

# Service Parts

## Engine

Engine Models:

**John Deere TO6059T**  
**6059TL**  
**CD6059F**  
**6068F**

Generator Models:

80/100ROZJ/REOZJ  
80/100DSJ/DSEJ  
100-150REOZJB  
100-150DSEJB

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# Introduction

This manual lists service replacement parts for John Deere 6059 and 6068 engines.

At the time of print this manual applied to the engine models listed in the Specification Number Index. On occasion this manual may apply to engines not listed in the Specification Number Index.

Information in this publication represents data available at the time of print. The generator set manufacturer reserves the right to change this publication and the products represented without notice and without any obligation or liability whatsoever.

This manual includes the following main sections:

**Table of Contents.** Lists the sections of the manual.

**Introduction (and other information sections).** Contains introductory material about part numbers, illustrations, and hardware.

**Index.** Lists the engine models and groups.

**Group Parts Lists.** List the part numbers of parts in the groups.

## Numbering System Significance

This manual uses the following numbering systems:

**Engine Model.** The product identification number located on the engine nameplate. Engines break down into groups.

**Group Number.** A unique number representing a parts group needed to assemble an engine function. For example, Group 1 is the Air Intake group.

**Variation Number.** A group might have several variations. Each variation performs the same function with different parts lists. For example, a 12-volt alternator and 24-volt alternator both perform the same function, but, with different parts. Each difference requires a group variation or module number.

**Part Number.** The part number identifies an individual assembly, subassembly, component, or accessory kit.

## Illustrations

Illustrations (or exploded-view drawings) best representing the widest range of variations accompany most groups in this manual. Illustrations do not depict all details and may not show all parts. Do not use illustrations for assembly or disassembly.

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## How to Find Part Numbers

Use the following steps to locate a service replacement part.

1. Locate the engine nameplate to **identify the engine model number**.
2. **Turn to the Specification Number Index.** The first column lists the engine model numbers. The headings identify the groups of parts that make up the engine.
3. **Identify the group** most likely to include the service part number.
4. **Find the group variation number** at the intersection of the model row and the group column. Note the variation number.
5. **Page forward to locate the group** identified in step 3 or find the appropriate page in the Table of Contents.
6. **Find the part on the illustration** and note the item number of the part or **find the part description in the parts list**.
7. Select the **part number that corresponds to your group variation**. The first column lists the illustration item number. Find the variation identified in the Specification Number Index in the appropriate column on the right side of the parts list table. Find the quantity used at the intersection of the item number row and the variation column. A blank space at the intersection means the variation/module does not use that part number.

## Hardware References

Many common hardware items do not appear in parts manuals or will appear as common hardware entries. A common hardware entry lists the size of the hardware. For example, an item that appears as "Hardware, 3/8-16" in the text means that the piece is 3/8-16 size. Obtain common hardware locally.

Some hardware items require a specific size or some other characteristic. In that case, use the part number listed in the text.

**When replacing hardware, do not substitute inferior grade hardware.** Replacement hardware grade should be equal to or better than the grade of the manufacturer's original hardware.

# Specification Number Index

| Group Title | Air Intake | Water Pump | Thermostat & Housing | Fan Belt | Fan Drive | Vent Tube | Camshaft | Rocker Arms & Push Rods | Rocker Arm Cover | Fuel Injection Pump | Fuel Injection Nozzle | Cylinder Block | Crankshaft | Crankshaft Pulley | Cylinder Head |
|-------------|------------|------------|----------------------|----------|-----------|-----------|----------|-------------------------|------------------|---------------------|-----------------------|----------------|------------|-------------------|---------------|
|-------------|------------|------------|----------------------|----------|-----------|-----------|----------|-------------------------|------------------|---------------------|-----------------------|----------------|------------|-------------------|---------------|

