



**Models 644 and 646  
Compact Wheel Loaders**

**Parts Catalog A1281**

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A Tenneco Company



**MODEL 644 S/N 9662906 THRU S/N 9698283**  
**MODEL 646 S/N 9663323 THRU S/N 9698982**  
**COMPACT WHEEL LOADERS**

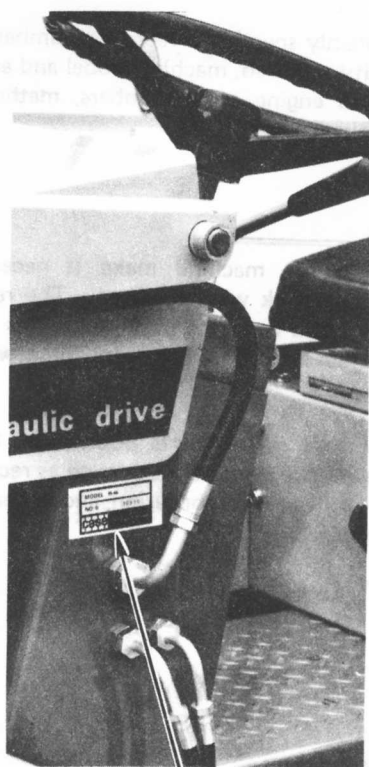
Parts Catalog No. A1281

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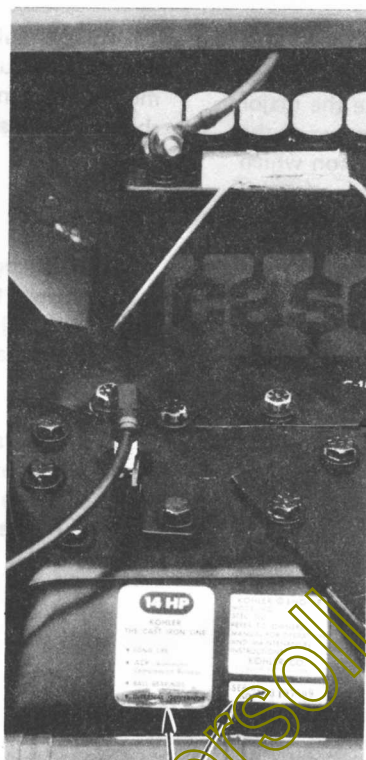
**Note:** This Parts Catalog replaces the previous issue - 1281 - which is obsolete and should be discarded.



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TRACTOR MODEL AND  
SERIAL NUMBER



ENGINE MODEL, SERIAL  
AND SPECIFICATION  
NUMBER 644



ENGINE MODEL, SERIAL  
AND SPECIFICATION  
NUMBER 646

| TRACTOR MODEL DESIGNATIONS | ENGINE MODEL DESIGNATIONS                 |
|----------------------------|-------------------------------------------|
| 644 WHEEL LOADER           | K-321-A C19028 Engine<br>Spec. No. 60209D |
| 646 WHEEL LOADER           | CCKA-MS C17626 Engine<br>Spec. No. 2481G  |

# GENERAL INFORMATION

## Indexes

This parts Catalog is arranged for easy identification of Genuine CASE Service Parts. An alphabetical index is provided at the front of this Catalog to locate the major groups or assemblies. A numerical index at the rear of the Catalog gives the part numbers and the pages on which they are described.

## Illustrations

All parts are illustrated in "Exploded Views" which show the individual parts in their normal relationship to each other. Reference numbers are used in the illustrations. These numbers correspond to those in the "Reference Number" column and are followed by the part number, description and quantity required.

## Orders

Orders should plainly specify correct part number, full description, quantity required, machine model and engine model, machine and engine serial numbers, method of shipment and shipping address.

## Changes

When changes to the machine make it necessary, revised pages for this book will be issued. The revised pages will be issued with the same page number as those they replace and the "issue" number and date will be advanced.

It is imperative that revised Parts Book pages be inserted into their respective Parts Books as soon as received. Failure to do so will lead to confusion and defeat the purpose of the book.

## Indented Description

Indented parts in the descriptive list are a part of the preceding assembly or sub-assembly.

The quantity shown in the "Number Required" column is the number of parts used on a machine except where parts are indented in descriptive list. In this case the quantity shown is the number required for the preceding assembly or sub-assembly.

| REF. | PART NO. | DESCRIPTION                              | REQ'D |
|------|----------|------------------------------------------|-------|
|      | A 55159  | CYLINDER ASSY - rear steering . . . . .  | 1     |
| 28   | A 56208  | SOCKET ASSY - rear cylinder . . . . .    | 1     |
| 29   | A 55956  | PLUG - adjusting, socket assy . . . . .  | 1     |
| 30   | A 55957  | SEAT - socket ball . . . . .             | 2     |
| 31   | A 56210  | SPRING - socket . . . . .                | 1     |
| 32   | A 56209  | SEAT - socket spring. . . . .            | 1     |
| 33   | G 45175  | CLAMP ASSY - socket assy . . . . .       | 1     |
|      | 16- 836  | BOLT - 1/2" x 2-1/4" N.F. hex. . . . .   | 1     |
| 34   | 132- 104 | PIN - cotter, 3/16" x 3". . . . .        | 1     |
| 35   | A 55889  | STUD - ball, socket & cylinder . . . . . | 2     |
| 36   | 13- 410  | BOLT - 1/4" x 5/8" N.C., hex. . . . .    | 4     |
| 37   | 92- 4    | LOCKWASHER - 1/4" SAE . . . . .          | 4     |

## Terms "Right Hand" and "Left Hand"

"Right Hand" and "Left Hand" sides of this machine are determined by standing at the rear of the unit and facing in the direction of forward travel.

# ALPHABETICAL INDEX

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## KOHLER ENGINE SECTION

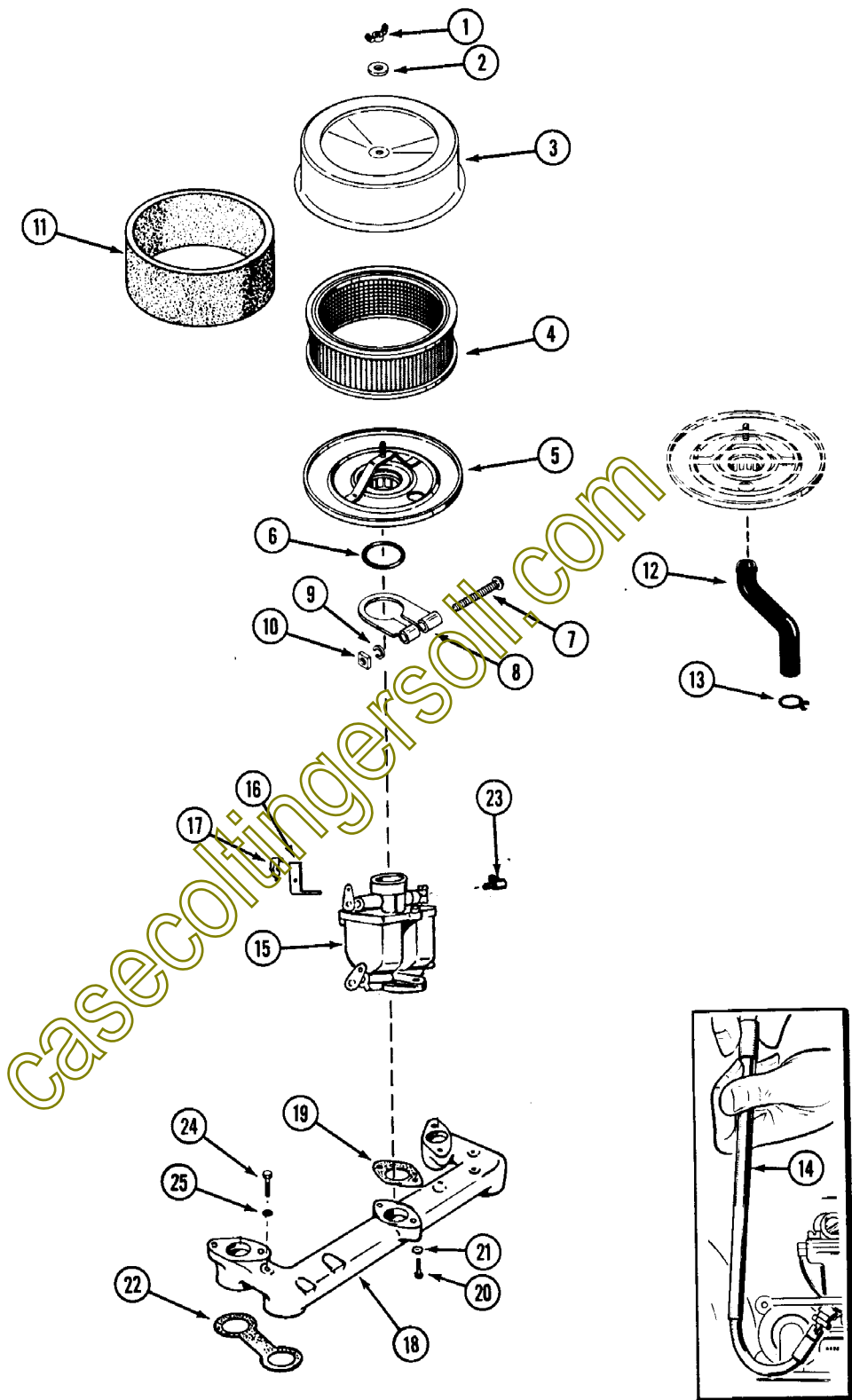
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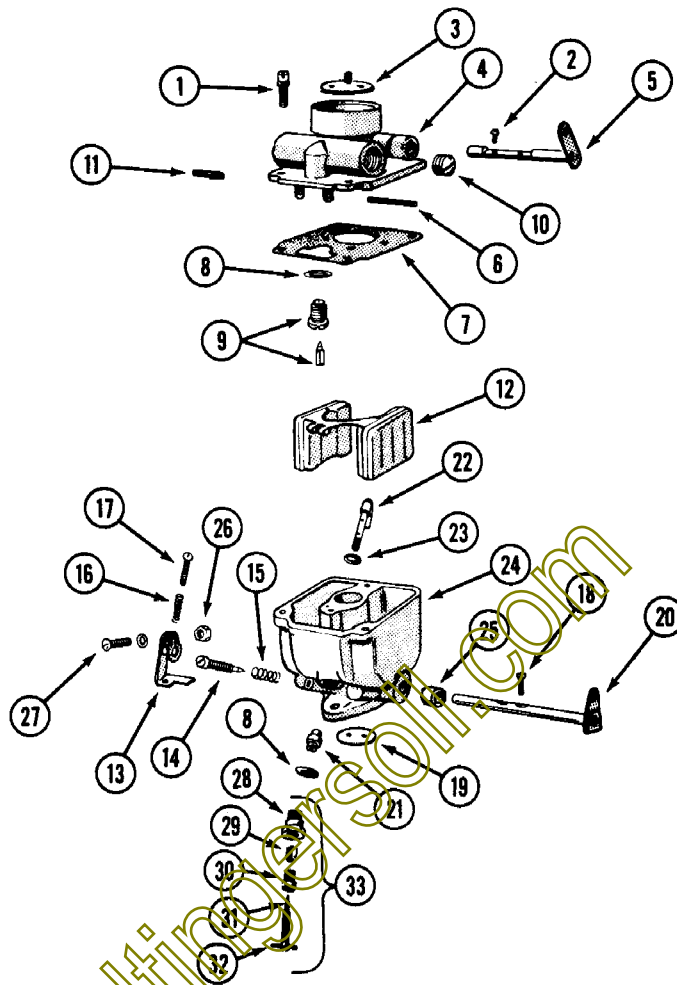
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## ONAN ENGINE

## CARBURETOR, AIR FILTER AND MANIFOLD

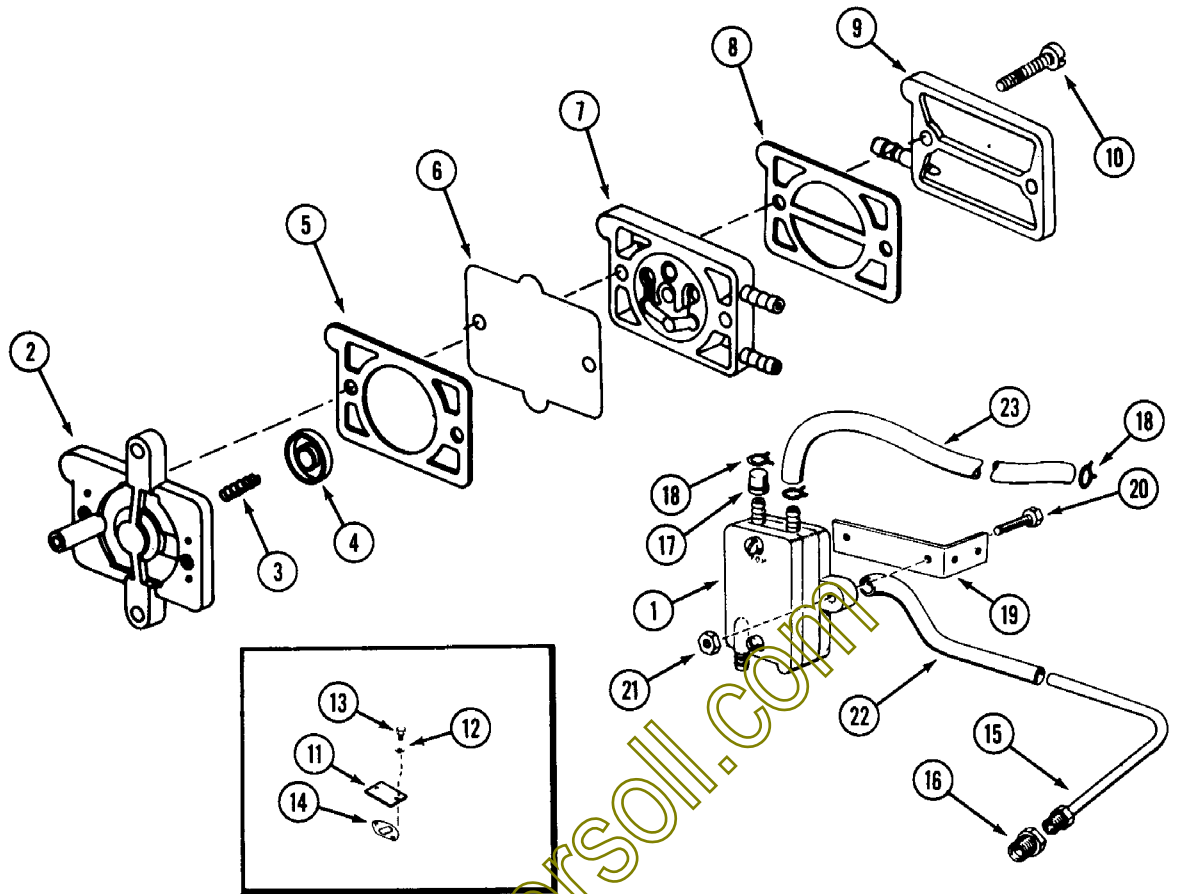
| REF. | PART NO.  | DESCRIPTION                                                     | REQ'D |
|------|-----------|-----------------------------------------------------------------|-------|
|      | C 18627   | AIR CLEANER ASSEMBLY .....                                      | 1     |
| 1    | 129- 900  | NUT - wing #10 NF .....                                         | 1     |
| 2    | 195- 513  | WASHER - #10 .....                                              | 1     |
| 3    | C 18629   | COVER - air cleaner .....                                       | 1     |
| 4    | A 70090   | ELEMENT - air cleaner .....                                     | 1     |
| 5    | C 18628   | BASE - air cleaner .....                                        | 1     |
| 6    | A 28077   | "O" RING - 1-7/16" I.D. ....                                    | 1     |
| 7    | 174- 222  | SCREW - #10 x 2-1/4" NF rd. hd. machine .....                   | 1     |
| 8    | C 19170   | CLAMP ASSEMBLY - air cleaner (includes items 7, 9 and 10) ..... | 1     |
| 9    | 192- 17   | LOCKWASHER - #10 .....                                          | 1     |
| 10   | 129- 77   | NUT - #10 NF square .....                                       | 1     |
| 11   | KO 237421 | PRE-CLEANER - air cleaner (optional) .....                      | 1     |
| 12   | C 19169   | TUBE - breather .....                                           | 1     |
| 13   | 214- 251  | CLAMP - hose .....                                              | 1     |
| 14   | C 20634   | WRENCH - carburetor adjusting .....                             | 1     |
| 15   | C 20660   | CARBURETOR - engine (repairs, page 7) .....                     | 1     |
| 16   | C 20630   | BRACKET - choke .....                                           | 1     |
| 17   | C 20374   | CLIP - throttle cable .....                                     | 1     |
| 18   | C 20631   | MANIFOLD - engine, intake .....                                 | 1     |
| 19   | C 20564   | GASKET - carburetor mtg. ....                                   | 1     |
| 20   | 13- 424   | BOLT - carburetor mtg. ....                                     | 2     |
| 21   | 92- 4     | LOCKWASHER - carburetor mtg. ....                               | 2     |
| 22   | C 20632   | GASKET - manifold, intake .....                                 | 1     |
| 23   | C 10678   | ELBOW - carburetor inlet .....                                  | 1     |
| 24   | 13- 632   | BOLT - manifold mtg. ....                                       | 2     |
| 25   | 92- 6     | LOCKWASHER - manifold mtg. ....                                 | 2     |



## ONAN ENGINE

## C 20688 CARBURETOR

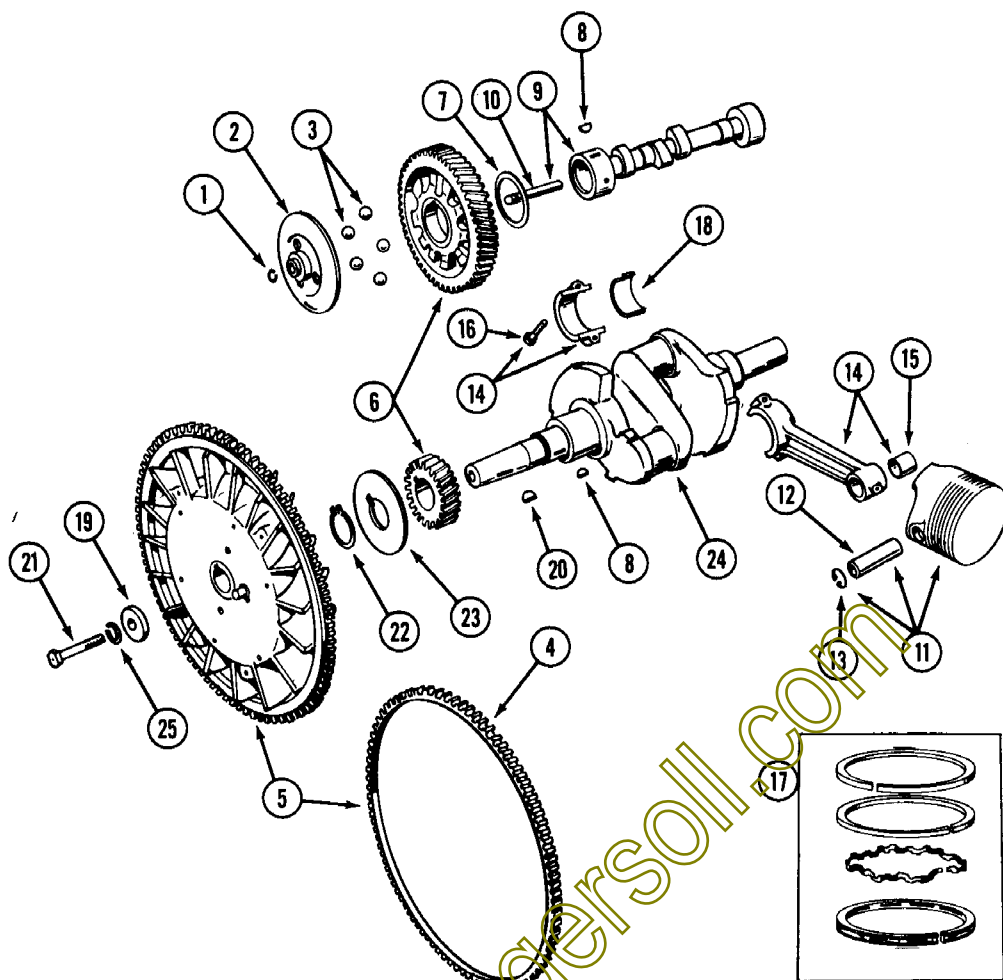
| REF. | PART NO. | DESCRIPTION                                                                                    | REQ'D |
|------|----------|------------------------------------------------------------------------------------------------|-------|
| 1    | 169- 97  | SCREW - bowl cover . . . . .                                                                   | 3     |
| 2    | NSS      | SCREW - choke fly #4 x 3/16" (order C 20689 Kit) . . . . .                                     | 2     |
| 3    | C 20691  | FLY - choke . . . . .                                                                          | 1     |
| 4    | NSS      | COVER ASSEMBLY - carburetor (order C 20688 carburetor) . . . . .                               | 1     |
| 5    | C 20693  | SHAFT ASSEMBLY - choke . . . . .                                                               | 1     |
| 6    | C 20694  | PIN - float . . . . .                                                                          | 1     |
| 7    | NSS      | GASKET - body to bowl (order C20689 kit) . . . . .                                             | 1     |
| 8    | NSS      | GASKET - float, valve seat (order C 20689 kit) . . . . .                                       | 1     |
| 8    | NSS      | GASKET - needle, main adjusting (order C 20689 kit) . . . . .                                  | 1     |
| 9    | NSS      | NEEDLE AND SEAT ASSEM. (order C 20689 kit) . . . . .                                           | 1     |
| 10   | C 20708  | PLUG - gas inlet . . . . .                                                                     | 1     |
| 11   | C 20712  | PIN - stop choke . . . . .                                                                     | 1     |
| 12   | C 20700  | FLOAT ASSEMBLY - carburetor . . . . .                                                          | 1     |
| 13   | C 20701  | LEVER - idler stop . . . . .                                                                   | 1     |
| 14   | NSS      | NEEDLE - idler adjust (order C 20689 kit) . . . . .                                            | 1     |
| 15   | C 20439  | SPRING - idle adjust . . . . .                                                                 | 1     |
| 16   | C 20704  | SPRING - throttle stop adj. . . . .                                                            | 1     |
| 17   | 169- 61  | SCREW - throttle stop #6 x 1/2" . . . . .                                                      | 1     |
| 18   | NSS      | SCREW - throttle fly #4 x 1/4" (order C 20689 kit) . . . . .                                   | 2     |
| 19   | C 20705  | FLY - throttle . . . . .                                                                       | 1     |
| 20   | NSS      | SHAFT ASSEMBLY - throttle (order C 20689 kit) . . . . .                                        | 1     |
| 21   | C 20707  | NOZZLE - nut and jet . . . . .                                                                 | 1     |
| 22   | C 20699  | NOZZLE ASSEMBLY . . . . .                                                                      | 1     |
| 23   | NSS      | GASKET - nozzle (order C 20689 kit) . . . . .                                                  | 1     |
| 24   | NSS      | BODY ASSEMBLY - carburetor (order 20688 carburetor) . . . . .                                  | 1     |
| 25   | C 20709  | BUSHING - throttle shaft . . . . .                                                             | 2     |
| 26   | 129- 665 | NUT - throttle stop . . . . .                                                                  | 1     |
| 27   | C 20711  | SCREW - throttle stop mtg. clamp . . . . .                                                     | 1     |
| 28   | C 20713  | NUT - main adjust needle retainer . . . . .                                                    | 1     |
| 29   | NSS      | PACKING - main adjust needle (order C 20689 kit) . . . . .                                     | 1     |
| 30   | C 20715  | RETAINER - main adjust needle . . . . .                                                        | 1     |
| 31   | C 20716  | PIN - main adjust needle . . . . .                                                             | 1     |
| 32   | NSS      | NEEDLE - main adjust (order C 20689 kit) . . . . .                                             | 1     |
| 33   | C 20718  | NEEDLE ASSEMBLY . . . . .                                                                      | 1     |
|      | C 20689  | KIT - repair, carburetor (includes items 2, 4, 7, 8, 9, 14, 18, 20, 23, 29, 30 & 32) . . . . . | 1     |



## ONAN ENGINE

## FUEL PUMP ASSEMBLY

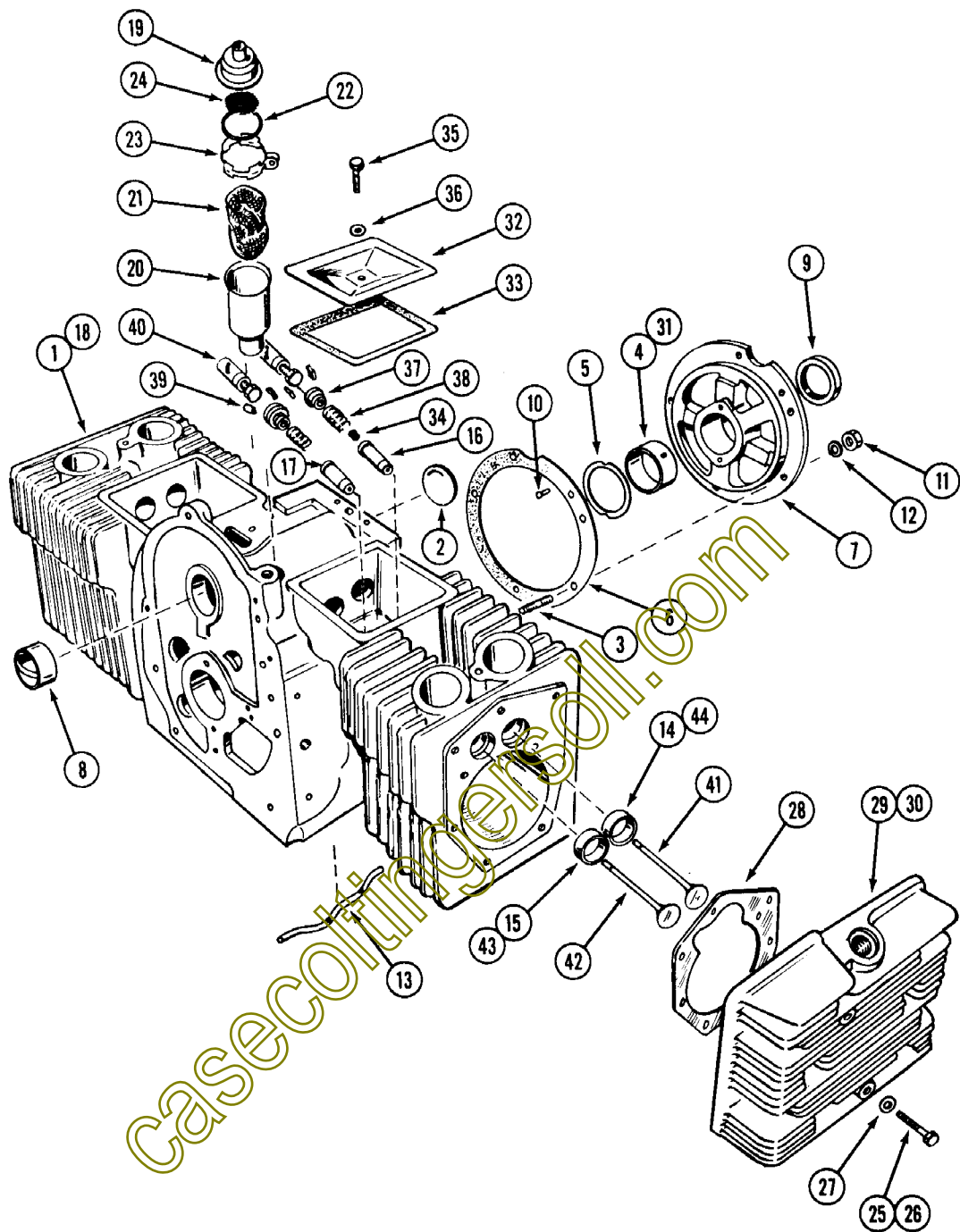
| REF. | PART NO.  | DESCRIPTION                                                | REQ'D |
|------|-----------|------------------------------------------------------------|-------|
| 1    | C 20653   | PUMP - fuel, vacuum (used S/N 9663306 and after) . . . . . | 1     |
| 2    | C 20740   | BASE - fuel pump . . . . .                                 | 1     |
| 3    | C 20440   | SPRING - diaphragm. . . . .                                | 1     |
| 4    | C 20448   | PLATE - spring . . . . .                                   | 1     |
| 5    | C 20434   | GASKET - base fuel pump . . . . .                          | 1     |
| 6    | C 20437   | DIAPHRAGM - fuel pump . . . . .                            | 1     |
| 7    | C 20428   | VALVE PLATE ASSEMBLY . . . . .                             | 1     |
| 8    | C 20738   | GASKET - cover, fuel pump. . . . .                         | 1     |
| 9    | C 20739   | COVER - fuel pump . . . . .                                | 1     |
| 10   | C 20433   | SCREW - cover, fuel pump. . . . .                          | 2     |
| 11   | C 20645   | PLATE - mechanical fuel pump hole cover. . . . .           | 1     |
| 12   | 192- 19   | LOCKWASHER - 1/4" . . . . .                                | 2     |
| 13   | 13- 410   | BOLT - 1/4" x 5/8" n.c. hex . . . . .                      | 2     |
| 14   | C 20735   | GASKET - plate, fuel pump hole cover. . . . .              | 1     |
| 15   | C 20647   | TUBE - vacuum line . . . . .                               | 1     |
| 16   | 222- 1014 | FITTING - inverted male . . . . .                          | 1     |
| 17   | C 20411   | CAP - fuel pump . . . . .                                  | 1     |
| 18   | 214- 251  | CLAMP - hose . . . . .                                     | 3     |
| 19   | C 20650   | BRACKET - fuel pump mtg. . . . .                           | 1     |
| 20   | C 20651   | SCREW - #10 x 5/8" . . . . .                               | 2     |
| 21   | 129- 27   | NUT - #10 n.f. hex. . . . .                                | 2     |
| 22   | C 16202   | HOSE - vacuum, fuel pump . . . . .                         | 1     |
| 23   | C 15526   | HOSE - fuel pump to carburetor . . . . .                   | 1     |



## ONAN ENGINE

## PISTON, CRANKSHAFT, FLYWHEEL AND CAMSHAFT

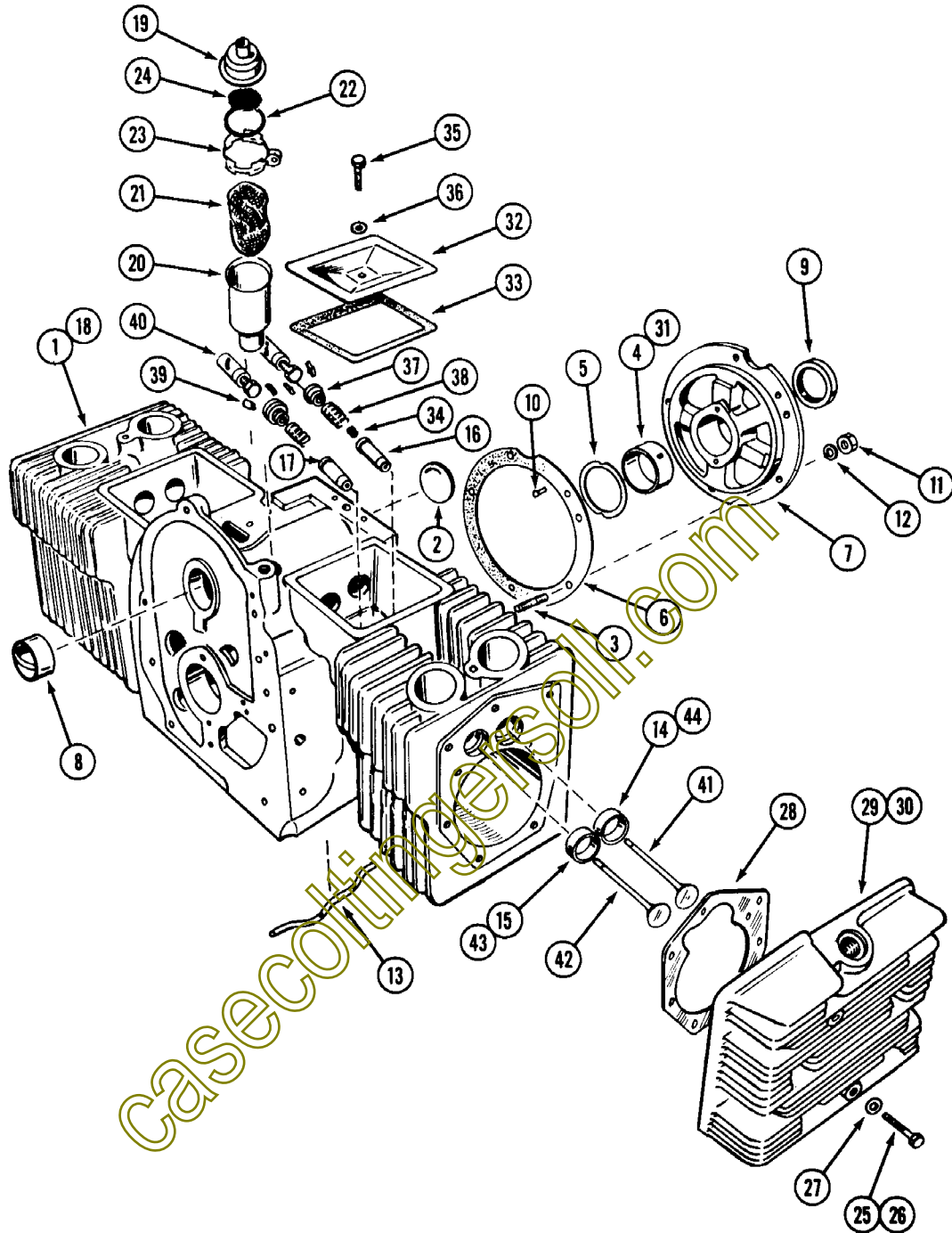
| REF. NO. | PART NO. | DESCRIPTION                                                     | REQ'D |
|----------|----------|-----------------------------------------------------------------|-------|
| 1        | C 20223  | RING - center pin, camshaft. . . . .                            | 1     |
| 2        | C 22260  | CUP - governor. . . . .                                         | 1     |
| 3        | 211- 14  | BALL - fly governor . . . . .                                   | 5     |
| 4        | C 20308  | GEAR - ring, flywheel. . . . .                                  | 1     |
| 5        | C 20317  | FLYWHEEL - engine (includes ring gear) . . . . .                | 1     |
| 6        | C 20228  | GEAR SET - timing (includes cam and crankshaft gears) . . . . . | 1     |
| 7        | C 20229  | WASHER - thrust, cam gear . . . . .                             | 1     |
| 8        | 126- 9   | KEY - woodruff, cam and crankshaft gear mtg. . . . .            | 2     |
| 9        | C 20327  | CAMSHAFT - engine (includes C 20233 Pin) . . . . .              | 1     |
| 10       | C 20233  | PIN - camshaft center . . . . .                                 | 1     |
| 11       | C 20342  | PISTON AND PIN ASSEMBLY - standard . . . . .                    | 2     |
| 11       | C 20351  | PISTON AND PIN ASSEMBLY - .005" . . . . .                       | 2     |
| 11       | C 20352  | PISTON AND PIN ASSEMBLY - .010" . . . . .                       | 2     |
| 11       | C 20357  | PISTON AND PIN ASSEMBLY - .020" . . . . .                       | 2     |
| 11       | C 20358  | PISTON AND PIN ASSEMBLY - .030" . . . . .                       | 2     |
| 11       | C 20373  | PISTON AND PIN ASSEMBLY - .040" . . . . .                       | 2     |
| 12       | C 20379  | PIN - piston. . . . .                                           | 2     |
| 13       | C 20380  | RETAINER - piston pin. . . . .                                  | 4     |
| 14       | C 20381  | CONNECTING ROD ASSEMBLY. . . . .                                | 2     |
| 15       | C 20481  | BUSHING - piston pin . . . . .                                  | 2     |
| 16       | C 20402  | BOLT - connecting rod . . . . .                                 | 4     |
| 17       | C 20382  | RING SET - piston (standard). . . . .                           | 2     |
| 17       | C 20383  | RING SET - piston (.005" oversize). . . . .                     | 2     |
| 17       | C 20384  | RING SET - piston (.010" oversize). . . . .                     | 2     |
| 17       | C 20386  | RING SET - piston (.020" oversize). . . . .                     | 2     |
| 17       | C 20394  | RING SET - piston (.030" oversize). . . . .                     | 2     |
| 17       | C 20400  | RING SET - piston (.040" oversize). . . . .                     | 2     |
| 18       | C 20403  | BEARING - connecting rod (standard). . . . .                    | 4     |
| 18       | C 20408  | BEARING - connecting rod (.002" undersize). . . . .             | 4     |
| 18       | C 20409  | BEARING - connecting rod (.010" undersize). . . . .             | 4     |
| 18       | C 20410  | BEARING - connecting rod (.020" undersize). . . . .             | 4     |
| 18       | C 20480  | BEARING - connecting rod (.030" undersize). . . . .             | 4     |
| 19       | C 20482  | WASHER - flywheel mtg. . . . .                                  | 1     |
| 20       | 126- 16  | KEY - flywheel mtg. . . . .                                     | 1     |
| 21       | C 20483  | BOLT - flywheel mtg. special . . . . .                          | 1     |
| 22       | R 13338  | RETAINER - crankshaft gear . . . . .                            | 1     |
| 23       | C 20219  | WASHER - retaining, crankshaft gear . . . . .                   | 1     |
| 24       | C 20487  | CRANKSHAFT - engine . . . . .                                   | 1     |
| 25       | 92- 7    | LOCKWASHER - 7/16" flywheel mtg. . . . .                        | 1     |



## ONAN ENGINE

## ENGINE BLOCK AND ATTACHING PARTS

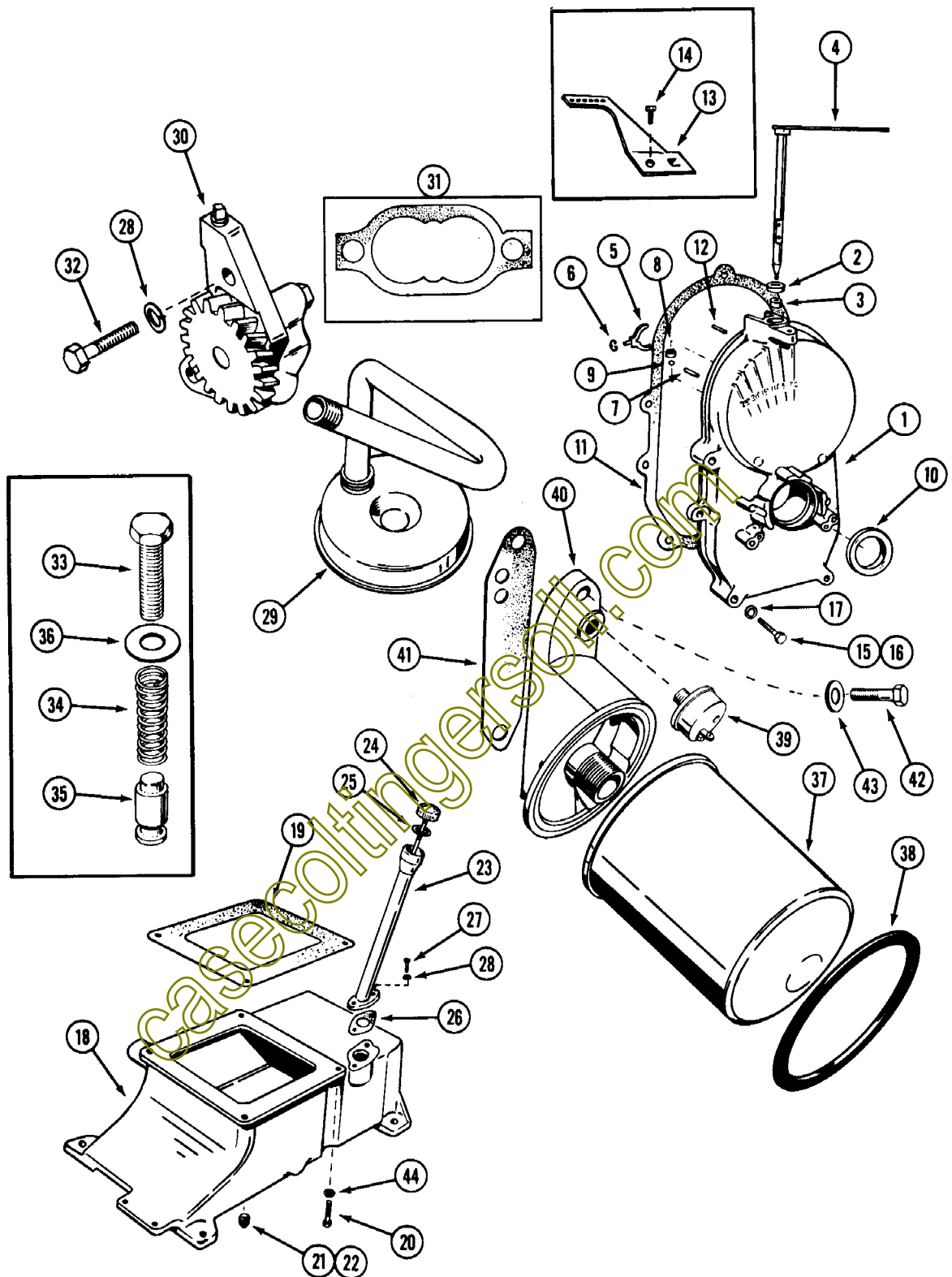
| REF. NO. | PART NO. | DESCRIPTION                                                                                                                                                                                      | REQ'D |
|----------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 1        | C 20489  | BLOCK ASSEM. - cylinder, standard bore . . . . .                                                                                                                                                 | 1     |
| 2        | C 20252  | PLUG - camshaft expansion . . . . .                                                                                                                                                              | 1     |
| 3        | C 20497  | STUD - bearing plate, rear . . . . .                                                                                                                                                             | 5     |
| 4        | C 20262  | BEARING - crankshaft, standard (undersize see below) . . . . .                                                                                                                                   | 2     |
| 5        | C 20267  | WASHER - thrust, crankshaft bearing . . . . .                                                                                                                                                    | 2     |
| 6        | C 20511  | KIT - gasket, bearing plate . . . . .                                                                                                                                                            | 1     |
| 7        | C 20512  | PLATE - bearing (excludes bearing) . . . . .                                                                                                                                                     | 1     |
| 8        | C 20513  | BEARING - camshaft, front or rear . . . . .                                                                                                                                                      | 2     |
| 9        | C 20271  | SEAL - bearing plate . . . . .                                                                                                                                                                   | 1     |
| 10       | C 20272  | PIN - main bearing stop . . . . .                                                                                                                                                                | 4     |
| 11       | 129- 513 | NUT - stud, bearing plate . . . . .                                                                                                                                                              | 5     |
| 12       | C 20519  | LOCKWASHER - rear bearing plate . . . . .                                                                                                                                                        | 5     |
| 13       | C 20520  | TUBE - oil, crankcase . . . . .                                                                                                                                                                  | 1     |
| 14       | C 20528  | INSERT - valve seat, intake (oversize see page 93). . . . .                                                                                                                                      | 2     |
| 15       | C 20523  | INSERT - valve seat, exhaust (oversize see page 93). . . . .                                                                                                                                     | 2     |
| 16       | C 20534  | GUIDE - valve, intake . . . . .                                                                                                                                                                  | 2     |
| 17       | C 20533  | GUIDE - valve, exhaust . . . . .                                                                                                                                                                 | 2     |
| 18       | C 21569  | BLOCK ASSEM. - short (includes: cylinder and crankcase, all bearings, crankshaft, camshaft, timing gear, governor gear case, rods, pistons, rings, valves, oil pump and breather tube) . . . . . | 1     |
| 19       | C 20490  | CAP - breather tube . . . . .                                                                                                                                                                    | 1     |
| 20       | C 20491  | TUBE - breather . . . . .                                                                                                                                                                        | 1     |
| 21       | C 20492  | BAFFLE - breather tube . . . . .                                                                                                                                                                 | 1     |
| 22       | C 20493  | SEAL - "O"-ring, breather tube . . . . .                                                                                                                                                         | 1     |
| 23       | C 20536  | CLAMP - breather cap . . . . .                                                                                                                                                                   | 1     |
| 24       | C 20504  | SCREEN - breather . . . . .                                                                                                                                                                      | 1     |
| 25       | C 20540  | BOLT - 5/16 x 1-1/4" n.c. hex . . . . .                                                                                                                                                          | 8     |
| 26       | C 20541  | BOLT - 5/16 x 1-3/4" n.c. hex . . . . .                                                                                                                                                          | 10    |
| 27       | C 20248  | WASHER - 5/16" . . . . .                                                                                                                                                                         | 18    |
| 28       | C 20499  | GASKET - cylinder head . . . . .                                                                                                                                                                 | 2     |
| 29       | C 20500  | HEAD - cylinder R.H. (used prior to eng. no. 292517). . . . .                                                                                                                                    | 1     |
| 29       | C 20501  | HEAD - cylinder R.H. (used eng. no. 292517 and after). . . . .                                                                                                                                   | 1     |
| 30       | C 20502  | HEAD - cylinder L.H. (used prior to eng. no. 292517). . . . .                                                                                                                                    | 1     |
| 30       | C 20503  | HEAD - cylinder L.H. (used eng. no. 292517 and after). . . . .                                                                                                                                   | 1     |
| 31       | C 20263  | BEARING - crankshaft, rear (.002 undersize). . . . .                                                                                                                                             | 2     |
| 31       | C 20264  | BEARING - crankshaft, rear (.010 undersize). . . . .                                                                                                                                             | 2     |



## ONAN ENGINE

## ENGINE BLOCK AND ATTACHING PARTS (continued)

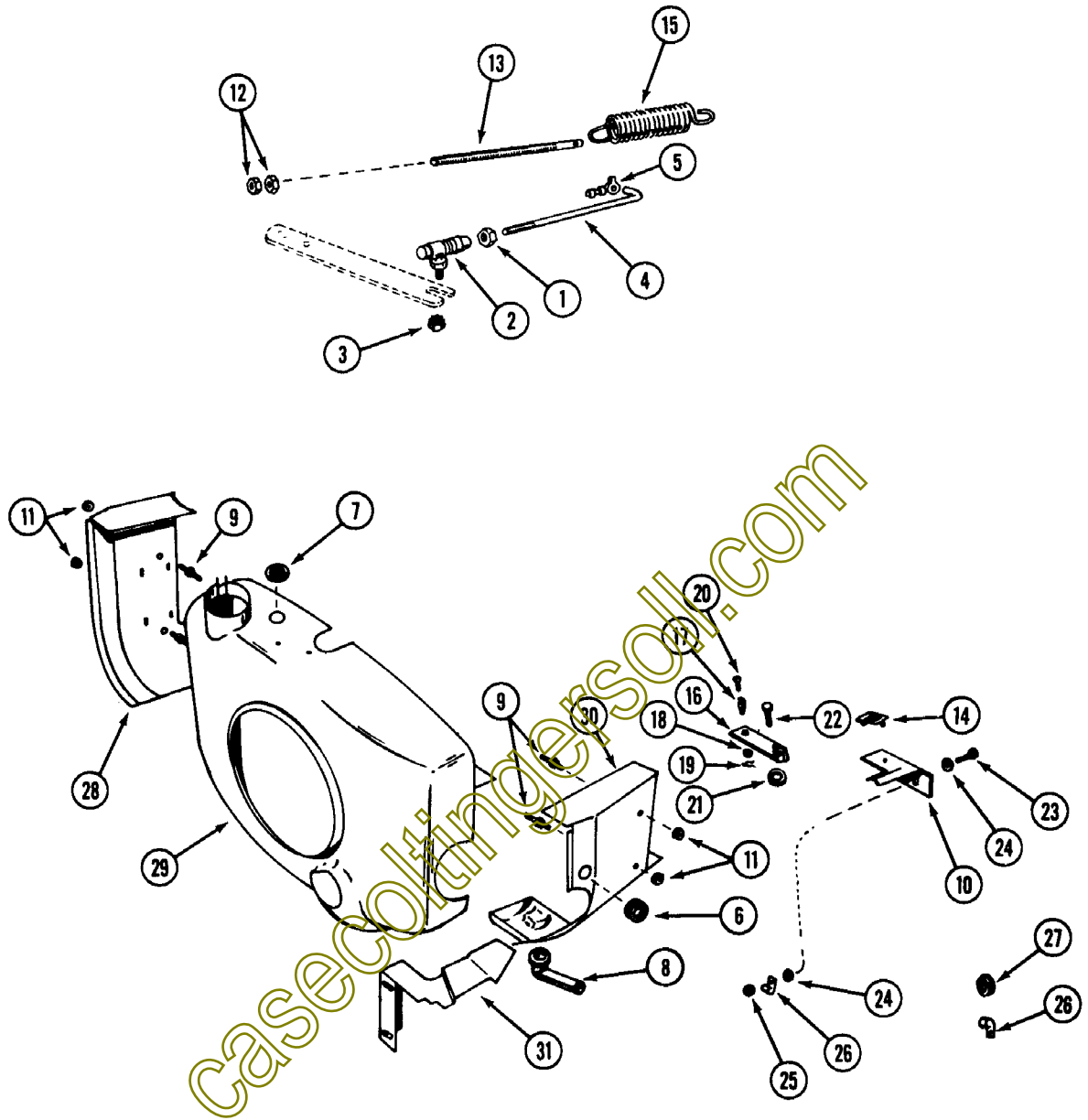
| REF. NO. | PART NO. | DESCRIPTION                                                                                                                                                                                      | REQ'D |
|----------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 31       | C 20265  | BEARING - crankshaft, rear (.020 undersize) . . . . .                                                                                                                                            | 2     |
| 31       | C 20266  | BEARING - crankshaft, rear (.030 undersize) . . . . .                                                                                                                                            | 2     |
| 32       | C 20494  | COVER - valve . . . . .                                                                                                                                                                          | 2     |
| 33       | C 20495  | GASKET - cover, valve . . . . .                                                                                                                                                                  | 2     |
| 34       | C 20498  | SEAL - valve, intake . . . . .                                                                                                                                                                   | 2     |
| 35       | 13- 436  | BOLT - valve cover . . . . .                                                                                                                                                                     | 2     |
| 36       | C 20247  | WASHER - valve cover, copper . . . . .                                                                                                                                                           | 2     |
| 37       | C 20517  | ROTATOR - valve . . . . .                                                                                                                                                                        | 4     |
| 38       | C 20293  | SPRING - valve . . . . .                                                                                                                                                                         | 4     |
| 39       | C 20294  | LOCK - valve and spring. . . . .                                                                                                                                                                 | 8     |
| 40       | C 20276  | TAPPET - valve, standard. . . . .                                                                                                                                                                | 4     |
| 40       | C 20277  | TAPPET - valve, .005" oversize. . . . .                                                                                                                                                          | 4     |
| 41       | C 20521  | VALVE - intake. . . . .                                                                                                                                                                          | 2     |
| 42       | C 20522  | VALVE - exhaust. . . . .                                                                                                                                                                         | 2     |
| 43       | C 20524  | INSERT - valve seat, exhaust (.002" oversize) . . . . .                                                                                                                                          | 2     |
| 43       | C 20525  | INSERT - valve seat, exhaust (.005" oversize) . . . . .                                                                                                                                          | 2     |
| 43       | C 20526  | INSERT - valve seat, exhaust (.010" oversize) . . . . .                                                                                                                                          | 2     |
| 43       | C 20527  | INSERT - valve seat, exhaust (.025" oversize) . . . . .                                                                                                                                          | 2     |
| 44       | C 20529  | INSERT - valve seat, intake (.002" oversize) . . . . .                                                                                                                                           | 2     |
| 44       | C 20530  | INSERT - valve seat, intake (.005" oversize) . . . . .                                                                                                                                           | 2     |
| 44       | C 20531  | INSERT - valve seat, intake (.010" oversize) . . . . .                                                                                                                                           | 2     |
| 44       | C 20532  | INSERT - valve seat, intake (.025" oversize) . . . . .                                                                                                                                           | 2     |
|          | C 20655  | KIT - gasket, complete engine. . . . .                                                                                                                                                           | 1     |
|          | C 20754  | KIT - gasket, carbon removal (includes: valve cover gaskets, cylinder head gaskets, intake manifold gaskets and exhaust gaskets . . . . .                                                        | 1     |
|          | C 20755  | KIT - overhaul, engine (standard) includes: valves, valve spring and retainers, ring set, oil filter, breather tube, points, plugs, condenser, crankshaft retainer ring and gasket kit . . . . . | 1     |



