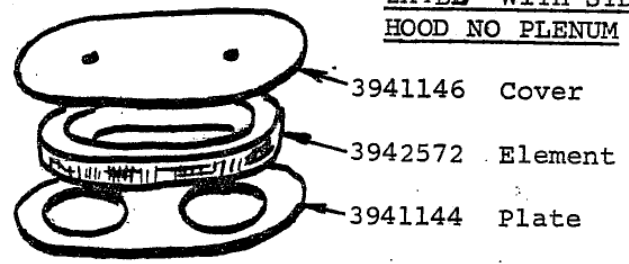
- 3941146 Cover
- 3963825 Element
- 3963823 Seal
- 3963824 Plate

1X4BL FOR
HOOD PLENUM



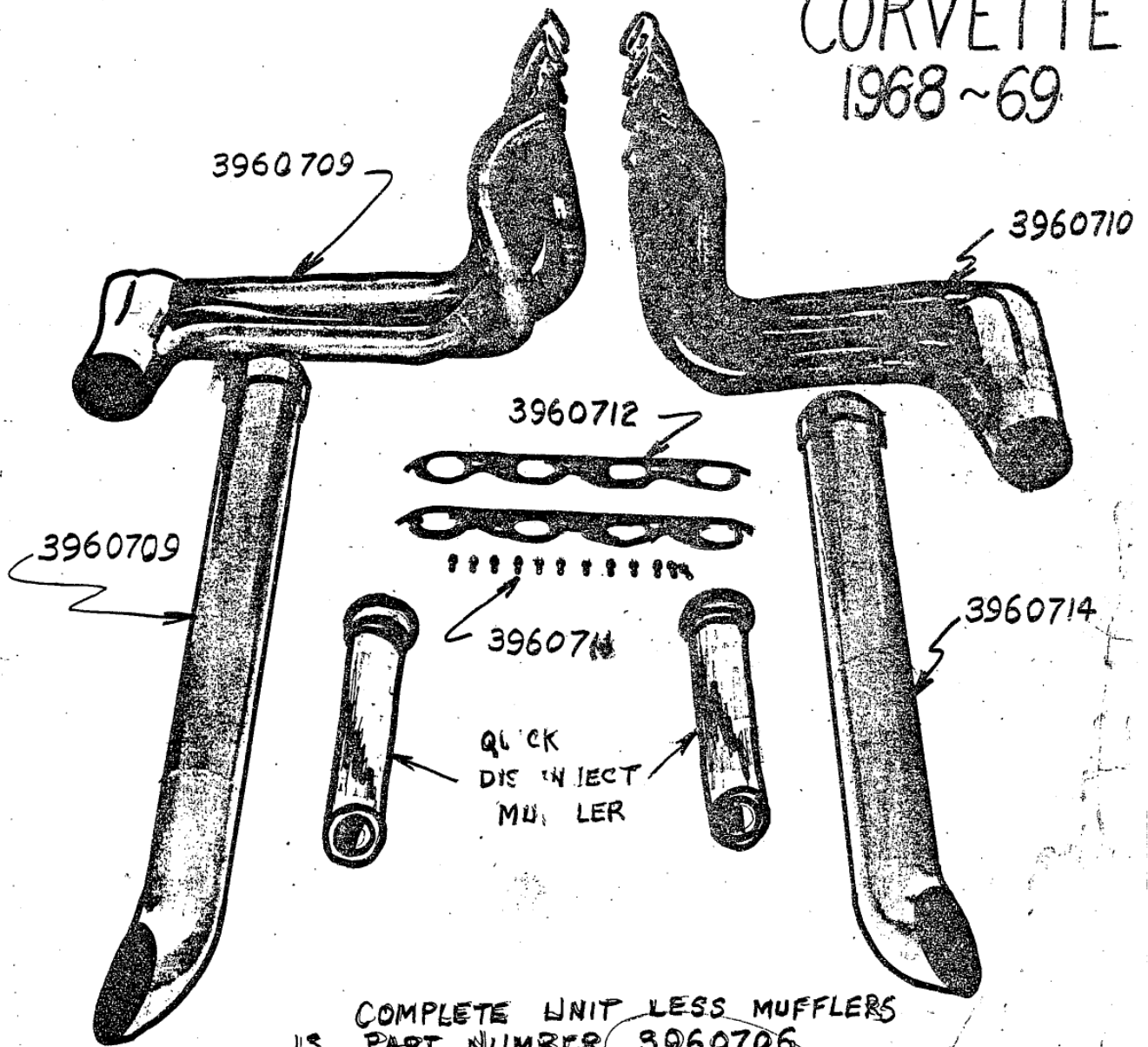
- 3963817 Adapter
- 3955230 Flange
- 6485788 Cleaner
- 6421746 Element
- 3963822 Seal

2X4BL WITH STD
HOOD NO PLENUM



- 3941146 Cover
- 3942572 Element
- 3941144 Plate

CORVETTE 1968~69



SIDE MOUNTED

Camshaft. 3863151

350 lift 327 342° Duration

.447 inch lift.

114° degrees of overlap.

Displacement
Bore & Stroke
Guide

Bore

	3.750	3.875	4.000	4.125
	3.00	265	283	302
<u>Stroke</u>	3.25	307	327	
	3.48		350	
	3.75			400

3910298 Stamped steel rocker arm
Covers no name, no holes
Not stock on any engines

Chevy Hot Line

Auto sports P.O. Box 11631

Santa Ana, California 92711

\$10