| Group No.                                       | 1                | 2a                   | 2b   | 2c   | 2d                   | 3    | 4a   | 4b   | 4c   | 5a   | 5b   | 7    | 8a   | 8b        | 9    |
|-------------------------------------------------|------------------|----------------------|------|------|----------------------|------|------|------|------|------|------|------|------|-----------|------|
|                                                 | Variation Number |                      |      |      |                      |      |      |      |      |      |      |      |      |           |      |
| Engine Model                                    |                  |                      |      |      |                      |      |      |      |      |      |      |      |      |           |      |
| 80ROZJ and 80DSJ Generator Set Models           |                  |                      |      |      |                      |      |      |      |      |      |      |      |      |           |      |
| TO6059T*                                        | 1                | 1                    | 1    | 1    | -                    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1         | 1    |
| CD6059T                                         | 1                | 2                    | 1    | 1    | -                    | 1    | 1    | 2    | 2    | 3    | 1    | 1    | 2    | 1         | 2    |
| 80REOZJ and 80DSEJ Generator Set Models         |                  |                      |      |      |                      |      |      |      |      |      |      |      |      |           |      |
| 6068T, 12 Volt                                  | 2                | 3                    | 2    | 2    | 3                    | 2    | 2    | 3    | 3    | 6    | 2    | 2    | 3    | 3         | 3    |
| 6068T, 24 Volt                                  | 2                | 3                    | 2    | 2    | 3                    | 2    | 2    | 3    | 3    | 7    | 2    | 2    | 3    | 3         | 3    |
| 100ROZJ and 100DSJ Generator Set Models         |                  |                      |      |      |                      |      |      |      |      |      |      |      |      |           |      |
| TO6059T                                         | 1                | 1                    | 1    | 1    | -                    | 1    | 1    | 1    | 1    | 2    | 1    | 1    | 1    | 2         | 1    |
| CD6059T                                         | 1                | 2                    | 1    | 1    | -                    | 1    | 1    | 2    | 2    | 4    | 1    | 1    | 2    | 2         | 2    |
| 100REOZJ and 100DSEJ Generator Set Models       |                  |                      |      |      |                      |      |      |      |      |      |      |      |      |           |      |
| 6068T, 12 Volt                                  | 2                | 3                    | 2    | 2    | 3                    | 2    | 2    | 3    | 3    | 5    | 2    | 2    | 3    | 3         | 3    |
| 6068T, 24 Volt                                  | 2                | 3                    | 2    | 2    | 3                    | 2    | 2    | 3    | 3    | 8    | 2    | 2    | 3    | 3         | 3    |
| 100/125REOZJB and 100DSEJB Generator Set Models |                  |                      |      |      |                      |      |      |      |      |      |      |      |      |           |      |
| 6068TF220, 12 V, 50 Hz                          | 1706             | 4403<br>5702<br>2001 | 2102 | 3    | 8702<br>2301<br>4    | 2905 | 4603 | 4902 | 1102 | 16GS | 16GS | 4603 | 4703 | 6803<br>4 | 5107 |
| 6068TF250, 12 V, 60 Hz                          | 1706             | 4403<br>5702<br>2001 | 2102 | 3    | 8702<br>2301<br>4    | 2905 | 4603 | 4902 | 1102 | 16MJ | 16MJ | 4603 | 4703 | 6803<br>4 | 5107 |
| 6068TF220, 24 V, 50 Hz                          | 1706             | 4403<br>5702<br>2001 | 2102 | 3    | 8702<br>2301<br>4    | 2905 | 4603 | 4902 | 1102 | 16LX | 16LX | 4603 | 4703 | 6803<br>4 | 5107 |
| 6068TF250, 24 V, 60 Hz                          | 1706             | 4403<br>5702<br>2001 | 2102 | 3    | 8702<br>2301<br>4    | 2905 | 4603 | 4902 | 1102 | 16MK | 16MK | 4603 | 4703 | 6803<br>4 | 5107 |
| 150REOZJB and 150DSEJB Generator Set Models     |                  |                      |      |      |                      |      |      |      |      |      |      |      |      |           |      |
| 6068HF120, 12 V, 50 Hz                          | 1712             | 4403<br>5702<br>2001 | 2102 | 2417 | 8702<br>2312<br>8610 | 2905 | 4603 | 4902 | 1108 | 16GT | 16GT | 4603 | 4703 | 1306      | 5107 |
| 6068HF150, 12 V, 60 Hz                          | 1712             | 4403<br>5702<br>2001 | 2102 | 2417 | 8702<br>2312<br>8610 | 2905 | 4603 | 4902 | 1108 | 16ML | 16ML | 4603 | 4703 | 1306      | 5107 |
| 6068HF120, 24 V, 50 Hz                          | 1712             | 4403<br>5702<br>2001 | 2102 | 2417 | 8702<br>2312<br>8610 | 2905 | 4603 | 4902 | 1108 | 16LY | 16LY | 4603 | 4703 | 1306      | 5107 |
| 6068HF150, 24 V, 60 Hz                          | 1712             | 4403<br>5702<br>2001 | 2102 | 2417 | 8702<br>2312<br>8610 | 2905 | 4603 | 4902 | 1108 | 16MM | 16MM | 4603 | 4703 | 1306      | 5107 |