## ONAN ENGINE

## OIL BASE, OIL PUMP AND GEAR COVER

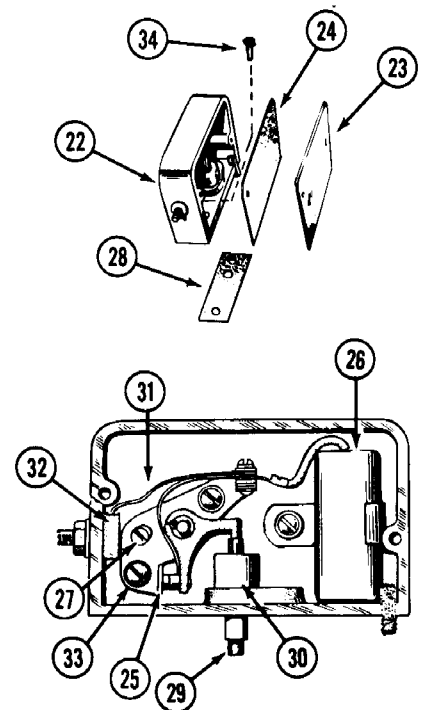
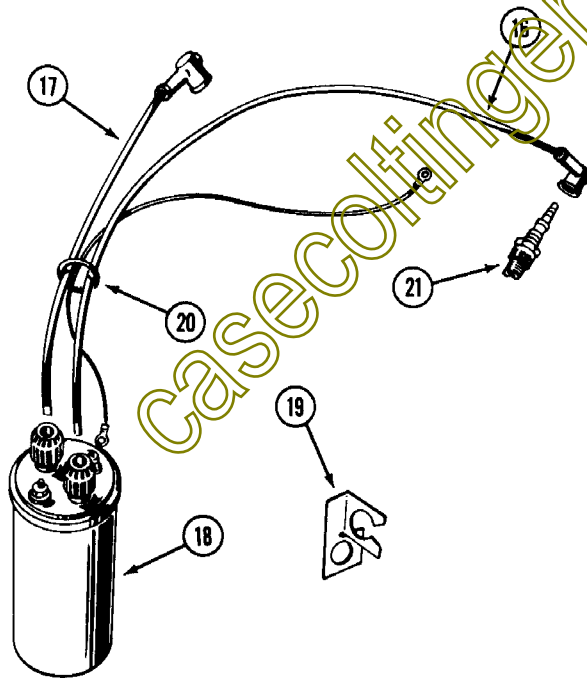
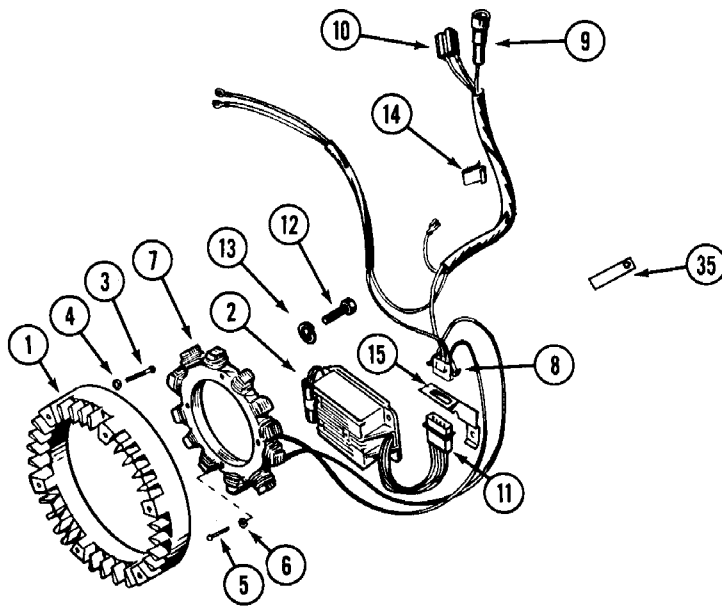
| REF. NO. | PART NO. | DESCRIPTION                                                  | REQ'D |
|----------|----------|--------------------------------------------------------------|-------|
| 1        | C 20551  | COVER ASSEMBLY - gear . . . . .                              | 1     |
| 2        | C 20310  | SEAL - oil, governor shaft . . . . .                         | 1     |
| 3        | C 20544  | BEARING - governor shaft, upper . . . . .                    | 1     |
| 4        | C 20545  | SHAFT AND ARM ASSEMBLY - governor . . . . .                  | 1     |
| 5        | C 20546  | YOKE - governor shaft . . . . .                              | 1     |
| 6        | C 20547  | RING - retainer, yoke . . . . .                              | 1     |
| 7        | C 20309  | PIN - stop, governor cup . . . . .                           | 1     |
| 8        | C 20549  | BEARING - governor shaft, lower . . . . .                    | 1     |
| 9        | 211- 5   | BEARING - ball, governor shaft . . . . .                     | 1     |
| 10       | C 20312  | SEAL - gear cover. . . . .                                   | 1     |
| 11       | C 20552  | GASKET - gear cover . . . . .                                | 2     |
| 12       | C 20314  | PIN - gear cover . . . . .                                   | 1     |
| 13       | C 20579  | ARM - governor extension . . . . .                           | 1     |
| 14       | 177- 97  | BOLT - governor arm extension . . . . .                      | 4     |
| 15       | 13- 528  | BOLT - 5/16 x 1-3/4" n.c. hex . . . . .                      | 1     |
| 16       | 13- 536  | BOLT - 5/16 x 2-1/4" n.c. hex . . . . .                      | 5     |
| 17       | 92- 5    | LOCKWASHER - 5/16" . . . . .                                 | 1     |
| 18       | C 20556  | BASE - oil . . . . .                                         | 1     |
| 19       | C 20555  | GASKET - oil base . . . . .                                  | 4     |
| 20       | C 20557  | BOLT - oil base to block . . . . .                           | 1     |
| 21       | 221- 13  | PLUG - oil drain 3/8" . . . . .                              | 1     |
| 22       | 221- 14  | PLUG - oil drain 1/2" . . . . .                              | 1     |
| 23       | C 20563  | TUBE - oil filler (used with vacuum fuel pump) . . . . .     | 1     |
| 23       | C 20562  | TUBE - oil filler (used with mechanical fuel pump) . . . . . | 1     |
| 24       | C 20553  | CAP - oil filler . . . . .                                   | 1     |
| 25       | C 20554  | GASKET - oil cap. . . . .                                    | 1     |
| 26       | C 20564  | GASKET - tube, oil filler . . . . .                          | 2     |
| 27       | 13- 410  | BOLT - oil filler tube mtg. . . . .                          | 4     |
| 28       | 92- 4    | LOCKWASHER - filler tube and oil pump mtg. . . . .           | 1     |
| 29       | C 20570  | INTAKE - oil pump (includes cup, screen and pipe) . . . . .  | 1     |
| 30       | C 20323  | OIL PUMP ASSEMBLY (internal components NSS) . . . . .        | 1     |
| 31       | C 20325  | KIT - gasket oil pump . . . . .                              | 2     |
| 32       | 13- 416  | BOLT - oil pump mtg. . . . .                                 | 1     |
| 33       | 14- 612  | BOLT - 3/8" n.c. hex, oil by-pass. . . . .                   | 1     |
| 34       | C 20320  | SPRING - oil by-pass. . . . .                                | 1     |
| 35       | C 20322  | VALVE - oil by-pass. . . . .                                 | 1     |
| 36       | C 20574  | WASHER - oil by-pass. . . . .                                | 1     |
| 37       | C 20566  | FILTER - oil . . . . .                                       | 1     |
| 38       | C 20577  | GASKET - oil filter. . . . .                                 | 1     |
| 39       | C 20568  | SWITCH - oil indicator . . . . .                             | 1     |
| 40       | C 20565  | ADAPTER - oil filter (used on early models) . . . . .        | 1     |
| 41       | C 20330  | GASKET - adapter oil . . . . .                               | 2     |
| 42       | 13- 516  | BOLT - 5/16 x 1" n.c. hex . . . . .                          | 2     |
| 43       | C 20331  | WASHER - copper . . . . .                                    | 4     |
| 44       | 92- 6    | LOCKWASHER - oil base mtg. . . . .                           |       |



## ONAN ENGINE

## GOVERNOR AND BLOWER HOUSING

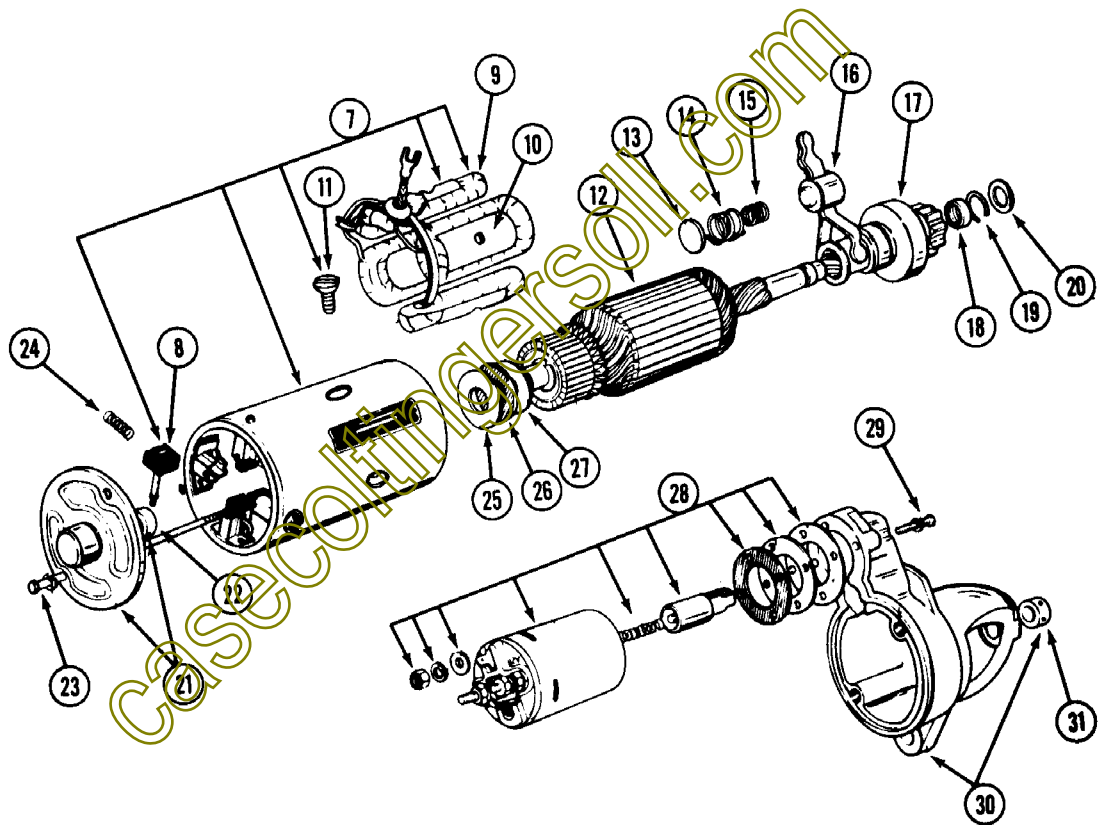
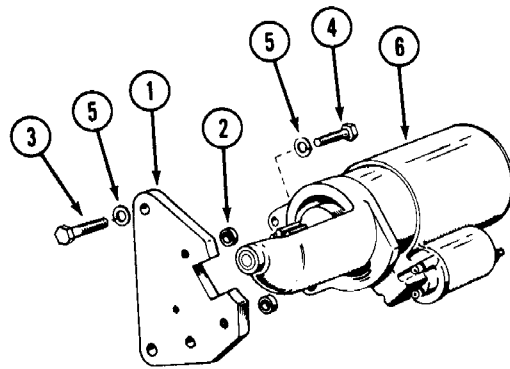
| REF. NO. | PART NO. | DESCRIPTION                                  | REQ'D |
|----------|----------|----------------------------------------------|-------|
| 1        | 129- 665 | NUT - lock, governor throttle . . . . .      | 1     |
| 2        | C 20569  | BALLJOINT - governor throttle rod. . . . .   | 1     |
| 3        | C 20605  | NUT - ball joint . . . . .                   | 1     |
| 4        | C 20572  | ROD - governor throttle. . . . .             | 1     |
| 5        | C 20573  | CLIP - rod, governor throttle . . . . .      | 1     |
| 6        | C 20610  | GROMMET - rubber . . . . .                   | 1     |
| 7        | C 20616  | PLUG - blower housing . . . . .              | 1     |
| 8        | C 20620  | TUBE - drain, oil filter. . . . .            | 1     |
| 9        | C 20621  | STUD - cylinder air baffle . . . . .         | 4     |
| 10       | C 20608  | BRACKET - governor control. . . . .          | 1     |
| 11       | 25- 118  | NUT - baffle mtg. . . . .                    | 4     |
| 12       | 129- 27  | NUT - #10 . . . . .                          | 2     |
| 13       | C 20611  | ROD - governor, high speed . . . . .         | 1     |
| 14       | C 20374  | CLIP - cable, throttle . . . . .             | 1     |
| 15       | C 20613  | SPRING - governor. . . . .                   | 1     |
| 16       | C 20622  | ARM - governor, rear. . . . .                | 1     |
| 17       | C 20372  | SWIVEL - governor arm. . . . .               | 1     |
| 18       | 195- 14  | WASHER - #6 . . . . .                        | 1     |
| 19       | 136- 2   | PIN - cotter. . . . .                        | 1     |
| 20       | 169- 74  | SCREW - #8 x 5/16" . . . . .                 | 1     |
| 21       | C 20624  | SPACER - governor arm. . . . .               | 1     |
| 22       | 121- 3   | BOLT - locking 1/4 x 1/2" n.c. hex . . . . . | 1     |
| 23       | C 20627  | SCREW - #10 x 1" n.f. . . . .                | 1     |
| 24       | C 20628  | WASHER - #10 . . . . .                       | 2     |
| 25       | 129- 27  | NUT - #10 N.F. hex. . . . .                  | 1     |
| 26       | C 20626  | CLIP - hose. . . . .                         | 2     |
| 27       | C 20625  | GROMMET - rubber . . . . .                   | 1     |
| 28       | C 20580  | BAFFLE - cylinder L.H. . . . .               | 1     |
| 29       | C 20582  | HOUSING - blower. . . . .                    | 1     |
| 30       | C 20584  | BAFFLE - cylinder R.H. . . . .               | 1     |
| 31       | C 20614  | BAFFLE - air . . . . .                       | 1     |



## ONAN ENGINE

## IGNITION AND CHARGING SYSTEM

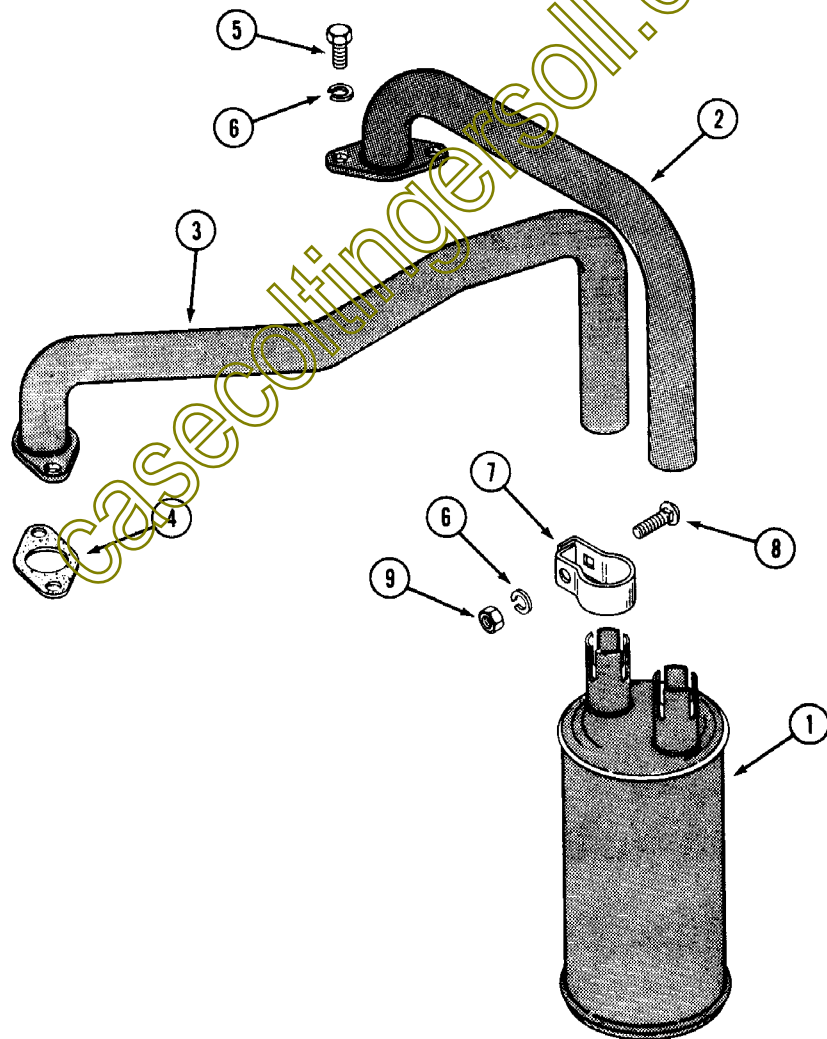
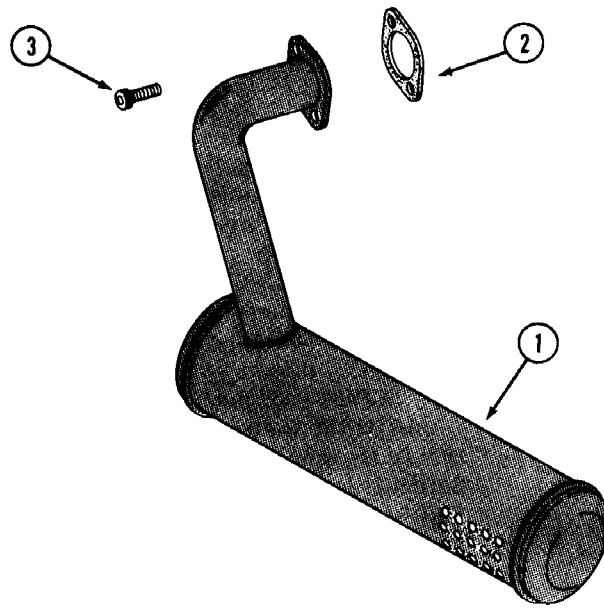
| REF. NO. | PART NO.  | DESCRIPTION                                                               | REQ'D |
|----------|-----------|---------------------------------------------------------------------------|-------|
| 1        | C 20591   | ROTOR - alternator . . . . .                                              | 1     |
| 2        | C 20592   | REGULATOR, RECTIFIER ASSEMBLY . . . . .                                   | 1     |
| 3        | C 20593   | SCREW - rotor mounting . . . . .                                          | 6     |
| 4        | 92- 4     | LOCKWASHER - rotor mtg. . . . .                                           | 6     |
| 5        | C 20594   | SCREW - stator mounting . . . . .                                         | 3     |
| 6        | 92- 3     | LOCKWASHER - stator mtg. . . . .                                          | 3     |
| 7        | C 20590   | STATOR ASSEMBLY (includes items 8, 9 & 10) . . . . .                      | 1     |
| 8        | C 20596   | CONNECTOR - socket . . . . .                                              | 1     |
| 9        | C 20597   | HOLDER - fuse . . . . .                                                   | 1     |
| 10       | C 20599   | CONNECTOR - wire . . . . .                                                | 1     |
| 11       | C 20604   | CONNECTOR - plug, regulator . . . . .                                     | 1     |
| 12       | 13- 414   | SCREW - 1/4 x 7/8" regulator, rectifier, mtg. . . . .                     | 3     |
| 13       | 92- 4     | LOCKWASHER - 1/4" . . . . .                                               | 3     |
| 14       | C 20585   | CLIP - wire holder . . . . .                                              | 1     |
| 15       | C 20617   | BRACKET - socket mtg. wire . . . . .                                      | 1     |
| 16       | C 20507   | CABLE - spark plug 23-1/2" . . . . .                                      | 1     |
| 17       | C 20348   | CABLE - spark plug 19" . . . . .                                          | 1     |
| 18       | C 20349   | COIL - ignition . . . . .                                                 | 1     |
| 19       | C 20344   | BRACKET - cable, spark plug. . . . .                                      | 1     |
| 20       | 16905     | RETAINER - o-ring, spark plug cables . . . . .                            | 1     |
| 21       | O 5999-AB | SPARK PLUG . . . . .                                                      | 2     |
| 22       | C 20514   | BOX ASSEMBLY - breaker contact (includes items 23, 24, 25 & 26) . . . . . | 1     |
| 23       | C 20318   | COVER - breaker box . . . . .                                             | 1     |
| 24       | C 20321   | GASKET - breaker box . . . . .                                            | 1     |
| 25       | C 20484   | POINT SET - breaker contacts (order kit below). . . . .                   | 1     |
| 26       | C 20343   | CONDENSER - breaker contacts (order kit below) . . . . .                  | 1     |
| 27       | C 20332   | CAM - point gap adjust . . . . .                                          | 1     |
| 28       | C 20505   | GASKET - breaker box mtg. . . . .                                         | 1     |
| 29       | C 20506   | PLUNGER ASSEMBLY (includes plunger, guide & diaphragm). . . . .           | 1     |
| 30       | C 20509   | DIAPHRAGM - breaker box . . . . .                                         | 1     |
| 31       | C 20515   | STRAP - point set to terminal block. . . . .                              | 1     |
| 32       | C 20516   | BLOCK AND TERMINAL ASSEMBLY . . . . .                                     | 1     |
| 33       | C 20548   | SCREW - #8 x 1/4" . . . . .                                               | 3     |
| 34       | C 20535   | SCREW - breaker box mtg.. . . .                                           | 2     |
| 35       | C 20588   | CLIP - wire harness. . . . .                                              | 1     |



## ONAN ENGINE

## STARTER MOTOR

| REF. NO. | PART NO. | DESCRIPTION                                                    | REQ'D |
|----------|----------|----------------------------------------------------------------|-------|
| 1        | C 20589  | BRACKET - starter mtg. . . . .                                 | 1     |
| 2        | C 20587  | SPACER - starter mtg. . . . .                                  | 2     |
| 3        | 13- 620  | BOLT - starter bracket mtg. . . . .                            | 3     |
| 4        | C 20615  | BOLT - starter to bracket mtg. . . . .                         | 2     |
| 5        | 92- 6    | LOCKWASHER - starter mtg. . . . .                              | 5     |
| 6        | C 20586  | MOTOR - starting 12 volt. . . . .                              | 1     |
| 7        | C 20663  | YOKE ASSEMBLY - frame (includes items 8, 9, 10, & 11). . . . . | 1     |
| 8        | C 20678  | BRUSH - starter motor . . . . .                                | 4     |
| 9        | C 20683  | COIL ASSEMBLY - field . . . . .                                | 1     |
| 10       | C 20686  | POLE - shoe . . . . .                                          | 4     |
| 11       | C 20687  | SCREW - coil mtg., field . . . . .                             | 4     |
| 12       | C 20664  | ARMATURE - starter motor. . . . .                              | 1     |
| 13       | C 20673  | HOLDER - spring. . . . .                                       | 1     |
| 14       | C 20672  | SPRING - lever (B). . . . .                                    | 1     |
| 15       | C 20671  | SPRING - lever (A). . . . .                                    | 1     |
| 16       | C 20670  | LEVER - clutch fork. . . . .                                   | 1     |
| 17       | C 20665  | CLUTCH - engaging, starter . . . . .                           | 1     |
| 18       | C 20666  | STOP - pinion . . . . .                                        | 1     |
| 19       | C 20667  | RING - retaining . . . . .                                     | 1     |
| 20       | C 20668  | WASHER . . . . .                                               | 1     |
| 21       | C 20674  | END CAP - starter, rear (includes bearing). . . . .            | 1     |
| 22       | C 20685  | BEARING - rear . . . . .                                       | 1     |
| 23       | C 20680  | BOLT - through . . . . .                                       | 2     |
| 24       | C 20679  | SPRING - brush . . . . .                                       | 4     |
| 25       | C 20676  | WASHER - armature. . . . .                                     | 1     |
| 26       | C 20677  | WASHER - insulating . . . . .                                  | 1     |
| 27       | C 20675  | WASHER - armature . . . . .                                    | 1     |
| 28       | C 20682  | SWITCH ASSEMBLY - solenoid . . . . .                           | 1     |
| 29       | 177- 133 | SCREW - solenoid mtg. . . . .                                  | 3     |
| 30       | C 20669  | FRAME ASSEMBLY - drive end (includes bearing). . . . .         | 1     |
| 31       | C 20684  | BEARING - front. . . . .                                       | 1     |



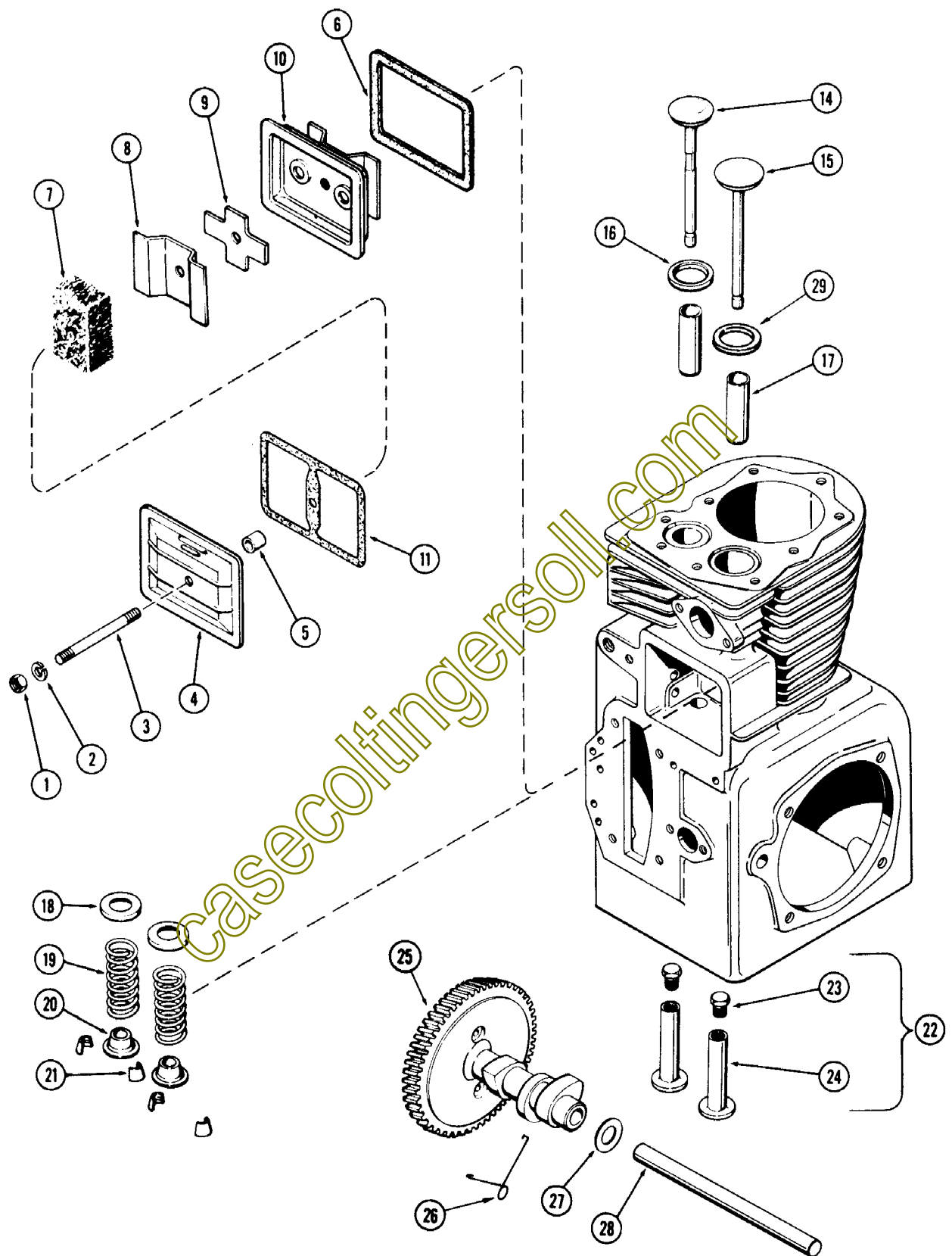
**EXHAUST SYSTEM — 644**

| REF. | PART NO. | DESCRIPTION                                   | REQ'D |
|------|----------|-----------------------------------------------|-------|
| 1    | C 18246  | MUFFLER - exhaust . . . . .                   | 1     |
| 2    | C 10372  | GASKET - exhaust . . . . .                    | 1     |
| 3    | 61- 510  | SCREW - 5/16" x 5/8" NC socket head . . . . . | 2     |

**EXHAUST SYSTEM — 646**

|   |          |                                                        |   |
|---|----------|--------------------------------------------------------|---|
| 1 | C 18121  | MUFFLER - exhaust . . . . .                            | 1 |
| 2 | C 18215  | PIPE - exhaust, left . . . . .                         | 1 |
| 3 | C 18214  | PIPE - exhaust, right . . . . .                        | 1 |
| 4 | C 18250  | GASKET - exhaust . . . . .                             | 2 |
| 5 | 61- 512  | BOLT - 5/16" x 3/4" NC hex . . . . .                   | 4 |
| 6 | 192- 45  | LOCKWASHER - 5/16" . . . . .                           | 6 |
| 7 | C 18216  | CLAMP - muffler . . . . .                              | 2 |
| 8 | 111- 204 | BOLT - 5/16" x 1-1/4" NC rd. hd. square neck . . . . . | 2 |
| 9 | 129- 518 | NUT - 5/16" NC hex . . . . .                           | 2 |

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## 644 CRANKCASE BREATHER

| REF. | PART NO.  | DESCRIPTION                       | REQ'D |
|------|-----------|-----------------------------------|-------|
| 1    | 25- 104   | NUT - 1/4" NC hex . . . . .       | 1     |
| 2    | 92- 4     | LOCKWASHER - 1/4" . . . . .       | 1     |
| 3    | KO 275220 | STUD - valve cover . . . . .      | 1     |
| 4    | KO 275143 | COVER - valve . . . . .           | 1     |
| 5    | KO 231032 | SEAL - breather . . . . .         | 1     |
| 6    | KO 235040 | GASKET - breather plate . . . . . | 1     |
| 7    | KO 235118 | FILTER - breather . . . . .       | 1     |
| 8    | KO 235117 | BAFFLE - breather . . . . .       | 1     |
| 9    | KO 235047 | REED - breather . . . . .         | 1     |
| 10   | KO 235631 | PLATE - breather . . . . .        | 1     |
| 11   | KO 275144 | GASKET - valve cover . . . . .    | 1     |

## 644 CAMSHAFT AND VALVES

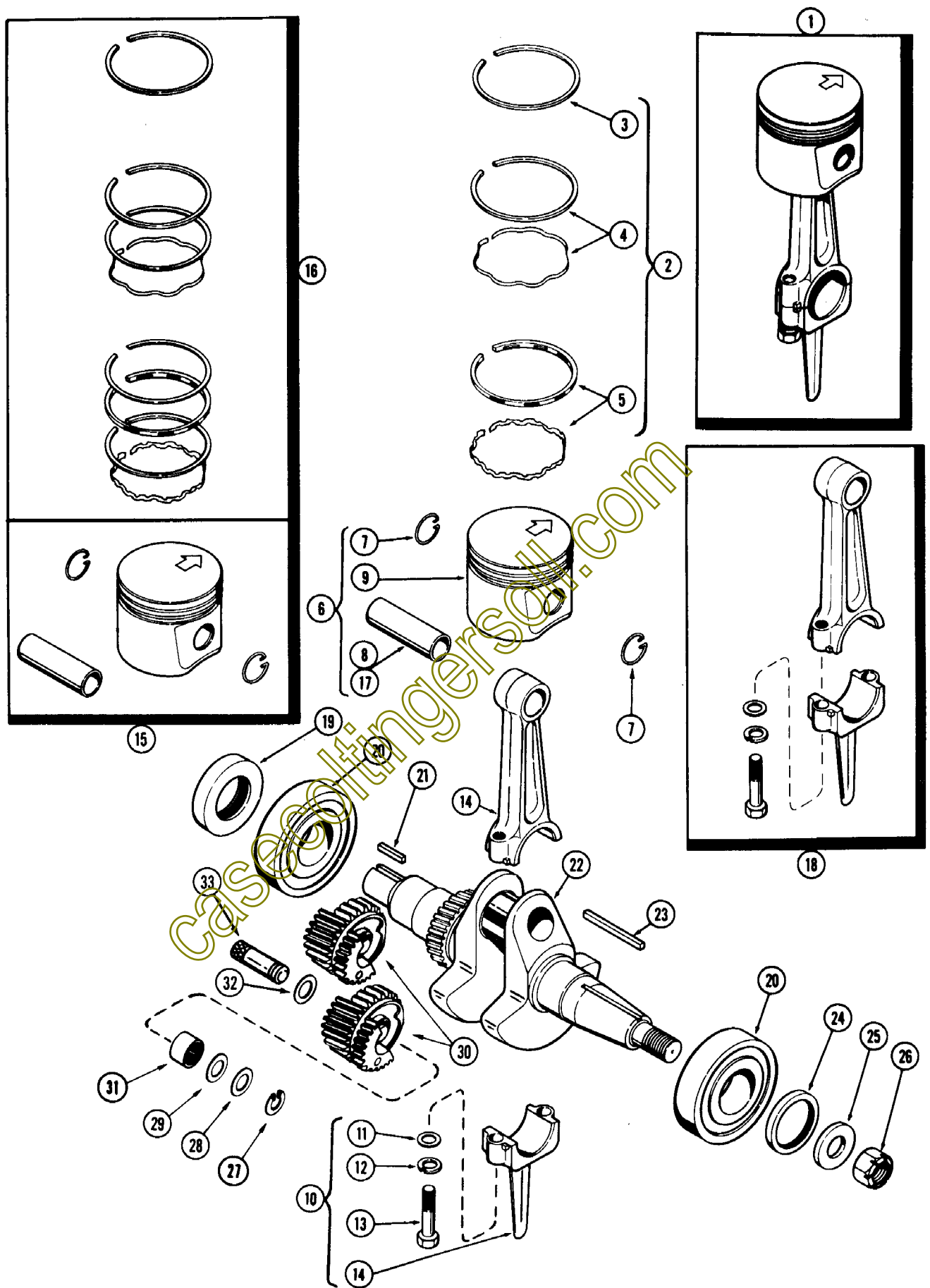
|    |            |                                                     |     |
|----|------------|-----------------------------------------------------|-----|
| 14 | KO 235838  | VALVE - exhaust . . . . .                           | 1   |
| 15 | KO 235582  | VALVE - intake . . . . .                            | 1   |
| 16 | KO 230170  | INSERT - exhaust valve seat . . . . .               | 1   |
| 17 | KO 235007  | GUIDE - valve . . . . .                             | 2   |
| 18 | KO 235011  | SEAT - valve spring . . . . .                       | 2   |
| 19 | KO 235168  | SPRING - valve . . . . .                            | 2   |
| 20 | KO 230020  | ROTATOR - valve (Furnished in pairs only) . . . . . | 2   |
| 21 | KO 240013  | LOCK - valve retainer . . . . .                     | 2   |
| 22 | KOD 235327 | LIFTER ASSEMBLY . . . . .                           | 2   |
| 23 | NSS        | SCREW - tappet adjusting . . . . .                  | 1   |
| 24 | NSS        | LIFTER - valve . . . . .                            | 1   |
| 25 | KOE 235646 | CAMSHAFT ASSEMBLY . . . . .                         | 1   |
| 26 | V 34346    | SPRING - actuating . . . . .                        | 1   |
| 27 | KO 275066  | SPACER - camshaft .005" . . . . .                   | UAR |
| 27 | KO 275067  | SPACER - camshaft .010" . . . . .                   | UAR |
| 28 | KO 235053  | PIN - camshaft . . . . .                            | 1   |
| 29 | KO 230265  | INSERT - intake valve seat . . . . .                | 1   |

**644 CRANKCASE BREATHER**

| REF. | PART NO.  | DESCRIPTION                       | REQ'D |
|------|-----------|-----------------------------------|-------|
| 1    | 25- 104   | NUT - 1/4" NC hex . . . . .       | 1     |
| 2    | 92- 4     | LOCKWASHER - 1/4" . . . . .       | 1     |
| 3    | KO 275220 | STUD - valve cover . . . . .      | 1     |
| 4    | KO 275143 | COVER - valve . . . . .           | 1     |
| 5    | KO 231032 | SEAL - breather . . . . .         | 1     |
| 6    | KO 235048 | GASKET - breather plate . . . . . | 1     |
| 7    | KO 235118 | FILTER - breather . . . . .       | 1     |
| 8    | KO 235117 | BAFFLE - breather . . . . .       | 1     |
| 9    | KO 235047 | REED - breather . . . . .         | 1     |
| 10   | KO 235631 | PLATE - breather . . . . .        | 1     |
| 11   | KO 275144 | GASKET - valve cover . . . . .    | 1     |

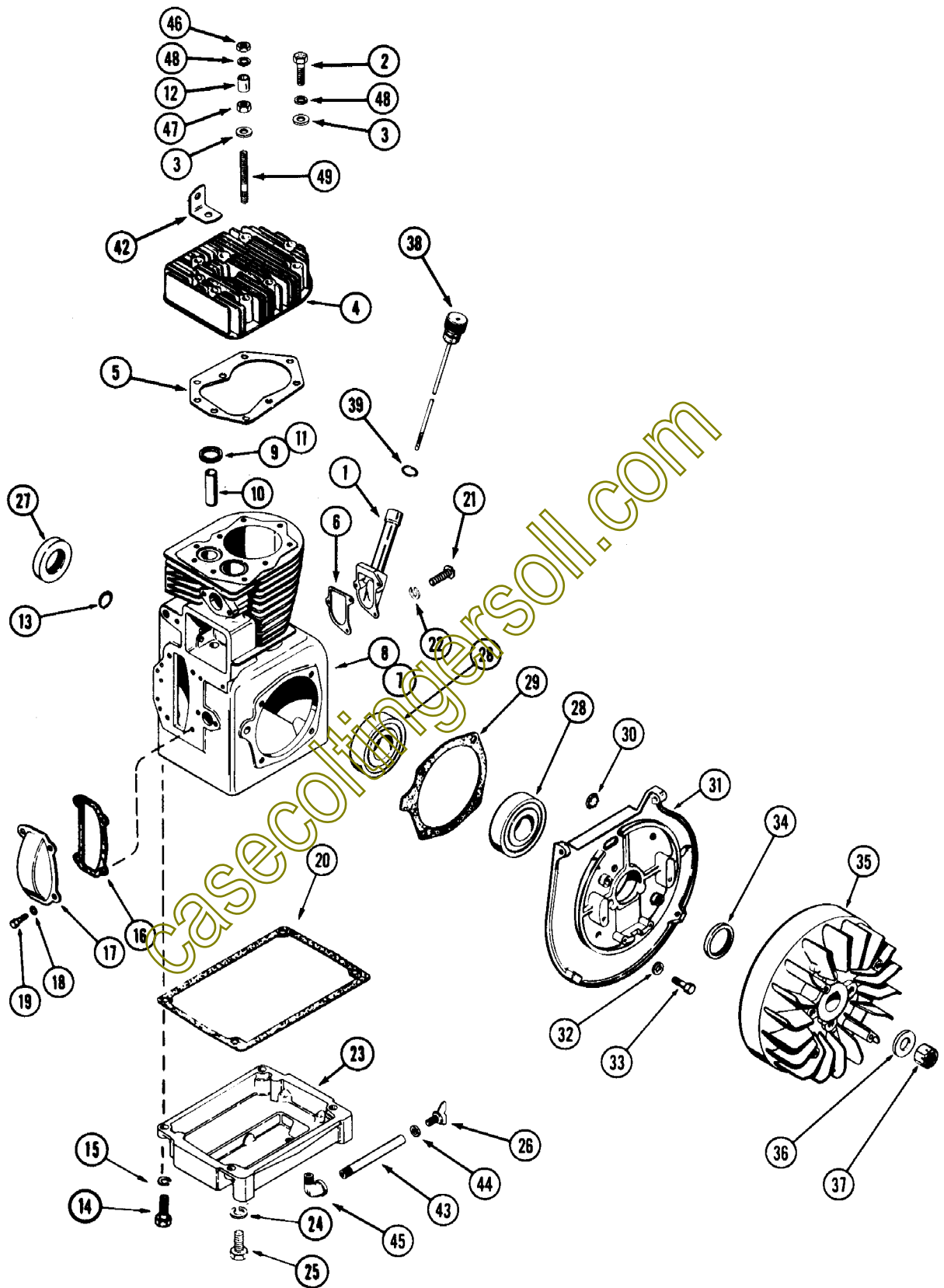
**644 CAMSHAFT AND VALVES**

|    |            |                                                     |     |
|----|------------|-----------------------------------------------------|-----|
| 14 | KO 235838  | VALVE - exhaust . . . . .                           | 1   |
| 15 | KO 235582  | VALVE - intake . . . . .                            | 1   |
| 16 | KO 230170  | INSERT - exhaust valve seat . . . . .               | 1   |
| 17 | KO 235007  | GUIDE - valve . . . . .                             | 2   |
| 18 | KO 235011  | SEAT - valve spring . . . . .                       | 2   |
| 19 | KO 235168  | SPRING - valve . . . . .                            | 2   |
| 20 | KO 230020  | ROTATOR - valve (Furnished in pairs only) . . . . . | 2   |
| 21 | KO 240013  | LOCK - valve retainer . . . . .                     | 2   |
| 22 | KOD 235327 | LIFTER ASSEMBLY . . . . .                           | 2   |
| 23 | NSS        | SCREW - tappet adjusting . . . . .                  | 1   |
| 24 | NSS        | LIFTER - valve . . . . .                            | 1   |
| 25 | KOE 235646 | CAMSHAFT ASSEMBLY . . . . .                         | 1   |
| 26 | V 34346    | SPRING - actuating . . . . .                        | 1   |
| 27 | KO 275066  | SPACER - camshaft, .905" . . . . .                  | UAR |
| 27 | KO 275067  | SPACER - camshaft, .010" . . . . .                  | UAR |
| 28 | KO 235053  | PIN - camshaft . . . . .                            | 1   |
| 29 | KO 230265  | INSERT - intake valve seat . . . . .                | 1   |