\* Early model 80ROZJ generator sets used John Deere 6359TL engines. Later model 80ROZJ generator sets used John Deere TO6059T engines. Check the engine nameplate to determine which engine is used. If the John Deere 6359TL engine was used, refer to Parts Catalog TP-5370.

# Generator Specification Number Index

| Group Title           |
|-----------------------|
| Oil Filter & Dipstick |
| Starter Motor         |
| Starter Drive         |
| Starter End Frame     |
| Starter Main Frame    |
| Starter Solenoid      |
| Exhaust System        |
| Flywheel              |
| Flywheel Housing      |
| Fuel Pump             |
| Fuel Filter           |
| Timing Gear Cover     |
| Oil Pan               |
| Oil Fill Tube         |

| Group No.                                       | 10               | 11a  | 11b  | 11c  | 11d  | 11e  | 12           | 13a  | 13b  | 14   | 15   | 18   | 21a  | 21b |
|-------------------------------------------------|------------------|------|------|------|------|------|--------------|------|------|------|------|------|------|-----|
|                                                 | Variation Number |      |      |      |      |      |              |      |      |      |      |      |      |     |
| Engine Model                                    |                  |      |      |      |      |      |              |      |      |      |      |      |      |     |
| 80ROZJ and 80DSJ Generator Set Models           |                  |      |      |      |      |      |              |      |      |      |      |      |      |     |
| TO6059T*                                        | 1                | 1    | 1    | 1    | 1    | 1    | 1            | 1    | 1    | 1    | 1    | 1    | 1    | 1   |
| CD6059T                                         | 1                | 1    | 1    | 1    | 1    | 1    | 1            | 1    | 2    | 1    | 2    | 1    | 1    | 1   |
| 80REOZJ and 80DSEJ Generator Set Models         |                  |      |      |      |      |      |              |      |      |      |      |      |      |     |
| 6068T, 12 Volt                                  | 2                | 3    | 3    | 3    | 3    | 3    | 2            | 2    | 3    | 2    | 3    | 2    | 2    | 2   |
| 6068T, 24 Volt                                  | 2                | 2    | 2    | 2    | 2    | 2    | 2            | 2    | 3    | 2    | 3    | 2    | 2    | 2   |
| 100ROZJ and 100DSJ Generator Set Models         |                  |      |      |      |      |      |              |      |      |      |      |      |      |     |
| TO6059T                                         | 1                | 1    | 1    | 1    | 1    | 1    | 1            | 1    | 1    | 1    | 1    | 1    | 1    | 1   |
| CD6059T                                         | 1                | 1    | 1    | 1    | 1    | 1    | 1            | 1    | 2    | 1    | 2    | 1    | 1    | 1   |
| 100REOZJ and 100DSEJ Generator Set Models       |                  |      |      |      |      |      |              |      |      |      |      |      |      |     |
| 6068T, 12 Volt                                  | 2                | 3    | 3    | 3    | 3    | 3    | 2            | 2    | 3    | 2    | 3    | 2    | 2    | 2   |
| 6068T, 24 Volt                                  | 2                | 2    | 2    | 2    | 2    | 2    | 2            | 2    | 3    | 2    | 3    | 2    | 2    | 2   |
| 100/125REOZJB and 100DSEJB Generator Set Models |                  |      |      |      |      |      |              |      |      |      |      |      |      |     |
| 6068TF220, 12 V, 50 Hz                          | 4002<br>8802     | 3006 | 3006 | 3006 | 3006 | 3006 | 2809<br>6401 | 1503 | 1406 | 3702 | 3518 | 4403 | 1907 | -   |
| 6068TF250, 12 V, 60 Hz                          | 4002<br>8802     | 3006 | 3006 | 3006 | 3006 | 3006 | 2809<br>6401 | 1503 | 1406 | 3702 | 3518 | 4403 | 1907 | -   |
| 6068TF220, 24 V, 50 Hz                          | 4002<br>8802     | 3041 | 3041 | 3041 | 3041 | 3041 | 2809<br>6401 | 1503 | 1406 | 3702 | 3518 | 4403 | 1907 | -   |
| 6068TF250, 24 V, 60 Hz                          | 4002<br>8802     | 3041 | 3041 | 3041 | 3041 | 3041 | 2809<br>6401 | 1503 | 1406 | 3702 | 3518 | 4403 | 1907 | -   |
| 150REOZJB and 150DSEJB Generator Set Models     |                  |      |      |      |      |      |              |      |      |      |      |      |      |     |
| 6068HF120, 12 V, 50 Hz                          | 4002<br>8803     | 3006 | 3006 | 3006 | 3006 | 3006 | 2809<br>6401 | 1503 | 1406 | 3702 | 3518 | 4403 | 1907 | -   |
| 6068HF150, 12 V, 60 Hz                          | 4002<br>8803     | 3006 | 3006 | 3006 | 3006 | 3006 | 2809<br>6401 | 1503 | 1406 | 3702 | 3518 | 4403 | 1924 | -   |
| 6068HF120, 24 V, 50 Hz                          | 4002<br>8803     | 3041 | 3041 | 3041 | 3041 | 3041 | 2809<br>6401 | 1503 | 1406 | 3702 | 3518 | 4403 | 1907 | -   |
| 6068HF150, 24 V, 60 Hz                          | 4002<br>8803     | 3041 | 3041 | 3041 | 3041 | 3041 | 2809<br>6401 | 1503 | 1406 | 3702 | 3518 | 4403 | 1924 | -   |