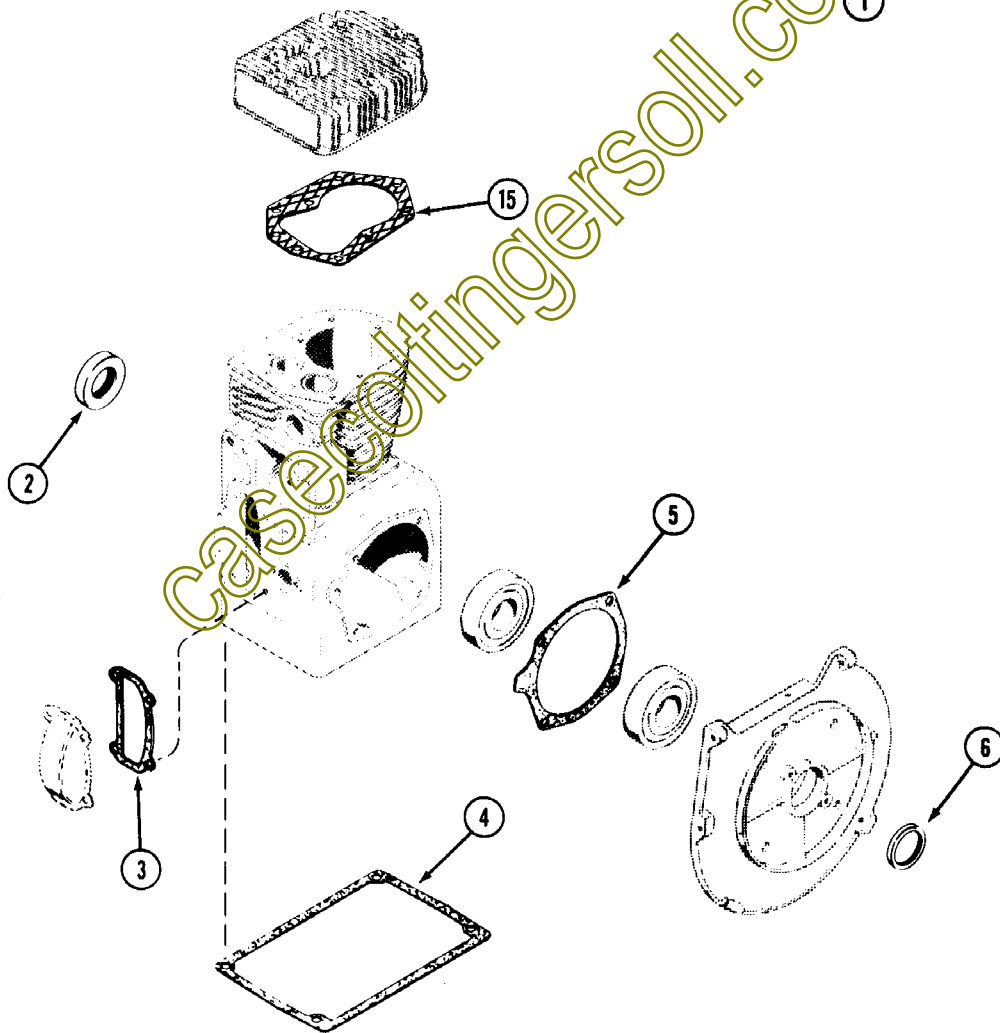
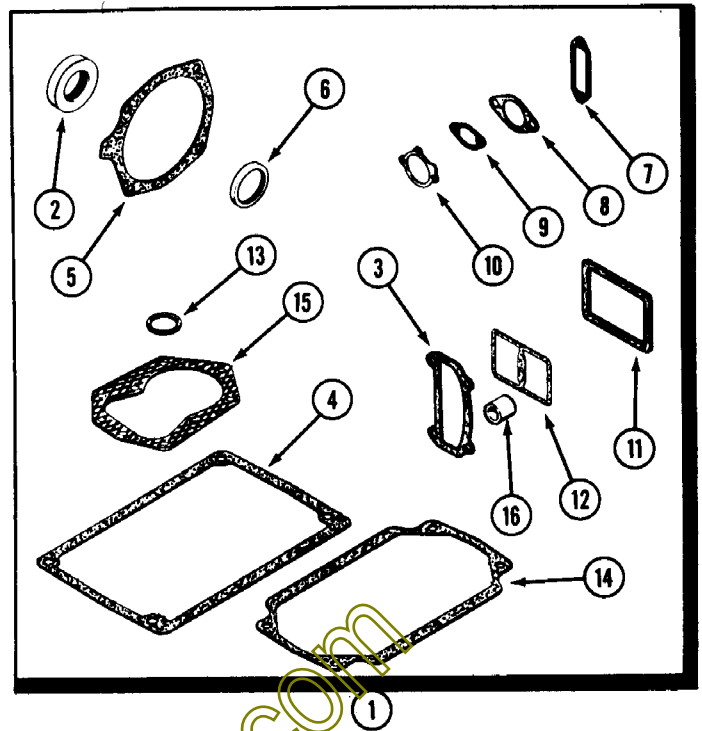
## 644 CRANKSHAFT, PISTON — CONNECTING ROD

| REF. | PART NO.   | DESCRIPTION                                                   | REQ'D |
|------|------------|---------------------------------------------------------------|-------|
| 1    | NSS        | PISTON AND ROD ASSEMBLY (Std. size) . . . . .                 | 1     |
| 2    | KO 236763  | RING SET - piston (For oversize, see item 16) . . . . .       | 1     |
| 3    | NSS        | RING - top compression . . . . .                              | 1     |
| 4    | NSS        | RING - 2nd compression (Includes expander). . . . .           | 1     |
| 5    | NSS        | RING - oil (Includes expander) . . . . .                      | 1     |
| 6    | KOA 237401 | PISTON ASSEMBLY (For oversize, see item 15) . . . . .         | 1     |
| 7    | KO 235811  | RETAINER - piston pin . . . . .                               | 2     |
| 8    | KO 235803  | PIN - piston. . . . .                                         | 1     |
| 9    | NSS        | PISTON . . . . .                                              | 1     |
| 10   | KOA 237344 | CONNECTING ROD ASSEMBLY (For undersize, see item 18). . . . . | 1     |
| 11   | KO 235003  | WASHER - special . . . . .                                    | 2     |
| 12   | 92- 6      | LOCKWASHER - 3/8" . . . . .                                   | 2     |
| 13   | KO 236611  | SCREW - cap, connecting rod . . . . .                         | 2     |
| 14   | NSS        | ROD - connecting . . . . .                                    | 1     |
| 15   | KOA 237403 | PISTON ASSEMBLY - .010" oversize . . . . .                    | 1     |
| 15   | KOA 237404 | PISTON ASSEMBLY - .020" oversize . . . . .                    | 1     |
| 15   | KOA 237405 | PISTON ASSEMBLY - .030" oversize . . . . .                    | 1     |
| 16   | KO 236764  | RING SET - piston .010" oversize . . . . .                    | 1     |
| 16   | KO 236765  | RING SET - piston .020" oversize . . . . .                    | 1     |
| 16   | KO 236766  | RING SET - piston .030" oversize . . . . .                    | 1     |
| 17   | KO 235868  | PIN - piston .005" oversize. . . . .                          | 1     |
| 18   | C 18102    | CONNECTING ROD ASSEMBLY - .010" undersize . . . . .           | 1     |
| 19   | R 16287    | OIL SEAL - crankshaft rear . . . . .                          | 1     |
| 20   | 40035      | BEARING - crankshaft ball . . . . .                           | 2     |
| 21   | W 5063-S   | KEY - 1/4" Sq. x 3/4" (Pump Coupling). . . . .                | 1     |
| 22   | KOB 237034 | CRANKSHAFT . . . . .                                          | 1     |
| 23   | A 27001    | KEY - flat 3/16" x 3/16" x 1 3/8" (Flywheel). . . . .         | 1     |
| 24   | C 18097    | OIL SEAL - crankshaft front . . . . .                         | 1     |
| 25   | C 18095    | WASHER - 5/8" . . . . .                                       | 1     |
| 26   | 131- 309   | NUT - special Marsden 5/8" NF . . . . .                       | 1     |
| 27   | C 15060    | RETAINER - external 1/2" ID . . . . .                         | 2     |
| 28   | KO 236504  | SPACER .020" . . . . .                                        | 2     |
| 29   | KO 236509  | SPACER .005" . . . . .                                        | UAR   |
| 30   | KOA 236507 | GEAR ASSEMBLY - counter balance . . . . .                     | 2     |
| 31   | KO 236506  | BEARING - gear assembly . . . . .                             | 2     |
| 32   | KO 236510  | SPACER .010" . . . . .                                        | 2     |
| 33   | KO 236559  | SHAFT - counterbalance stub. . . . .                          | 2     |



## 644 ENGINE BLOCK AND ATTACHING PARTS

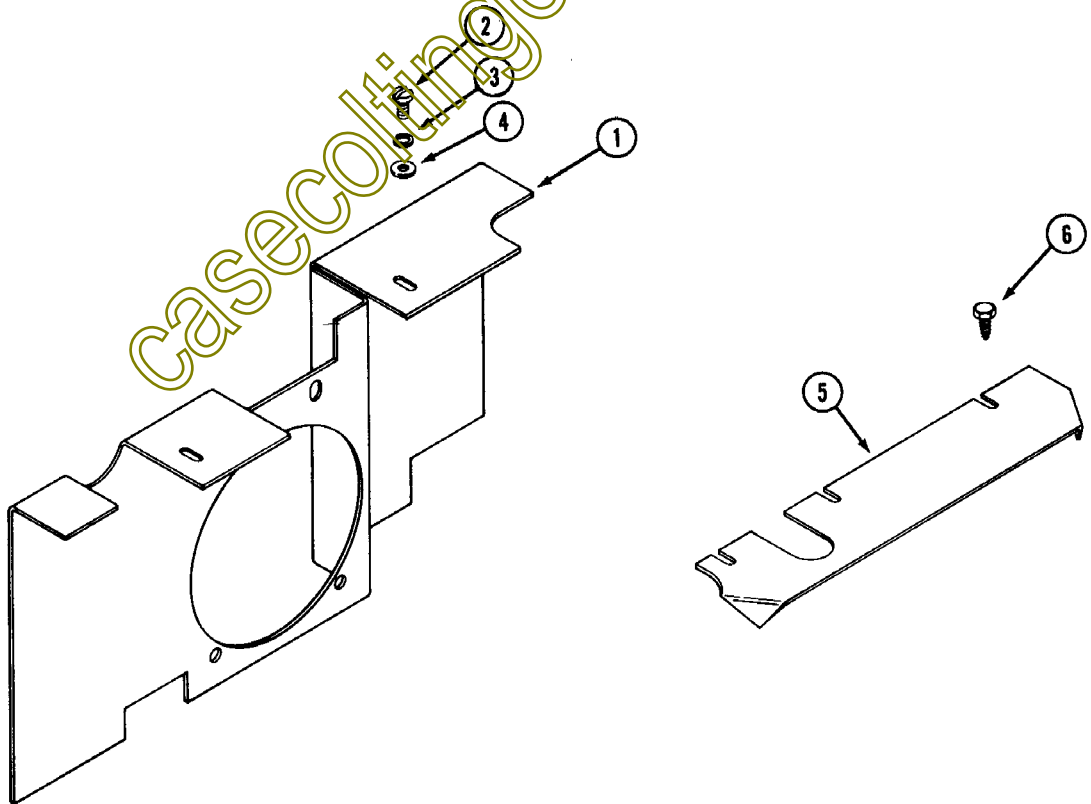
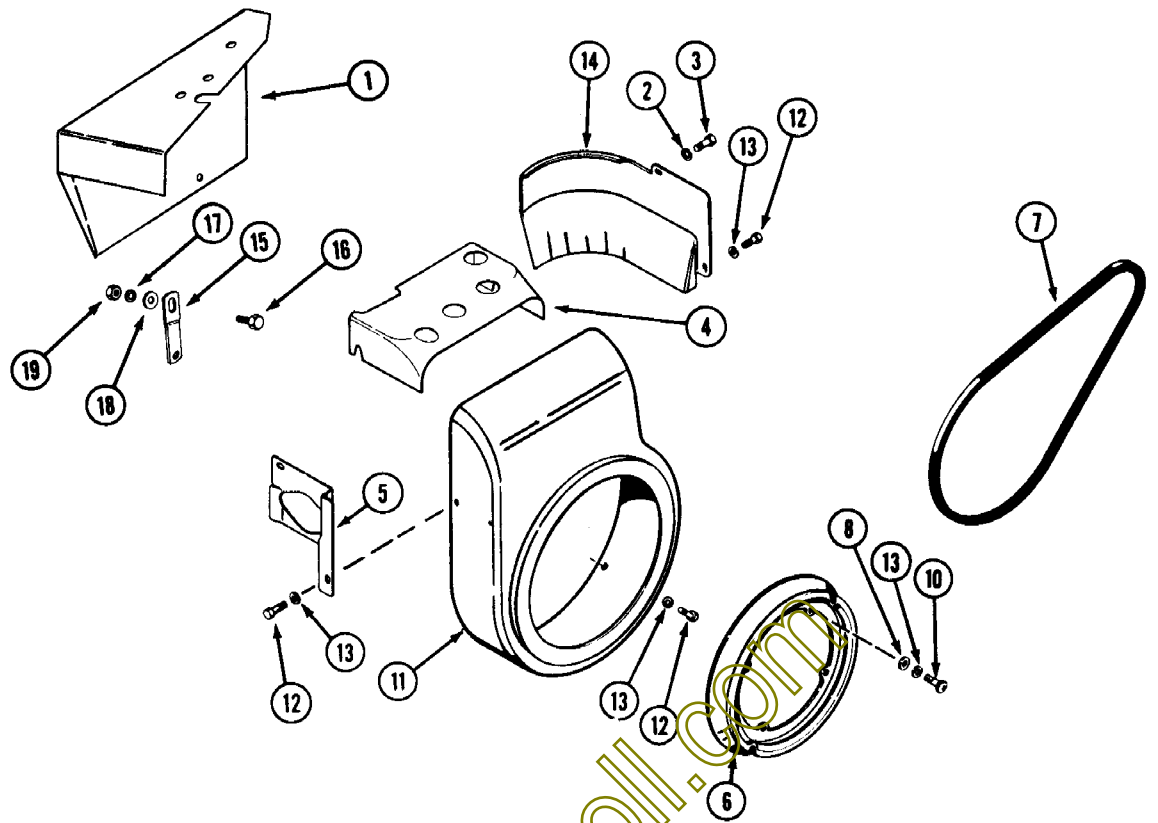
| REF. | PART NO.   | DESCRIPTION                                                                                                                  | REQ'D |
|------|------------|------------------------------------------------------------------------------------------------------------------------------|-------|
| 1    | KO 236886  | FILLER TUBE . . . . .                                                                                                        | 1     |
| 2    | KO 270158  | BOLT - cylinder head special 3/8" x 1-1/2" NC hex . . . . .                                                                  | 3     |
| 3    | KO 270889  | WASHER - cylinder head bolt . . . . .                                                                                        | 9     |
| 4    | KO 237670  | HEAD - cylinder . . . . .                                                                                                    | 1     |
| 5    | KO 237658  | GASKET - head . . . . .                                                                                                      | 1     |
| 6    | KO 237064  | GASKET - filler tube . . . . .                                                                                               | 1     |
| 7    | KOB 237182 | BLOCK ASSEMBLY - cylinder, short (Includes crankshaft, piston, rod assembly, camshaft, valves, bearings and plate) . . . . . | 1     |
| 8    | KOA 237033 | BLOCK ASSEMBLY - cylinder, standard bore . . . . .                                                                           | 1     |
| 9    | KO 230170  | INSERT - exhaust valve . . . . .                                                                                             | 1     |
| 10   | KO 235007  | GUIDE - valve . . . . .                                                                                                      | 2     |
| 11   | KO 230265  | INSERT - intake valve . . . . .                                                                                              | 1     |
| 12   | C 21814    | SPACER - cylinder head . . . . .                                                                                             | 1     |
| 13   | 41- 18     | PLUG - expansion . . . . .                                                                                                   | 1     |
| 14   | 113- 209   | BOLT - 3/8" x 1-1/2" NC hex plated . . . . .                                                                                 | 4     |
| 15   | 192- 21    | LOCKWASHER - 3/8" plated . . . . .                                                                                           | 4     |
| 16   | KO 235025  | GASKET - camshaft cover . . . . .                                                                                            | 1     |
| 17   | KO 235026  | COVER - camshaft gear . . . . .                                                                                              | 1     |
| 18   | 192- 19    | LOCKWASHER - 1/4" plated . . . . .                                                                                           | 4     |
| 19   | 113- 6     | BOLT - 1/4" x 1/2" NC plated . . . . .                                                                                       | 4     |
| 20   | KO 235353  | GASKET - oil pan . . . . .                                                                                                   | 1     |
| 21   | 173- 221   | SCREW - #10 x 7/16" round head machine . . . . .                                                                             | 3     |
| 22   | 193- 26    | LOCKWASHER - #10 internal tooth . . . . .                                                                                    | 3     |
| 23   | KO 237808  | BASE - oil pan . . . . .                                                                                                     | 1     |
| 24   | 192- 21    | LOCKWASHER - 3/8" plated . . . . .                                                                                           | 4     |
| 25   | 113- 207   | BOLT - 3/8" x 1" NC socket head, engine mtg. . . . .                                                                         | 4     |
| 26   | C 14399    | PLUG - oil drain . . . . .                                                                                                   | 1     |
| 27   | R 16287    | OIL SEAL - crankshaft rear . . . . .                                                                                         | 1     |
| 28   | 40035      | BEARING - crankshaft ball . . . . .                                                                                          | 2     |
| 29   | KO 235757  | GASKET - shim, bearing plate .312" . . . . .                                                                                 | 1     |
| 29   | KO 235070  | GASKET - shim, .010" . . . . .                                                                                               | UAR   |
| 31   | C 21815    | PLATE - bearing . . . . .                                                                                                    | 1     |
| 32   | 192- 21    | LOCKWASHER - 3/8" plated . . . . .                                                                                           | 4     |
| 33   | 113- 207   | BOLT - 3/8" x 1" NC plated . . . . .                                                                                         | 4     |
| 34   | C 18097    | OIL SEAL - crankshaft front . . . . .                                                                                        | 1     |
| 35   | KO 235818  | FLY/WHEEL . . . . .                                                                                                          | 1     |
| 36   | 195- 545   | WASHER - special, plated 21/32" ID x 1-3/8" OD x 1/4" . . . . .                                                              | 1     |
| 37   | 131- 309   | NUT - special Marsden 5/8" . . . . .                                                                                         | 1     |
| 38   | C 14954    | DIPSTICK ASSEMBLY . . . . .                                                                                                  | 1     |
| 39   | A 27365    | "O" RING - dipstick . . . . .                                                                                                | 1     |
| 42   | KO 235748  | STRAP - lifting . . . . .                                                                                                    | 1     |
| 43   | C 19473    | NIPPLE - oil drain extension . . . . .                                                                                       | 1     |
| 44   | C 14906    | GASKET - plug, oil drain . . . . .                                                                                           | 1     |
| 45   | 221- 1412  | ELBOW - street . . . . .                                                                                                     | 1     |
| 46   | 129- 143   | NUT - 3/8" NC hex, jam . . . . .                                                                                             | 6     |
| 47   | 129- 103   | NUT - 3/8" NC hex . . . . .                                                                                                  | 6     |
| 48   | 192- 21    | LOCKWASHER - 3/8" . . . . .                                                                                                  | 9     |
| 49   | KO 237277  | STUD - cylinder head . . . . .                                                                                               | 6     |



## ENGINE GASKET AND SEAL KIT

| REF. | PART NO.  | DESCRIPTION                                      | REQ'D |
|------|-----------|--------------------------------------------------|-------|
| 1    | KO 237727 | KIT - engine gasket . . . . .                    | 1     |
| 2    | R 16287   | SEAL - crankshaft, rear . . . . .                | 1     |
| 3    | KO 235025 | GASKET - camshaft cover . . . . .                | 1     |
| 4    | KO 235353 | GASKET - oil pan . . . . .                       | 1     |
| 5    | KO 235757 | GASKET - shim, bearing plate (.010") . . . . .   | 6     |
| 5    | KO 235070 | GASKET - shim (.010") . . . . .                  | UAR   |
| 6    | C 18097   | SEAL - crankshaft, front . . . . .               | 1     |
| 7    | KO 220174 | GASKET - breaker cover . . . . .                 | 1     |
| 8    | A 72100   | GASKET - carburetor flange . . . . .             | 1     |
| 9    | A 72108   | GASKET - fuel pump flange . . . . .              | 1     |
| 10   | KO 275341 | GASKET - carburetor air horn . . . . .           | 1     |
| 11   | KO 235048 | GASKET - breather plate . . . . .                | 1     |
| 12   | KO 275144 | GASKET - valve cover . . . . .                   | 1     |
| 13   | B 53393   | GASKET - fuel strainer bowl (not used) . . . . . | 1     |
| 14   | KO 235057 | GASKET - pan (not used) . . . . .                | 1     |
| 15   | KO 237658 | GASKET - cylinder head . . . . .                 | 1     |
| 16   | KO 231032 | SEAL - breather . . . . .                        | 1     |

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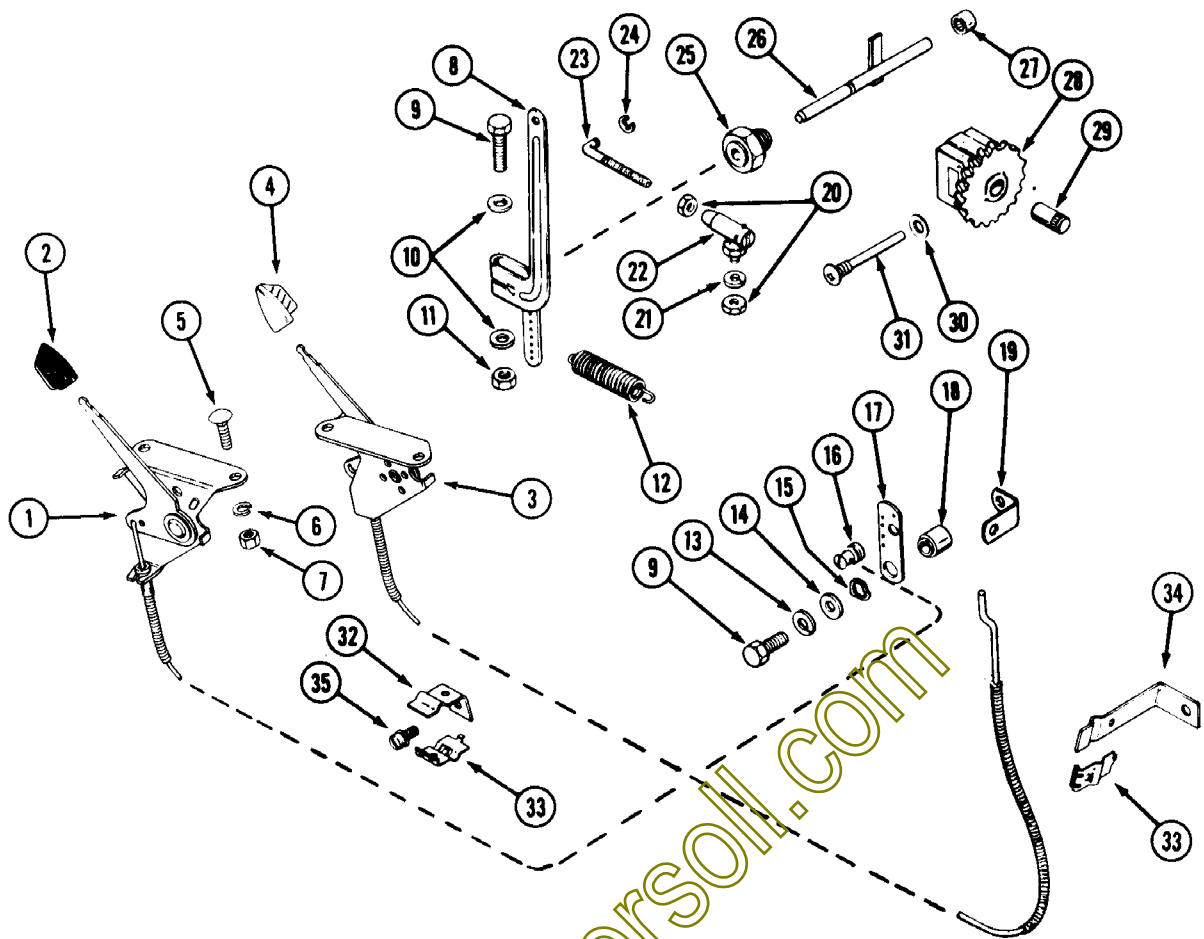


## BAFFLES AND SHROUDS — 644

| REF. | PART NO.  | DESCRIPTION                                                      | REQ'D |
|------|-----------|------------------------------------------------------------------|-------|
| 1    | C 18989   | DEFLECTOR - engine air . . . . .                                 | 1     |
| 2    | 192- 19   | LOCKWASHER - 1/4" zinc plated. . . . .                           | 2     |
| 3    | 113- 6    | BOLT - 1/4" x 1/2" NC hex, zinc plated. . . . .                  | 2     |
| 4    | KO 237677 | BAFFLE - cylinder head . . . . .                                 | 1     |
| 5    | KO 235652 | BAFFLE - carburetor side air . . . . .                           | 1     |
| 6    | KO 235207 | PULLEY - starter . . . . .                                       | 1     |
| 7    | C 14345   | BELT - drive, starter-generator . . . . .                        | 1     |
| 8    | 195- 515  | WASHER - 1/4" zinc plated . . . . .                              | 4     |
| 9    | 192- 19   | LOCKWASHER - 1/4" zinc plated . . . . .                          | 4     |
| 10   | 175- 436  | SCREW - 1/4" x 5/8" NC truss head Phillips, zinc plated. . . . . | 4     |
| 11   | KO 235901 | HOUSING - blower . . . . .                                       | 1     |
| 12   | 113- 2    | BOLT - 1/4" x 3/4" NC hex, zinc plated. . . . .                  | 4     |
| 13   | 192- 19   | LOCKWASHER - 1/4" zinc plated . . . . .                          | 4     |
| 14   | KO 235054 | BAFFLE - cylinder. . . . .                                       | 1     |
| 15   | C 19021   | SUPPORT - engine air deflector. . . . .                          | 1     |
| 16   | 113- 118  | BOLT - 5/16" x 5/8" NC hex . . . . .                             | 1     |
| 17   | 192- 20   | LOCKWASHER - 5/16" . . . . .                                     | 1     |
| 18   | 195- 521  | WASHER - 5/16" plain . . . . .                                   | 1     |
| 19   | 129- 102  | NUT - 5/16" NC hex . . . . .                                     | 1     |

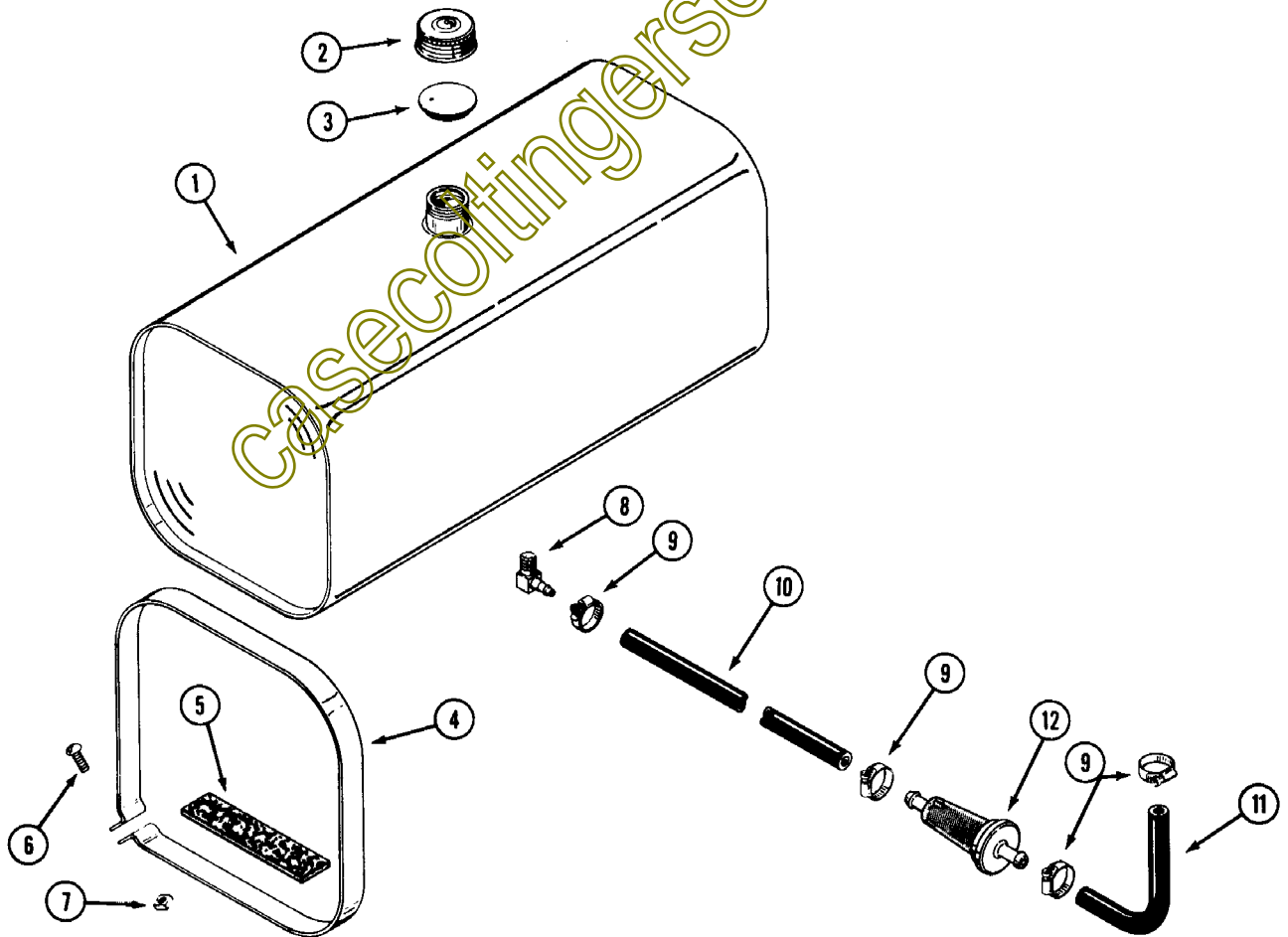
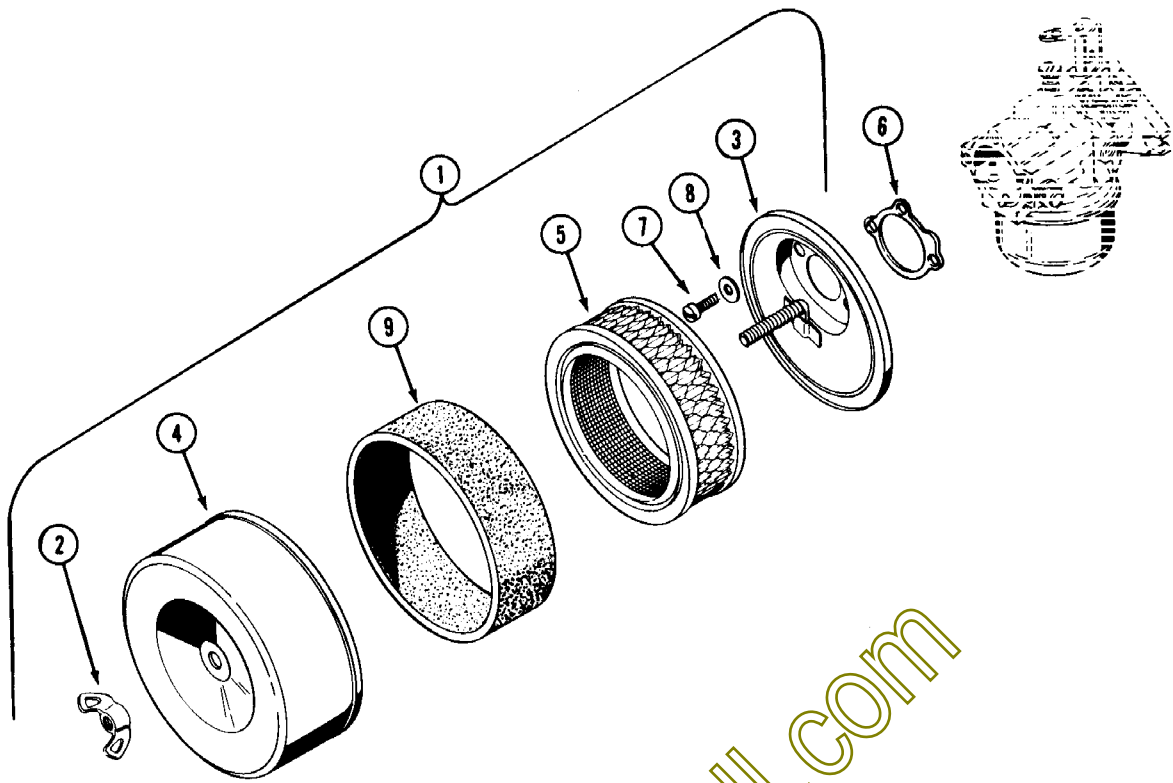
## BAFFLES AND SHROUDS — 646

|   |          |                                               |   |
|---|----------|-----------------------------------------------|---|
| 1 | C 18129  | SHIELD - engine heat . . . . .                | 1 |
| 2 | 182- 525 | SCREW - #10 x 3/8" NF pan hd. . . . .         | 2 |
| 3 | 192- 18  | LOCKWASHER #10 . . . . .                      | 2 |
| 4 | 195- 513 | WASHER - #10. . . . .                         | 2 |
| 5 | C 18385  | SHIELD - heat, engine top . . . . .           | 1 |
| 6 | 187- 484 | SCREW - #10 x 1/2" hex. hd. self tap. . . . . | 2 |



## CHOKE THROTTLE AND GOVERNOR

| REF. | PART NO.     | DESCRIPTION                                           | REQ'D |
|------|--------------|-------------------------------------------------------|-------|
| 1    | C 18311      | CONTROL - throttle (644) . . . . .                    | 1     |
| 1    | C 19465      | CONTROL - throttle (646) . . . . .                    | 1     |
| 2    | C 12224      | HANDLE - throttle control, black . . . . .            | 1     |
| 3    | C 18312      | CONTROL - choke (644) . . . . .                       | 1     |
| 3    | C 18271      | CONTROL - choke (646) . . . . .                       | 1     |
| 4    | C 14506      | HANDLE - choke control, white . . . . .               | 1     |
| 5    | 111- 1       | BOLT - 10-24 x 1/2" round head, square neck . . . . . | 2     |
| 6    | 192- 18      | LOCKWASHER - #10 Std. plated . . . . .                | 2     |
| 7    | 129- 17      | NUT - #10-24 plated . . . . .                         | 2     |
| 8    | KO 237653    | LEVER - governor . . . . .                            | 1     |
| 9    | 15- 420      | BOLT - 1/4" x 1-1/4" NC hex . . . . .                 | 2     |
| 10   | 195- 515     | WASHER - 1/4" plated . . . . .                        | 2     |
| 11   | 25- 104      | NUT - 1/4" hex . . . . .                              | 1     |
| 12   | KO 235496    | SPRING - governor . . . . .                           | 1     |
| 13   | 192 19       | LOCKWASHER - 1/4" plated . . . . .                    | 1     |
| 14   | C 18098      | WASHER - thrust . . . . .                             | 1     |
| 15   | KO 275690    | WASHER - wavy . . . . .                               | 1     |
| 16   | KO 231052    | CLAMP - swivel, wire . . . . .                        | 1     |
| 17   | KO 235086    | LEVER - speed control . . . . .                       | 1     |
| 18   | KO 235085    | SPACER - speed control bracket . . . . .              | 1     |
| 19   | KO 235084    | BRACKET - high speed stop . . . . .                   | 1     |
| 20   | 129- 37      | NUT - #10-32 hex . . . . .                            | 2     |
| 21   | 192- 18      | LOCKWASHER - 3/16" plated . . . . .                   | 1     |
| 22   | A 10326      | JOINT - ball . . . . .                                | 1     |
| 23   | KO 235277    | ROD - throttle . . . . .                              | 1     |
| 24   | KO 235278    | RING - retaining, throttle rod . . . . .              | 1     |
| 25   | KO 235476    | BUSHING - governor cross shaft . . . . .              | 1     |
| 26   | KOA 235256-S | SHAFT ASSEMBLY - governor cross . . . . .             | 1     |
| 27   | C 18103      | BEARING - needle governor shaft . . . . .             | 1     |
| 28   | KOA 235743-S | GEAR ASSEMBLY - governor . . . . .                    | 1     |
| 29   | KO 235125-S  | SHAFT - governor stop . . . . .                       | 1     |
| 30   | C 18099      | WASHER - governor stop pin . . . . .                  | 1     |
| 31   | KO 231355    | PIN - governor stop . . . . .                         | 1     |
| 32   | KO 235900    | BRACKET - throttle cable . . . . .                    | 1     |
| 33   | KO 235603    | CLIP - bracket . . . . .                              | 2     |
| 34   | KOA 236919   | BRACKET - choke cable . . . . .                       | 1     |
| 35   | 169- 95      | SCREW - #10 x 3/8" NC fillister head . . . . .        | 1     |

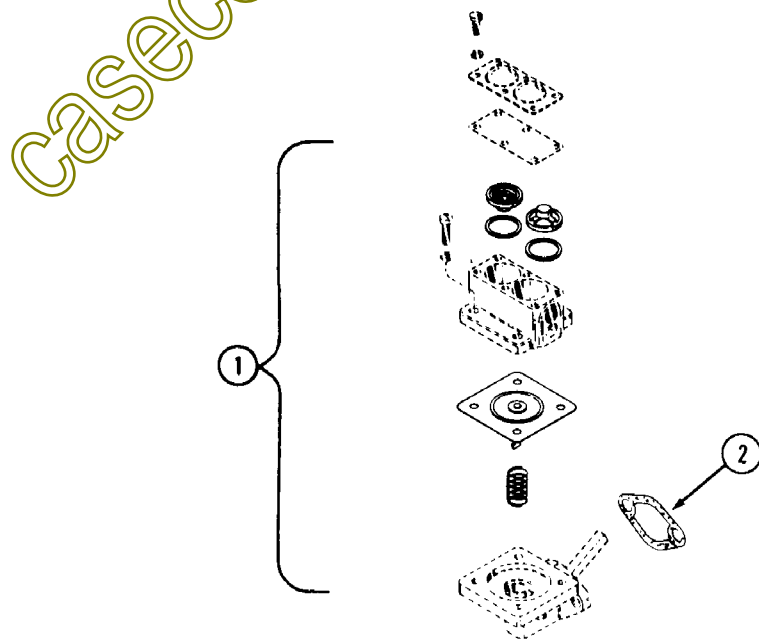
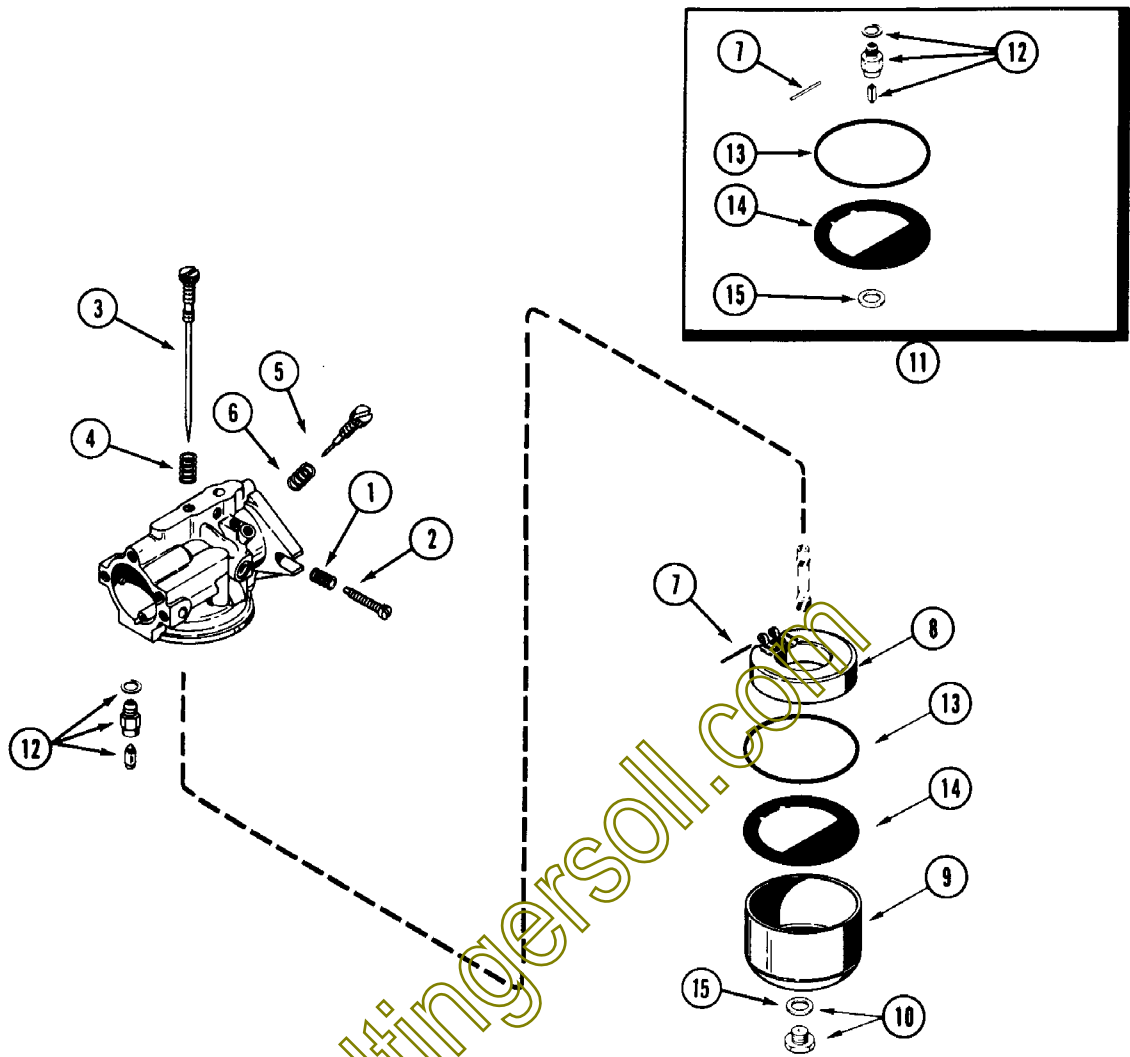


## AIR CLEANER - 644

| REF. | PART NO.   | DESCRIPTION                                 | REQ'D |
|------|------------|---------------------------------------------|-------|
| 1    | KOA 235100 | AIR CLEANER ASSEMBLY .....                  | 1     |
| 2    | 129- 409   | NUT - wing 3/8" NC .....                    | 1     |
| 3    | NSS        | BASE - air cleaner (order KOA235100) .....  | 1     |
| 4    | NSS        | COVER - air cleaner (order KOA235100) ..... | 1     |
| 5    | A 70090    | ELEMENT - air cleaner .....                 | 1     |
| 6    | KO 275341  | GASKET - air horn .....                     | 1     |
| 7    | 177- 94    | SCREW - #10 x 5/16" NF fillister hd. ....   | 3     |
| 8    | 195- 512   | WASHER - 3/16" .....                        | 3     |
| 9    | KO 237421  | PRE-CLEANER (Optional) .....                | 1     |

## FUEL SYSTEM - 646

| REF. | PART NO. | DESCRIPTION                                  | REQ'D |
|------|----------|----------------------------------------------|-------|
| 1    | C 18133  | TANK - fuel .....                            | 1     |
| 2    | C 11529  | CAP - fuel tank .....                        | 1     |
| 3    | C 11545  | INSERT - fuel cap .....                      | 1     |
| 4    | C 18190  | STRAP - tank mtg. ....                       | 2     |
| 5    | C 14690  | CUSTION - fuel tank .....                    | 2     |
| 6    | 173- 215 | SCREW - 1/4 x 1-1/2" round hd. machine ..... | 2     |
| 7    | 129- 504 | NUT - 1/4" NC square .....                   | 2     |
| 8    | C 10678  | ELBOW - fuel tank .....                      | 1     |
| 9    | 214- 251 | CLAMP - hose .....                           | 4     |
| 10   | C 18275  | HOSE - fuel line 44" .....                   | 1     |
| 11   | C 15007  | HOSE - fuel line 5-1/4" .....                | 1     |
| 12   | D 59949  | FILTER - fuel .....                          | 1     |

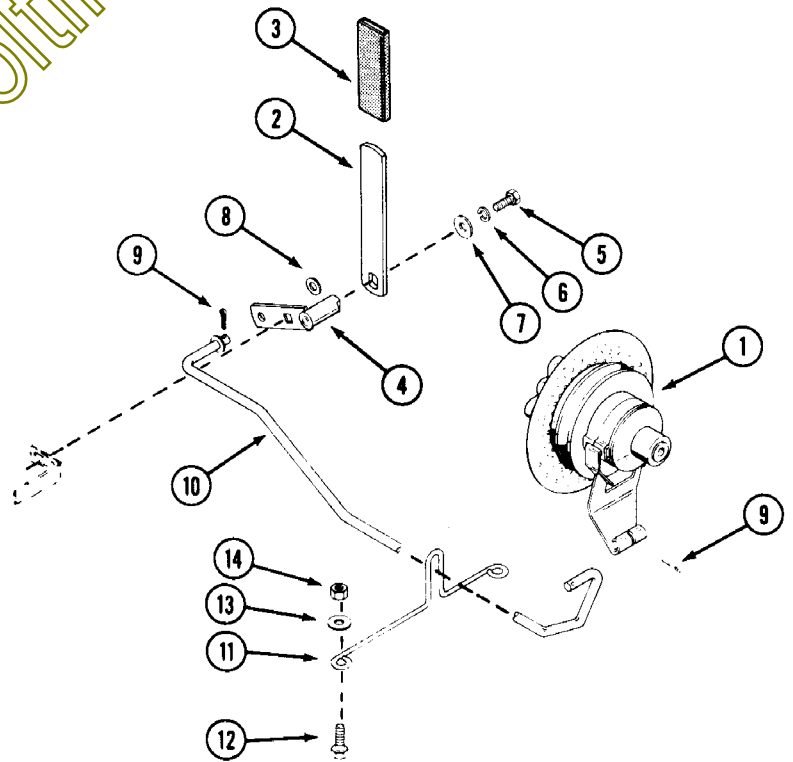
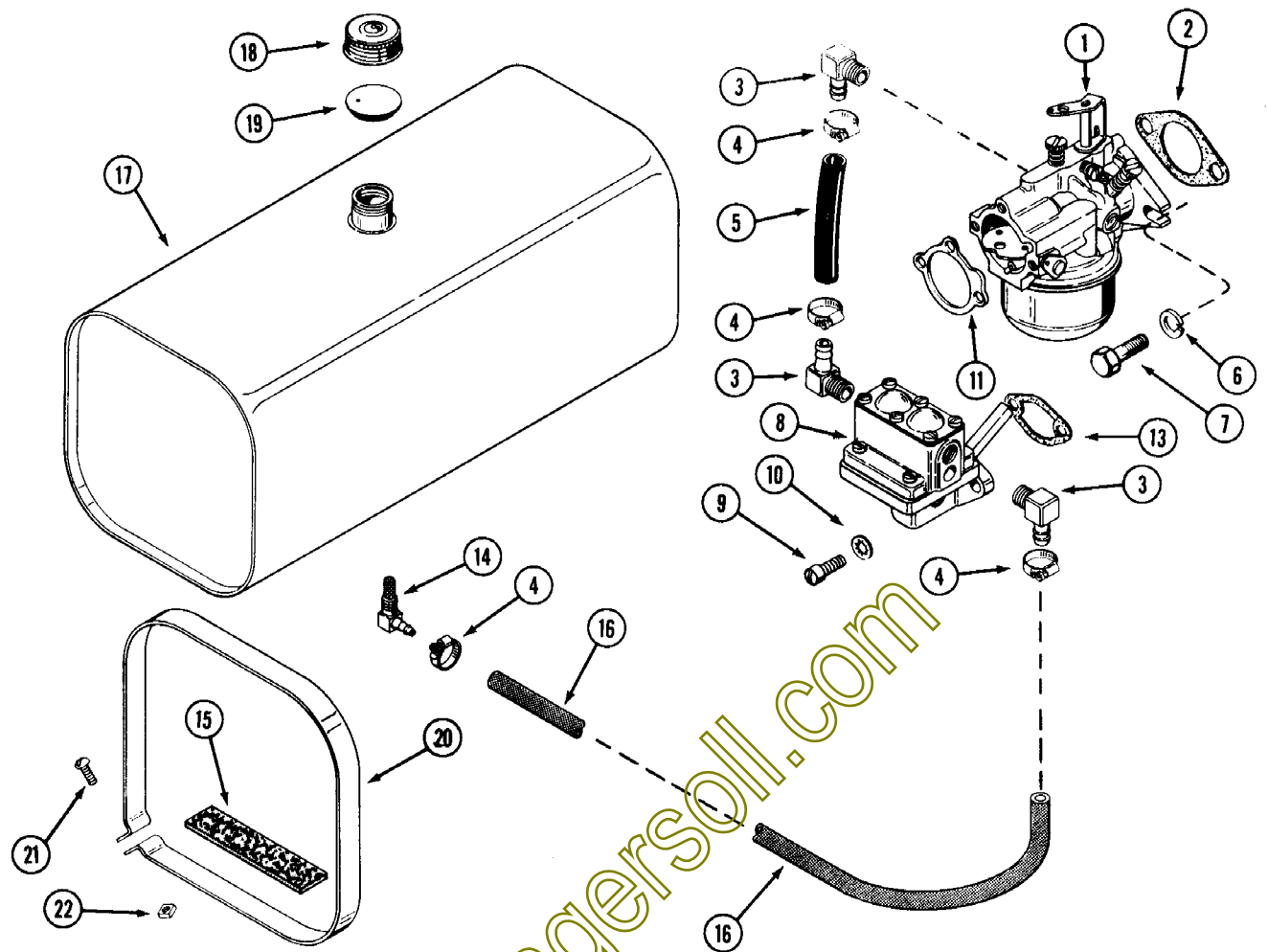


## CARBURETOR - 644

| REF. | PART NO.  | DESCRIPTION                              | REQ'D |
|------|-----------|------------------------------------------|-------|
|      | C 21816   | CARBURETOR ASSEMBLY - 644                | 1     |
| 1    | KO 200380 | SPRING - tension, idle adjust            | 1     |
| 2    | A 72092   | SCREW - idle adjust                      | 1     |
| 3    | C 22005   | NEEDLE - Hi Speed adjust                 | 1     |
| 4    | KO 200383 | SPRING - fuel adjust.                    | 1     |
| 5    | KO 275231 | NEEDLE - idle adjust                     | 1     |
| 6    | KO 200380 | SPRING - idle adjust.                    | 1     |
| 7    | F 19892   | PIN - float hinge                        | 1     |
| 8    | KO 200408 | FLOAT - carburetor                       | 1     |
| 9    | KO 235448 | BOWL - carburetor                        | 1     |
| 10   | KO 235447 | NUT AND GASKET ASSEM. - carburetor bowl. | 1     |
| 11   | KO 231555 | KIT - carburetor repair                  | 1     |
| 12   | KO 200443 | INLET NEEDLE AND SEAT ASSEMBLY           | 1     |
| 13   | KO 200375 | GASKET - bowl ring                       | 1     |
| 14   | KO 200439 | GASKET - bowl baffle                     | 1     |
| 15   | KO 200372 | GASKET - bowl screw                      | 1     |
|      | F 19892   | PIN - float hinge                        | 1     |

## FUEL PUMP - 644

|   |           |                                 |   |
|---|-----------|---------------------------------|---|
| 1 | KO 236387 | KIT - fuel pump (for KOA236205) | 1 |
|   | NSS       | VALVE ASSEMBLY                  | 2 |
|   | NSS       | GASKET - valve                  | 2 |
|   | NSS       | DIAPHRAGM ASSEMBLY              | 1 |
|   | NSS       | SPRING - diaphragm              | 1 |
|   | NSS       | GASKET - valve                  | 1 |
| 2 | A 72108   | GASKET - fuel pump mtg.         | 1 |