\* Early model 80ROZJ generator sets used John Deere 6359TL engines. Later model 80ROZJ generator sets used John Deere TO6059T engines. Check the engine nameplate to determine which engine is used. If the John Deere 6359TL engine was used, refer to Parts Catalog TP-5370.

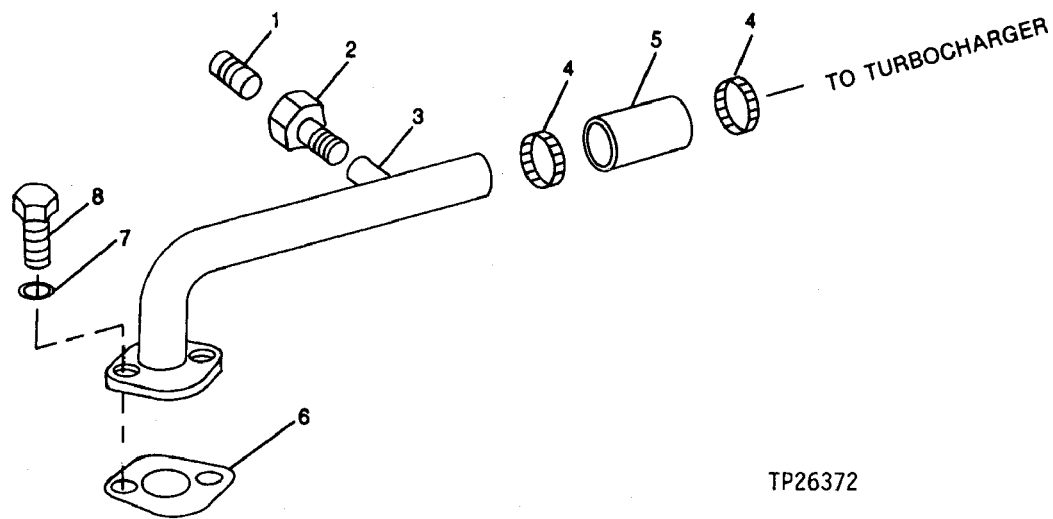
# Specification Number Index

| Group Title |            |                              |                         |          |             |                     |                          |             |              |                        |            |                       |                     |  |
|-------------|------------|------------------------------|-------------------------|----------|-------------|---------------------|--------------------------|-------------|--------------|------------------------|------------|-----------------------|---------------------|--|
|             | Oil Cooler | Oil Pressure Regulator Valve | Piston & Connecting Rod | Oil Pump | Front Plate | Overhaul Gasket Set | Cylinder Head Gasket Set | Short Block | Turbocharger | Turbocharger Oil Lines | Alternator | Alternator Components | Alternator Mounting |  |