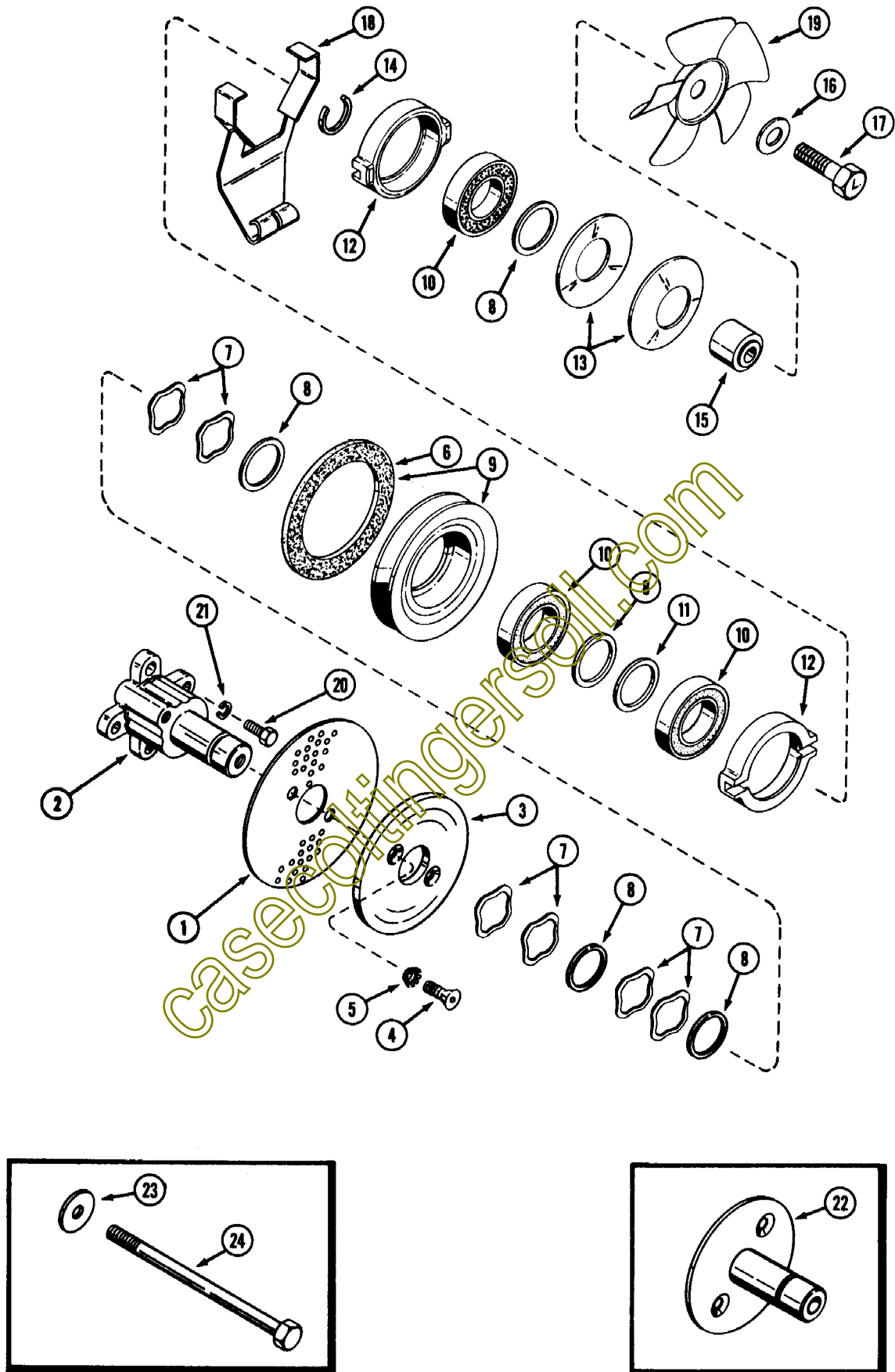


## FUEL SYSTEM - 644

| REF. | PART NO.   | DESCRIPTION                                               | REQ'D |
|------|------------|-----------------------------------------------------------|-------|
| 1    | C 21816    | CARBURETOR - (Repairs page 41)                            | 1     |
| 2    | A 72100    | GASKET - carburetor flange                                | 1     |
| 3    | C 10678    | ELBOW - fuel pump and carburetor                          | 4     |
| 4    | 214- 251   | CLAMP - hose                                              | 4     |
| 5    | C 15007    | HOSE - carburetor 5-1/4"                                  | 1     |
| 6    | 192- 20    | LOCKWASHER 5/16"                                          | 2     |
| 7    | 113- 103   | BOLT - 5/16" x 1" NC hex                                  | 2     |
| 8    | KOA 236205 | PUMP - fuel, 644 (Repairs page 41)                        | 1     |
| 9    | 71- 410    | SCREW - 1/4" x 5/8" NC fillister head                     | 2     |
| 10   | 193- 60    | LOCKWASHER - 1/4"                                         | 2     |
| 11   | KO 275341  | GASKET - air horn                                         | 1     |
| 13   | A 72108    | GASKET - fuel pump mounting, all models                   | 1     |
| 14   | C 10657    | ELBOW ASSEMBLY - fuel tank                                | 1     |
| 15   | C 14690    | CUSHION - fuel tank                                       | 2     |
| 16   | C 18275    | HOSE - fuel line (44")                                    | 1     |
| 17   | C 18133    | TANK - fuel                                               | 1     |
| 18   | C 11529    | CAP - fuel tank (Includes insert)                         | 1     |
| 19   | C 11545    | INSERT - fuel cap                                         | 1     |
| 20   | C 18190    | STRAP - fuel tank mounting                                | 2     |
| 21   | 173- 215   | SCREW - 1/4" x 1-1/2" NC round head, machine, zinc plated | 2     |
| 22   | 129- 504   | NUT - square 1/4" NC                                      | 2     |

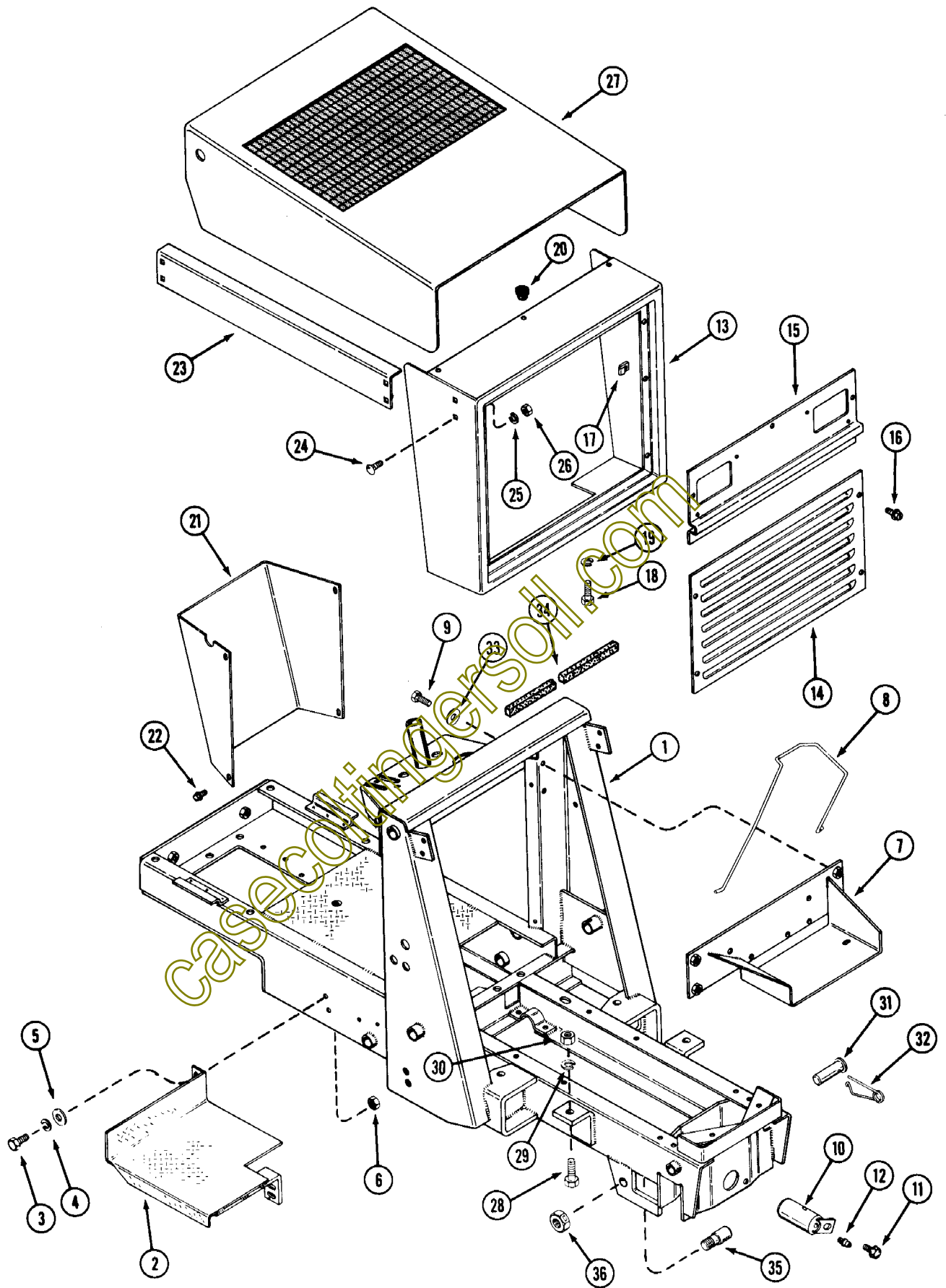
## PTO CLUTCH AND LINKAGE

|    |          |                                                      |   |
|----|----------|------------------------------------------------------|---|
| 1  | C 19276  | CLUTCH ASSEMBLY - less screen, 644 (Repairs page 45) | 1 |
| 1  | C 19197  | CLUTCH ASSEMBLY - 646 (Repairs page 45)              | 1 |
| 2  | C 17679  | HANDLE - clutch engaging                             | 1 |
| 3  | C 14728  | GRIP - clutch handle                                 | 1 |
| 4  | C 17681  | ARM - clutch pivot                                   | 1 |
| 5  | 113- 113 | BOLT - 5/16" x 7/8" NC hex                           | 1 |
| 6  | 192- 20  | LOCKWASHER - 5/16"                                   | 1 |
| 7  | 195- 521 | WASHER - 5/16"                                       | 1 |
| 8  | 195- 525 | WASHER - 3/8"                                        | 1 |
| 9  | 132- 48  | PIN - cotter 1/8" x 1"                               | 2 |
| 10 | C 18279  | ROD - clutch (644)                                   | 1 |
| 10 | C 18280  | ROD - clutch (646)                                   | 1 |
| 11 | C 16682  | GUIDE - clutch rod, 644                              | 1 |
| 11 | C 18826  | GUIDE - clutch rod, 646                              | 1 |
| 12 | 113- 207 | BOLT - 3/8" x 1" NC hex                              | 2 |
| 13 | 195- 525 | WASHER - 3/8"                                        | 2 |
| 14 | 131- 178 | NUT - lock 3/8" NC hex                               | 2 |



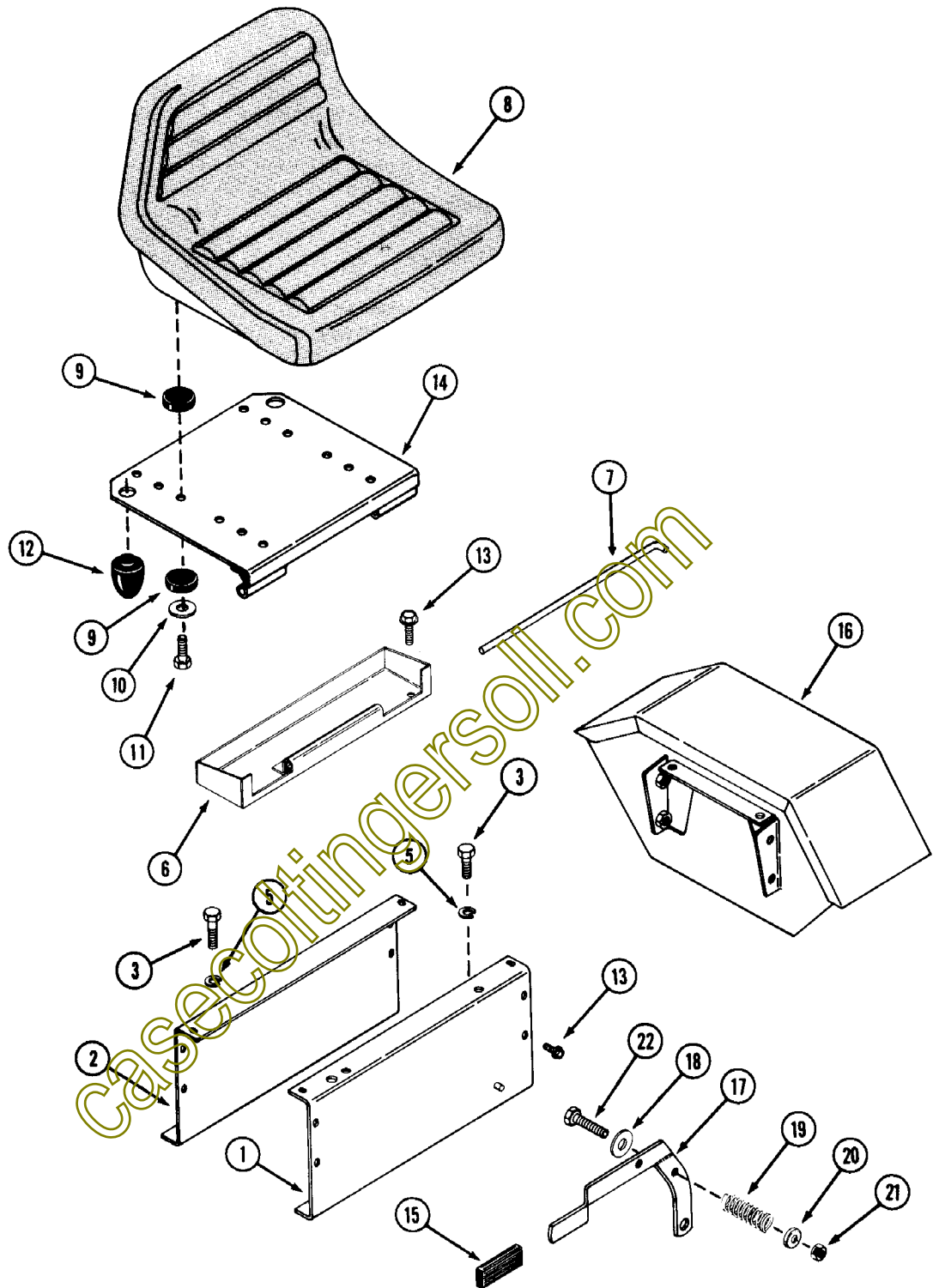
## CLUTCH ASSEMBLY (PTO)

| REF. | PART NO. | DESCRIPTION                                                             | REQ'D |
|------|----------|-------------------------------------------------------------------------|-------|
|      | C 19276  | CLUTCH ASSEMBLY - less screen (644) . . . . .                           | 1     |
|      | C 19197  | CLUTCH ASSEMBLY - (646). . . . .                                        | 1     |
| 1    | C 15721  | SCREEN - grass (644) . . . . .                                          | 1     |
| 2    | C 18907  | HUB - clutch (644) . . . . .                                            | 1     |
| 3    | C 15718  | PLATE - clutch (644) . . . . .                                          | 1     |
| 4    | 164- 40  | SCREW - 5/16" x 3/4" NC flat head socket (644). . . . .                 | 2     |
| 4    | 164- 50  | SCREW - 3/8" x 3/4" NC flat head socket (646). . . . .                  | 2     |
| 5    | 193- 76  | LOCKWASHER - 5/16" counter sunk ext. tooth (644) . . . . .              | 2     |
| 5    | 193- 56  | LOCKWASHER - 3/8" counter sunk, ext. tooth (646). . . . .               | 2     |
| 6    | C 23740  | KIT - disc, friction . . . . .                                          | 1     |
| 7    | C 15515  | WASHER - spring. . . . .                                                | 6     |
| 8    | C 15557  | WASHER - spacer .050 . . . . .                                          | UAR   |
| 9    | C 22671  | PULLEY AND DISC ASSEMBLY - clutch. . . . .                              | 1     |
| 10   | C 23245  | BEARING - cam and pulley . . . . .                                      | 3     |
| 11   | C 21596  | WASHER - shim .005" . . . . .                                           | UAR   |
| 11   | C 15556  | WASHER - spacer .010 . . . . .                                          | UAR   |
| 12   | NSS      | CAM - clutch (service with (2) C23033 cams and (1) C23512 arm). . . . . | 2     |
| 13   | C 16786  | SPRING - clutch . . . . .                                               | 2     |
| 14   | F 59014  | RING - retaining . . . . .                                              | 1     |
| 15   | C 18908  | SPACER - hub (644). . . . .                                             | 1     |
| 16   | O 2815N  | WASHER - 17/32" (644) . . . . .                                         | 1     |
| 17   | C 18940  | BOLT - 1/2" x 1-3/4" NC hex, L.H. thread (644). . . . .                 | 1     |
| 18   | C 23512  | ARM - engaging . . . . .                                                | 1     |
| 19   | C 16616  | FAN - cooling (644) . . . . .                                           | 1     |
| 20   | 113- 207 | BOLT - 3/8" x 1" NC hex (644) . . . . .                                 | 4     |
| 21   | 192- 21  | LOCKWASHER - 3/8" (644) . . . . .                                       | 4     |
| 22   | C 19196  | PLATE - clutch (646) . . . . .                                          | 1     |
| 23   | C 18263  | WASHER - spacer (646). . . . .                                          | 2     |
| 24   | C 18291  | BOLT - 7/16" x 7-1/4" NC hex (646) . . . . .                            | 1     |



## HOOD, FRAME AND GRILLE

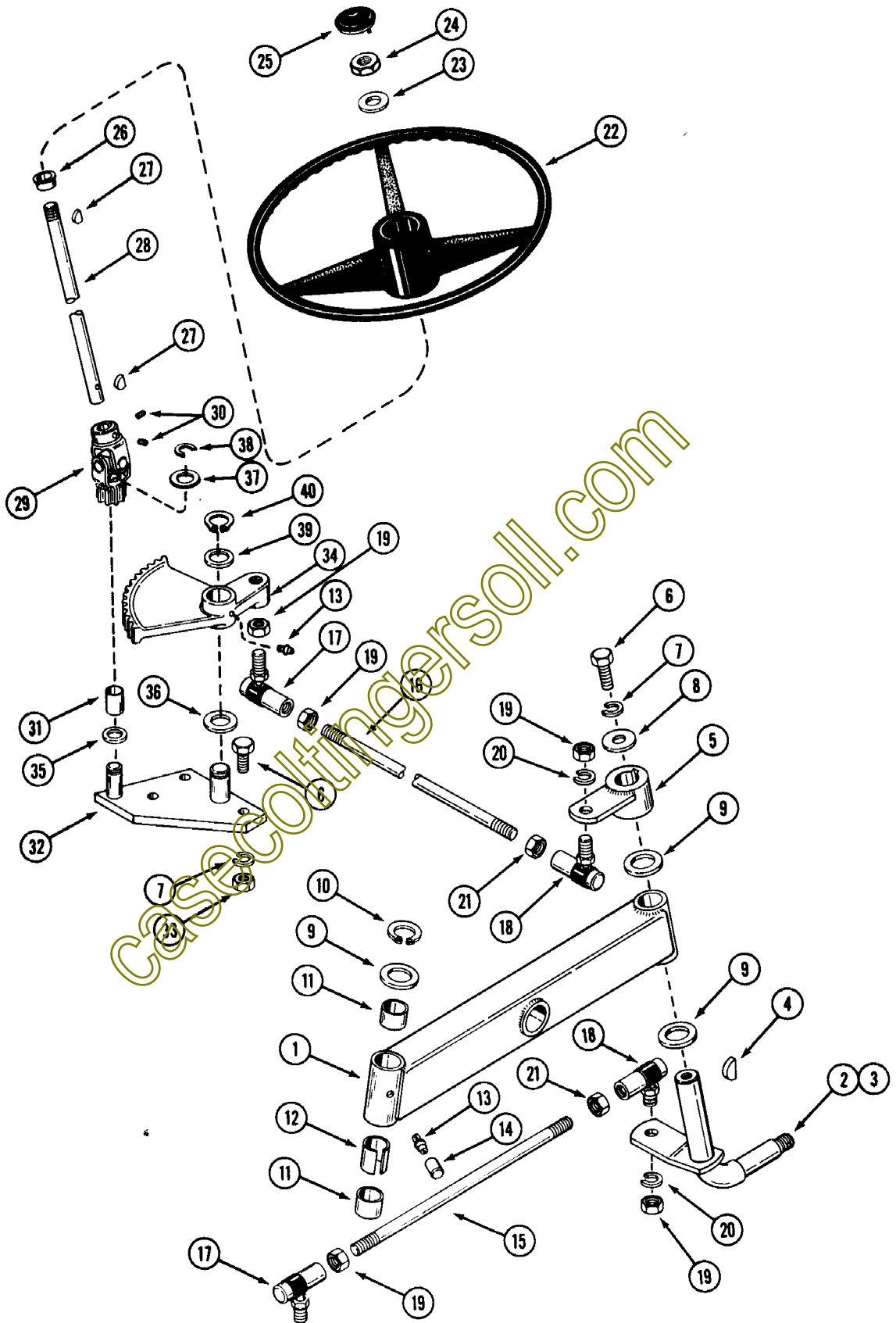
| REF. | PART NO.  | DESCRIPTION                                                            | REQ'D |
|------|-----------|------------------------------------------------------------------------|-------|
| 1    | C 17534   | FRAME - main (644) . . . . .                                           | 1     |
| 1    | C 17533   | FRAME - main (646) . . . . .                                           | 1     |
| 2    | C 17563   | PAD - foot, L.H. . . . .                                               | 1     |
| 2    | C 18024   | PAD - foot, R.H. . . . .                                               | 1     |
| 3    | 113- 207  | BOLT - 3/8" x 1" NC hex . . . . .                                      | 8     |
| 4    | 192- 21   | LOCKWASHER - 3/8" . . . . .                                            | 8     |
| 5    | 195- 104  | WASHER - 3/8" . . . . .                                                | 4     |
| 6    | 129- 103  | NUT - 3/8" NC hex . . . . .                                            | 4     |
| 7    | C 17598   | TRAY - battery . . . . .                                               | 1     |
| 8    | C 16239   | STRAP - battery hold down . . . . .                                    | 1     |
| 9    | 113- 102  | BOLT - 5/16" x 3/4" NC hex . . . . .                                   | 4     |
| 10   | C 19018   | PIN - axle pivot . . . . .                                             | 1     |
| 11   | 187- 1046 | BOLT - 3/8" NC indented hex head . . . . .                             | 1     |
| 12   | 219- 17   | FITTING - lube . . . . .                                               | 1     |
| 13   | C 17657   | GRILLE - frame . . . . .                                               | 1     |
| 14   | C 18201   | GRILLE - insert (644) . . . . .                                        | 1     |
| 14   | C 19375   | GRILLE - insert (646) . . . . .                                        | 1     |
| 15   | C 17656   | PANEL - head light . . . . .                                           | 1     |
| 16   | 187- 1080 | BOLT - 1/4" x 1/2" NC hex slotted, black . . . . .                     | 7     |
| 17   | C 17653   | NUT - 1/4" tinnerman . . . . .                                         | 7     |
| 18   | 113- 206  | BOLT - 3/8" x 3/4" NC hex . . . . .                                    | 2     |
| 19   | 192- 21   | LOCKWASHER - 3/8" . . . . .                                            | 2     |
| 20   | C 18193   | BUMPER - rubber, hood . . . . .                                        | 3     |
| 21   | C 17647   | PANEL - dash . . . . .                                                 | 1     |
| 22   | 187- 1036 | BOLT - 1/4" x 1/2" NC hex self tap . . . . .                           | 4     |
| 23   | C 17662   | SUPPORT - grille . . . . .                                             | 2     |
| 24   | 111- 340  | BOLT - 3/8" x 3/4" NC round head, square neck . . . . .                | 8     |
| 25   | 192- 21   | LOCKWASHER - 3/8" . . . . .                                            | 8     |
| 26   | 129- 103  | NUT - 3/8" NC hex . . . . .                                            | 8     |
| 27   | C 18003   | HOOD - 644 . . . . .                                                   | 1     |
| 27   | C 18586   | HOOD - (646) . . . . .                                                 | 1     |
| 28   | 113- 412  | BOLT - 1/2" x 1-3/4" NC hex (engine mounting) 646 . . . . .            | 3     |
| 28   | 113- 410  | BOLT - 1/2" x 1-1/2" NC hex (left front engine mounting) 646 . . . . . | 1     |
| 28   | 113- 207  | BOLT - 3/8" x 1" hex (engine mounting) 644 . . . . .                   | 4     |
| 29   | 192- 23   | LOCKWASHER - 1/2" (646) . . . . .                                      | 3     |
| 29   | 192- 21   | LOCKWASHER - 3/8" (engine mounting) 644 . . . . .                      | 4     |
| 30   | 129- 105  | NUT - 1/2" NC hex (646) . . . . .                                      | 3     |
| 30   | 131- 165  | NUT - lock 1/2" NC hex jam (left front engine mount) (646) . . . . .   | 1     |
| 31   | C 18055   | PIN - latch . . . . .                                                  | 2     |
| 32   | C 10898   | PIN - safety . . . . .                                                 | 2     |
| 33   | 195- 521  | WASHER - 5/16" . . . . .                                               | 4     |
| 34   | C 19411   | STRIP - seal (646) . . . . .                                           | 1     |
| 35   | C 18733   | PIN - attachment . . . . .                                             | 2     |
| 36   | 131- 159  | NUT - lock 1/2" NF jam . . . . .                                       | 2     |



## SEAT, FENDERS AND TOOL TRAY

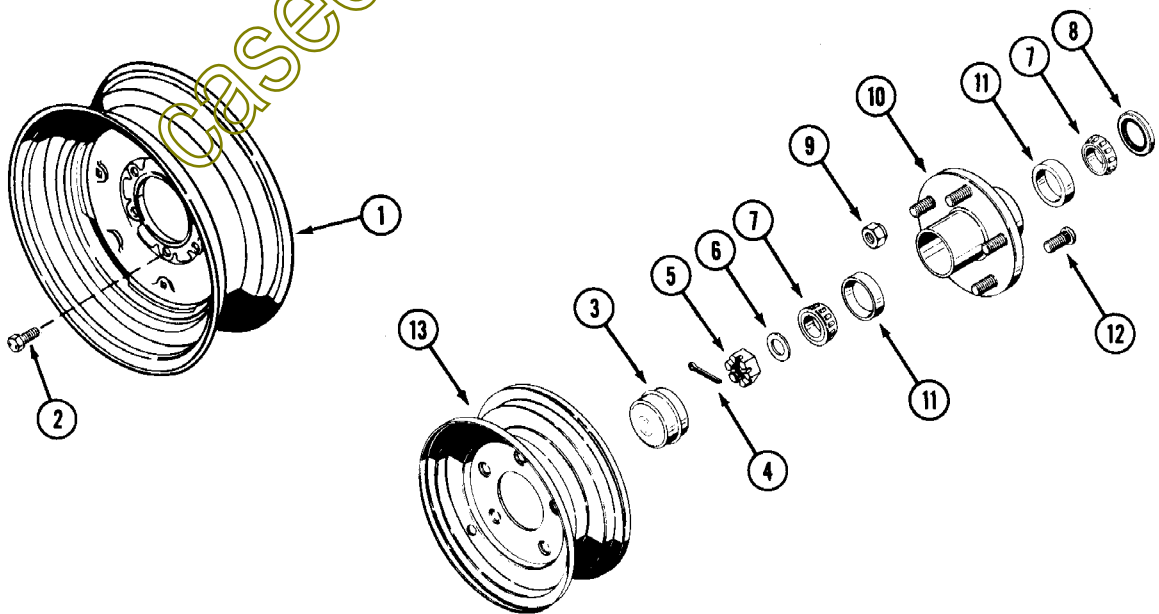
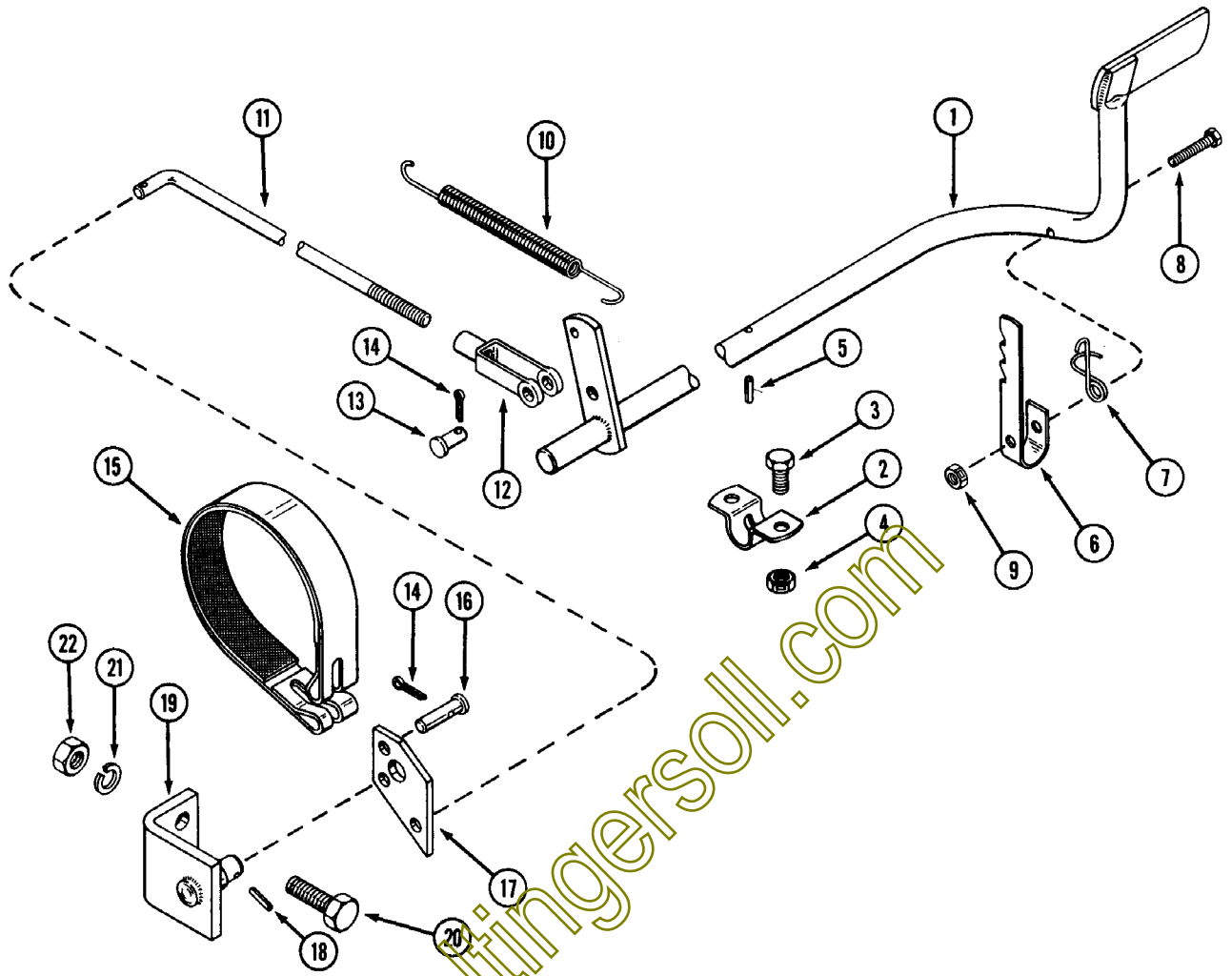
| REF. | PART NO.  | DESCRIPTION                                 | REQ'D |
|------|-----------|---------------------------------------------|-------|
| 1    | C 17488   | SUPPORT - seat, front . . . . .             | 1     |
| 2    | C 17485   | SUPPORT - seat, rear . . . . .              | 1     |
| 3    | 113- 424  | BOLT - 1/2" x 1" NC hex . . . . .           | 4     |
| 5    | 192- 23   | LOCKWASHER - 1/2" . . . . .                 | 4     |
| 6    | C 19417   | TRAY - tool . . . . .                       | 1     |
| 7    | C 16429   | PIN - seat hinge . . . . .                  | 1     |
| 8    | C 18217   | SEAT. . . . .                               | 1     |
| 9    | C 15410   | CUSHION - rubber . . . . .                  | 8     |
| 10   | 195- 2021 | WASHER - 5/16" x 1-1/4" O.D. . . . .        | 4     |
| 11   | 26- 524   | BOLT - 5/16" x 1-1/2" NC hex . . . . .      | 4     |
| 12   | C 14534   | BUMPER - seat . . . . .                     | 2     |
| 13   | 121- 106  | BOLT - 5/16" x 1/2" NC hex flange . . . . . | 14    |
| 14   | C 17152   | HINGE - seat. . . . .                       | 1     |
| 15   | C 14728   | GRIP - shift lever . . . . .                | 1     |
| 16   | C 17456   | FENDER - L.H. . . . .                       | 1     |
| 16   | C 17457   | FENDER - R.H. . . . .                       | 1     |
| 17   | C 17491   | LEVER - shift . . . . .                     | 1     |
| 18   | 195- 2029 | WASHER - 7/16" x 1-1/4". . . . .            | 1     |
| 19   | C 17216   | SPRING - shift lever . . . . .              | 1     |
| 20   | C 17066   | WASHER - cupped . . . . .                   | 1     |
| 21   | 131- 178  | NUT - lock 3/8" NC hex . . . . .            | 1     |
| 22   | 113- 257  | BOLT 3/8" x 2-1/2" NC hex . . . . .         | 1     |

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## FRONT AXLE AND STEERING GEAR

| REF. | PART NO.  | DESCRIPTION                             | REQ'D |
|------|-----------|-----------------------------------------|-------|
| 1    | C 17296   | AXLE - front . . . . .                  | 1     |
| 2    | C 17399   | SPINDLE - L.H. . . . .                  | 1     |
| 3    | C 17398   | SPINDLE - R.H. . . . .                  | 1     |
| 4    | 126- 32   | KEY - 1/4" x 1-1/4" woodruff . . . . .  | 1     |
| 5    | C 17407   | ARM - upper spindle . . . . .           | 1     |
| 6    | 113- 417  | BOLT - 1/2" x 1-3/4" NC hex. . . . .    | 4     |
| 7    | 192- 23   | LOCKWASHER - 1/2" . . . . .             | 4     |
| 8    | 195- 536  | WASHER - 9/16" . . . . .                | 1     |
| 9    | C 17684   | WASHER - thrust . . . . .               | 4     |
| 10   | A 59939   | RING - retaining . . . . .              | 1     |
| 11   | C 12888   | BUSHING - spindle . . . . .             | 4     |
| 12   | C 18248   | SPACER - bearing . . . . .              | 2     |
| 13   | 219- 17   | FITTING - lube . . . . .                | 4     |
| 14   | C 13106   | COVER - lube fitting . . . . .          | 4     |
| 15   | C 17401   | TIE ROD . . . . .                       | 1     |
| 16   | C 17402   | ROD - drag link . . . . .               | 1     |
| 17   | C 17404   | BALL JOINT - R.H. thread . . . . .      | 2     |
| 18   | C 11501   | BALL JOINT - L.H. thread . . . . .      | 2     |
| 19   | 129- 127  | NUT - 5/8" NF hex . . . . .             | 6     |
| 20   | 192- 25   | LOCKWASHER - 5/8" . . . . .             | 4     |
| 21   | 129- 327  | NUT - 5/8" NF hex L.H. thread . . . . . | 2     |
| 22   | C 18014   | WHEEL - steering . . . . .              | 1     |
| 23   | C 12975   | WASHER - 5/8" . . . . .                 | 1     |
| 24   | 131- 356  | NUT - lock 5/8" NC hex . . . . .        | 1     |
| 25   | C 18016   | CAP - steering wheel . . . . .          | 1     |
| 26   | C 15096   | BUSHING - flanged nylon . . . . .       | 1     |
| 27   | 126- 16   | KEY - woodruff #9 . . . . .             | 2     |
| 28   | C 17572   | SHAFT - steering . . . . .              | 1     |
| 29   | C 17703   | JOINT - universal . . . . .             | 1     |
| 30   | 178- 860  | SETSCREW - 1/4" x 3/8" . . . . .        | 2     |
| 31   | C 17255   | BEARING - ball . . . . .                | 1     |
| 32   | C 17570   | PLATE - steering . . . . .              | 1     |
| 33   | 129- 105  | NUT - 1/2" NC hex . . . . .             | 3     |
| 34   | C 17252   | GEAR - steering . . . . .               | 1     |
| 35   | C 17256   | BEARING - thrust, universal . . . . .   | 1     |
| 36   | C 17257   | BEARING - thrust . . . . .              | 1     |
| 37   | C 17550   | WASHER - 3/4", universal . . . . .      | 1     |
| 38   | O 5904-AB | RING - retaining, universal . . . . .   | 1     |
| 39   | 195- 2115 | WASHER - 1/2" . . . . .                 | 1     |
| 40   | A 34428   | RING - retaining . . . . .              | 1     |

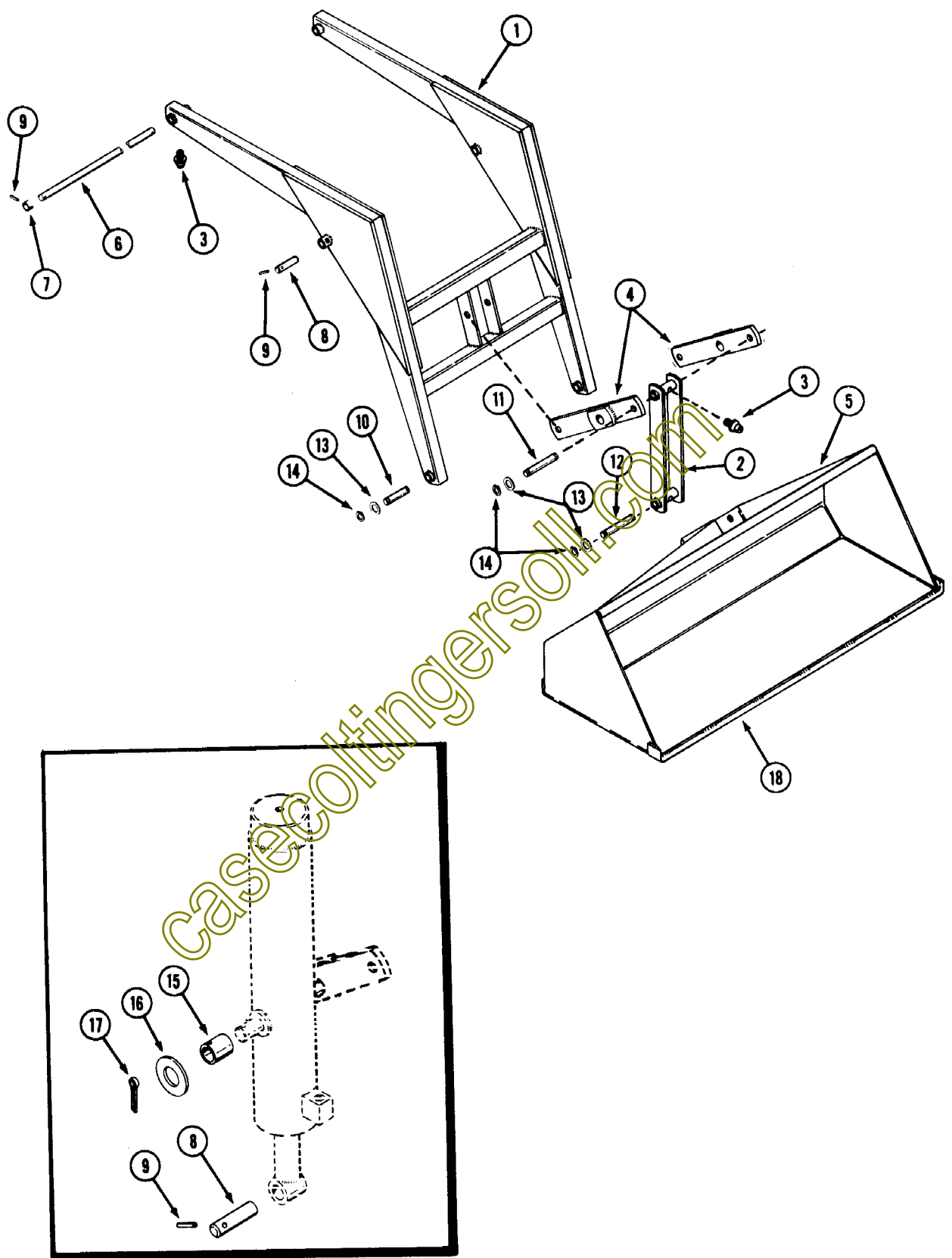


## BRAKE ASSEMBLY

| REF. | PART NO.  | DESCRIPTION                           | REQ'D |
|------|-----------|---------------------------------------|-------|
| 1    | C 18026   | PEDAL - brake . . . . .               | 1     |
| 2    | C 18029   | BRACKET - saddle . . . . .            | 2     |
| 3    | 113- 206  | BOLT - 3/8" x 3/4" NC hex . . . . .   | 4     |
| 4    | 131- 178  | NUT - lock 3/8" NC hex . . . . .      | 4     |
| 5    | 138- 92   | PIN - roll 3/16" x 3/4" . . . . .     | 1     |
| 6    | C 18105   | LOCK - brake . . . . .                | 1     |
| 7    | C 17541   | SPRING - brake lock . . . . .         | 1     |
| 8    | 113- 5    | BOLT - 1/4" x 1-1/2" NC hex . . . . . | 1     |
| 9    | 131- 1102 | NUT - 1/4" NC hex . . . . .           | 1     |
| 10   | C 18278   | SPRING - brake return . . . . .       | 1     |
| 11   | C 14946   | ROD - brake . . . . .                 | 1     |
| 12   | 213- 4    | CLEVIS . . . . .                      | 1     |
| 13   | 141- 4    | PIN - clevis . . . . .                | 1     |
| 14   | 132- 310  | PIN - cotter 1/8" x 1" . . . . .      | 3     |
| 15   | C 14187   | BAND - brake . . . . .                | 1     |
| 16   | C 13526   | PIN - clevis . . . . .                | 2     |
| 17   | C 18305   | ARM - actuator . . . . .              | 1     |
| 18   | 138- 77   | PIN - roll 5/32" x 1" . . . . .       | 1     |
| 19   | C 18306   | BRACKET - pivot . . . . .             | 1     |
| 20   | 113- 412  | BOLT - 1/2" x 1-3/4" NC hex . . . . . | 2     |
| 21   | 192- 23   | LOCKWASHER - 1/2" . . . . .           | 2     |
| 22   | 129- 105  | NUT - 1/2" NC hex . . . . .           | 2     |

## FRONT AND REAR WHEELS

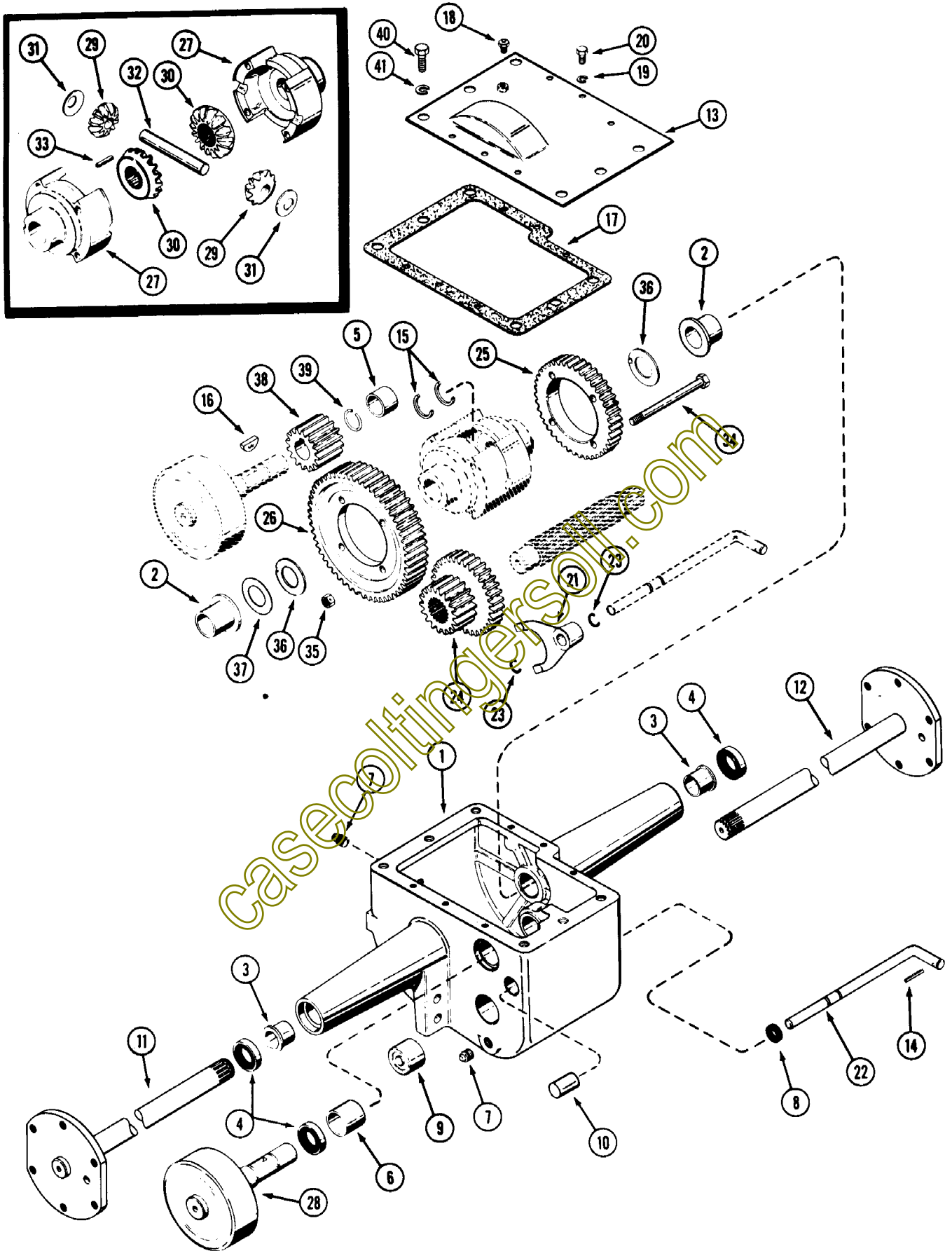
|    |          |                                      |    |
|----|----------|--------------------------------------|----|
| 1  | C 10316  | WHEEL - rim, rear . . . . .          | 2  |
| 2  | A 30064  | BOLT - real wheel lug . . . . .      | 12 |
| 3  | C 18299  | CAP - dust . . . . .                 | 2  |
| 4  | 132- 49  | PIN - cotter 1/8" x 1-1/8" . . . . . | 2  |
| 5  | 25- 1312 | NUT - castle 3/4" NC hex . . . . .   | 2  |
| 6  | C 10822  | WASHER - retaining . . . . .         | 2  |
| 7  | D 29266  | BEARING - cone . . . . .             | 4  |
| 8  | T 27809  | SEAL - bearing . . . . .             | 2  |
| 9  | C 18301  | NUT - wheel . . . . .                | 10 |
| 10 | C 19193  | HUB ASSEMBLY - front wheel . . . . . | 2  |
| 11 | D 29267  | RACE - bearing . . . . .             | 4  |
| 12 | C 18300  | STUD - wheel . . . . .               | 10 |
|    | NSS      | HUB - front wheel . . . . .          | 2  |
| 13 | C 13168  | WHEEL - rim, front . . . . .         | 2  |



## BUCKET AND ARM ASSEMBLY

| REF. | PART NO.  | DESCRIPTION                            | REQ'D |
|------|-----------|----------------------------------------|-------|
| 1    | C 17311   | ARM ASSEMBLY - bucket lift .....       | 1     |
| 2    | C 17322   | ARM - bucket .....                     | 1     |
| 3    | 219- 20   | FITTING - lube .....                   | 4     |
| 4    | C 18249   | LINK - bucket cylinder .....           | 2     |
| 5    | C 17328   | BUCKET ASSEMBLY - loader .....         | 1     |
| 6    | C 17337   | ROD - arm assembly mounting .....      | 1     |
| 7    | C 17987   | COLLAR .....                           | 2     |
| 8    | C 17338   | PIN - cylinder mounting .....          | 2     |
| 9    | 138- 2005 | PIN - spiral 1/4" x 1" .....           | 5     |
| 10   | C 17334   | PIN - bucket mounting, 3-5/16" L. .... | 2     |
| 11   | C 17335   | PIN - 4-15/16" .....                   | 2     |
| 12   | C 17336   | PIN - 4-3/4" .....                     | 1     |
| 13   | 195- 545  | WASHER - 13/32" .....                  | 10    |
| 14   | A 33531   | RING - retaining .....                 | 10    |
| 15   | C 18145   | BUSHING - oilite .....                 | 2     |
| 16   | 195- 533  | WASHER - 1-1/16" .....                 | 2     |
| 17   | 132- 71   | PIN - cotter 5/32" x 1-3/8" .....      | 2     |
| 18   | C 12824   | EDGE - cutting .....                   | 1     |