| Group No.                                       | 21c              | 21d  | 22   | 25           | 29   | 39a  | 39b  | 42   | 50a  | 50b  | 51a  | 51b  | 51c  |
|-------------------------------------------------|------------------|------|------|--------------|------|------|------|------|------|------|------|------|------|
|                                                 | Variation Number |      |      |              |      |      |      |      |      |      |      |      |      |
| Engine Model                                    |                  |      |      |              |      |      |      |      |      |      |      |      |      |
| 80ROZJ and 80DSJ Generator Set Models           |                  |      |      |              |      |      |      |      |      |      |      |      |      |
| TO6059T*                                        | 1                | 1    | 1    | 1            | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    |
| CD6059T                                         | 2                | 1    | 1    | 2            | 1    | 1    | 1    | 1    | 2    | 2    | 1    | 1    | 1    |
| 80REOZJ and 80DSEJ Generator Set Models         |                  |      |      |              |      |      |      |      |      |      |      |      |      |
| 6068T, 12 Volt                                  | 3                | 1    | 2    | 3            | 2    | 2    | 2    | 2    | 3    | 3    | 2    | 2    | 2    |
| 6068T, 24 Volt                                  | 3                | 1    | 2    | 3            | 2    | 2    | 2    | 2    | 3    | 3    | 3    | 3    | 2    |
| 100ROZJ and 100DSJ Generator Set Models         |                  |      |      |              |      |      |      |      |      |      |      |      |      |
| TO6059T                                         | 1                | 1    | 1    | 1            | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    |
| CD6059T                                         | 2                | 1    | 1    | 2            | 1    | 1    | 1    | 1    | 2    | 2    | 1    | 1    | 1    |
| 100REOZJ and 100DSEJ Generator Set Models       |                  |      |      |              |      |      |      |      |      |      |      |      |      |
| 6068T, 12 Volt                                  | 3                | 1    | 3    | 3            | 2    | 3    | 2    | 2    | 3    | 3    | 2    | 2    | 2    |
| 6068T, 24 Volt                                  | 3                | 1    | 3    | 3            | 2    | 3    | 2    | 2    | 3    | 3    | 3    | 3    | 2    |
| 100/125REOZJB and 100DSEJB Generator Set Models |                  |      |      |              |      |      |      |      |      |      |      |      |      |
| 6068TF220, 12 V, 50 Hz                          | -                | 5001 | 4810 | 5001<br>1907 | 3601 | 9901 | 9901 | 9901 | 65AC | 65AC | 3122 | 3122 | 6201 |
| 6068TF250, 12 V, 60 Hz                          | 5902             | 5001 | 4810 | 5001<br>1907 | 3601 | 9901 | 9901 | 9901 | 6594 | 6594 | 3122 | 3122 | 6201 |
| 6068TF220, 24 V, 50 Hz                          | -                | 5001 | 4810 | 5001<br>1907 | 3601 | 9901 | 9901 | 9901 | 65AC | 65AC | 3104 | 3104 | 6201 |
| 6068TF250, 24 V, 60 Hz                          | 5902             | 5001 | 4810 | 5001<br>1907 | 3601 | 9901 | 9901 | 9901 | 6594 | 6594 | 3104 | 3104 | 6201 |
| 150REOZJB and 150DSEJB Generator Set Models     |                  |      |      |              |      |      |      |      |      |      |      |      |      |
| 6068HF120, 12 V, 50 Hz                          | -                | 5001 | 4810 | 5001<br>1907 | -    | 9901 | 9901 | 9901 | 65AG | 65AG | 3122 | 3122 | 6201 |
| 6068HF150, 12 V, 60 Hz                          | -                | 5001 | 4810 | 5001<br>1907 | -    | 9901 | 9901 | 9901 | 6594 | 6594 | 3122 | 3122 | 6201 |
| 6068HF120, 24 V, 50 Hz                          | -                | 5001 | 4810 | 5001<br>1907 | -    | 9901 | 9901 | 9901 | 65AG | 65AG | 3104 | 3104 | 6201 |
| 6068HF150, 24 V, 60 Hz                          | -                | 5001 | 4810 | 5001<br>1907 | -    | 9901 | 9901 | 9901 | 6594 | 6594 | 3104 | 3104 | 6201 |

\* Early model 80ROZJ generator sets used John Deere 6359TL engines. Later model 80ROZJ generator sets used John Deere TO6059T engines. Check the engine nameplate to determine which engine is used. If the John Deere 6359TL engine was used, refer to Parts Catalog TP-5370.