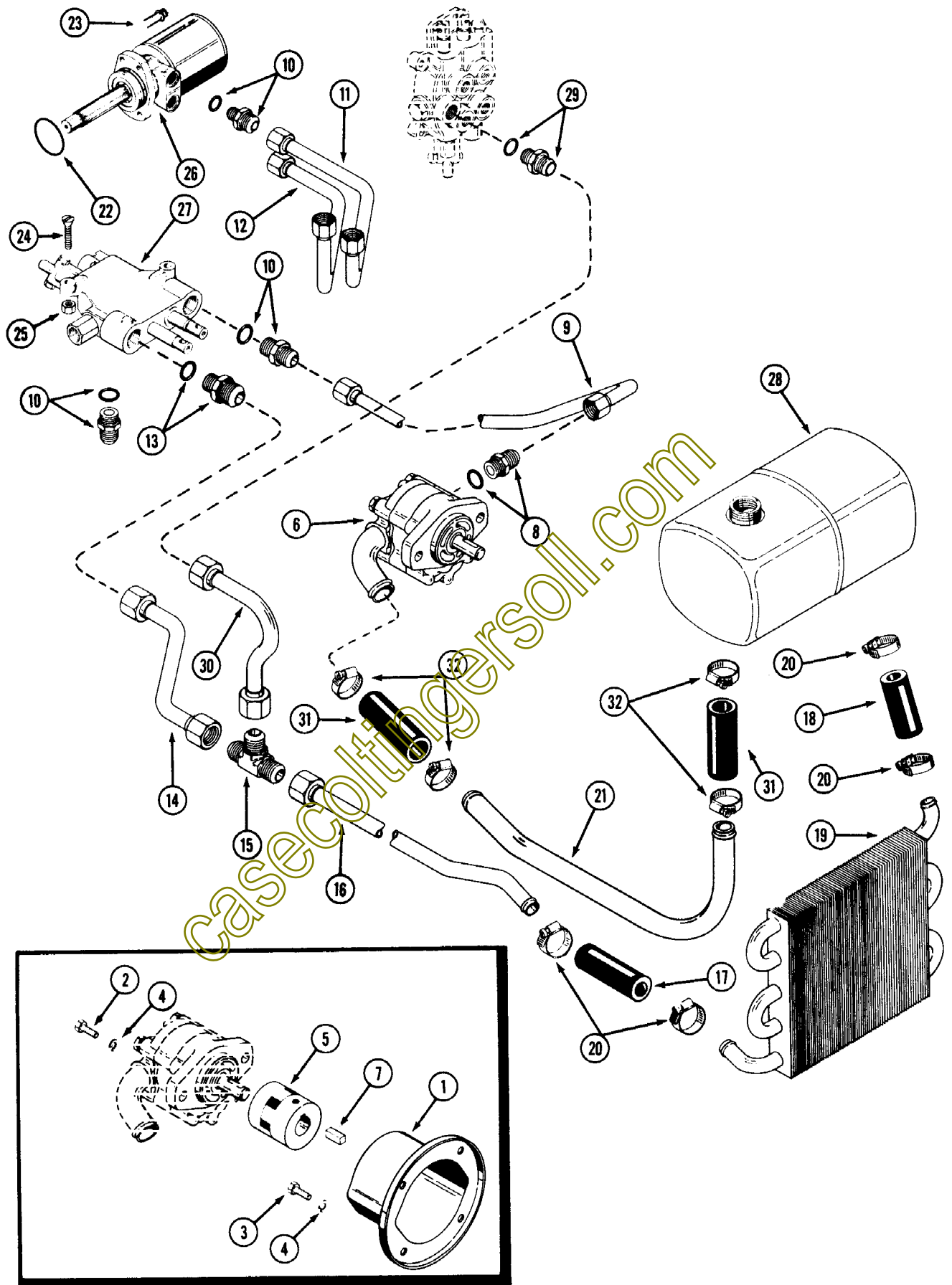
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## TRANSMISSION AND FINAL DRIVE

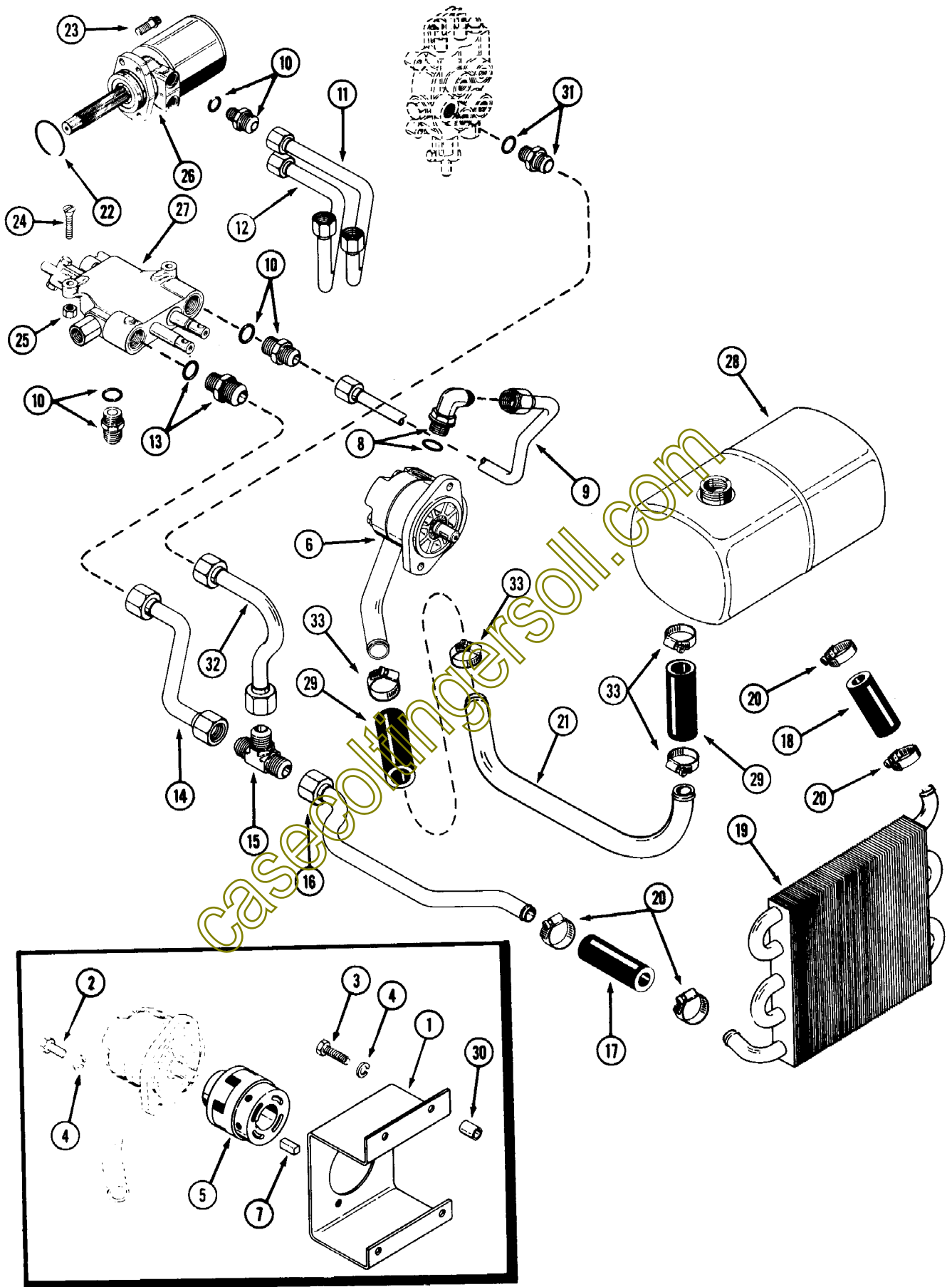
| REF. | PART NO. | DESCRIPTION                                                     | REQ'D |
|------|----------|-----------------------------------------------------------------|-------|
| 1    | C 13770  | CASE - transmission                                             | 1     |
| 2    | C 12713  | BEARING - flanged                                               | 2     |
| 3    | C 16744  | BEARING - flanged                                               | 2     |
| 4    | D 31945  | SEAL - axle                                                     | 3     |
| 5    | C 13241  | BEARING - sleeve                                                | 1     |
| 6    | C 13385  | BEARING - sleeve                                                | 1     |
| 7    | 221- 4   | PLUG - filler and drain 1/2"                                    | 2     |
| 8    | C 13266  | SEAL - shift rod                                                | 1     |
| 9    | C 13211  | BEARING - roller                                                | 1     |
| 10   | C 12723  | CAP - shift rod                                                 | 1     |
| 11   | C 12722  | SHAFT - axle, short R.H.                                        | 1     |
| 12   | C 12721  | SHAFT - axle, long L.H.                                         | 1     |
| 13   | C 13197  | COVER - transmission                                            | 1     |
| 14   | 138- 319 | PIN - roll 3/16" x 1-1/2"                                       | 1     |
| 15   | B 52144  | RING - retainer, axle                                           | 2     |
| 16   | 126- 128 | KEY - woodruff, brake idler                                     | 1     |
| 17   | C 13196  | GASKET - transmission cover                                     | 1     |
| 18   | A 50096  | BREATHER - transmission                                         | 1     |
| 19   | 192- 19  | LOCKWASHER - 1/4"                                               | 6     |
| 20   | 113- 3   | BOLT - 1/4" x 3/4" NC hex                                       | 6     |
| 21   | C 12725  | FORK - shift                                                    | 1     |
| 22   | C 16339  | ROD - gear shift                                                | 1     |
| 23   | C 14168  | RING - retaining                                                | 2     |
| 24   | C 14644  | GEAR - cluster input                                            | 1     |
| 25   | C 12551  | GEAR - high 41 tooth                                            | 1     |
| 26   | C 12552  | GEAR - low 55 tooth                                             | 1     |
| 27   | C 16295  | KIT - diff. case (Includes Ref. 34 & 35)                        | 1     |
| 28   | C 13261  | BRAKE DRUM                                                      | 1     |
| 29*  |          | GEAR - differential pinion (order two of each, items 29 and 30) | 2     |
| 30*  |          | GEAR - differential (order two of each, items 29 and 30)        | 2     |
| 31   | C 12559  | WASHER - pinion thrust                                          | 2     |
| 32   | C 12560  | PIN - differential cross                                        | 1     |
| 33   | R 17820  | PIN - differential cross lock                                   | 1     |
| 34   | C 12561  | SCREW - 3/8" x 4-3/4" NC hex cap.                               | 4     |
| 35   | 131- 366 | NUT - lock 3/8" NC hex                                          | 4     |
| 36   | C 12718  | WASHER - differential                                           | 2     |
| 37   | C 14223  | WASHER - spacer                                                 | UAR   |
| 38   | C 12965  | GEAR - brake idler                                              | 1     |
| 39   | C 14222  | RING - retainer, brake idler                                    | 1     |
| 40   | 113- 424 | BOLT - 1/2" x 1" NC hex (transaxle mounting)                    | 6     |
| 41   | 192- 23  | LOCKWASHER - 1/2"                                               | 6     |

\* Must be serviced in sets of four using two C12558 Pinion Gears and two C12557 Differential Gears.



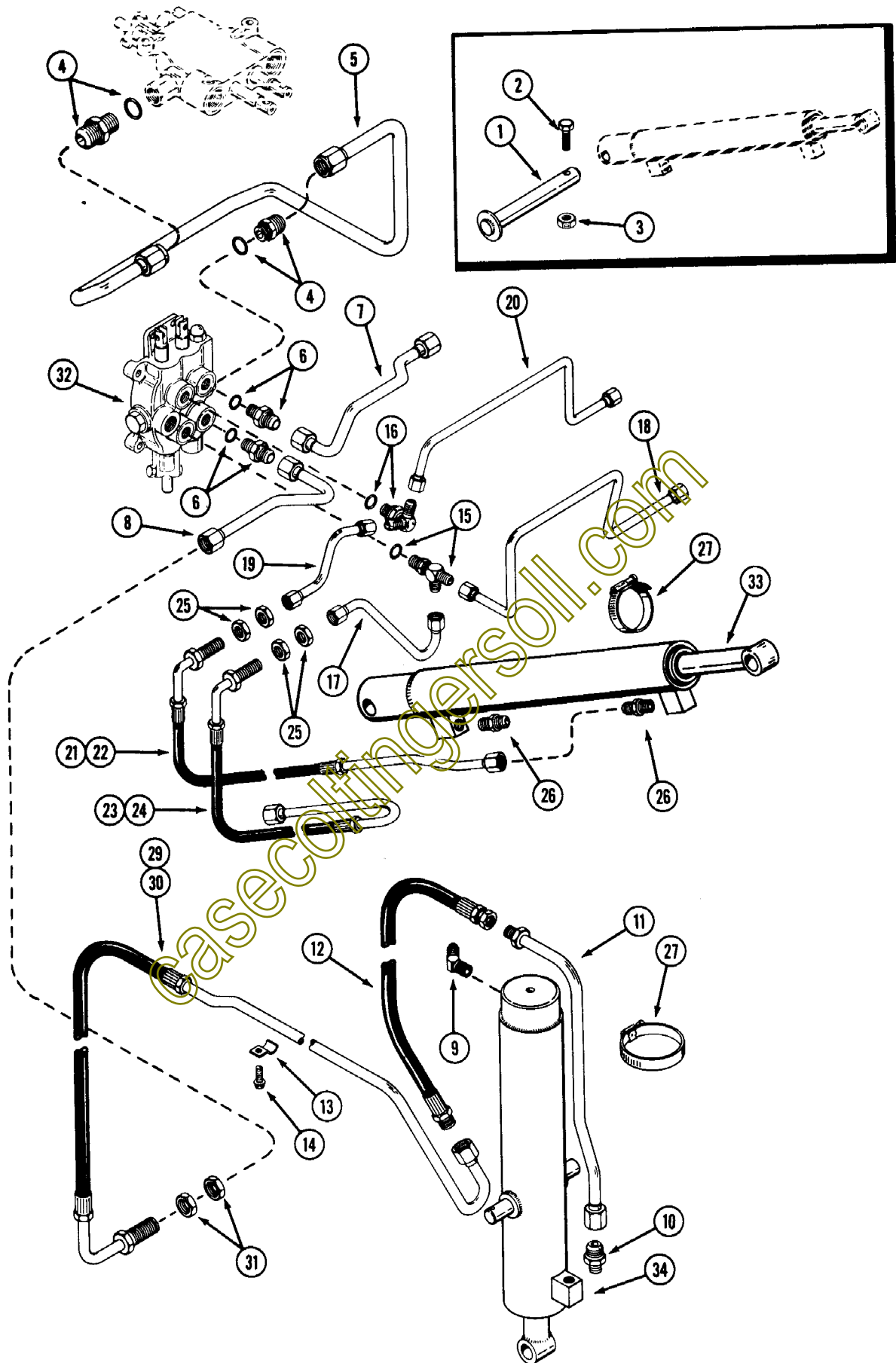
## HYDRAULIC SYSTEM 644

| REF. | PART NO.  | DESCRIPTION                                                               | REQ'D |
|------|-----------|---------------------------------------------------------------------------|-------|
| 1    | C 15335   | SUPPORT - pump . . . . .                                                  | 1     |
| 2    | 114- 200  | BOLT - 3/8" x 1" NF hex . . . . .                                         | 2     |
| 3    | 113- 207  | BOLT - 3/8" x 1" NC hex . . . . .                                         | 4     |
| 4    | 192- 21   | LOCKWASHER - 3/8" . . . . .                                               | 6     |
| 5    | C 17298   | COUPLING - pump (repairs page 75) . . . . .                               | 1     |
| 6    | C 19045   | PUMP - hydraulic (repairs page 75) . . . . .                              | 1     |
| 7    | C 17354   | KEY - square . . . . .                                                    | 1     |
| 8    | 218- 5066 | FITTING - pump out (includes 218-5006 "O" - ring) . . . . .               | 1     |
| 9    | C 18167   | TUBE - pump to valve . . . . .                                            | 1     |
| 10   | C 18321   | FITTING - hydraulic (includes 218-5007 "O" - ring) . . . . .              | 5     |
| 11   | C 18159   | TUBE - valve to motor, upper . . . . .                                    | 1     |
| 12   | C 18160   | TUBE - valve to motor, lower . . . . .                                    | 1     |
| 13   | 218- 5065 | FITTING - hydraulic (includes 218-5007 "O" - ring) . . . . .              | 1     |
| 14   | C 18162   | TUBE - valve to tee . . . . .                                             | 1     |
| 15   | 218- 596  | TEE - 1-1/16" . . . . .                                                   | 1     |
| 16   | C 18163   | TUBE - heat exchanger to tee . . . . .                                    | 1     |
| 17   | C 14619   | HOSE - 4" . . . . .                                                       | 1     |
| 18   | C 14245   | HOSE - 3" . . . . .                                                       | 1     |
| 19   | C 14195   | EXCHANGER - heat . . . . .                                                | 1     |
| 20   | 214- 9    | CLAMP - hose . . . . .                                                    | 4     |
| 21   | C 19437   | TUBE - pump suction . . . . .                                             | 1     |
| 22   | A 30095   | SEAL - hydraulic motor to case . . . . .                                  | 1     |
| 23   | 166- 86   | SCREW - 1/2" x 1-1/4" NC flanged 12 pt. . . . .                           | 4     |
| 24   | 171- 247  | SCREW - 5/16" x 1-1/4" NC, flat head machine. . . . .                     | 2     |
| 25   | 131- 351  | NUT - lock 5/16" NC hex . . . . .                                         | 2     |
| 26   | C 14655   | MOTOR - hydraulic drive (repairs page 79) . . . . .                       | 1     |
| 27   | NSS       | VALVE - hvdraulic control (repairs page 69) order C 21497 valve . . . . . | 1     |
| 27   | C 21497   | VALVE - hydraulic control (repairs page 71) . . . . .                     | 1     |
| 28   | C 19439   | RESERVOIR - oil . . . . .                                                 | 1     |
| 29   | 218- 5353 | FITTING - valve, bucket (includes 218-5006 "O" - rings) . . . . .         | 1     |
| 30   | C 18161   | TUBE - bucket to tee . . . . .                                            | 1     |
| 31   | C 19438   | HOSE - rubber . . . . .                                                   | 2     |
| 32   | 214- 14   | CLAMP - hose . . . . .                                                    | 4     |



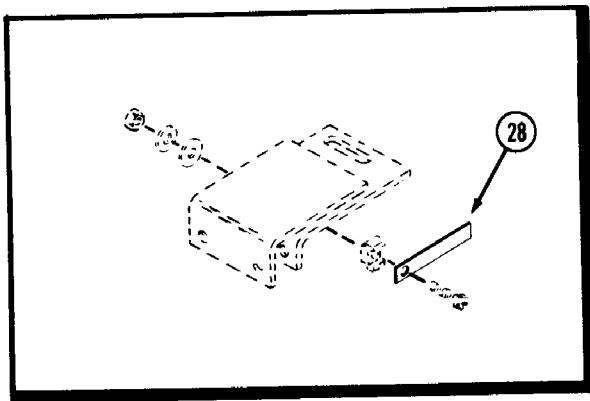
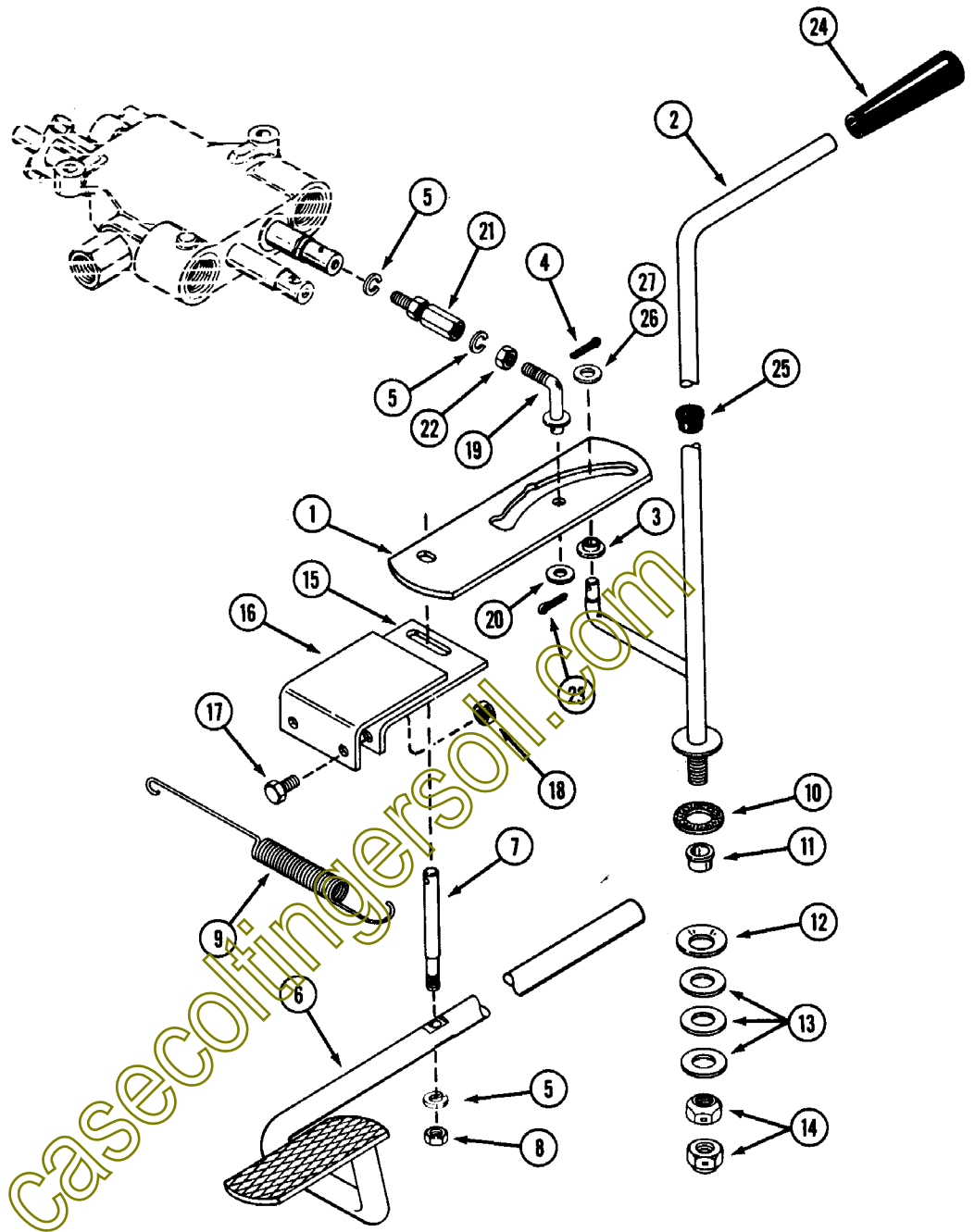
## HYDRAULIC SYSTEM 646

| REF. | PART NO.  | DESCRIPTION                                                    | REQ'D |
|------|-----------|----------------------------------------------------------------|-------|
| 1    | C 18064   | SUPPORT - pump                                                 | 1     |
| 2    | 114- 200  | BOLT - 3/8" x 1" NF hex                                        | 2     |
| 3    | 113- 209  | BOLT - 3/8" x 1-1/2" NC hex                                    | 4     |
| 4    | 192- 21   | LOCKWASHER - 3/8"                                              | 6     |
| 5    | C 18235   | COUPLING - pump (repairs page 75)                              | 1     |
| 6    | C 20122   | PUMP - hydraulic (repairs page 75), used S/N 9680417 and after | 1     |
| 6    | NSS       | PUMP - hydraulic (repairs page 77), used prior to S/N 9680417  | 1     |
| 7    | T 27067   | KEY - square                                                   | 1     |
| 8    | 218- 5107 | FITTING - 90° pump out (includes 218-5007 "O" - ring)          | 1     |
| 9    | C 18284   | TUBE - pump to valve                                           | 1     |
| 10   | C 18321   | FITTING - hydraulic (includes 218-5007 "O" - ring)             | 5     |
| 11   | C 18159   | TUBE - valve to motor, upper                                   | 1     |
| 12   | C 18160   | TUBE - valve to motor, lower                                   | 1     |
| 13   | 218- 5065 | FITTING - hydraulic (includes 218-5007 "O" - ring)             | 1     |
| 14   | C 18162   | TUBE - valve to tee                                            | 1     |
| 15   | 218- 596  | TEE - 1-1/16"                                                  | 1     |
| 16   | C 18177   | TUBE - heat exchanger to tee                                   | 1     |
| 17   | C 14619   | HOSE - 4"                                                      | 1     |
| 18   | C 14245   | HOSE - 3"                                                      | 1     |
| 19   | C 14195   | EXCHANGER - heat                                               | 1     |
| 20   | 214- 9    | CLAMP - hose                                                   | 6     |
| 21   | C 19447   | TUBE - pump suction                                            | 1     |
| 22   | A 30095   | SEAL - hydraulic motor to case                                 | 1     |
| 23   | 166- 86   | SCREW - 1/2" x 1-1/4" NC flanged 12 pt.                        | 4     |
| 24   | 171- 247  | SCREW - 5/16" x 1-1/4" NC flat head machine                    | 2     |
| 25   | 131- 351  | NUT - lock 5/16" NC hex                                        | 2     |
| 26   | C 14655   | MOTOR - hydraulic drive (repairs page 79)                      | 1     |
| 27   | NSS       | VALVE - hydraulic control (repairs page 69) order C21497 valve | 1     |
| 27   | C 21497   | VALVE - hydraulic control (repairs page 71)                    | 1     |
| 28   | C 19439   | RESERVOIR - oil                                                | 1     |
| 29   | C 19438   | HOSE - rubber                                                  | 2     |
| 30   | C 17622   | SPACER - pump support                                          | 4     |
| 31   | 218- 5353 | FITTING - valve, bucket (includes 218-5006 "O" - ring)         | 1     |
| 32   | C 18161   | TUBE - bucket valve to tee                                     | 1     |
| 33   | 214- 14   | CLAMP - hose                                                   | 4     |



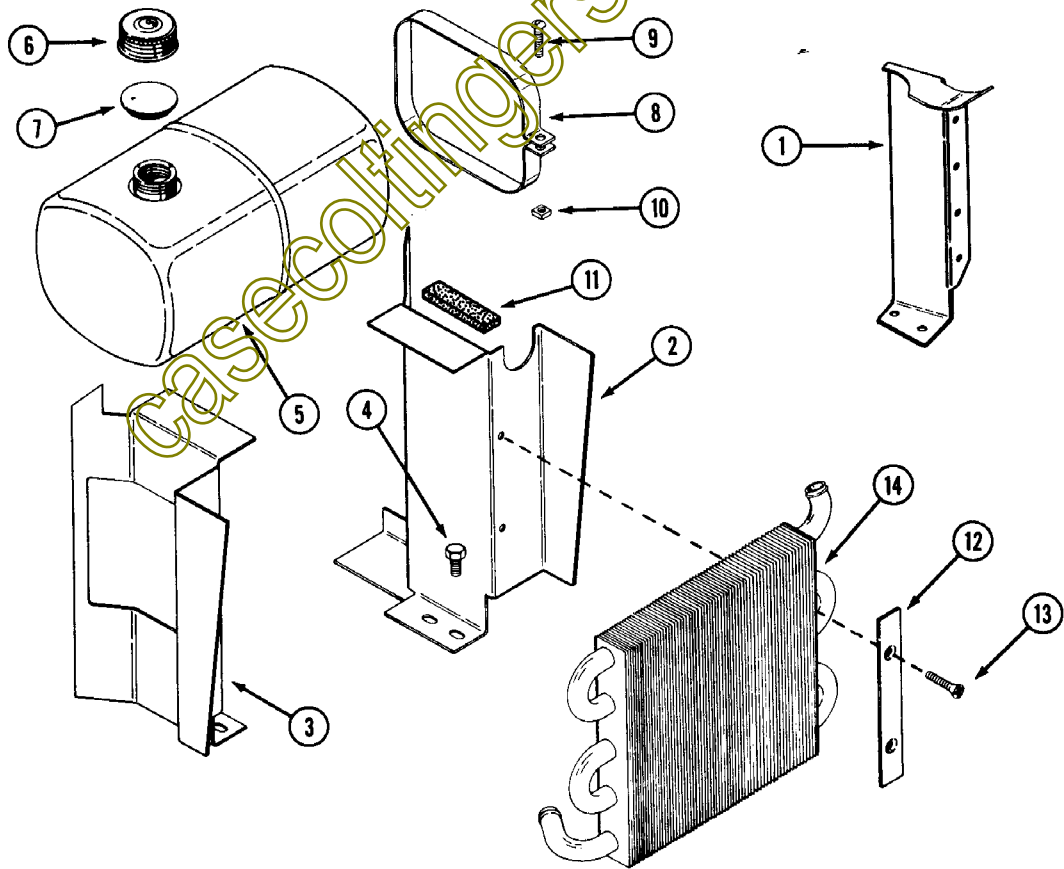
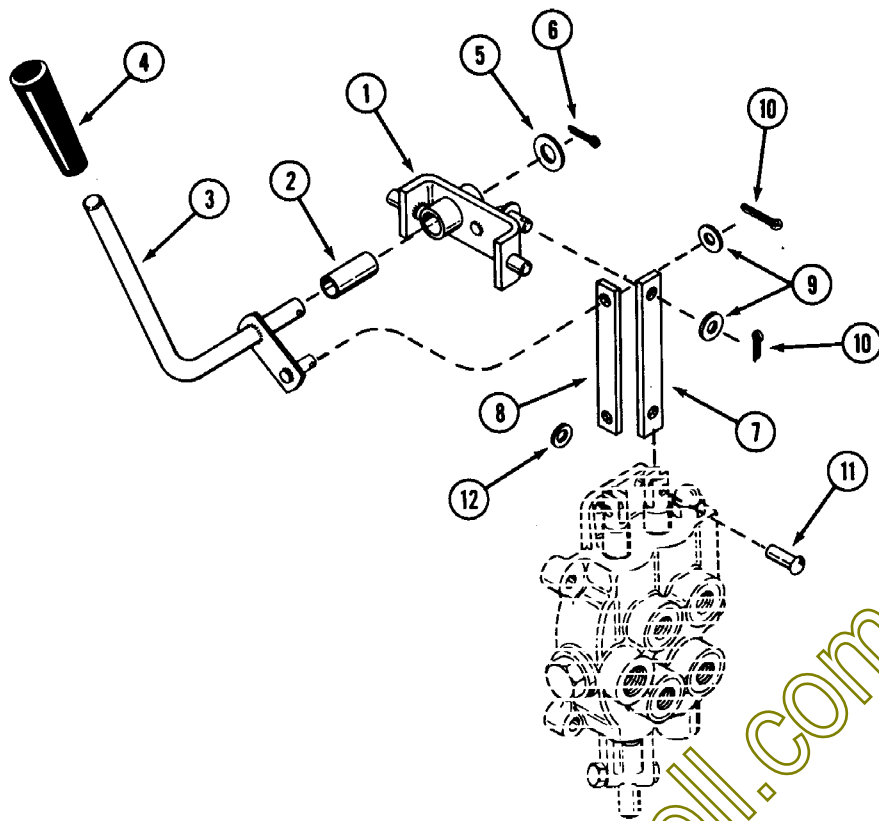
## HYDRAULIC SYSTEM — BUCKET CONTROL

| REF. | PART NO.  | DESCRIPTION                                                               | REQ'D |
|------|-----------|---------------------------------------------------------------------------|-------|
| 1    | C 17714   | PIN - cylinder mounting . . . . .                                         | 2     |
| 2    | 113- 122  | BOLT - 5/16" x 1-1/2" NC hex . . . . .                                    | 2     |
| 3    | 131- 173  | NUT - lock 5/16" . . . . .                                                | 2     |
| 4    | 218- 5066 | FITTING - hydraulic (includes 218-5006 "O" - ring). . . . .               | 2     |
| 5    | C 18175   | TUBE - valve to bucket valve . . . . .                                    | 1     |
| 6    | 218- 5351 | FITTING - hydraulic, bucket valve (includes 218-5005 "O" - ring). . . . . | 2     |
| 7    | C 18170   | TUBE - bucket valve to left bulkhead . . . . .                            | 1     |
| 8    | C 18171   | TUBE - bucket valve to right bulkhead . . . . .                           | 1     |
| 9    | 218- 533  | FITTING - 45°, bucket cylinder . . . . .                                  | 1     |
| 10   | 218- 455  | FITTING - straight, bucket cylinder. . . . .                              | 1     |
| 11   | C 18164   | TUBE - bucket cylinder. . . . .                                           | 1     |
| 12   | C 18156   | HOSE - bucket, cylinder . . . . .                                         | 2     |
| 13   | C 18304   | CLIP - hose tube mounting. . . . .                                        | 4     |
| 14   | 187- 1036 | SCREW - clip mounting . . . . .                                           | 4     |
| 15   | 218- 5243 | TEE - bucket valve, (includes 218-5005 "O" - ring). . . . .               | 1     |
| 16   | C 18295   | FITTING - special 45° (includes 218-5005 "O" - ring). . . . .             | 1     |
| 17   | C 18169   | TUBE - bucket valve to right front bulkhead . . . . .                     | 1     |
| 18   | C 18176   | TUBE - bucket valve to left front bulkhead . . . . .                      | 1     |
| 19   | C 18168   | TUBE - bucket valve to right rear bulkhead . . . . .                      | 1     |
| 20   | C 18174   | TUBE - bucket to valve to left front bulkhead . . . . .                   | 1     |
| 21   | C 18166   | HOSE TUBE - left rear to lift arm cylinder, rod end . . . . .             | 1     |
| 22   | C 18157   | HOSE TUBE - right rear to lift arm cylinder, rod end . . . . .            | 1     |
| 23   | C 18165   | HOSE TUBE - right front to lift arm cylinder, foot end . . . . .          | 1     |
| 24   | C 18158   | HOSE TUBE - left front to lift arm cylinder, foot end . . . . .           | 1     |
| 25   | 218- 1254 | NUT - jam 9/16" . . . . .                                                 | 8     |
| 26   | 218- 443  | FITTING - lift arm cylinder . . . . .                                     | 4     |
| 27   | 214- 262  | CLAMP - hose, large . . . . .                                             | 3     |
| 29   | C 18172   | HOSE TUBE - bucket cylinder, top left . . . . .                           | 1     |
| 30   | C 18173   | HOSE TUBE - bucket cylinder, top right . . . . .                          | 1     |
| 31   | 218- 1255 | NUT - jam 3/4" . . . . .                                                  | 4     |
| 32   | C 18179   | VALVE - bucket control (repairs page 73) . . . . .                        | 1     |
| 33   | C 11527   | CYLINDER - lift arm (repairs page 81). . . . .                            | 2     |
| 34   | C 11528   | CYLINDER - bucket (repairs page 81) . . . . .                             | 1     |



## DIRECTION CONTROL

| REF. | PART NO. | DESCRIPTION                                                | REQ'D |
|------|----------|------------------------------------------------------------|-------|
| 1    | C 21512  | ARM - control . . . . .                                    | 1     |
| 2    | C 17569  | LEVER - direction control . . . . .                        | 1     |
| 3    | C 23514  | FOLLOWER - cam . . . . .                                   | 1     |
| 4    | 132- 46  | PIN - cotter 1/8" x 3/4" . . . . .                         | 1     |
| 5    | 192- 20  | LOCKWASHER - 5/16" . . . . .                               | 3     |
| 6    | C 19900  | PEDAL - motion control . . . . .                           | 1     |
| 7    | C 17553  | ROD - pedal control . . . . .                              | 1     |
| 8    | 129- 102 | NUT - lock 5/16" NC hex . . . . .                          | 1     |
| 9    | C 18277  | SPRING - pedal return . . . . .                            | 1     |
| 10   | C 17551  | DISC - friction . . . . .                                  | 1     |
| 11   | C 12127  | BUSHING - nylon . . . . .                                  | 1     |
| 12   | C 18391  | WASHER - spring . . . . .                                  | 1     |
| 13   | 195- 541 | WASHER - 5/8" . . . . .                                    | 3     |
| 14   | 131- 165 | NUT - 1/2" NC hex . . . . .                                | 2     |
| 15   | C 19902  | BRACKET - valve control . . . . .                          | 1     |
| 16   | C 18012  | BRACKET - guide . . . . .                                  | 1     |
| 17   | 113- 103 | BOLT - 5/16" x 1" NC hex . . . . .                         | 2     |
| 18   | 131- 176 | NUT - lock 5/16" NC hex . . . . .                          | 2     |
| 19   | C 19220  | ROD - valve control . . . . .                              | 1     |
| 20   | 195- 102 | WASHER - 1/4" . . . . .                                    | 2     |
| 21   | C 19025  | BALL JOINT . . . . .                                       | 1     |
| 22   | 129- 122 | NUT - 5/16" NF hex . . . . .                               | 1     |
| 23   | 132- 320 | PIN - cotter 3/32" x 3/4" . . . . .                        | 2     |
| 24   | A 37247  | KNOB - control lever . . . . .                             | 1     |
| 25   | C 12093  | BUSHING - flip lok . . . . .                               | 1     |
| 26   | C 19376  | WASHER - spacer, 3/32" . . . . .                           | UAR   |
| 27   | C 19377  | WASHER - spacer, 1/32" . . . . .                           | UAR   |
| 28   | C 19258  | SWITCH - safety (see electrical pages 65 and 67) . . . . . | 1     |

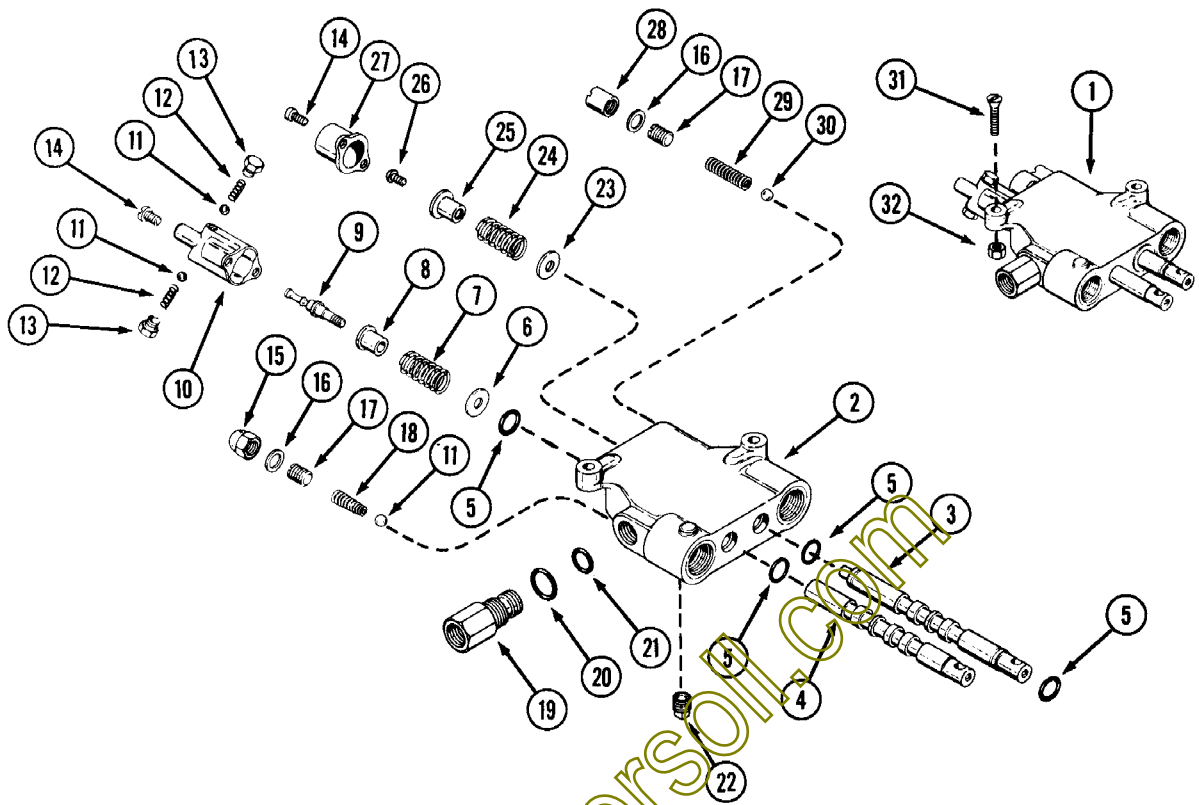


### BUCKET CONTROLS

| REF. | PART NO. | DESCRIPTION                            | REQ'D |
|------|----------|----------------------------------------|-------|
| 1    | C 17594  | BRACKET - pivot . . . . .              | 1     |
| 2    | C 16714  | BUSHING - pivot bracket . . . . .      | 1     |
| 3    | C 17596  | LEVER - bucket control . . . . .       | 1     |
| 4    | A 37247  | KNOB - lever, bucket control . . . . . | 1     |
| 5    | 195- 533 | WASHER - 1/2" . . . . .                | 1     |
| 6    | 132- 321 | PIN - cotter 1/8" x 1" . . . . .       | 1     |
| 7    | C 17587  | LINK - valve 4" . . . . .              | 1     |
| 8    | C 17588  | LINK - valve 3-3/4" . . . . .          | 1     |
| 9    | 195- 521 | WASHER - 5/16" . . . . .               | 2     |
| 10   | 132- 320 | PIN - cotter 3/32" x 3/4" . . . . .    | 2     |
| 11   | C 12932  | PIN . . . . .                          | 2     |
| 12   | C 18845  | RETAINER . . . . .                     | 2     |

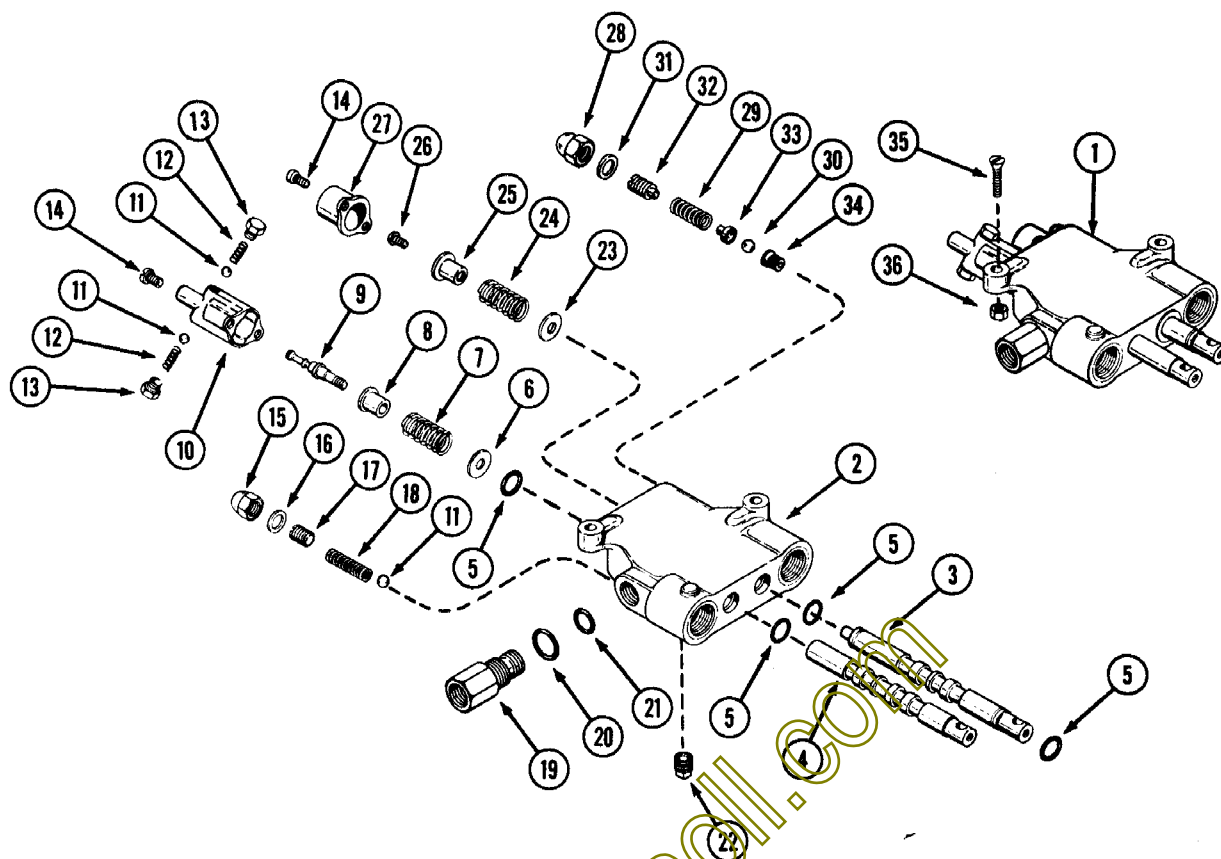
### HYDRAULIC RESERVOIR MOUNTING

|    |           |                                                       |   |
|----|-----------|-------------------------------------------------------|---|
| 1  | C 18000   | SUPPORT - reservoir R.H. (644) . . . . .              | 1 |
| 1  | C 18001   | SUPPORT - reservoir L.H. (644) . . . . .              | 1 |
| 2  | C 18396   | SUPPORT - reservoir L.H. (646) . . . . .              | 1 |
| 3  | C 18126   | SUPPORT - reservoir R.H. (646) . . . . .              | 1 |
| 4  | 113- 118  | BOLT - 5/16" x 5/8" NC hex . . . . .                  | 4 |
| 5  | C 19439   | RESERVOIR - hydraulic oil . . . . .                   | 1 |
| 6  | C 11529   | CAP - reservoir with insert . . . . .                 | 1 |
| 7  | C 11545   | INSERT - reservoir cap . . . . .                      | 1 |
| 8  | A 70100   | STRAP - reservoir mounting . . . . .                  | 2 |
| 9  | 173- 215  | SCREW - 1/4" x 1-1/4" round head machine . . . . .    | 2 |
| 10 | 129- 504  | NUT - 1/4" NC hex . . . . .                           | 2 |
| 11 | C 14690   | CUSHION - reservoir . . . . .                         | 2 |
| 12 | C 14246   | BRACKET - heat exchanger mounting . . . . .           | 2 |
| 13 | 187- 1251 | SCREW - 1/4" x 1-1/4" NC flat head phillips . . . . . | 4 |
| 14 | C 14195   | EXCHANGER - heat . . . . .                            | 1 |



## C 19221 HYDRAULIC CONTROL VALVE — TRACTOR

| REF. | PART NO.  | DESCRIPTION                                                       | REQ'D |
|------|-----------|-------------------------------------------------------------------|-------|
|      |           | 644 - used prior to S/N 9698059                                   |       |
|      |           | 644 - used S/N 9698139 to 9698168                                 |       |
|      |           | 646 - used prior to S/N 9698622                                   |       |
| 1    | NSS       | VALVE - tractor control (order C 21497 valve) . . . . .           | 1     |
| 2    | NSS       | BODY - valve (order C21497 valve) . . . . .                       | 1     |
| 3    | NSS       | SPOOL - valve (order C 21497 valve) . . . . .                     | 1     |
| 4    | NSS       | SPOOL - valve (order C 21497 valve) . . . . .                     | 1     |
| 5    | A 7982    | SEAL - "O" ring, spool . . . . .                                  | 4     |
| 6    | C 17440   | WASHER . . . . .                                                  | 1     |
| 7    | C 17441   | SPRING - detent . . . . .                                         | 1     |
| 8    | C 13200   | SPACER. . . . .                                                   | 1     |
| 9    | C 17439   | DETENT - spool . . . . .                                          | 1     |
| 10   | C 17438   | COVER - detent . . . . .                                          | 1     |
| 11   | 211- 7    | BALL - steel 1/4" . . . . .                                       | 3     |
| 12   | C 17444   | SPRING - detent . . . . .                                         | 2     |
| 13   | C 17443   | SCREW - detent, cap. . . . .                                      | 2     |
| 14   | 169- 114  | SCREW - cover . . . . .                                           | 4     |
| 15   | 129- 531  | CAP - relief adjust . . . . .                                     | 1     |
| 16   | C 17435   | GASKET - relief adjust cap. . . . .                               | 2     |
| 17   | C 17433   | SCREW - relief adjust . . . . .                                   | 2     |
| 18   | C 17445   | SPRING - relief . . . . .                                         | 1     |
| 19   | C 18852   | BUSHING - power beyond . . . . .                                  | 1     |
| 20   | 218- 5007 | SEAL - "O" ring, bushing . . . . .                                | 1     |
| 21   | A 30097   | SEAL - "O" ring . . . . .                                         | 1     |
| 22   | 221- 841  | PLUG - pipe 1/4" . . . . .                                        | 1     |
| 23   | 129- 521  | WASHER - return . . . . .                                         | 1     |
| 24   | C 18850   | SPRING - return . . . . .                                         | 1     |
| 25   | C 18853   | SPACER. . . . .                                                   | 1     |
| 26   | 193- 524  | SCREW - with lockwasher . . . . .                                 | 1     |
| 27   | C 18847   | COVER - return . . . . .                                          | 1     |
| 28   | C 18854   | CAP - relief adjust . . . . .                                     | 1     |
| 29   | C 17432   | SPRING - relief . . . . .                                         | 1     |
| 30   | 211- 9    | BALL - steel 5/16" . . . . .                                      | 1     |
| 31   | 171- 247  | SCREW - valve mounting 5/16" x 1-1/4" flat head machine . . . . . | 2     |
| 32   | 131- 351  | NUT 5/16" NC hex. . . . .                                         | 2     |