Group 1: Air Intake

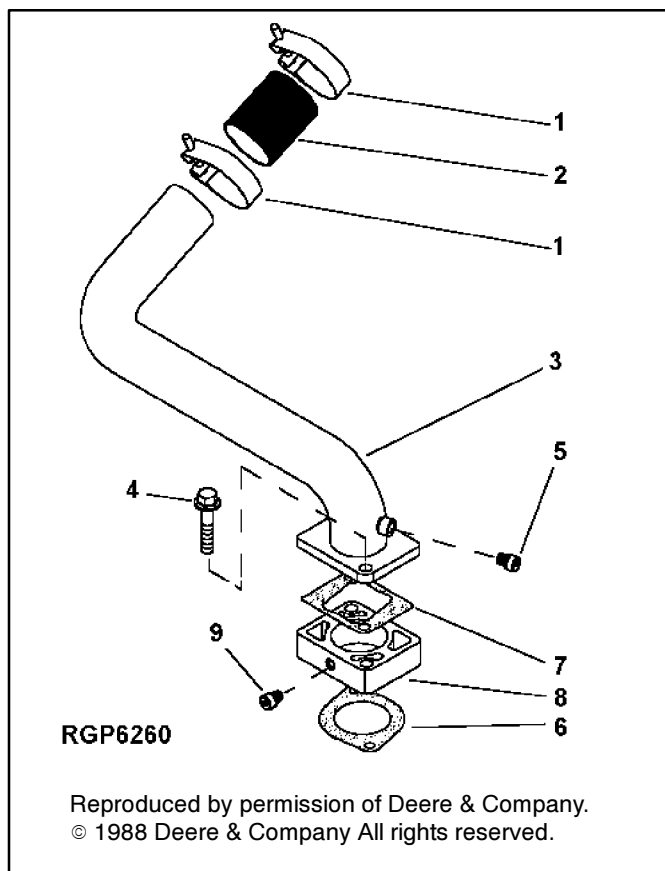


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| Item | Part Number | Description               | Quantity  |   |
|------|-------------|---------------------------|-----------|---|
|      |             |                           | Variation |   |
|      |             |                           | 1         | 2 |
| 1    | #           | Plug, pipe, 3/8 in. NT    | 1         |   |
| 1    | #           | Plug                      |           | 1 |
| 2    | 224158      | Fitting                   | 1         |   |
| 3    | 224160      | Tube                      | 1         |   |
| 3    | 360027      | Tube, intake              |           | 1 |
| 4    | #           | Clamp                     | 2         | 2 |
| 5    | 224152      | Hose                      | 1         | 1 |
| 6    | 223532      | Gasket                    | 1         | 1 |
| 7    | #           | Washer, lock, 3/8 in.     | 2         |   |
| 8    | #           | Screw, 3/8-16 x 1 1/4 in. | 2         |   |
| 8    | #           | Screw, M10 x 25           |           | 2 |