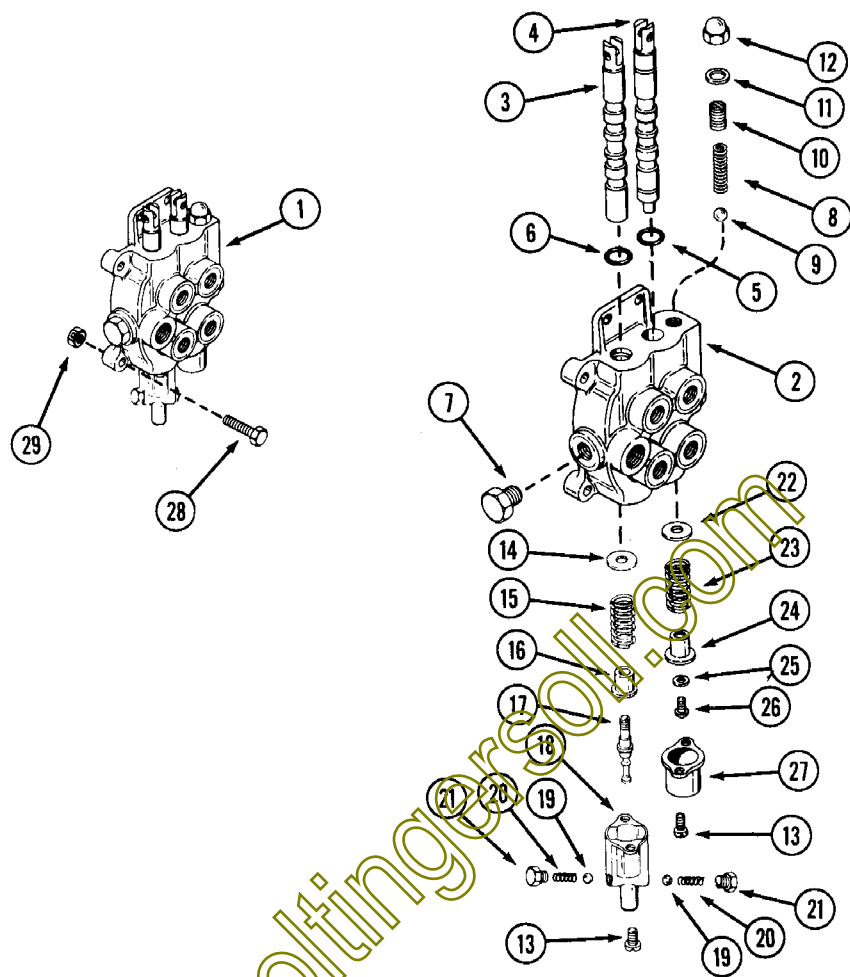


## C 21497 HYDRAULIC CONTROL VALVE — TRACTOR

644 - used S/N 9698059 and after

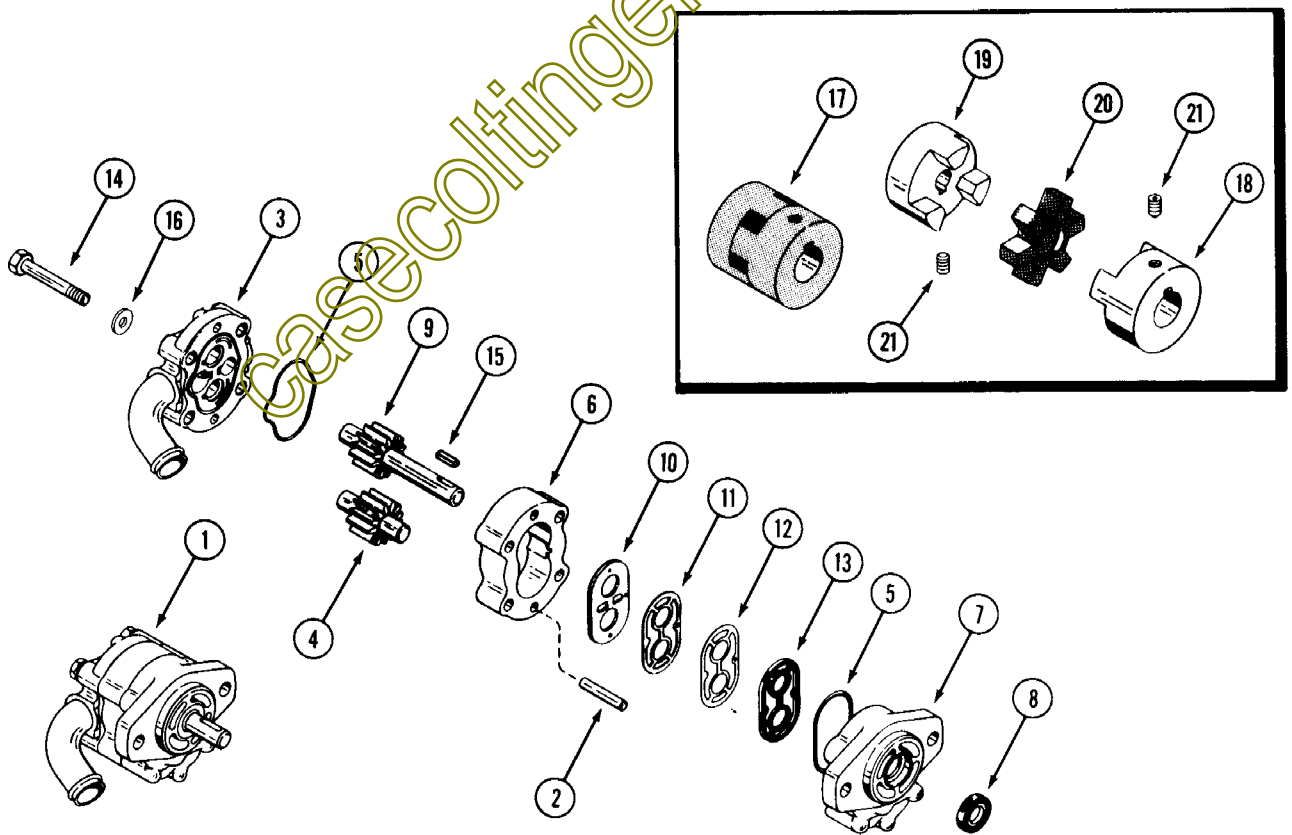
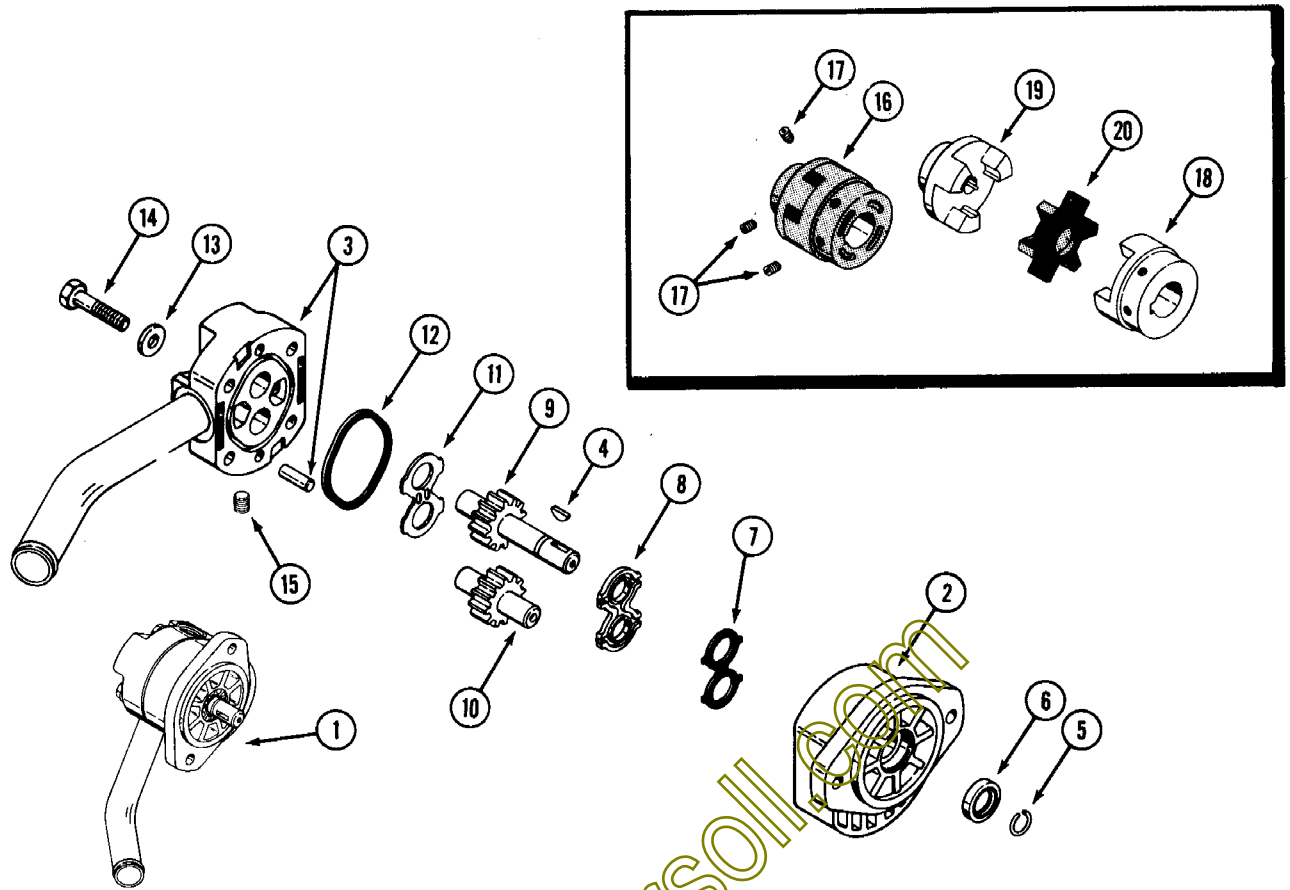
646 - used S/N 9698622 and after

| REF. | PART NO.  | DESCRIPTION                                                             | REQ'D |
|------|-----------|-------------------------------------------------------------------------|-------|
| 1    | C 21497   | VALVE - tractor control . . . . .                                       | 1     |
| 2    | NSS       | BODY - valve (order C 21497 valve) . . . . .                            | 1     |
| 3    | NSS       | SPOOL - valve (order C 21497 valve) . . . . .                           | 1     |
| 4    | NSS       | SPOOL - valve (order C 21497 valve) . . . . .                           | 1     |
| 5    | A 7982    | SEAL - "O" ring, spool . . . . .                                        | 4     |
| 6    | C 17440   | WASHER . . . . .                                                        | 1     |
| 7    | D 59376   | SPRING - detent . . . . .                                               | 1     |
| 8    | C 13200   | SPACER . . . . .                                                        | 1     |
| 9    | C 17439   | DETENT - spool . . . . .                                                | 1     |
| 10   | C 17438   | COVER - detent . . . . .                                                | 1     |
| 11   | 211- 7    | BALL - steel 1/4" . . . . .                                             | 3     |
| 12   | C 17444   | SPRING - detent . . . . .                                               | 2     |
| 13   | C 17443   | SCREW - detent, cap. . . . .                                            | 2     |
| 14   | 169- 114  | SCREW - cover . . . . .                                                 | 4     |
| 15   | 129- 531  | CAP - relief adjust . . . . .                                           | 1     |
| 16   | C 17435   | GASKET - relief adjust cap . . . . .                                    | 1     |
| 17   | C 17433   | SCREW - relief adjust . . . . .                                         | 1     |
| 18   | C 21505   | SPRING - relief . . . . .                                               | 1     |
| 19   | C 18852   | BUSHING - power beyond . . . . .                                        | 1     |
| 20   | 218- 5007 | SEAL - "O" ring, bushing . . . . .                                      | 1     |
| 21   | A 30097   | SEAL - "O" ring . . . . .                                               | 1     |
| 22   | 221- 841  | PLUG - pipe 1/4" . . . . .                                              | 1     |
| 23   | 195- 521  | WASHER - return . . . . .                                               | 1     |
| 24   | C 18850   | SPRING - return . . . . .                                               | 1     |
| 25   | C 18853   | SPACER . . . . .                                                        | 1     |
| 26   | 193- 524  | SCREW - with lock washer . . . . .                                      | 1     |
| 27   | C 18847   | COVER - return . . . . .                                                | 1     |
| 28   | C 21510   | CAP - relief adjust . . . . .                                           | 1     |
| 29   | C 21507   | SPRING - relief . . . . .                                               | 1     |
| 30   | 211- 9    | BALL - steel 5/16" . . . . .                                            | 1     |
| 31   | C 21508   | GASKET - relief adj. cap . . . . .                                      | 1     |
| 32   | C 21509   | SCREW - relief adjust . . . . .                                         | 1     |
| 33   | C 21506   | RETAINER - ball, relief . . . . .                                       | 1     |
| 34   | C 21522   | SEAT - ball, relief . . . . .                                           | 1     |
| 35   | 171- 247  | SCREW - valve mounting 5/16" x 1-1/4" flat head machine . . . . .       | 2     |
| 36   | 131- 351  | NUT - 5/16" NC hex. . . . .                                             | 2     |
| 37   | C 18851   | KIT - detent (Includes items 6, 7, 8, 9, 10, 11, 12, 13 & 14) . . . . . | 1     |
| 38   | C 21511   | KIT - relief (Includes items 11, 15, 16, 17 & 18) . . . . .             | 1     |
| 39   | C 21521   | KIT - relief (Includes items 28, 29, 30, 31, 32, 33 & 34) . . . . .     | 1     |



## HYDRAULIC CONTROL VALVE – BUCKET

| REF. | PART NO.  | DESCRIPTION                                                              | REQ'D |
|------|-----------|--------------------------------------------------------------------------|-------|
| 1    | C 18179   | VALVE - bucket control . . . . .                                         | 1     |
| 2    | NSS       | BODY - valve (order C18179 valve) . . . . .                              | 1     |
| 3    | NSS       | SPOOL - valve (order C18179 valve). . . . .                              | 1     |
| 4    | NSS       | SPOOL - valve (order C18179 valve). . . . .                              | 1     |
| 5    | A 7982    | SEAL - "O" ring, spool . . . . .                                         | 2     |
| 6    | D 40816   | SEAL - "O" ring, spool . . . . .                                         | 2     |
| 7    | 221- 843  | PLUG - 3/8" . . . . .                                                    | 1     |
| 8    | C 17432   | SPRING - relief . . . . .                                                | 1     |
| 9    | 211- 9    | BALL - steel 5/16" . . . . .                                             | 1     |
| 10   | C 17433   | SCREW - relief adjust . . . . .                                          | 1     |
| 11   | C 17435   | GASKET - adjust screw . . . . .                                          | 1     |
| 12   | 129- 531  | CAP - adjust screw . . . . .                                             | 1     |
| 13   | 169- 114  | SCREW - cover . . . . .                                                  | 4     |
| 14   | C 17740   | WASHER . . . . .                                                         | 1     |
| 15   | C 17741   | SPRING - return . . . . .                                                | 1     |
| 16   | C 13200   | SPACER - detent . . . . .                                                | 1     |
| 17   | C 17439   | DETENT - spool . . . . .                                                 | 1     |
| 18   | C 17438   | COVER - detent . . . . .                                                 | 1     |
| 19   | 211- 7    | BALL - steel 1/4" . . . . .                                              | 2     |
| 20   | C 17444   | SPRING - detent . . . . .                                                | 2     |
| 21   | C 17443   | SCREW - detent . . . . .                                                 | 2     |
| 22   | 195- 521  | WASHER - return. . . . .                                                 | 1     |
| 23   | C 18850   | SPRING - return . . . . .                                                | 1     |
| 24   | C 13200   | SPACER. . . . .                                                          | 1     |
| 25   | 195- 510  | WASHER . . . . .                                                         | 1     |
| 26   | 193- 524  | SCREW . . . . .                                                          | 1     |
| 27   | C 18847   | COVER - centering . . . . .                                              | 1     |
| 28   | 113- 17   | BOLT - valve mounting 1/4" x 1-1/4" NC hex. . . . .                      | 3     |
| 29   | 131- 1102 | NUT - lock 1/4" NC hex. . . . .                                          | 3     |
|      | C 18846   | KIT - spring center (Includes items 22, 23, 24, 25, 26 and 27) . . . . . | 1     |
|      | C 18851   | KIT - detent (Includes items 14, 15, 16, 17, 18, 19, 20 and 22). . . . . | 1     |

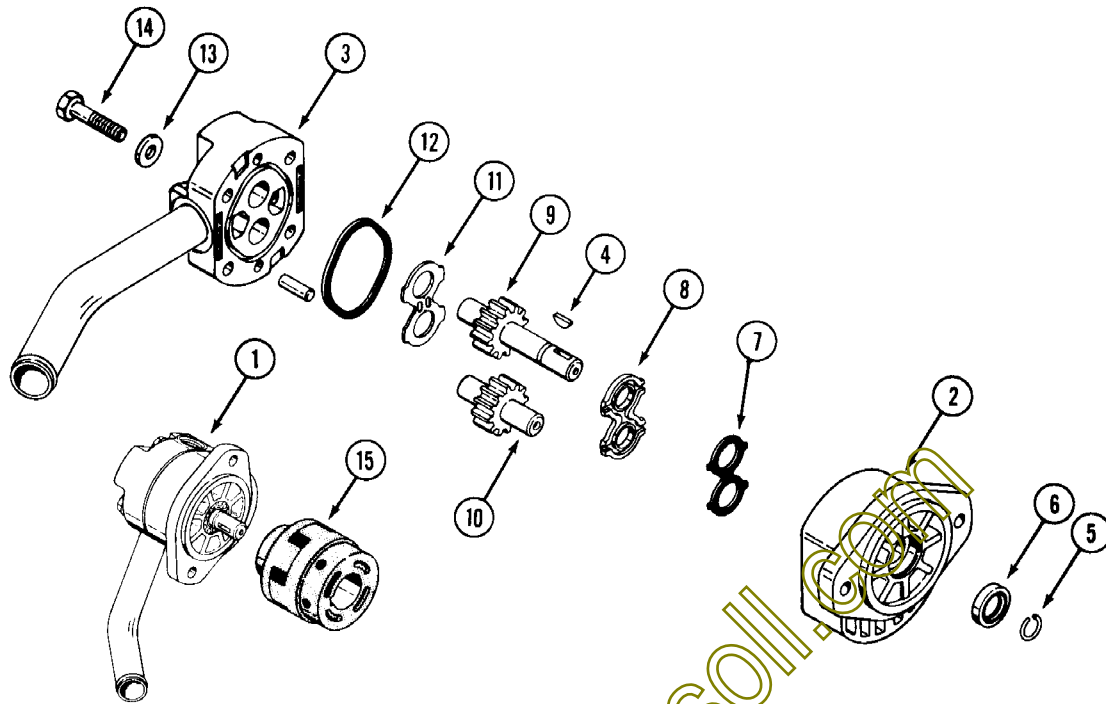


## HYDRAULIC PUMP AND COUPLING — 646

| REF. | PART NO.  | DESCRIPTION                                                 | REQ'D |
|------|-----------|-------------------------------------------------------------|-------|
| 1    | C 20122   | PUMP - hydraulic (used S/N 9680417 and after) . . . . .     | 1     |
| 2    | C 19277   | BODY ASSEMBLY - (Includes bushings) . . . . .               | 1     |
| 3    | C 19278   | COVER ASSEMBLY - (Includes bushings & dowel pins) . . . . . | 1     |
| 4    | 126- 12   | KEY - woodruff . . . . .                                    | 2     |
| 5    | C 18768   | RING - snap . . . . .                                       | 1     |
| 6    | C 19281   | SEAL - oil . . . . .                                        | 1     |
| 7    | C 18764   | SEAL - pressure load . . . . .                              | 1     |
| 8    | C 19279   | PLATE - wear . . . . .                                      | 1     |
| 9    | C 18761   | GEAR - drive . . . . .                                      | 1     |
| 10   | C 18762   | GEAR - driven . . . . .                                     | 1     |
| 11   | C 19280   | PLATE - thrust . . . . .                                    | 1     |
| 12   | C 18769   | SEAL - gasket . . . . .                                     | 1     |
| 13   | 195- 2028 | WASHER . . . . .                                            | 4     |
| 14   | 113- 233  | BOLT . . . . .                                              | 4     |
| 15   | 221- 841  | PLUG - pipe . . . . .                                       | 1     |
| 16   | C 18235   | COUPLING - pump . . . . .                                   | 2     |
| 17   | 178- 858  | SCREW - set 5/16" x 3/8" . . . . .                          | 4     |
| 18   | NSS       | HUB - (order C18235) . . . . .                              | 1     |
| 19   | NSS       | HUB - (order C18235) . . . . .                              | 1     |
| 20   | C 18258   | SPIDER - coupling . . . . .                                 | 1     |

## HYDRAULIC PUMP AND COUPLING — 644

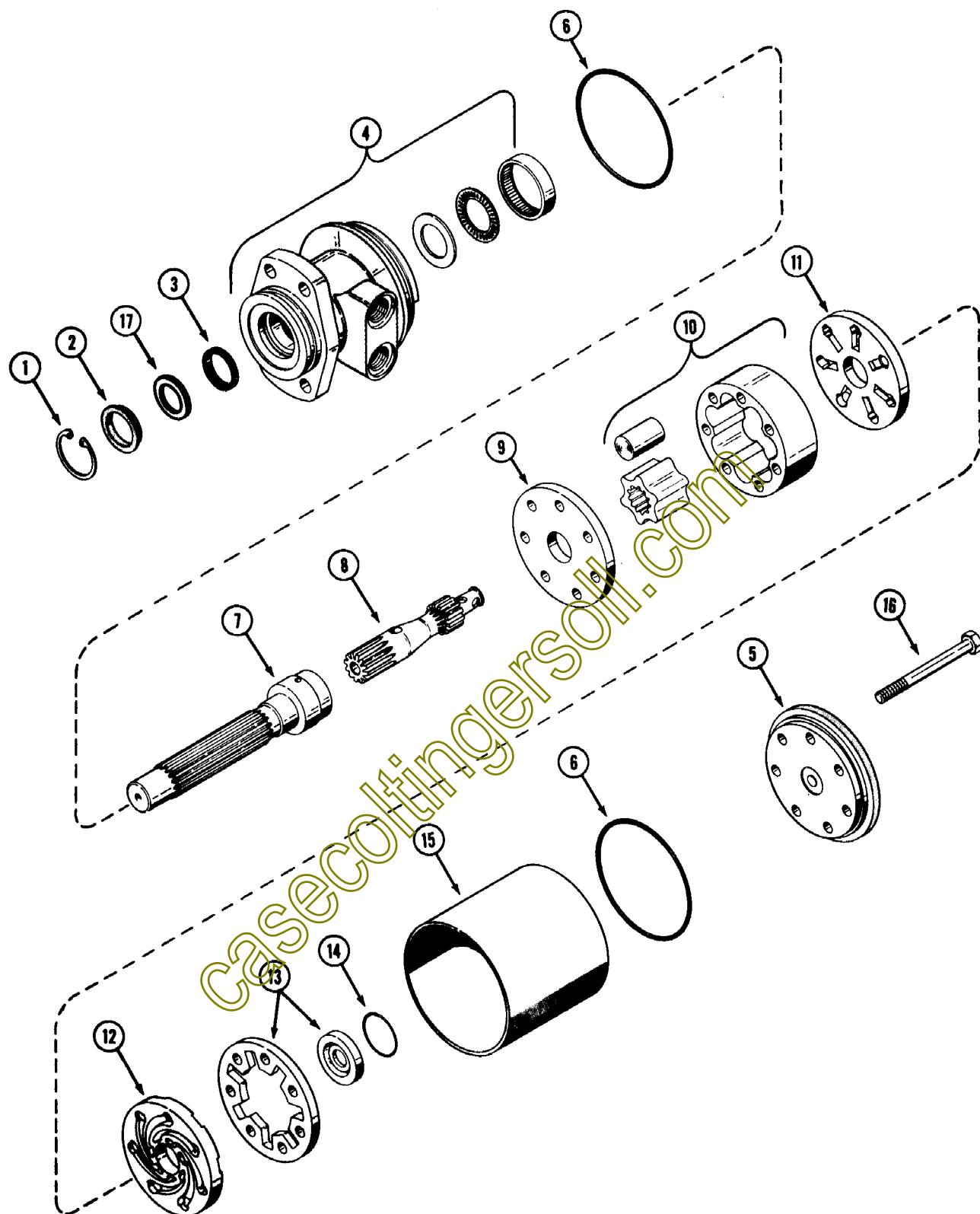
|    |         |                                                    |   |
|----|---------|----------------------------------------------------|---|
| 1  | C 19045 | PUMP - hydraulic . . . . .                         | 1 |
| 2  | C 15729 | PIN - dowel . . . . .                              | 2 |
| 3  | C 19113 | COVER - rear . . . . .                             | 1 |
| 4  | C 15731 | GEAR ASSEMBLY - driven . . . . .                   | 1 |
| 5  | C 15732 | "O" RING . . . . .                                 | 2 |
| 6  | C 15733 | BODY - pump . . . . .                              | 1 |
| 7  | C 15734 | COVER - front . . . . .                            | 1 |
| 8  | C 15735 | SEAL - rotary . . . . .                            | 1 |
| 9  | C 19114 | GEAR ASSEMBLY - drive . . . . .                    | 1 |
| 10 | C 15737 | PLATE - wear . . . . .                             | 1 |
| 11 | C 15738 | SHIELD - heat . . . . .                            | 1 |
| 12 | C 15739 | GASKET . . . . .                                   | 1 |
| 13 | C 15740 | SEAL . . . . .                                     | 1 |
| 14 | 13- 540 | BOLT . . . . .                                     | 4 |
| 15 | C 19207 | KEY - 1/8" x 3/4" . . . . .                        | 1 |
| 16 | C 19115 | WASHER . . . . .                                   | 4 |
| 17 | C 17298 | COUPLING - pump . . . . .                          | 1 |
| 18 | NSS     | HUB - (order item 17) . . . . .                    | 1 |
| 19 | NSS     | HUB - (order item 17) . . . . .                    | 1 |
| 20 | C 15036 | SPIDER - (for C17298 coupling) . . . . .           | 1 |
| 21 | 83- 55  | SCREW - set 5/16" x 5/16" NC socket head . . . . . | 2 |



## HYDRAULIC PUMP AND COUPLING – 646

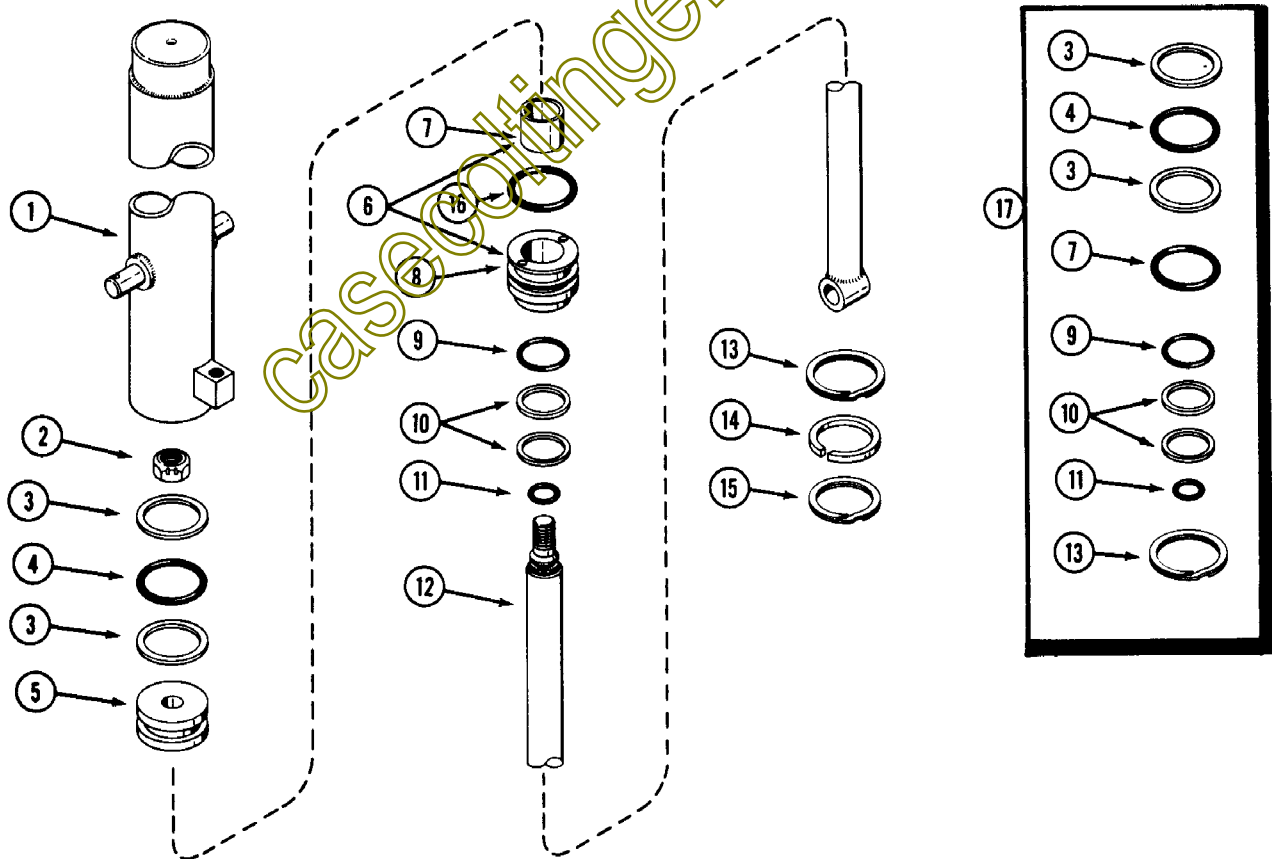
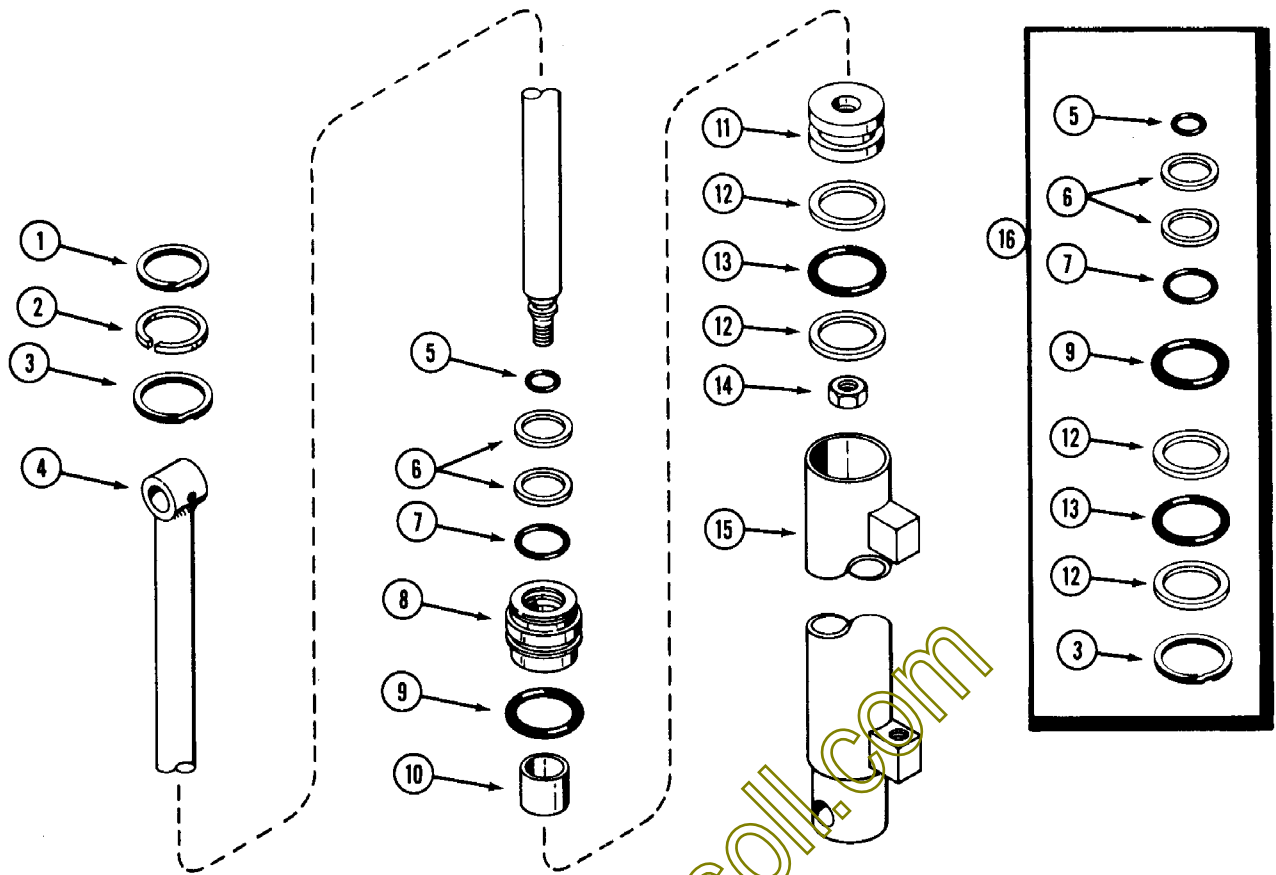
| REF. | PART NO. | DESCRIPTION                                                             | REQ'D |
|------|----------|-------------------------------------------------------------------------|-------|
| 1    | NSS      | PUMP - hydraulic, C19176 (used prior to S/N 9680417) order C20122 . . . | 1     |
| 2    | C 20200  | BODY - pump . . . . .                                                   | 1     |
| 3    | C 20201  | COVER - pump . . . . .                                                  | 1     |
| 4    | 126- 112 | KEY - woodruff. . . . .                                                 | 2     |
| 5    | C 18768  | RING - snap . . . . .                                                   | 1     |
| 6    | C 18766  | SEAL - oil . . . . .                                                    | 1     |
| 7    | C 18764  | SEAL - pressure load. . . . .                                           | 1     |
| 8    | C 19279  | PLATE - wear . . . . .                                                  | 1     |
| 9    | C 18761  | GEAR - drive . . . . .                                                  | 1     |
| 10   | C 18762  | GEAR - driven. . . . .                                                  | 1     |
| 11   | C 19280  | PLATE - thrust . . . . .                                                | 1     |
| 12   | C 18769  | SEAL - gasket . . . . .                                                 | 1     |
| 13   | A 7200   | WASHER . . . . .                                                        | 4     |
| 14   | 113- 274 | BOLT. . . . .                                                           | 4     |
| 15   | C 18235  | COUPLING - pump . . . . .                                               | 2     |

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## HYDRAULIC DRIVE MOTOR

| REF. | PART NO. | DESCRIPTION                                        | REQ'D |
|------|----------|----------------------------------------------------|-------|
|      | C 14655  | MOTOR - hydraulic . . . . .                        | 1     |
| 1    | L 30654  | RING - retaining . . . . .                         | 1     |
| 2    | NSS      | SPACER - (See kit below) . . . . .                 | 1     |
| 3    | NSS      | SEAL - oil (See kit below) . . . . .               | 1     |
| 4    | C 14827  | HOUSING ASSEMBLY . . . . .                         | 1     |
| 5    | C 14837  | END CAP . . . . .                                  | 1     |
| 6    | NSS      | SEAL - (See kit below) . . . . .                   | 2     |
| 7    | C 14828  | SHAFT - coupling . . . . .                         | 1     |
| 8    | C 14829  | DRIVE LINK . . . . .                               | 1     |
| 9    | C 14830  | PLATE - wear . . . . .                             | 1     |
| 10   | C 14831  | ROTOR ASSEMBLY . . . . .                           | 1     |
| 11   | C 14832  | PLATE - manifold . . . . .                         | 1     |
| 12   | C 14833  | MANIFOLD . . . . .                                 | 1     |
| 13   | C 14834  | COMMUTATOR AND RING SET . . . . .                  | 1     |
| 14   | NSS      | RING - sealing (See kit below) . . . . .           | 1     |
| 15   | C 14836  | SLEEVE . . . . .                                   | 1     |
| 16   | C 14838  | BOLT - 3/8" x 4-3/8" NF hex . . . . .              | 7     |
| 17   | NSS      | WASHER - back up, .010" (see kit below) . . . . .  | 1     |
|      | C 19037  | KIT - "O" ring and seal . . . . .                  | 1     |
|      | C 19041  | RING - sealing . . . . .                           | 1     |
|      | C 19038  | SEAL - dirt (not used - throw away item) . . . . . | 1     |
|      | C 18382  | SEAL . . . . .                                     | 2     |
|      | C 19039  | SEAL . . . . .                                     | 1     |
|      | L 30654  | RING - retaining . . . . .                         | 1     |
|      | C 19040  | SPACER - seal . . . . .                            | 1     |
|      | C 19212  | WASHER - back up, .010" . . . . .                  | 1     |

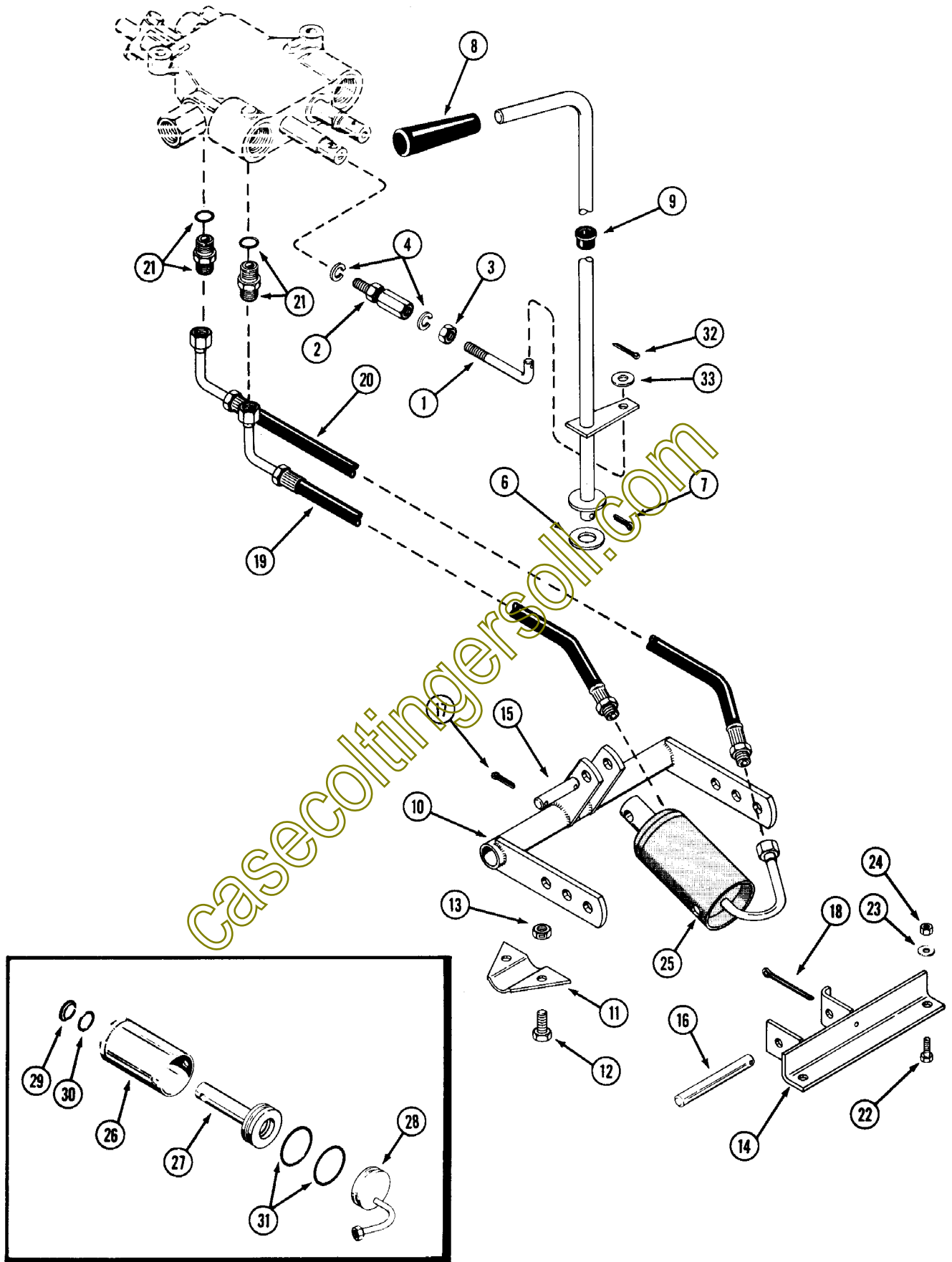


## CYLINDER -- LIFT ARM

| REF. | PART NO. | DESCRIPTION                         | REQ'D |
|------|----------|-------------------------------------|-------|
|      | C 11527  | CYLINDER - lift arm . . . . .       | 1     |
| 1    | T 24080  | RING - retaining . . . . .          | 1     |
| 2    | T 24081  | SPACER. . . . .                     | 1     |
| 3    | NSS      | RING - retaining . . . . .          | 1     |
| 4    | C 18575  | ROD - cylinder . . . . .            | 1     |
| 5    | NSS      | SEAL - "O" - ring, rod . . . . .    | 1     |
| 6    | NSS      | WIPER - rod . . . . .               | 2     |
| 7    | NSS      | SEAL - "O" - ring, rod . . . . .    | 1     |
| 8    | T 42253  | HEAD - cylinder . . . . .           | 1     |
| 9    | NSS      | SEAL - head . . . . .               | 1     |
| 10   | T 42254  | BUSHING - head . . . . .            | 1     |
| 11   | T 24084  | PISTON - cylinder . . . . .         | 1     |
| 12   | NSS      | WASHER - backup, piston . . . . .   | 2     |
| 13   | NSS      | SEAL - "O" - ring, piston . . . . . | 1     |
| 14   | 25- 159  | NUT - jam . . . . .                 | 1     |
| 15   | C 18576  | BODY - cylinder . . . . .           | 1     |
| 16   | T 41499  | KIT - seal . . . . .                | 1     |

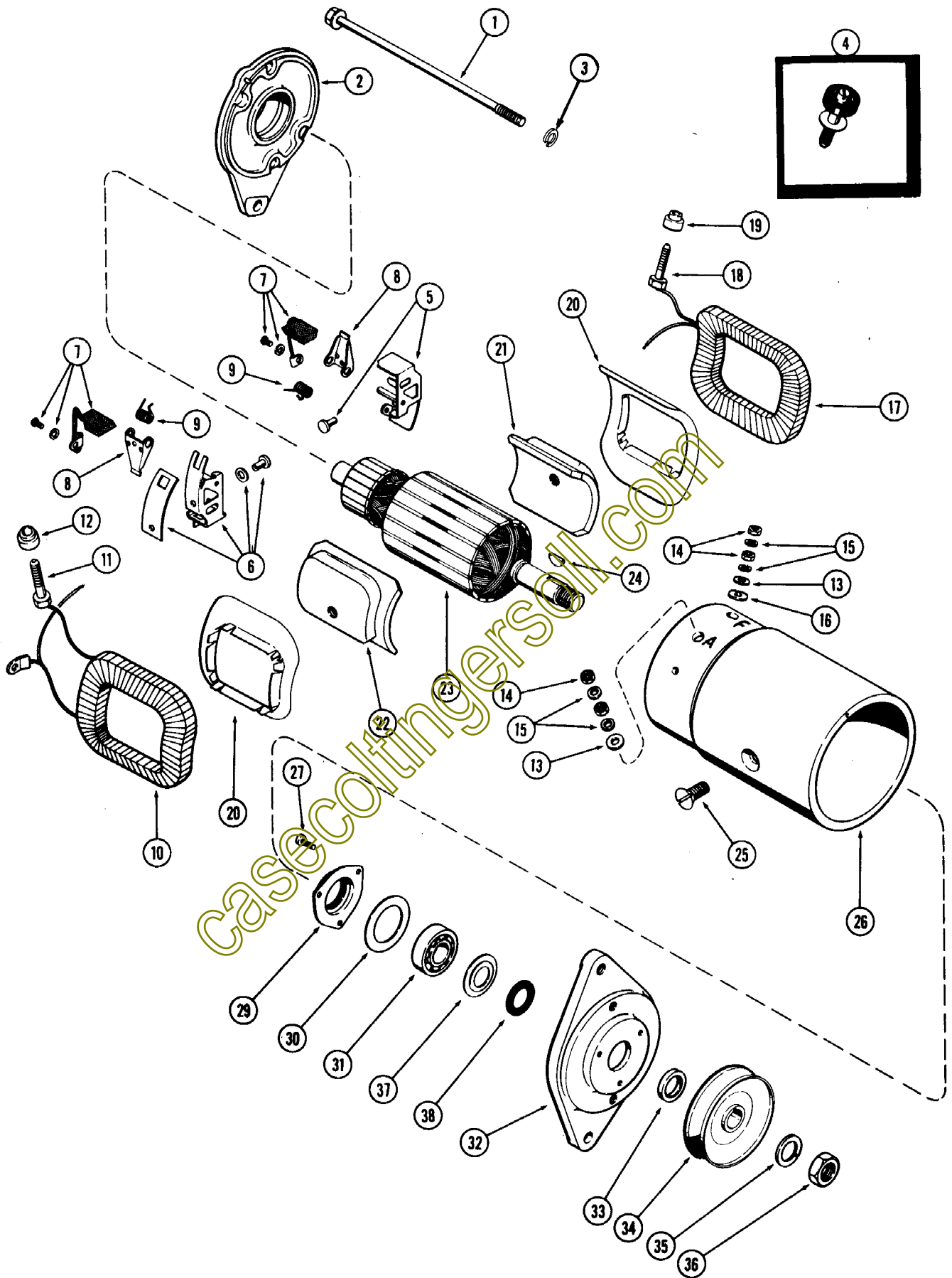
## CYLINDER -- BUCKET

|    |          |                                     |   |
|----|----------|-------------------------------------|---|
|    | C 11528  | CYLINDER - bucket . . . . .         | 1 |
| 1  | C 18573  | BODY - cylinder . . . . .           | 1 |
| 2  | 131- 677 | NUT - jam . . . . .                 | 1 |
| 3  | NSS      | WASHER - backup, piston . . . . .   | 2 |
| 4  | NSS      | SEAL - "O" - ring, piston . . . . . | 1 |
| 5  | D 54909  | PISTON - cylinder . . . . .         | 1 |
| 6  | C 18486  | HEAD ASSEMBLY . . . . .             | 1 |
| 7  | NSS      | BUSHING - head . . . . .            | 1 |
| 8  | C 18487  | HEAD - cylinder . . . . .           | 1 |
| 9  | NSS      | SEAL - "O" - ring, rod . . . . .    | 1 |
| 10 | NSS      | WASHER - backup . . . . .           | 2 |
| 11 | NSS      | SEAL - "O" - ring, rod . . . . .    | 1 |
| 12 | C 18572  | ROD - cylinder . . . . .            | 1 |
| 13 | NSS      | RING - retaining . . . . .          | 1 |
| 14 | D 54915  | SPACER. . . . .                     | 1 |
| 15 | D 54917  | RING - retaining . . . . .          | 1 |
| 16 | NSS      | SEAL - "O" - ring, head . . . . .   | 1 |
| 17 | C 18574  | KIT - seal . . . . .                | 1 |



## HYDRAULIC LIFT

| REF. | PART NO.  | DESCRIPTION                                                      | REQ'D |
|------|-----------|------------------------------------------------------------------|-------|
| 1    | C 19384   | ROD - lift control . . . . .                                     | 1     |
| 2    | C 19025   | BALL JOINT . . . . .                                             | 1     |
| 3    | 129- 122  | NUT - 5/16" NF hex. . . . .                                      | 1     |
| 4    | 192- 20   | LOCKWASHER - 5/16" . . . . .                                     | 2     |
| 5    | C 17566   | LEVER - lift control . . . . .                                   | 1     |
| 6    | 195- 541  | WASHER - 5/8" . . . . .                                          | 4     |
| 7    | 132- 48   | PIN - cotter 1/8" x 1" . . . . .                                 | 1     |
| 8    | A 37247   | KNOB - lift lever . . . . .                                      | 1     |
| 9    | C 12093   | BUSHING - flip lock. . . . .                                     | 1     |
| 10   | C 17585   | CROSS SHAFT ASSEMBLY . . . . .                                   | 1     |
| 11   | C 17250   | BRACKET - clamp . . . . .                                        | 2     |
| 12   | 113- 221  | BOLT - 3/8" x 7/8" NC hex . . . . .                              | 4     |
| 13   | 131- 178  | NUT - lock 3/8" NC hex . . . . .                                 | 4     |
| 14   | C 17579   | BRACKET - cylinder mounting . . . . .                            | 1     |
| 15   | C 18251   | PIN - cylinder mounting, rod end. . . . .                        | 1     |
| 16   | C 17536   | PIN - cylinder mounting, foot end . . . . .                      | 1     |
| 17   | 132- 310  | PIN - cotter 1/8" x 1" . . . . .                                 | 2     |
| 18   | 132- 361  | PIN - cotter 3/16 x 2-1/2" . . . . .                             | 1     |
| 19   | C 18154   | HOSE - valve to cylinder, short . . . . .                        | 1     |
| 20   | C 18155   | HOSE - valve to cylinder, long . . . . .                         | 1     |
| 21   | 218- 5056 | FITTING - valve (includes 218-5004 "O" ring). . . . .            | 2     |
| 22   | 113- 207  | BOLT - 3/8" x 1" NC hex . . . . .                                | 2     |
| 23   | 195- 525  | WASHER - 3/8" . . . . .                                          | 2     |
| 24   | 131- 178  | NUT - lock 3/8" NC hex . . . . .                                 | 2     |
| 25   | C 19475   | CYLINDER - hydraulic lift. . . . .                               | 1     |
| 26   | C 19479   | BODY - cylinder . . . . .                                        | 1     |
| 27   | C 19104   | ROD AND PISTON ASSEMBLY. . . . .                                 | 1     |
| 28   | C 17732   | FOOT - cylinder . . . . .                                        | 1     |
| 29   | NSS       | SEAL . . . . .                                                   | 1     |
| 30   | NSS       | "O" - RING . . . . .                                             | 1     |
| 31   | NSS       | "O" - RING . . . . .                                             | 2     |
|      | C 17268   | KIT - SEAL, cylinder (consists of items 29, 30 and 31) . . . . . | 1     |
| 32   | 132- 320  | PIN - cotter 3/32" x 3/4" . . . . .                              | 1     |
| 33   | 195- 102  | WASHER - 1/4" . . . . .                                          | 1     |



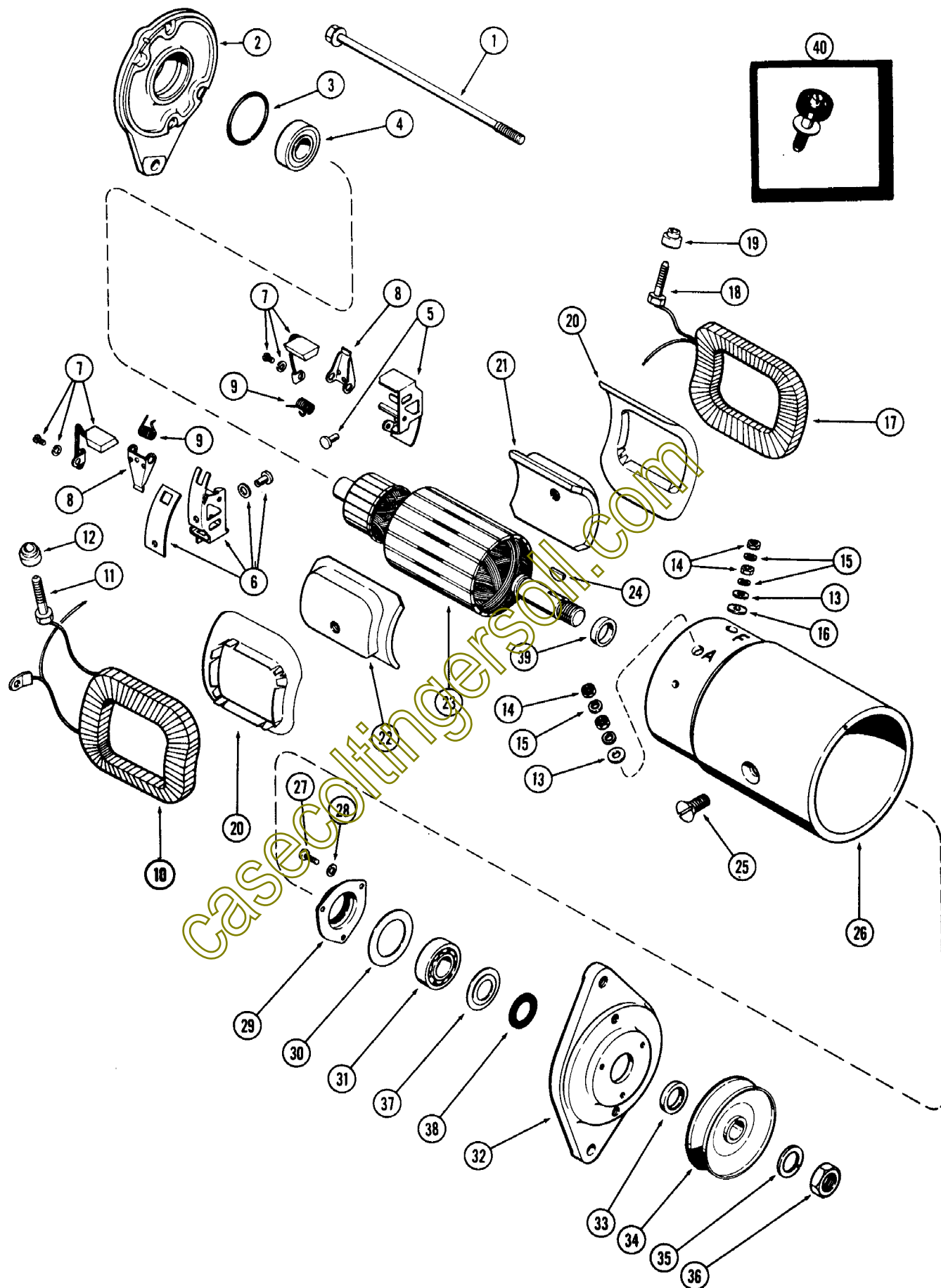
**C 16852 STARTER-GENERATOR**

(DELCO NUMBER 1101875)

(Use A 70202 for Service)

| REF. | PART NO. | DESCRIPTION                                              | REQ'D |
|------|----------|----------------------------------------------------------|-------|
| 1    | R 15106  | BOLT - through . . . . .                                 | 2     |
| 2    | A 43494  | FRAME ASSEMBLY - commutator end . . . . .                | 1     |
| 3    | 192- 20  | LOCKWASHER - 5/16" . . . . .                             | 2     |
| 4    | A 40702  | KIT - stud - (Includes items 16, 18 and 19) . . . . .    | 1     |
| 5    | A 72039  | HOLDER KIT - ground brush . . . . .                      | 1     |
| 6    | A 72040  | HOLDER KIT - insulated brush . . . . .                   | 1     |
| 7    | A 72038  | BRUSH ASSEMBLY . . . . .                                 | 2     |
| 8    | R 15090  | ARM - brush pressure . . . . .                           | 2     |
| 9    | R 16161  | SPRING - brush arm . . . . .                             | 2     |
| 10   | A 72042  | COIL ASSEMBLY - field R.H. . . . .                       | 1     |
| 11   | A 72048  | STUD - armature terminal . . . . .                       | 1     |
| 12   | R 16147  | BUSHING - insulated, armature stud . . . . .             | 1     |
| 13   | A 41927  | WASHER - armature stud . . . . .                         | 2     |
| 14   | 129- 18  | NUT - terminal stud 12-24 hex . . . . .                  | 4     |
| 15   | 192- 17  | LOCKWASHER - terminal stud #12 . . . . .                 | 4     |
| 16   | R 16148  | WASHER - insulated, field stud (Order A40702) . . . . .  | 1     |
| 17   | A 72043  | COIL ASSEMBLY - field L.H. . . . .                       | 1     |
| 18   | NSS      | STUD - field terminal (Order A40702) . . . . .           | 1     |
| 19   | R 15077  | BUSHING - insulated, field stud (Order A40702) . . . . . | 1     |
| 20   | A 25447  | INSULATOR - field coil . . . . .                         | 2     |
| 21   | A 40736  | SHOE - pole . . . . .                                    | 1     |
| 22   | A 40736  | SHOE - pole . . . . .                                    | 1     |
| 23   | A 43495  | ARMATURE . . . . .                                       | 1     |
| 24   | 126- 111 | KEY - Woodruff, armature . . . . .                       | 1     |
| 25   | A 42127  | SCREW - pole . . . . .                                   | 2     |
| 26   | NSS      | BODY - starter, generator (Order A70202) . . . . .       | 1     |
| 27   | A 41959  | SCREW - 10-32 x 1/2" round head . . . . .                | 3     |
| 29   | A 44433  | RETAINER ASSEMBLY - bearing . . . . .                    | 1     |
| 30*  | NSS      | GASKET - bearing retainer (Order A44433) . . . . .       | 1     |
| 31   | A 43356  | BEARING - ball, drive end . . . . .                      | 1     |
| 32   | A 72046  | FRAME ASSEMBLY - drive end . . . . .                     | 1     |
| 33   | A 72047  | SPACER - pulley . . . . .                                | 1     |
| 34   | C 14344  | PULLEY - starter, generator drive . . . . .              | 1     |
| 35   | 192- 116 | LOCKWASHER - 11/16" plated . . . . .                     | 1     |
| 36   | A 25546  | NUT - armature shaft, drive end . . . . .                | 1     |
| 37   | A 43499  | RETAINER - grease . . . . .                              | 1     |
| 38*  | NSS      | SEAL - felt (Order A44433) . . . . .                     | 1     |

\* Retainer gasket and felt seal no longer required when servicing with item 29.

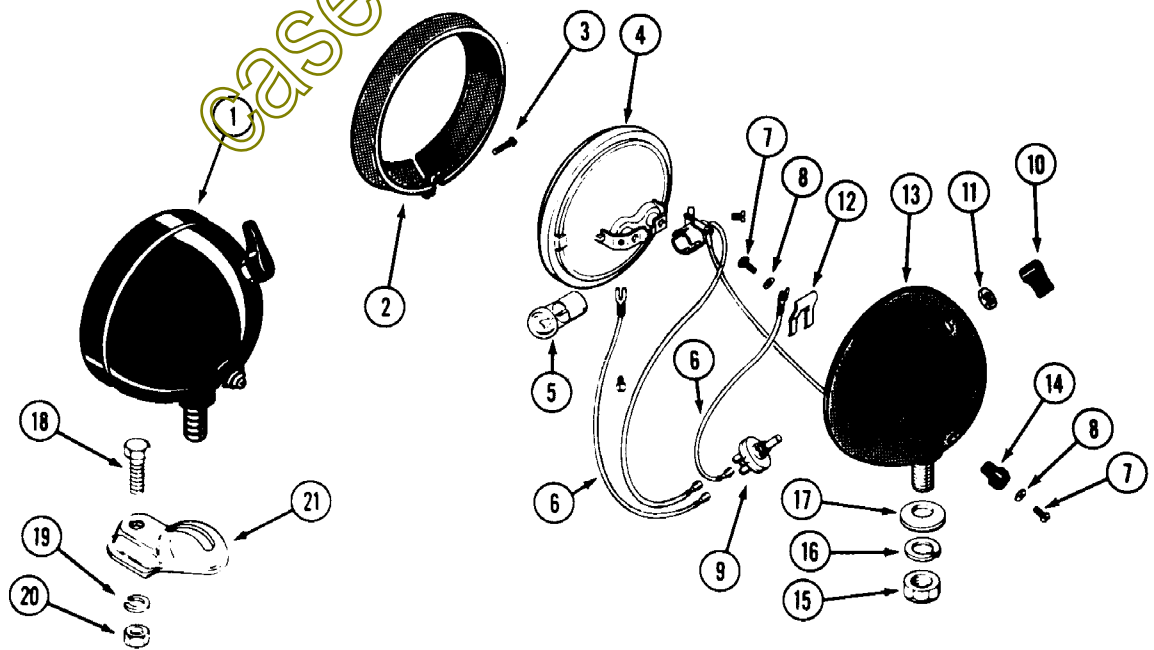
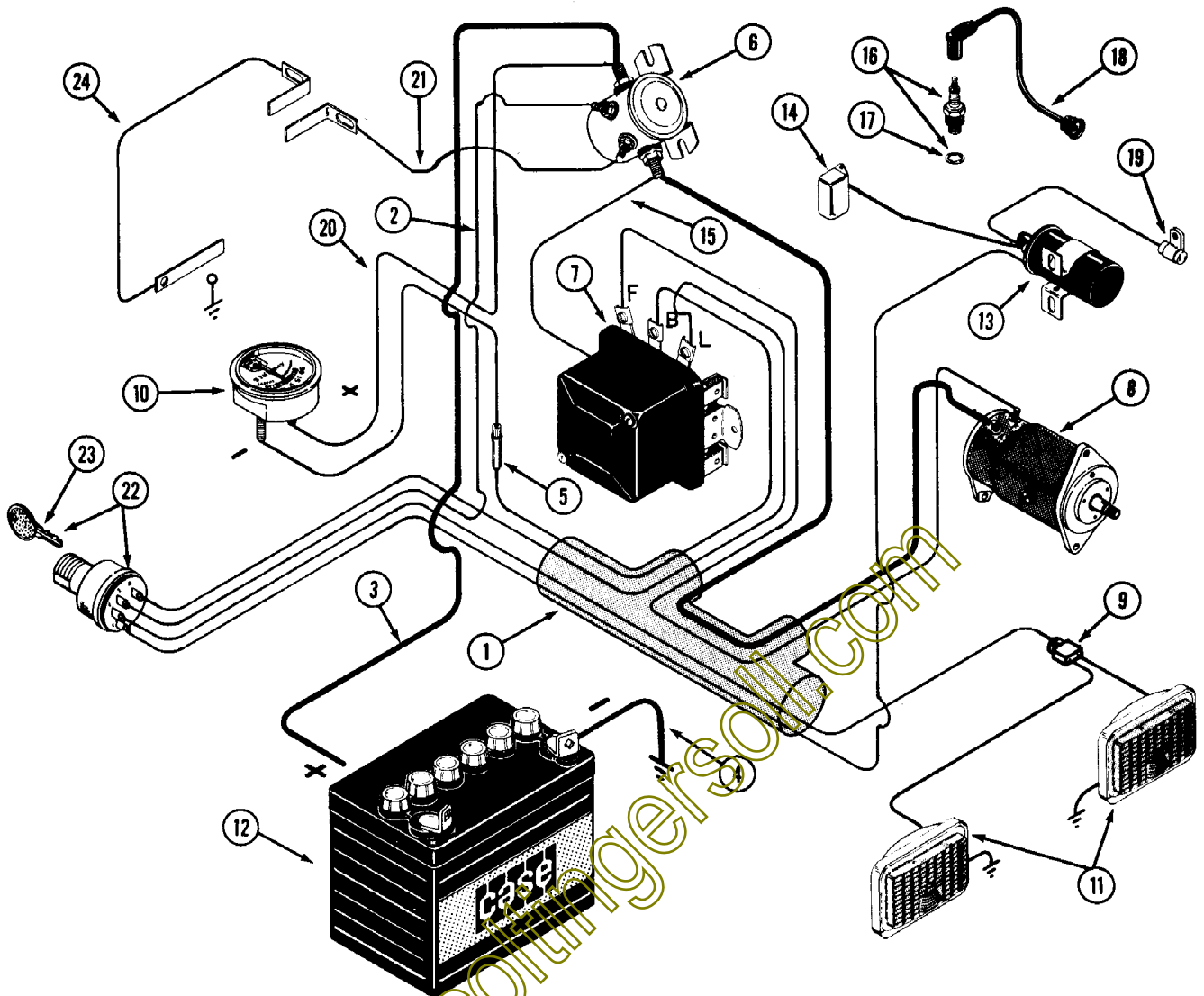


**A 70202 STARTER-GENERATOR**

(DELCO NUMBER 1101970)

| REF. | PART NO. | DESCRIPTION                                              | REQ'D |
|------|----------|----------------------------------------------------------|-------|
| 1    | R 15106  | BOLT - through (Includes washer) . . . . .               | 2     |
| 2    | A 72104  | FRAME ASSEMBLY - commutator end . . . . .                | 1     |
| 3    | R 15087  | RING - bearing retainer . . . . .                        | 1     |
| 4    | A 25461  | BEARING - commutator end ball . . . . .                  | 1     |
| 5    | A 72039  | HOLDER KIT - ground brush . . . . .                      | 1     |
| 6    | A 72040  | HOLDER KIT - insulated brush . . . . .                   | 1     |
| 7    | A 72038  | BRUSH ASSEMBLY . . . . .                                 | 2     |
| 8    | R 15090  | ARM - brush pressure . . . . .                           | 2     |
| 9    | R 16161  | SPRING - brush arm . . . . .                             | 2     |
| 10   | A 72042  | COIL ASSEMBLY - field R.H. . . . .                       | 1     |
| 11   | A 72048  | STUD - armature terminal . . . . .                       | 1     |
| 12   | R 16147  | BUSHING - insulated, armature stud . . . . .             | 1     |
| 13   | A 41927  | WASHER - armature stud . . . . .                         | 2     |
| 14   | 129- 18  | NUT - terminal stud 12-24 hex . . . . .                  | 4     |
| 15   | 192- 17  | LOCKWASHER - terminal stud #12 . . . . .                 | 4     |
| 16   | R 16148  | WASHER - insulated, field stud . . . . .                 | 1     |
| 17   | A 72043  | COIL ASSEMBLY - field L.H. . . . .                       | 1     |
| 18   | NSS      | STUD - field terminal (See Ref. 40) . . . . .            | 1     |
| 19   | R 15077  | BUSHING - insulated, field stud (Order A40702) . . . . . | 1     |
| 20   | A 25447  | INSULATOR - field coil . . . . .                         | 2     |
| 21   | A 40736  | SHOE - pole, plain . . . . .                             | 1     |
| 22   | A 40736  | SHOE - pole, notched . . . . .                           | 1     |
| 23   | A 72041  | ARMATURE . . . . .                                       | 1     |
| 24   | 126- 111 | KEY - Woodruff, armature . . . . .                       | 1     |
| 25   | 74- 610  | SCREW - pole . . . . .                                   | 2     |
| 26   | NSS      | BODY - starter, generator (Order A70202) . . . . .       | 1     |
| 27   | 173- 237 | SCREW - 10-32 x 1/2" Rd. Hd. . . . .                     | 3     |
| 28   | 192- 18  | LOCKWASHER - 3/16" plated . . . . .                      | 3     |
| 29   | A 44433  | RETAINER ASSEMBLY - bearing . . . . .                    | 1     |
| 30*  | NSS      | GASKET - bearing retainer (order A44433) . . . . .       | 1     |
| 31   | A 25441  | BEARING - ball, drive end . . . . .                      | 1     |
| 32   | A 72046  | FRAME ASSEMBLY - drive end . . . . .                     | 1     |
| 33   | A 72047  | SPACER - pulley . . . . .                                | 1     |
| 34   | C 14344  | PULLEY - starter, generator drive . . . . .              | 1     |
| 35   | 192- 26  | LOCKWASHER - 11/16" plated . . . . .                     | 1     |
| 36   | A 25546  | NUT - armature shaft, drive end . . . . .                | 1     |
| 37   | A 43499  | RETAINER - grease . . . . .                              | 1     |
| 38*  | NSS      | SEAL - felt (Order A44433) . . . . .                     | 1     |
| 39   | NSS      | SPACER - armature shaft, inner . . . . .                 | 1     |
| 40   | A 40702  | KIT - stud (Includes items 16, 18 and 19) . . . . .      | 1     |

\* Retainer gasket and felt seal no longer required when servicing with item 29.

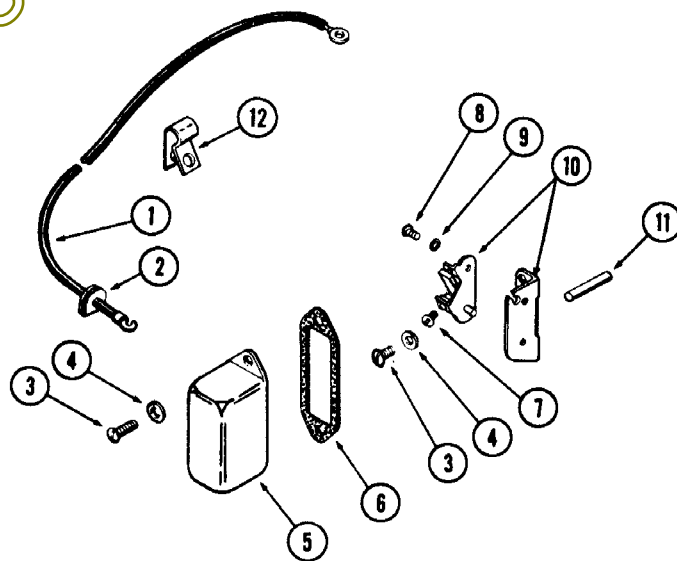
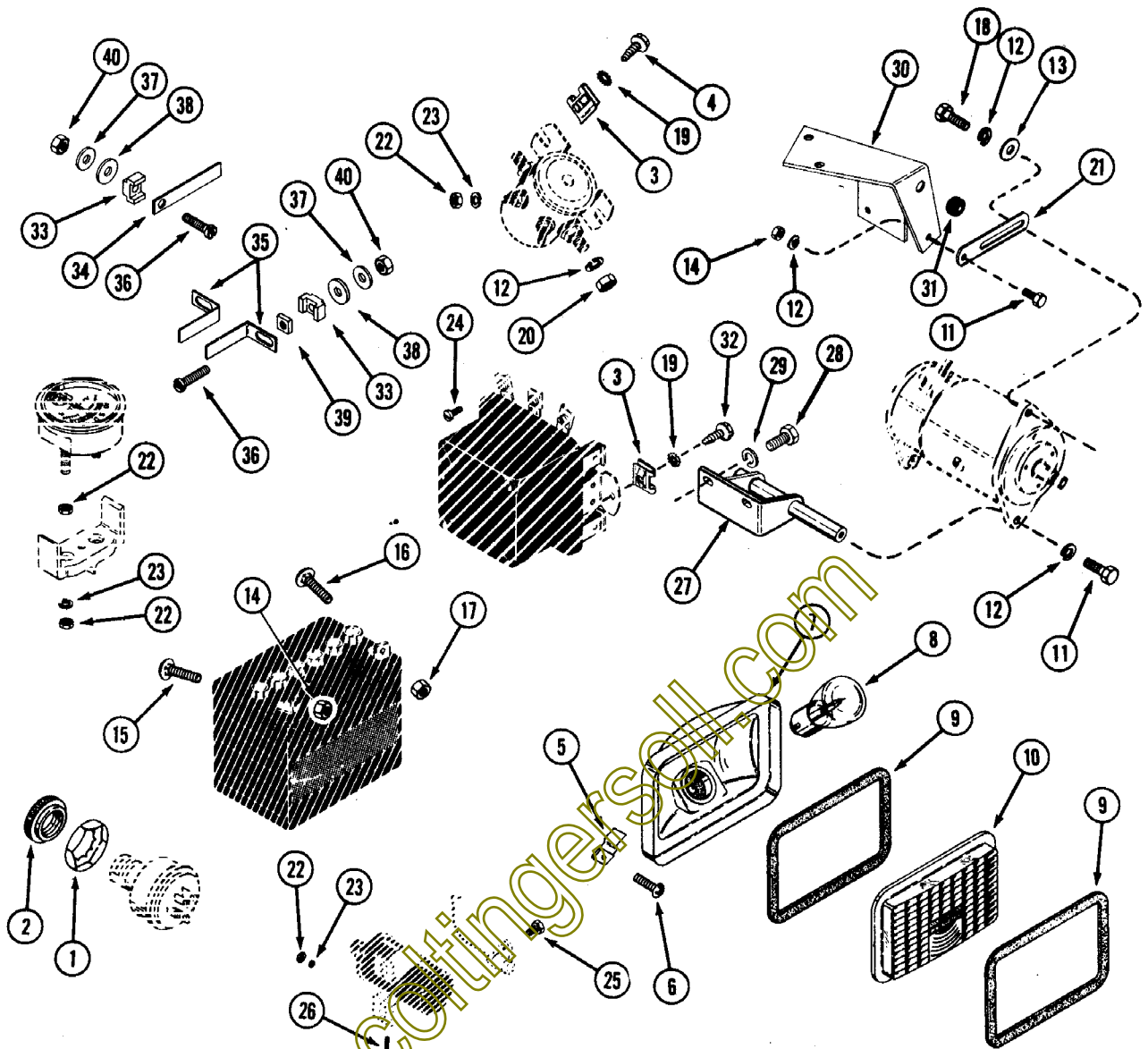


## ELECTRICAL SYSTEM — 644

| REF. | PART NO.  | DESCRIPTION                                              | REQ'D |
|------|-----------|----------------------------------------------------------|-------|
| 1    | C 19365   | HARNESS - wire . . . . .                                 | 1     |
| 2    | C 17187   | WIRE - ignition switch to solenoid (yellow 8") . . . . . | 1     |
| 3    | C 14565   | CABLE - battery positive (red 10-1/2") . . . . .         | 1     |
| 4    | C 18267   | CABLE - battery ground (black 16") . . . . .             | 1     |
| 5    | 223- 20   | FUSE - 20 amp. . . . .                                   | 1     |
| 6    | C 14553   | SOLENOID - start . . . . .                               | 1     |
| 7    | A 70221   | REGULATOR - voltage . . . . .                            | 1     |
| 8    | C 16852   | STARTER - generator 12 volt, DELCO No. 1101875 . . . . . | 1     |
|      |           | (Repairs page 85) . . . . .                              | 1     |
| 8    | A 70202   | STARTER - generator 12 volt, DELCO No. 110970 . . . . .  | 1     |
|      |           | (Repairs page 87) . . . . .                              | 1     |
| 9    | C 14537   | CONNECTOR - headlamp . . . . .                           | 1     |
| 10   | C 18389   | GAUGE - ammeter . . . . .                                | 1     |
| 11   | C 22571   | HEADLAMP ASSEMBLY - 12 volt (Repairs page 91) . . . . .  | 2     |
| 12   | C 18197   | BATTERY - 12 volt . . . . .                              | 1     |
| 13   | KO 231281 | COIL - ignition 12 volt . . . . .                        | 1     |
| 14   | KO 232535 | COVER - breaker contacts . . . . .                       | 1     |
| 15   | C 17275   | WIRE - regulator ground to solenoid (white 7") . . . . . | 1     |
| 16   | M 20007   | SPARK PLUG - (Includes gasket) . . . . .                 | 1     |
| 17   | A 27251   | GASKET - spark plug . . . . .                            | 1     |
| 18   | KO 238057 | CABLE - high tension . . . . .                           | 1     |
| 19   | KO 230722 | CONDENSER . . . . .                                      | 1     |
| 20   | C 18261   | WIRE - amp. gauge to solenoid (range 6") . . . . .       | 1     |
| 21   | C 18140   | WIRE - solenoid to safety switch (black 6") . . . . .    | 1     |
| 22   | C 21595   | SWITCH - ignition (Includes key) . . . . .               | 1     |
| 23   | C 17763   | KEY - ignition . . . . .                                 | 1     |
| 24   | C 19055   | WIRE - safety switch (black 21") . . . . .               | 1     |
|      | C 19521   | CLIP - wire holder . . . . .                             | 2     |
|      | 353- 407  | PLUG - hole, dash . . . . .                              | 1     |

## TAIL LAMP

|    |          |                                                    |   |
|----|----------|----------------------------------------------------|---|
| 1  | A 20965  | LAMP ASSEMBLY - flood and tail . . . . .           | 1 |
| 2  | B 50255  | MOLDING - lamp retaining . . . . .                 | 1 |
| 3  | 10934    | SCREW - molding . . . . .                          | 1 |
| 4  | A 40855  | LAMP - sealed unit . . . . .                       | 1 |
| 5  | B 50223  | BULB - red 15 C.P. 12 volt . . . . .               | 1 |
| 6  | B 50273  | WIRE - switch . . . . .                            | 2 |
| 7  | 173- 73  | SCREW - wire . . . . .                             | 2 |
| 8  | 193- 4   | WASHER - 1/4" lock . . . . .                       | 2 |
| 9  | NSS      | SWITCH (see kit below) . . . . .                   | 1 |
| 10 | NSS      | KNOB - switch (see kit below) . . . . .            | 1 |
| 11 | A 39888  | NUT - switch . . . . .                             | 1 |
| 12 | 10927    | SPRING - terminal . . . . .                        | 1 |
| 13 | NSS      | BODY . . . . .                                     | 1 |
| 14 | B 50293  | TERMINAL - wire . . . . .                          | 1 |
| 15 | 129- 105 | NUT - 1/2" NC hex . . . . .                        | 1 |
| 16 | 192- 23  | WASHER - 1/2" lock . . . . .                       | 1 |
| 17 | 10923    | WASHER - bearing . . . . .                         | 1 |
| 18 | 113- 209 | BOLT - 3/8" x 1-1/2" NC hex, zinc plated . . . . . | 1 |
| 19 | 192- 21  | LOCKWASHER - 3/8" zinc plated . . . . .            | 1 |
| 20 | 129- 103 | NUT - 3/8" NC hex, zinc plated . . . . .           | 1 |
| 21 | A 34046  | BRACKET - mounting, tail lamp . . . . .            | 1 |
|    | A 43182  | KIT - switch, includes knob . . . . .              | 1 |

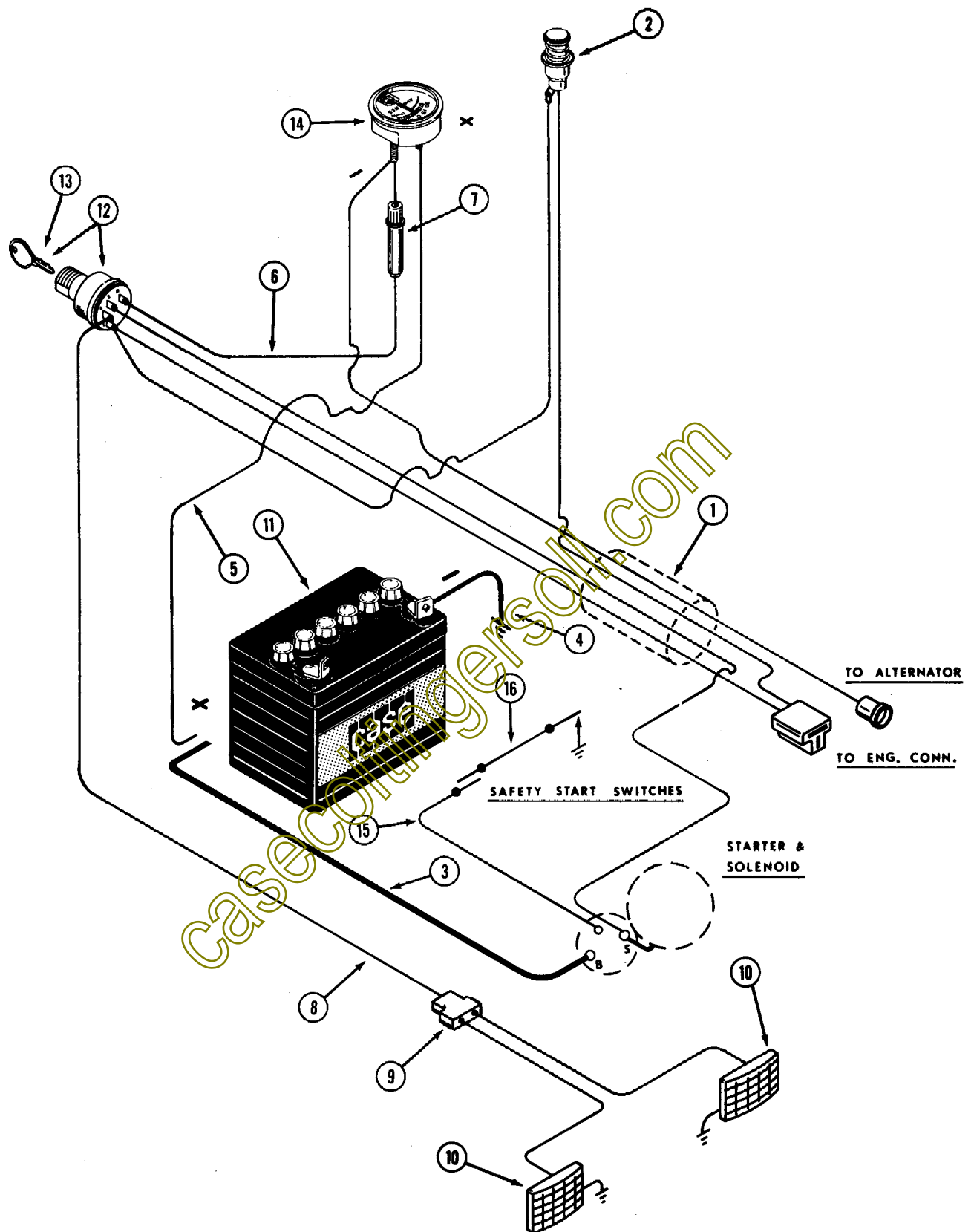


## ELECTRICAL SYSTEM HARDWARE -644

| REF. | PART NO.  | DESCRIPTION                                                   | REQ'D |
|------|-----------|---------------------------------------------------------------|-------|
| 1    | C 14060   | NUT - back up 3/4" . . . . .                                  | 1     |
| 2    | C 17921   | NUT - escutcheon 3/4" . . . . .                               | 1     |
| 3    | C 10836   | NUT - speed type "U" . . . . .                                | 4     |
| 4    | 187- 485  | SCREW - #10 x 5/8" self-tapping hex . . . . .                 | 2     |
| 5    | 131- 629  | NUT - speed type "U" . . . . .                                | 4     |
| 6    | 187- 1047 | SCREW - #8 x 1/2" self-tapping round head, Phillips . . . . . | 4     |
|      | C 22571   | HEADLAMP ASSEMBLY . . . . .                                   | 2     |
| 7    | NSS       | RECEPTACLE - headlamp (Order C22571) . . . . .                | 1     |
| 8    | C 14305   | BULB - headlamp . . . . .                                     | 1     |
| 9    | C 14304   | GASKET - headlamp . . . . .                                   | 2     |
| 10   | C 22573   | LENS - headlamp . . . . .                                     | 1     |
| 11   | 113- 103  | BOLT - 5/16" x 1" NC hex, zinc plated . . . . .               | 2     |
| 12   | 192- 20   | LOCKWASHER - 5/16" zinc plated . . . . .                      | 5     |
| 13   | 195- 520  | WASHER - 5/16" plain, zinc plated . . . . .                   | 2     |
| 14   | 129- 102  | NUT - 5/16" NC hex, zinc plated . . . . .                     | 2     |
| 15   | 111- 202  | BOLT - 5/16" x 3/4" NC, round head, square neck . . . . .     | 1     |
| 16   | 111- 108  | BOLT - 1/4" x 3/4" NC, round head, square neck . . . . .      | 1     |
| 17   | 129- 101  | NUT - 1/4" NC hex . . . . .                                   | 1     |
| 18   | 113- 102  | BOLT - 5/16" x 3/4" NC, zinc plated . . . . .                 | 1     |
| 19   | 193- 70   | LOCKWASHER - #10 external tooth . . . . .                     | 2     |
| 20   | 129- 122  | NUT - 5/16" NF hex . . . . .                                  | 2     |
| 21   | C 14599   | BRACKET - starter generator adjust. . . . .                   | 1     |
| 22   | 129- 27   | NUT - #10 NF hex . . . . .                                    | 4     |
| 23   | 192- 18   | LOCKWASHER - #10 . . . . .                                    | 4     |
| 24   | 169- 131  | SCREW - #8 x 5/16" NC fillister head . . . . .                | 3     |
| 25   | 113- 1    | BOLT - 1/4" x 1/2" NC hex, zinc plated . . . . .              | 2     |
| 26   | 187- 1844 | SCREW - #10 x 1-1/2" NF self tap. . . . .                     | 1     |
| 27   | C 18788   | SUPPORT - starter generator . . . . .                         | 1     |
| 28   | 13- 612   | BOLT - 3/8" x 3/4" NC hex . . . . .                           | 2     |
| 29   | 192- 21   | LOCKWASHER - 3/8" . . . . .                                   | 2     |
| 30   | C 18999   | SUPPORT - starter generator adjust. . . . .                   | 1     |
| 31   | C 17546   | GROMMET - wire . . . . .                                      | 1     |
| 32   | 187- 130  | SCREW - #10 x 5/8" self tapping . . . . .                     | 2     |
| 33   | C 19246   | HOLDER - strip switch . . . . .                               | 3     |
| 34   | C 19258   | STRIP SWITCH. . . . .                                         | 1     |
| 35   | C 18115   | STRIP SWITCH, PTO . . . . .                                   | 2     |
| 36   | 182- 523  | SCREW - #10 x 7/8" binder head . . . . .                      | 3     |
| 37   | 195- 513  | WASHER - #10 . . . . .                                        | 3     |
| 38   | C 19254   | WASHER - nylon 13/64" . . . . .                               | 3     |
| 39   | 129- 77   | NUT - #10 NF Square . . . . .                                 | 2     |
| 40   | 129- 37   | NUT - #10 NF hex . . . . .                                    | 3     |

## BREAKER CONTACTS - 644

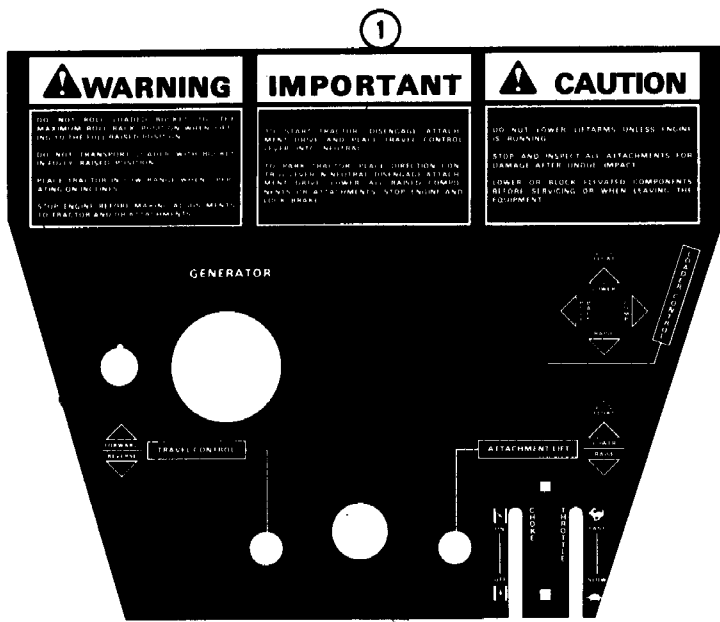
|    |            |                                                      |   |
|----|------------|------------------------------------------------------|---|
| 1  | KOA 231533 | LEAD - breaker contact (Includes grommet) . . . . .  | 1 |
| 2  | KO 220297  | GROMMET - contact lead . . . . .                     | 1 |
| 3  | 173- 210   | SCREW - #10 x 3/8" round head, zinc plated . . . . . | 4 |
| 4  | 192- 18    | LOCKWASHER - 3/16" zinc plated . . . . .             | 4 |
| 5  | KO 232535  | COVER - breaker contact . . . . .                    | 1 |
| 6  | KO 220174  | GASKET - cover . . . . .                             | 1 |
| 7  | 187- 408   | SCREW - #6 x 3/8" Self-Tapping . . . . .             | 1 |
| 8  | 173- 224   | SCREW - #8 x 1/4" NC round head . . . . .            | 1 |
| 9  | 193- 5     | LOCKWASHER - #8 internal tooth . . . . .             | 1 |
| 10 | KOA 220474 | POINT SET - breaker assembly . . . . .               | 1 |
| 11 | C 18100    | ROD - breaker contact push . . . . .                 | 1 |
| 12 | KO 275182  | CLIP - wire . . . . .                                | 1 |



## ELECTRICAL SYSTEM — 646

| REF. | PART NO.  | DESCRIPTION                                                     | REQ'D |
|------|-----------|-----------------------------------------------------------------|-------|
| 1    | C 18265   | HARNES - wire . . . . .                                         | 1     |
| 2    | C 18283   | LAMP ASSEMBLY - oil indicator . . . . .                         | 1     |
|      | B 50213   | BULB - oil indicator 12 volt, (red) . . . . .                   | 1     |
| 3    | C 18266   | CABLE - battery positive (red 27") . . . . .                    | 1     |
| 4    | C 14566   | CABLE - battery ground (black 12") . . . . .                    | 1     |
| 5    | C 18268   | WIRE - battery positive to amp. gauge (white 14-1/2") . . . . . | 1     |
| 6    | C 18401   | WIRE ASSEMBLY - fused (yellow 10-3/4") . . . . .                | 1     |
| 7    | 223- 31   | FUSE - 30 amp. . . . .                                          | 2     |
| 8    | C 18270   | WIRE - ignition switch to lights (pink 44") . . . . .           | 1     |
| 9    | C 14537   | CONNECTOR - headlamp . . . . .                                  | 1     |
| 10   | C 22571   | HEADLAMP - 12 volt . . . . .                                    | 2     |
| 11   | C 18197   | BATTERY - 12 volt . . . . .                                     | 1     |
| 12   | C 21595   | SWITCH - ignition (Includes key) . . . . .                      | 1     |
| 13   | C 17763   | KEY - ignition . . . . .                                        | 1     |
| 14   | C 18389   | GAUGE - ammeter . . . . .                                       | 1     |
| 15   | C 18203   | WIRE - solenoid to safety switch (black 14") . . . . .          | 1     |
| 16   | C 19055   | WIRE - safety switch to PTO switch (black 21") . . . . .        | 1     |
|      | 214- 1102 | CLIP - wire, grille . . . . .                                   | 2     |
|      | C 19521   | CLIP - wire holder . . . . .                                    | 1     |

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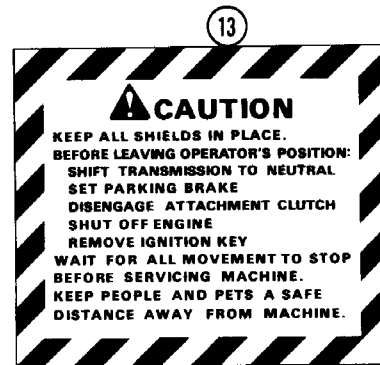
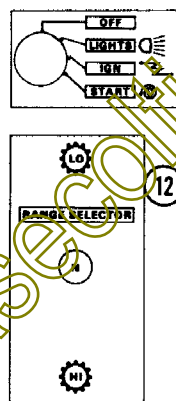
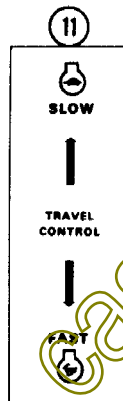


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**644**

③

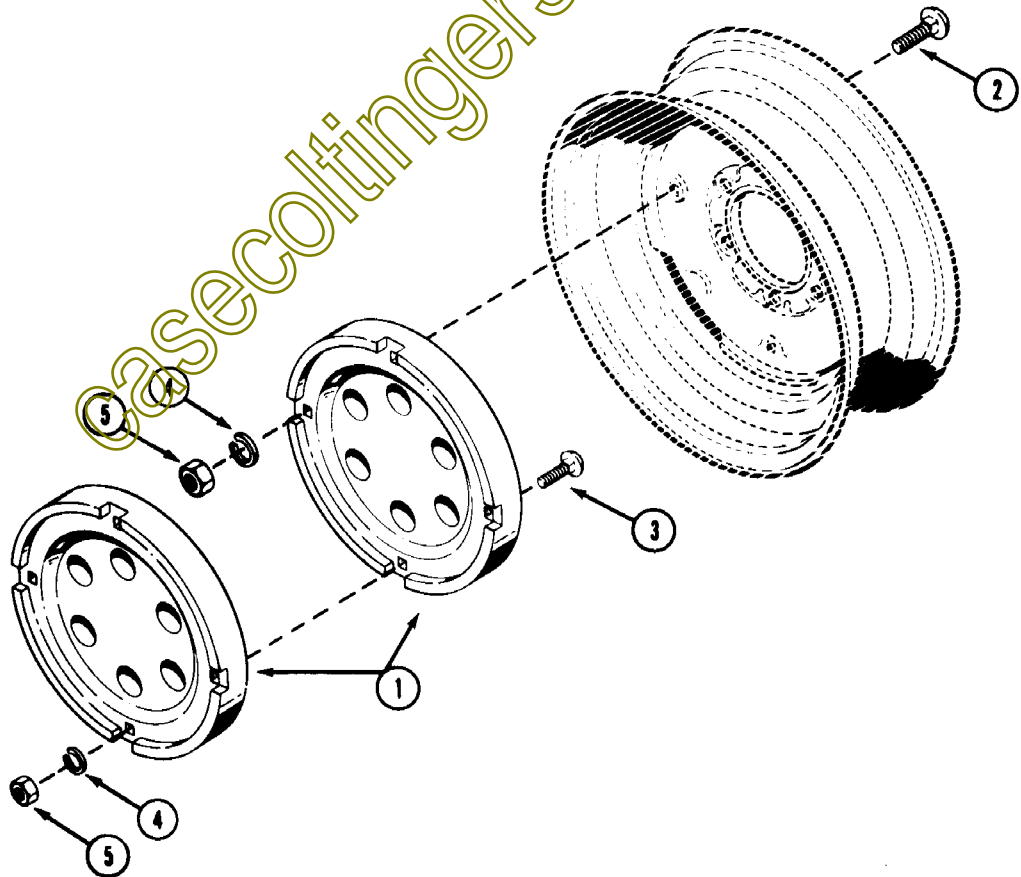
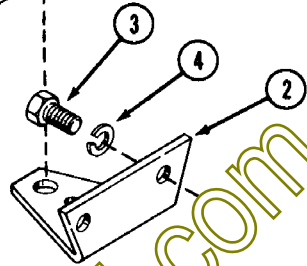
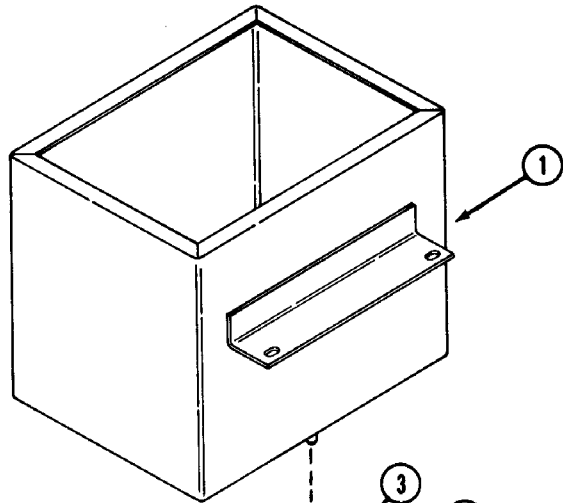
**646**



## DECALS

| REF. | PART NO.  | DESCRIPTION                                | REQ'D |
|------|-----------|--------------------------------------------|-------|
| 1    | 321- 2144 | DECAL - instrument panel . . . . .         | 1     |
| 2    | 321- 2141 | DECAL - (644) . . . . .                    | 1     |
| 3    | 321- 2140 | DECAL - (646) . . . . .                    | 1     |
| 4    | 321- 1571 | DECAL - "CASE", . . . . .                  | 3     |
| 5    | 321- 2139 | DECAL - "CASE", brushed aluminum . . . . . | 1     |
| 6    | C 14539   | DECAL - oil, hydraulic reservoir . . . . . | 1     |
| 7    | C 14066   | DECAL - gasoline . . . . .                 | 1     |
| 8    | 321- 2171 | DECAL - oil pressure . . . . .             | 1     |
| 9    | 321- 2147 | DECAL - ignition switch . . . . .          | 1     |
| 10   | 321- 2111 | DECAL - attachment drive . . . . .         | 1     |
| 11   | 321- 2338 | DECAL - travel control . . . . .           | 1     |
| 12   | 321- 1788 | DECAL - range selector . . . . .           | 1     |
| 13   | 321- 2487 | DECAL - caution . . . . .                  | 1     |

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## WEIGHT BOX AND DRAW BAR

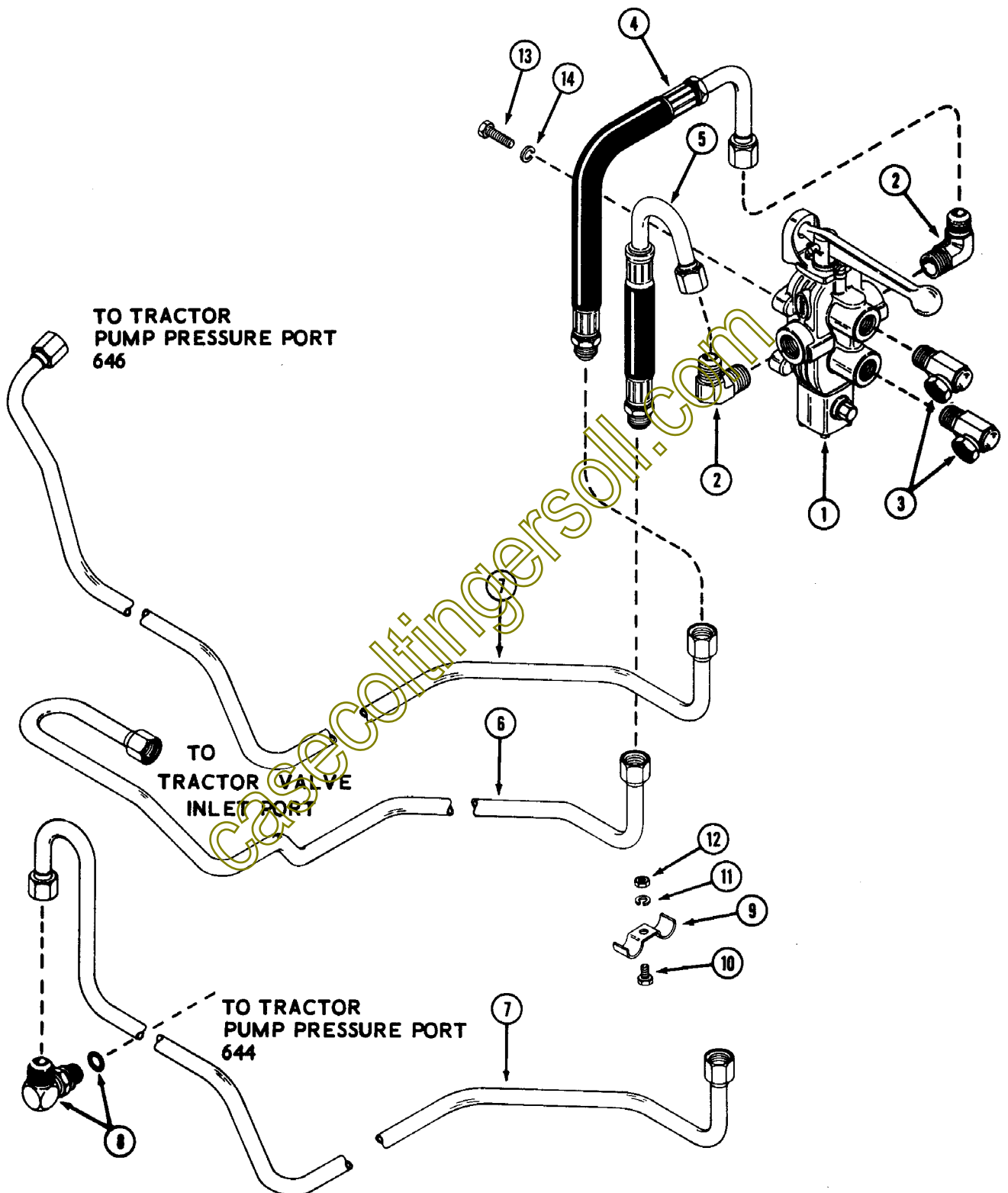
| REF. | PART NO. |       | DESCRIPTION                   | REQ'D |
|------|----------|-------|-------------------------------|-------|
| 1    | C        | 17641 | WEIGHT BOX .....              | 1     |
| 2    | C        | 13360 | DRAWBAR. ....                 | 1     |
| 3    | 113-     | 424   | BOLT - 1/2" x 1" NC hex ..... | 2     |
| 4    | 192-     | 23    | LOCKWASHER - 1/2" .....       | 2     |

## D10 WHEEL WEIGHTS

|   |      |     |                                                          |   |
|---|------|-----|----------------------------------------------------------|---|
| 1 | NSS  |     | WEIGHT - wheel (Order as machinery item) .....           | 4 |
| 2 | 111- | 530 | BOLT - 1/2" x 2-1/2" NC round head, square neck ZP ..... | 4 |
| 3 | 111- | 531 | BOLT - 1/2" x 2-3/4" NC round head, square neck ZP ..... | 4 |
| 4 | 92-  | 8   | LOCKWASHER - 1/2" .....                                  | 8 |
| 5 | 129- | 105 | NUT - 1/2" NC hex .....                                  | 8 |

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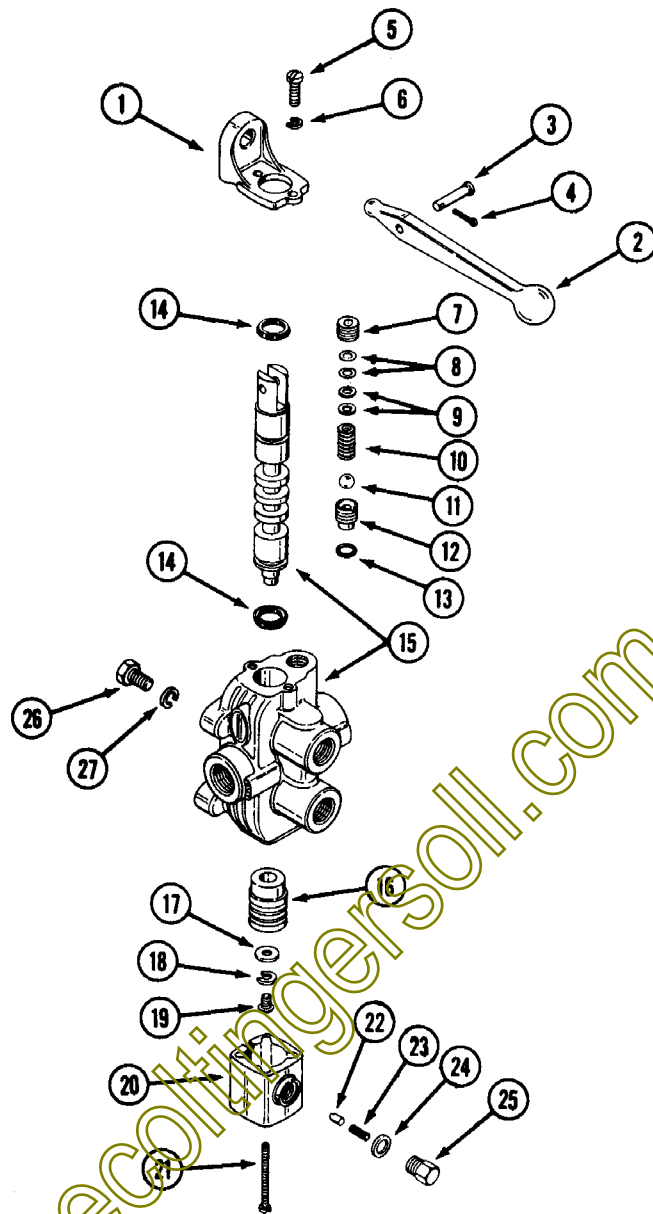
ILLUSTRATED AS VIEWED FROM  
LEFT REAR OF TRACTOR



## MODEL LT-16 AND LT-17 HYDRAULIC PTO KIT

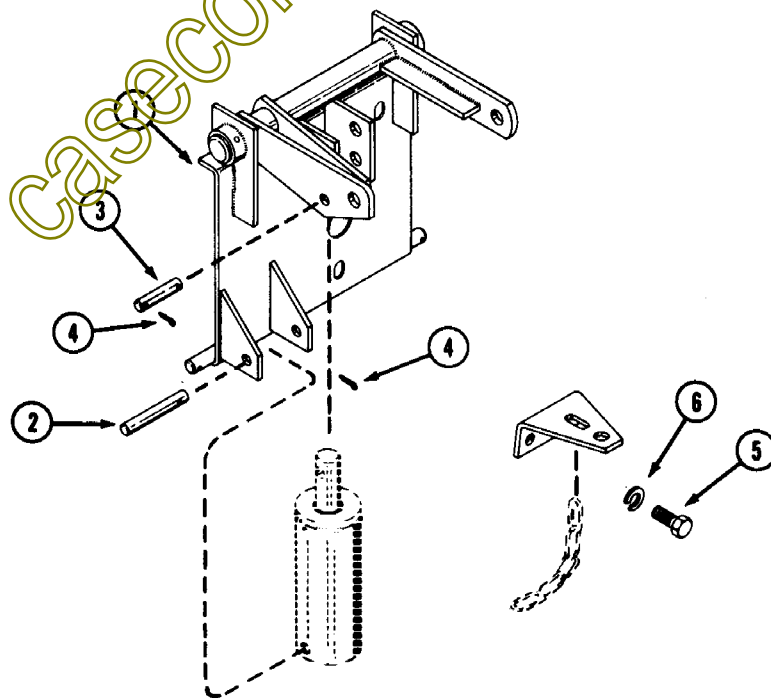
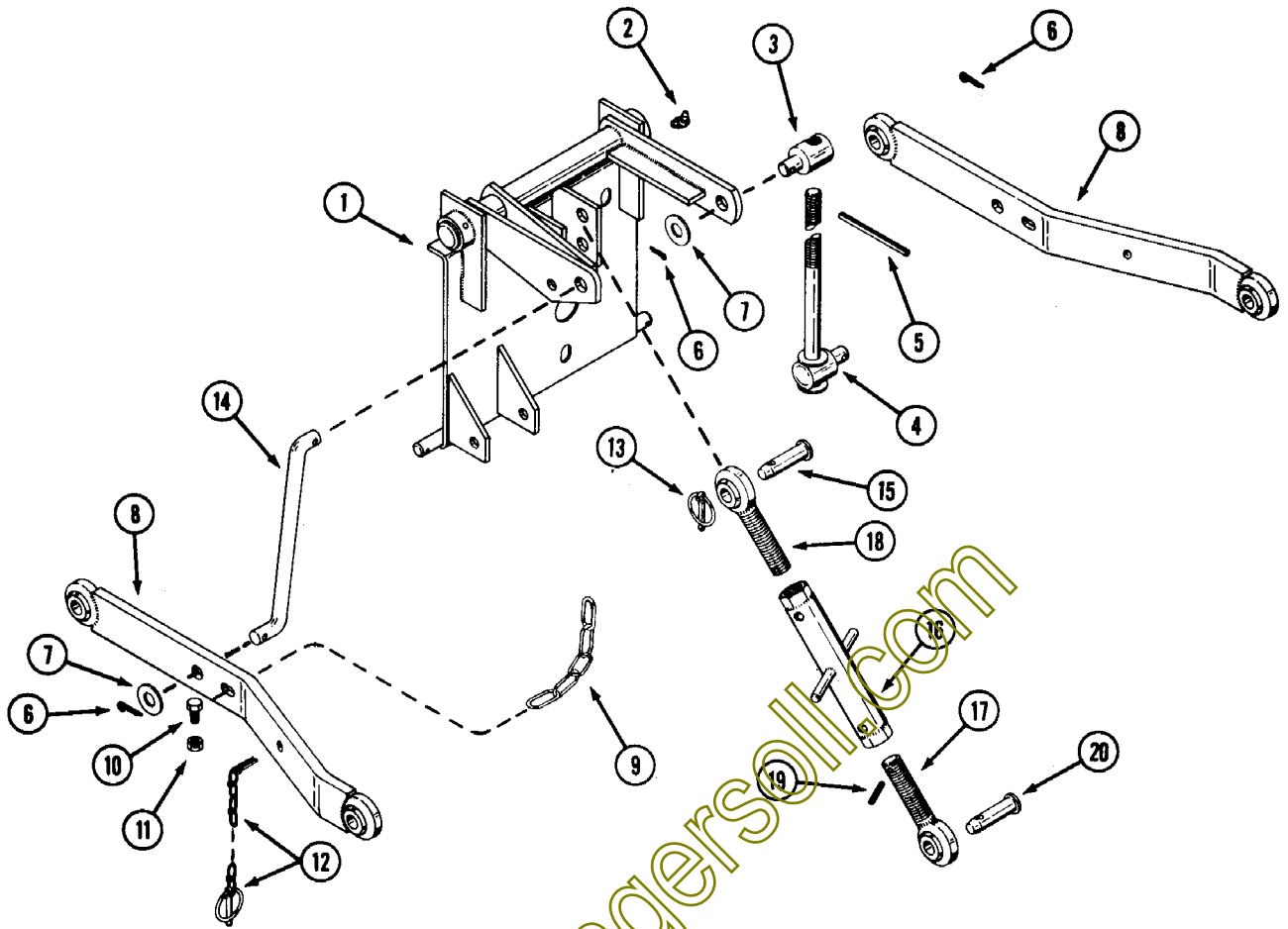
| REF. | PART NO. |       | DESCRIPTION                                                     | REQ'D |
|------|----------|-------|-----------------------------------------------------------------|-------|
| 1    | C        | 18314 | VALVE - hydraulic, PTO (repairs page 101) . . . . .             | 1     |
| 2    | 218-     | 494   | FITTING - elbow, 90° . . . . .                                  | 2     |
| 3    | 218-     | 927   | FITTING - swivel, 90° . . . . .                                 | 2     |
| 4    | C        | 18287 | HOSE, - valve inlet . . . . .                                   | 1     |
| 5    | C        | 18288 | HOSE - valve outlet . . . . .                                   | 1     |
| 6    | C        | 18285 | TUBE - PTO valve to tractor valve . . . . .                     | 1     |
| 7    | C        | 18286 | TUBE - pump to PTO valve (646) . . . . .                        | 1     |
| 7    | C        | 18317 | TUBE - pump to PTO valve (644) . . . . .                        | 1     |
| 8    | 218-     | 5117  | FITTING - pump 90° (includes 218-5007 "O" - ring) 644 . . . . . | 1     |
| 9    | C        | 15389 | CLAMP - tube support . . . . .                                  | 1     |
| 10   | 113-     | 3     | BOLT - 1/4" x 3/4" NC hex . . . . .                             | 1     |
| 11   | 192-     | 19    | LOCKWASHER 1/4" . . . . .                                       | 1     |
| 12   | 129-     | 101   | NUT - 1/4" NC hex . . . . .                                     | 1     |
| 13   | 113-     | 206   | BOLT - 3/8" x 3/4" NC hex . . . . .                             | 4     |
| 14   | 192-     | 21    | LOCKWASHER - 3/8" . . . . .                                     | 4     |

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## LT-16 AND LT-17 HYDRAULIC PTO VALVE

| REF. | PART NO. | DESCRIPTION                                           | REQ'D |
|------|----------|-------------------------------------------------------|-------|
|      | C 18314  | VALVE - hydraulic PTO . . . . .                       | 1     |
| 1    | C 11888  | BRACKET - handle . . . . .                            | 1     |
| 2    | C 11889  | HANDLE - valve . . . . .                              | 1     |
| 3    | 36627    | PIN - clevis . . . . .                                | 1     |
| 4    | 132- 5   | PIN - cotter 1/16 x 1/2" . . . . .                    | 1     |
| 5    | 75- 410  | SCREW . . . . .                                       | 2     |
| 6    | 92- 4    | LOCKWASHER - 1/4" . . . . .                           | 2     |
| 7    | 221- 842 | PLUG - relief 3/8" NPT. . . . .                       | 1     |
| 8    | D 39712  | WASHER - relief, .010" . . . . .                      | UAR   |
| 9    | A 55894  | WASHER - relief, .020" . . . . .                      | UAR   |
| 10   | T 40189  | SPRING - relief . . . . .                             | 1     |
| 11   | 211- 11  | BALL - relief 3/8" . . . . .                          | 1     |
| 12   | C 18417  | SEAT - relief . . . . .                               | 1     |
| 13   | A 27891  | SEAL - "O" - ring, relief seat . . . . .              | 1     |
| 14   | C 11891  | SEAL - "U" cup. . . . .                               | 2     |
| 15   | NSS      | BODY AND SPOOL ASSEMBLY (order C18314 valve). . . . . | 1     |
| 16   | C 11895  | ADAPTER - spool . . . . .                             | 1     |
| 17   | 95- 4    | WASHER - detent 1/4" . . . . .                        | 1     |
| 18   | 36628    | LOCKWASHER - 1/4" . . . . .                           | 1     |
| 19   | 75- 48   | SCREW - 1/4" x 1/2" rd. hd. machine . . . . .         | 1     |
| 20   | C 11893  | BONNET - detent . . . . .                             | 1     |
| 21   | 169- 108 | SCREW - bonnet #8" x 2-1/2" fillister hd. . . . .     | 4     |
| 22   | C 11901  | PIN - detent . . . . .                                | 1     |
| 23   | C 11892  | SPRING - detent . . . . .                             | 1     |
| 24   | C 11886  | WASHER - detent cap . . . . .                         | 1     |
| 25   | C 11887  | CAP - detent . . . . .                                | 1     |
| 26   | 113- 206 | BOLT - 3/8" x 3/4" NC hex . . . . .                   | 4     |
| 27   | 192- 21  | LOCKWASHER - 3/8" . . . . .                           | 4     |

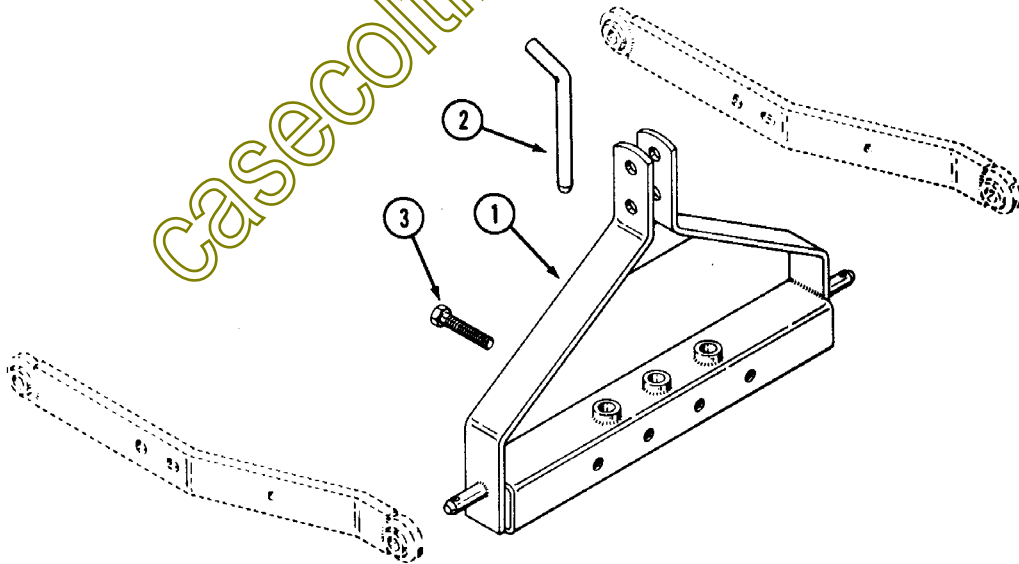
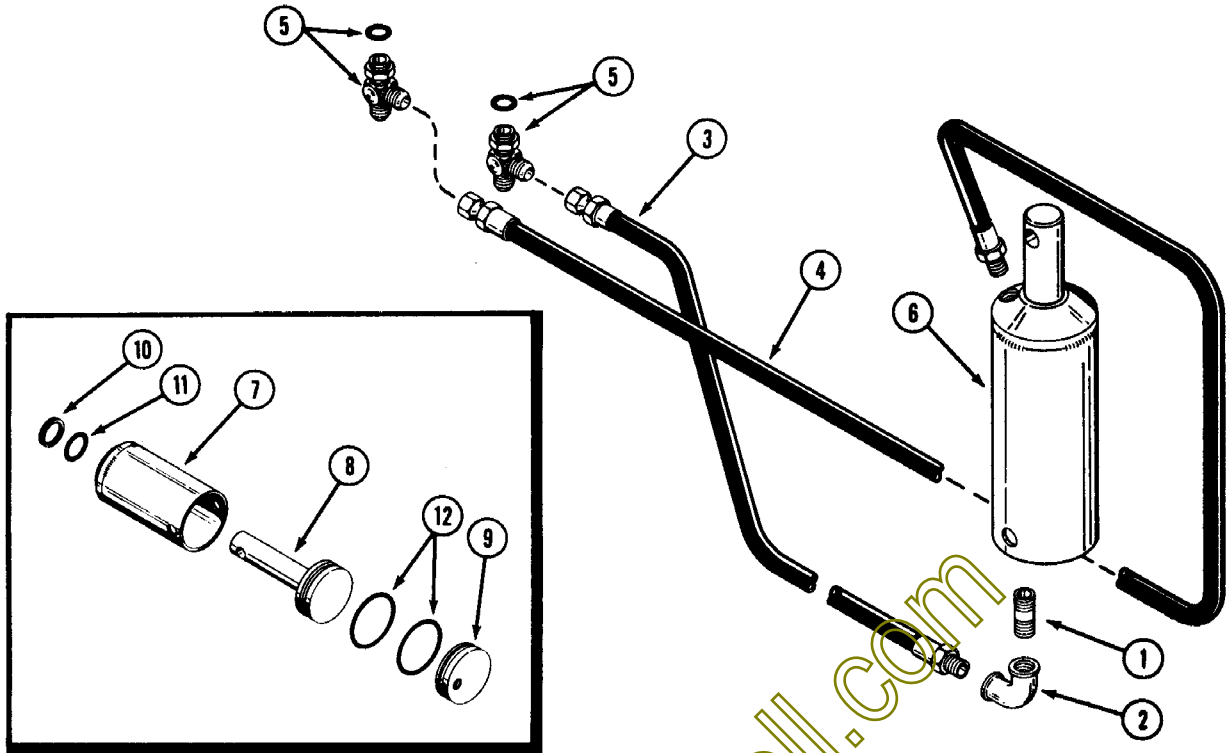


### LT 26 THREE POINT HITCH 644 AND 646 FRAME, LIFT RODS AND ARMS

| REF. | PART NO. | DESCRIPTION                                      | REQ'D |
|------|----------|--------------------------------------------------|-------|
| 1    | C 20117  | HITCH PLATE ASSEMBLY . . . . .                   | 1     |
| 2    | 219- 405 | FITTING - lube . . . . .                         | 2     |
| 3    | C 14722  | NUT - lift rod . . . . .                         | 1     |
| 4    | C 14724  | ROD ASSEMBLY - R.H. lift. . . . .                | 1     |
| 5    | 138- 309 | PIN - roll 1/4 x 4" . . . . .                    | 1     |
| 6    | 132- 91  | PIN - cotter 3/16 x 1" . . . . .                 | 6     |
| 7    | 195- 541 | WASHER - plain 5/8" . . . . .                    | 4     |
| 8    | C 14715  | ARM - lift. . . . .                              | 2     |
| 9    | C 14991  | CHAIN - stay 19 links . . . . .                  | 1     |
| 10   | 113- 118 | BOLT - 5/16" x 5/8" NC hex, zinc plated. . . . . | 2     |
| 11   | 131- 176 | NUT - lock 5/16" NC hex . . . . .                | 2     |
| 12   | B 52118  | PIN - klik . . . . .                             | 2     |
| 13   | A 30338  | PIN - klik . . . . .                             | 3     |
| 14   | C 14725  | ROD - lift L.H. . . . .                          | 1     |
| 15   | C 14717  | PIN - clevis . . . . .                           | 1     |
|      | C 14712  | LINK ASSEMBLY . . . . .                          | 1     |
| 16   | C 14703  | CENTER TUBE ASSEMBLY . . . . .                   | 1     |
| 17   | C 14709  | BALL END ASSEMBLY R.H. THREAD . . . . .          | 1     |
| 18   | C 14710  | BALL END ASSEMBLY L.H. THREAD . . . . .          | 1     |
| 19   | 138 59   | PIN - roll 1/8" x 7/8" . . . . .                 | 2     |
| 20   | C 16128  | PIN - clevis 5/8" x 3" . . . . .                 | 1     |

### CYLINDER AND DRAWBAR MOUNTING

|   |          |                                                    |   |
|---|----------|----------------------------------------------------|---|
| 1 | C 20117  | HITCH PLATE ASSEMBLY . . . . .                     | 1 |
| 2 | C 19481  | PIN - lower cylinder mounting . . . . .            | 1 |
| 3 | C 14976  | PIN - upper cylinder mounting . . . . .            | 1 |
| 4 | 132- 310 | PIN - cotter 1/8" x 1" . . . . .                   | 3 |
| 5 | 113- 417 | BOLT - 1/2" x 1-1/4" NC hex, zinc plated . . . . . | 4 |
| 6 | 192- 23  | LOCKWASHER - 1/2" . . . . .                        | 4 |



**MODEL LT26 THREE POINT HITCH AND MODEL  
F27 HITCH ADAPTER  
HYDRAULIC CONNECTIONS AND COMPONENTS**

| REF. | PART NO.  | DESCRIPTION                                        | REQ'D |
|------|-----------|----------------------------------------------------|-------|
| 1    | 221- 1139 | NIPPLE - 1/4" x 3" .....                           | 1     |
| 2    | 221- 1375 | ELBOW - 90° .....                                  | 1     |
| 3    | C 17188   | HOSE - hydraulic short .....                       | 1     |
| 4    | C 17189   | HOSE - hydraulic long. ....                        | 1     |
| 5    | 218- 5291 | FITTING - tee (Includes 218-5004 "O" ring) .....   | 2     |
| 6    | C 19480   | CYLINDER ASSEMBLY .....                            | 1     |
| 7    | C 19476   | BODY - cylinder .....                              | 1     |
| 8    | C 19469   | ROD AND PISTON ASSEMBLY .....                      | 1     |
| 9    | C 14692   | FOOT - cylinder. ....                              | 1     |
| 10   | NSS       | SEAL - wiper. ....                                 | 1     |
| 11   | NSS       | "O" RING .....                                     | 1     |
| 12   | NSS       | "O" RING .....                                     | 2     |
|      | C 17268   | KIT - seal (Consists of items 10, 11 and 12). .... | 1     |

**MODEL F27 HITCH ADAPTER**

|   |           |                                            |   |
|---|-----------|--------------------------------------------|---|
| 1 | C 14872   | BRACKET - hitch adapter .....              | 1 |
| 2 | C / 14568 | PIN - drawbar .....                        | 1 |
| 3 | 113- 425  | BOLT - 1/2" x 3" NC hex, zinc plated ..... | 4 |

**MODEL LT26 THREE POINT HITCH AND MODEL  
F27 HITCH ADAPTER  
HYDRAULIC CONNECTIONS AND COMPONENTS**

| REF. | PART NO.  | DESCRIPTION                                           | REQ'D |
|------|-----------|-------------------------------------------------------|-------|
| 1    | 221- 1139 | NIPPLE - 1/4" x 3" . . . . .                          | 1     |
| 2    | 221- 1375 | ELBOW - 90° . . . . .                                 | 1     |
| 3    | C 17188   | HOSE - hydraulic short . . . . .                      | 1     |
| 4    | C 17189   | HOSE - hydraulic long . . . . .                       | 1     |
| 5    | 218- 5291 | FITTING - tee (Includes 218-5004 "O" ring). . . . .   | 2     |
| 6    | C 19480   | CYLINDER ASSEMBLY. . . . .                            | 1     |
| 7    | C 19476   | BODY - cylinder . . . . .                             | 1     |
| 8    | C 19469   | ROD AND PISTON ASSEMBLY. . . . .                      | 1     |
| 9    | C 14692   | FOOT - cylinder. . . . .                              | 1     |
| 10   | NSS       | SEAL - wiper. . . . .                                 | 1     |
| 11   | NSS       | "O" RING . . . . .                                    | 1     |
| 12   | NSS       | "O" RING . . . . .                                    | 2     |
|      | C 17268   | KIT - seal (Consists of items 10, 11 and 12). . . . . | 1     |

**MODEL F27 HITCH ADAPTER**

|   |           |                                                |   |
|---|-----------|------------------------------------------------|---|
| 1 | C 14872   | BRACKET - hitch adapter . . . . .              | 1 |
| 2 | C / 14568 | PIN - drawbar . . . . .                        | 1 |
| 3 | 113- 425  | BOLT - 1/2" x 3" NC hex, zinc plated . . . . . | 4 |

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|          | 10923    | 89       | 17       | A        | 72039    | 85       | 5        | C        | 12561 | 57  | 34 |
|          | 10927    | 89       | 12       | A        | 72039    | 87       | 5        | C        | 12713 | 57  | 2  |
|          | 10934    | 89       | 3        | A        | 72040    | 85       | 6        | C        | 12718 | 57  | 36 |
|          | 16905    | 21       | 20       | A        | 72040    | 87       | 6        | C        | 12721 | 57  | 12 |
|          | 36627    | 101      | 3        | A        | 72041    | 87       | 23       | C        | 12722 | 57  | 11 |
|          | 36628    | 101      | 18       | A        | 72042    | 85       | 10       | C        | 12723 | 57  | 10 |
|          | 40035    | 29       | 20       | A        | 72042    | 87       | 10       | C        | 12725 | 57  | 21 |
|          | 40035    | 31       | 28       | A        | 72043    | 85       | 17       | C        | 12824 | 55  | 18 |
| A        | 7200     | 77       | 13       | A        | 72043    | 87       | 17       | C        | 12888 | 51  | 11 |
| A        | 7982     | 69       | 5        | A        | 72046    | 85       | 32       | C        | 12932 | 67  | 11 |
| A        | 7982     | 71       | 5        | A        | 72046    | 87       | 32       | C        | 12965 | 57  | 38 |
| A        | 7982     | 73       | 5        | A        | 72047    | 85       | 33       | C        | 12975 | 51  | 23 |
| A        | 10326    | 37       | 22       | A        | 72047    | 87       | 33       | C        | 13106 | 51  | 14 |
| A        | 20965    | 89       | 1        | A        | 72048    | 85       | 11       | C        | 13168 | 53  | 13 |
| A        | 25441    | 87       | 31       | A        | 72048    | 87       | 11       | C        | 13196 | 57  | 17 |
| A        | 25447    | 85       | 20       | A        | 72092    | 41       | 2        | C        | 13197 | 57  | 13 |
| A        | 25447    | 87       | 20       | A        | 72100    | 33       | 8        | C        | 13200 | 69  | 8  |
| A        | 25461    | 87       | 4        | A        | 72100    | 43       | 2        | C        | 13200 | 71  | 8  |
| A        | 25546    | 85       | 36       | A        | 72104    | 87       | 2        | C        | 13200 | 73  | 16 |
| A        | 25546    | 87       | 36       | A        | 72108    | 33       | 9        | C        | 13200 | 73  | 24 |
| A        | 27001    | 29       | 23       | A        | 72108    | 41       | 2        | C        | 13211 | 57  | 9  |
| A        | 27251    | 89       | 17       | A        | 72108    | 43       | 13       | C        | 13241 | 57  | 5  |
| A        | 27365    | 31       | 39       | B        | 50213    | 93       |          | C        | 13261 | 57  | 28 |
| A        | 27891    | 101      | 13       | B        | 50223    | 89       | 5        | C        | 13266 | 57  | 8  |
| A        | 28077    | 5        | 6        | B        | 50255    | 89       | 2        | C        | 13360 | 97  | 2  |
| A        | 30064    | 53       | 2        | B        | 50273    | 89       | 6        | C        | 13385 | 57  | 6  |
| A        | 30095    | 59       | 22       | B        | 50293    | 89       | 14       | C        | 13526 | 53  | 16 |
| A        | 30095    | 61       | 22       | B        | 52118    | 103      | 12       | C        | 13770 | 57  | 1  |
| A        | 30097    | 69       | 21       | B        | 52144    | 57       | 15       | C        | 14060 | 91  | 1  |
| A        | 30097    | 71       | 21       | B        | 53393    | 53       | 13       | C        | 14066 | 95  | 7  |
| A        | 30338    | 103      | 13       | C        | 10316    | 53       | 1        | C        | 14168 | 57  | 23 |
| A        | 33531    | 55       | 14       | C        | 10372    | 25       | 2        | C        | 14187 | 53  | 15 |
| A        | 34046    | 89       | 21       | C        | 10657    | 43       | 14       | C        | 14195 | 59  | 19 |
| A        | 34428    | 51       | 40       | C        | 10678    | 5        | 23       | C        | 14195 | 61  | 19 |
| A        | 37247    | 65       | 24       | C        | 10678    | 39       | 8        | C        | 14195 | 67  | 14 |
| A        | 37247    | 67       | 4        | C        | 10678    | 43       | 3        | C        | 14222 | 57  | 39 |
| A        | 37247    | 83       | 8        | C        | 10822    | 53       | 6        | C        | 14223 | 57  | 37 |
| A        | 39888    | 89       | 11       | C        | 10836    | 91       | 3        | C        | 14245 | 59  | 18 |
| A        | 40702    | 85       | 4        | C        | 10898    | 47       | 32       | C        | 14245 | 61  | 18 |
| A        | 40702    | 87       | 40       | C        | 11501    | 51       | 18       | C        | 14246 | 67  | 12 |
| A        | 40736    | 85       | 21       | C        | 11527    | 63       | 33       | C        | 14295 | 45  | 10 |
| A        | 40736    | 85       | 22       | C        | 11527    | 81       |          | C        | 14302 | 89  | 11 |
| A        | 40736    | 87       | 21       | C        | 11528    | 63       | 34       | C        | 14302 | 91  |    |
| A        | 40736    | 87       | 22       | C        | 11528    | 81       |          | C        | 14302 | 93  | 10 |
| A        | 40855    | 89       | 4        | C        | 11529    | 39       | 2        | C        | 14303 | 91  | 10 |
| A        | 41927    | 85       | 13       | C        | 11529    | 43       | 18       | C        | 14304 | 91  | 9  |
| A        | 41927    | 87       | 13       | C        | 11529    | 67       | 6        | C        | 14305 | 91  | 8  |
| A        | 41959    | 85       | 27       | C        | 11545    | 39       | 3        | C        | 14344 | 85  | 34 |
| A        | 42127    | 85       | 25       | C        | 11545    | 43       | 19       | C        | 14344 | 87  | 34 |
| A        | 43182    | 89       | 22       | C        | 11545    | 67       | 7        | C        | 14345 | 35  | 7  |
| A        | 43356    | 85       | 31       | C        | 11886    | 101      | 24       | C        | 14399 | 31  | 26 |
| A        | 43494    | 85       | 2        | C        | 11887    | 101      | 25       | C        | 14506 | 37  | 4  |
| A        | 43495    | 85       | 23       | C        | 11888    | 101      | 1        | C        | 14534 | 49  | 12 |
| A        | 43499    | 85       | 37       | C        | 11889    | 101      | 2        | C        | 14537 | 89  | 9  |
| A        | 43499    | 87       | 37       | C        | 11891    | 101      | 14       | C        | 14537 | 93  | 9  |
| A        | 44433    | 85       | 29       | C        | 11892    | 101      | 23       | C        | 14539 | 95  | 6  |
| A        | 44433    | 87       | 29       | C        | 11893    | 101      | 20       | C        | 14553 | 89  | 6  |
| A        | 50096    | 57       | 18       | C        | 11895    | 101      | 16       | C        | 14565 | 89  | 3  |
| A        | 55894    | 101      | 9        | C        | 11901    | 101      | 22       | C        | 14566 | 93  | 4  |
| A        | 59939    | 51       | 10       | C        | 12093    | 65       | 25       | C        | 14568 | 105 | 2  |
| A        | 70090    | 5        | 4        | C        | 12093    | 83       | 9        | C        | 14599 | 91  | 21 |
| A        | 70090    | 39       | 5        | C        | 12127    | 65       | 11       | C        | 14619 | 59  | 17 |
| A        | 70100    | 67       | 8        | C        | 12224    | 37       | 2        | C        | 14619 | 61  | 17 |
| A        | 70202    | 89       | 8        | C        | 12551    | 57       | 25       | C        | 14644 | 57  | 24 |
| A        | 70221    | 89       | 7        | C        | 12552    | 57       | 26       | C        | 14655 | 59  | 26 |
| A        | 72038    | 85       | 7        | C        | 12559    | 57       | 31       | C        | 14655 | 61  | 26 |
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| C        | 14712    | 103      |          | C        | 17189    | 105      | 4        | C        | 17566 | 83 | 5  |
| C        | 14715    | 103      | 8        | C        | 17216    | 49       | 19       | C        | 17569 | 65 | 2  |
| C        | 14717    | 103      | 15       | C        | 17250    | 83       | 11       | C        | 17570 | 51 | 32 |
| C        | 14722    | 103      | 3        | C        | 17252    | 51       | 34       | C        | 17572 | 51 | 28 |
| C        | 14724    | 103      | 4        | C        | 17255    | 51       | 31       | C        | 17579 | 83 | 14 |
| C        | 14725    | 103      | 14       | C        | 17256    | 51       | 35       | C        | 17585 | 83 | 10 |
| C        | 14728    | 43       | 3        | C        | 17257    | 51       | 36       | C        | 17587 | 67 | 7  |
| C        | 14728    | 49       | 15       | C        | 17268    | 83       |          | C        | 17588 | 67 | 8  |
| C        | 14827    | 79       | 4        | C        | 17268    | 105      |          | C        | 17594 | 67 | 1  |
| C        | 14828    | 79       | 7        | C        | 17275    | 89       | 15       | C        | 17596 | 67 | 3  |
| C        | 14829    | 79       | 8        | C        | 17296    | 51       | 1        | C        | 17598 | 47 | 7  |
| C        | 14830    | 79       | 9        | C        | 17298    | 59       | 5        | C        | 17622 | 61 | 30 |
| C        | 14831    | 79       | 10       | C        | 17298    | 75       | 17       | C        | 17641 | 97 | 1  |
| C        | 14832    | 79       | 11       | C        | 17311    | 55       | 1        | C        | 17647 | 47 | 21 |
| C        | 14833    | 79       | 12       | C        | 17322    | 55       | 2        | C        | 17653 | 47 | 17 |
| C        | 14834    | 79       | 13       | C        | 17328    | 55       | 5        | C        | 17656 | 47 | 15 |
| C        | 14836    | 79       | 15       | C        | 17334    | 55       | 10       | C        | 17657 | 47 | 13 |
| C        | 14837    | 79       | 5        | C        | 17335    | 55       | 11       | C        | 17662 | 47 | 23 |
| C        | 14838    | 79       | 16       | C        | 17336    | 55       | 12       | C        | 17679 | 43 | 2  |
| C        | 14872    | 105      | 1        | C        | 17337    | 55       | 6        | C        | 17681 | 43 | 4  |
| C        | 14906    | 31       | 44       | C        | 17338    | 55       | 8        | C        | 17684 | 51 | 9  |
| C        | 14946    | 53       | 11       | C        | 17354    | 59       | 7        | C        | 17703 | 51 | 29 |
| C        | 14954    | 31       | 38       | C        | 17398    | 51       | 3        | C        | 17714 | 63 | 1  |
| C        | 14976    | 103      | 3        | C        | 17399    | 51       | 2        | C        | 17732 | 83 | 28 |
| C        | 14991    | 103      | 9        | C        | 17401    | 51       | 15       | C        | 17740 | 73 | 14 |
| C        | 15007    | 39       | 11       | C        | 17402    | 51       | 16       | C        | 17741 | 73 | 15 |
| C        | 15007    | 43       | 5        | C        | 17404    | 51       | 17       | C        | 17763 | 89 | 23 |
| C        | 15036    | 75       | 20       | C        | 17407    | 51       | 5        | C        | 17763 | 93 | 13 |
| C        | 15060    | 29       | 27       | C        | 17432    | 71       | 29       | C        | 17921 | 91 | 2  |
| C        | 15096    | 51       | 26       | C        | 17432    | 73       | 8        | C        | 17987 | 55 | 7  |
| C        | 15335    | 59       | 1        | C        | 17433    | 69       | 17       | C        | 18000 | 67 | 1  |
| C        | 15389    | 99       | 9        | C        | 17433    | 71       | 17       | C        | 18001 | 67 | 1  |
| C        | 15410    | 49       | 9        | C        | 17433    | 73       | 10       | C        | 18003 | 47 | 27 |
| C        | 15515    | 45       | 7        | C        | 17435    | 69       | 16       | C        | 18012 | 65 | 16 |
| C        | 15526    | 9        | 23       | C        | 17435    | 71       | 16       | C        | 18014 | 51 | 22 |
| C        | 15556    | 45       | 11       | C        | 17435    | 73       | 11       | C        | 18016 | 51 | 25 |
| C        | 15557    | 45       | 8        | C        | 17438    | 69       | 10       | C        | 18024 | 47 | 2  |
| C        | 15718    | 45       | 3        | C        | 17438    | 71       | 10       | C        | 18026 | 53 | 1  |
| C        | 15719    | 45       | 9        | C        | 17438    | 73       | 18       | C        | 18029 | 53 | 2  |
| C        | 15721    | 45       | 1        | C        | 17439    | 69       | 9        | C        | 18055 | 47 | 31 |
| C        | 15729    | 75       | 2        | C        | 17439    | 71       | 9        | C        | 18064 | 61 | 1  |
| C        | 15731    | 75       | 4        | C        | 17439    | 73       | 17       | C        | 18095 | 29 | 25 |
| C        | 15732    | 75       | 5        | C        | 17440    | 69       | 6        | C        | 18097 | 29 | 24 |
| C        | 15733    | 75       | 6        | C        | 17440    | 71       | 6        | C        | 18097 | 31 | 34 |
| C        | 15734    | 75       | 7        | C        | 17441    | 71       | 7        | C        | 18097 | 33 | 6  |
| C        | 15735    | 75       | 8        | C        | 17443    | 69       | 13       | C        | 18098 | 37 | 14 |
| C        | 15737    | 75       | 10       | C        | 17443    | 71       | 13       | C        | 18099 | 37 | 30 |
| C        | 15738    | 75       | 11       | C        | 17443    | 73       | 21       | C        | 18100 | 91 | 11 |
| C        | 15739    | 75       | 12       | C        | 17444    | 69       | 12       | C        | 18102 | 29 | 18 |
| C        | 15740    | 75       | 13       | C        | 17444    | 71       | 12       | C        | 18103 | 37 | 27 |
| C        | 16128    | 103      | 20       | C        | 17444    | 73       | 20       | C        | 18105 | 53 | 6  |
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| C        | 16239    | 47       | 8        | C        | 17456    | 49       | 16       | C        | 18121 | 25 | 1  |
| C        | 16295    | 57       | 27       | C        | 17457    | 49       | 16       | C        | 18126 | 67 | 3  |
| C        | 16339    | 57       | 22       | C        | 17485    | 49       | 2        | C        | 18129 | 35 | 1  |
| C        | 16429    | 49       | 7        | C        | 17488    | 49       | 1        | C        | 18133 | 39 | 1  |
| C        | 16616    | 45       | 19       | C        | 17491    | 49       | 17       | C        | 18133 | 43 | 17 |
| C        | 16682    | 43       | 11       | C        | 17533    | 47       | 1        | C        | 18140 | 89 | 21 |
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| C        | 18154    | 83       | 19       | C        | 18285    | 99       | 6        | C        | 18854 | 71  | 28 |
| C        | 18155    | 83       | 20       | C        | 18286    | 99       | 7        | C        | 18907 | 45  | 2  |
| C        | 18156    | 63       | 12       | C        | 18287    | 99       | 4        | C        | 18908 | 45  | 15 |
| C        | 18157    | 63       | 22       | C        | 18288    | 99       | 5        | C        | 18940 | 45  | 17 |
| C        | 18158    | 63       | 24       | C        | 18291    | 45       | 24       | C        | 18989 | 35  | 1  |
| C        | 18159    | 59       | 11       | C        | 18295    | 63       | 16       | C        | 18999 | 91  | 30 |
| C        | 18159    | 61       | 11       | C        | 18299    | 53       | 3        | C        | 19018 | 47  | 10 |
| C        | 18160    | 59       | 12       | C        | 18300    | 53       | 12       | C        | 19021 | 35  | 15 |
| C        | 18160    | 61       | 12       | C        | 18301    | 53       | 9        | C        | 19025 | 65  | 21 |
| C        | 18161    | 59       | 30       | C        | 18304    | 63       | 13       | C        | 19025 | 83  | 2  |
| C        | 18161    | 61       | 32       | C        | 18305    | 53       | 17       | C        | 19037 | 79  |    |
| C        | 18162    | 59       | 14       | C        | 18306    | 53       | 19       | C        | 19038 | 79  |    |
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| C        | 18166    | 63       | 21       | C        | 18317    | 99       | 7        | C        | 19045 | 75  | 1  |
| C        | 18167    | 59       | 9        | C        | 18321    | 59       | 10       | C        | 19055 | 89  | 24 |
| C        | 18168    | 63       | 19       | C        | 18321    | 61       | 10       | C        | 19055 | 93  | 16 |
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| C        | 18170    | 63       | 7        | C        | 18385    | 35       | 5        | C        | 19113 | 75  | 3  |
| C        | 18171    | 63       | 8        | C        | 18389    | 89       | 10       | C        | 19114 | 75  | 9  |
| C        | 18172    | 63       | 29       | C        | 18389    | 93       | 14       | C        | 19115 | 75  | 16 |
| C        | 18173    | 63       | 30       | C        | 18391    | 65       | 12       | C        | 19169 | 5   | 12 |
| C        | 18174    | 63       | 20       | C        | 18396    | 67       | 2        | C        | 19170 | 5   | 8  |
| C        | 18175    | 63       | 5        | C        | 18401    | 93       | 6        | C        | 19193 | 53  | 10 |
| C        | 18176    | 63       | 18       | C        | 18417    | 101      | 12       | C        | 19196 | 45  | 22 |
| C        | 18177    | 61       | 16       | C        | 18486    | 81       | 6        | C        | 19197 | 43  | 1  |
| C        | 18179    | 63       | 32       | C        | 18487    | 81       | 8        | C        | 19197 | 45  |    |
| C        | 18179    | 73       | 1        | C        | 18572    | 81       | 12       | C        | 19204 | 45  | 12 |
| C        | 18190    | 39       | 4        | C        | 18573    | 81       | 1        | C        | 19207 | 75  | 15 |
| C        | 18190    | 43       | 20       | C        | 18574    | 81       | 17       | C        | 19212 | 79  |    |
| C        | 18193    | 47       | 20       | C        | 18575    | 81       | 4        | C        | 19220 | 65  | 19 |
| C        | 18197    | 89       | 12       | C        | 18576    | 81       | 15       | C        | 19246 | 91  | 33 |
| C        | 18197    | 93       | 11       | C        | 18586    | 47       | 27       | C        | 19254 | 91  | 38 |
| C        | 18201    | 47       | 14       | C        | 18627    | 5        |          | C        | 19258 | 65  | 28 |
| C        | 18203    | 93       | 15       | C        | 18628    | 5        | 5        | C        | 19258 | 91  | 34 |
| C        | 18214    | 25       | 3        | C        | 18629    | 5        | 3        | C        | 19276 | 43  | 1  |
| C        | 18215    | 25       | 2        | C        | 18733    | 47       | 35       | C        | 19276 | 45  |    |
| C        | 18216    | 25       | 7        | C        | 18761    | 75       | 9        | C        | 19277 | 75  | 2  |
| C        | 18217    | 49       | 8        | C        | 18761    | 77       | 9        | C        | 19278 | 75  | 3  |
| C        | 18235    | 61       | 5        | C        | 18762    | 75       | 10       | C        | 19279 | 75  | 8  |
| C        | 18235    | 75       | 16       | C        | 18762    | 77       | 10       | C        | 19279 | 77  | 8  |
| C        | 18235    | 77       | 15       | C        | 18764    | 75       | 7        | C        | 19280 | 75  | 11 |
| C        | 18246    | 25       | 1        | C        | 18764    | 77       | 7        | C        | 19280 | 77  | 11 |
| C        | 18248    | 51       | 12       | C        | 18766    | 77       | 6        | C        | 19281 | 75  | 6  |
| C        | 18249    | 55       | 4        | C        | 18768    | 75       | 5        | C        | 19365 | 89  | 1  |
| C        | 18250    | 25       | 4        | C        | 18768    | 77       | 5        | C        | 19375 | 47  | 14 |
| C        | 18251    | 83       | 15       | C        | 18769    | 75       | 12       | C        | 19376 | 65  | 26 |
| C        | 18258    | 75       | 20       | C        | 18769    | 77       | 12       | C        | 19377 | 65  | 27 |
| C        | 18261    | 89       | 20       | C        | 18788    | 91       | 27       | C        | 19384 | 83  | 1  |
| C        | 18263    | 45       | 23       | C        | 18825    | 43       | 11       | C        | 19411 | 47  | 34 |
| C        | 18265    | 93       | 1        | C        | 18845    | 67       | 12       | C        | 19417 | 49  | 6  |
| C        | 18266    | 93       | 3        | C        | 18846    | 73       |          | C        | 19437 | 59  | 21 |
| C        | 18267    | 89       | 4        | C        | 18847    | 69       | 27       | C        | 19438 | 59  | 31 |
| C        | 18268    | 93       | 5        | C        | 18847    | 71       | 27       | C        | 19438 | 61  | 29 |
| C        | 18270    | 93       | 8        | C        | 18847    | 73       | 27       | C        | 19439 | 59  | 28 |
| C        | 18271    | 37       | 3        | C        | 18850    | 69       | 24       | C        | 19439 | 61  | 28 |
| C        | 18275    | 39       | 10       | C        | 18850    | 71       | 24       | C        | 19439 | 67  | 5  |
| C        | 18275    | 43       | 16       | C        | 18850    | 73       | 23       | C        | 19447 | 61  | 21 |
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| C        | 18278    | 53       | 10       | C        | 18851    | 73       |          | C        | 19469 | 105 | 8  |
| C        | 18279    | 43       | 10       | C        | 18852    | 69       | 19       | C        | 19473 | 31  | 43 |
| C        | 18280    | 43       | 10       | C        | 18852    | 71       | 19       | C        | 19475 | 83  | 25 |
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| C        | 20310    | 17       | 2        | C        | 20501    | 13       | 29       | C        | 20586 | 23 | 6  |
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| C        | 20314    | 17       | 12       | C        | 20503    | 13       | 30       | C        | 20588 | 21 | 35 |
| C        | 20317    | 11       | 5        | C        | 20504    | 13       | 24       | C        | 20589 | 23 | 1  |
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| C        | 20327    | 11       | 9        | C        | 20513    | 13       | 8        | C        | 20597 | 21 | 9  |
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| C        | 20343    | 21       | 26       | C        | 20519    | 13       | 12       | C        | 20610 | 19 | 6  |
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| C        | 20655    | 15       |          | C        | 21595    | 93       | 12       | KO       | 235084   | 37 | 19 |
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| C        | 20666    | 23       | 18       | C        | 22005    | 41       | 3        | KO       | 235168   | 27 | 19 |
| C        | 20667    | 23       | 19       | C        | 22571    | 89       | 11       | KO       | 235207   | 35 | 6  |
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| C        | 20669    | 23       | 30       | C        | 22571    | 93       | 10       | KO       | 235278   | 37 | 24 |
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| C        | 20671    | 23       | 15       | C        | 22260    | 11       | 2        | KO       | 235353   | 33 | 4  |
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| C        | 20673    | 23       | 13       | C        | 23740    | 45       | 6        | KO       | 235448   | 41 | 9  |
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| C        | 20679    | 23       | 24       | D        | 54909    | 81       | 5        | KO       | 235652   | 35 | 5  |
| C        | 20680    | 23       | 23       | D        | 54915    | 81       | 14       | KO       | 235748   | 31 | 42 |
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| C        | 20683    | 23       | 9        | D        | 59376    | 89       | 7        | KO       | 235757   | 33 | 5  |
| C        | 20684    | 23       | 31       | D        | 59949    | 39       | 12       | KO       | 235803   | 29 | 8  |
| C        | 20685    | 23       | 22       | F        | 19892    | 41       |          | KO       | 235811   | 29 | 7  |
| C        | 20686    | 23       | 10       | F        | 19892    | 41       | 7        | KO       | 235818   | 31 | 35 |
| C        | 20687    | 23       | 11       | F        | 59014    | 45       | 14       | KO       | 235838   | 27 | 14 |
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| C        | 20691    | 7        | 3        | KO       | 200375   | 41       | 13       | KO       | 235900   | 37 | 32 |
| C        | 20693    | 7        | 5        | KO       | 200380   | 41       | 1        | KO       | 235901   | 35 | 11 |
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| C        | 20708    | 7        | 10       | KO       | 220297   | 91       | 2        | KO       | 236763   | 29 | 2  |
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| C        | 20711    | 7        | 27       | KO       | 230170   | 27       | 16       | KO       | 236765   | 29 | 16 |
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| C        | 20713    | 7        | 28       | KO       | 230265   | 27       | 29       | KO       | 236886   | 31 | 1  |
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| C        | 20716    | 7        | 31       | KO       | 230722   | 89       | 19       | KO       | 237277   | 31 | 49 |
| C        | 20718    | 7        | 33       | KO       | 231032   | 27       | 5        | KO       | 237421   | 5  | 11 |
| C        | 20735    | 9        | 14       | KO       | 231032   | 33       | 16       | KO       | 237421   | 39 | 9  |
| C        | 20738    | 9        | 8        | KO       | 231052   | 37       | 16       | KO       | 237653   | 37 | 8  |
| C        | 20739    | 9        | 9        | KO       | 231281   | 89       | 13       | KO       | 237658   | 31 | 5  |
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