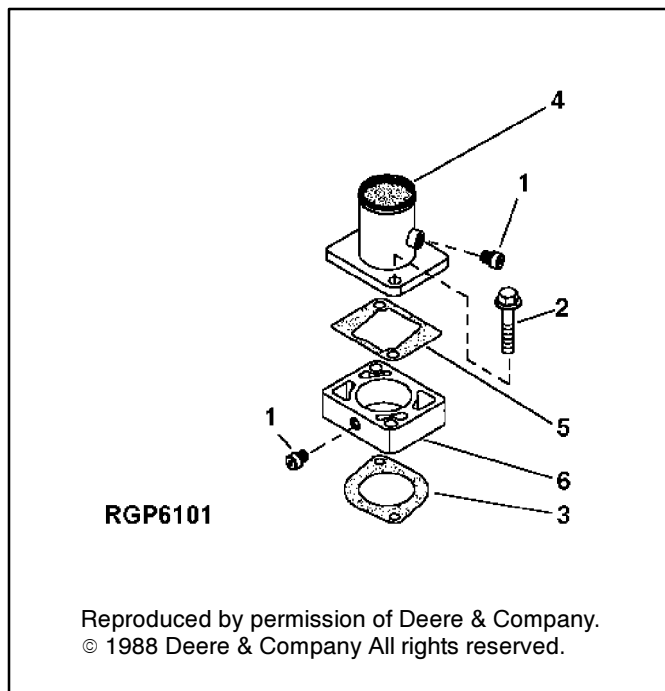
# Common hardware; procure locally

## Group 1: Air Intake, continued



| Item | Part Number | Description      | Qty.           |
|------|-------------|------------------|----------------|
|      |             |                  | Variation 1706 |
| 1    | GM18669     | Clamp            | 2              |
| 2    | 224152      | Hose             | 1              |
| 3    | GM24515     | Tube, air intake | 1              |
| 4    | #           | Screw, M10 x 50  | 2              |
| 5    | GM17515     | Fitting          | 1              |
| 6    | 223532      | Gasket           | 1              |
| 7    | GM17458     | Gasket           | 1              |
| 8    | GM17483     | Spacer           | 1              |
| 9    | GM17515     | Fitting          | 1              |

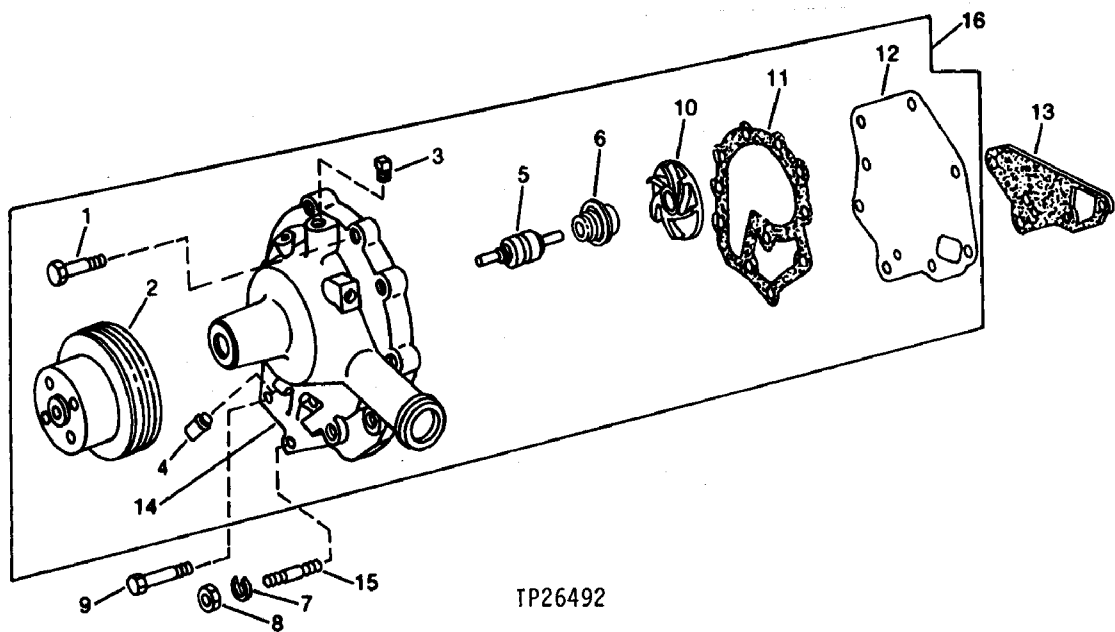
# Common hardware; procure locally



| Item | Part Number | Description      | Qty.           |
|------|-------------|------------------|----------------|
|      |             |                  | Variation 1712 |
| 1    | GM24516     | Fitting          | 1              |
| 2    | #           | Screw, M10 x 50  | 2              |
| 3    | 223532      | Gasket           | 1              |
| 4    | GM24517     | Manifold, intake | 1              |
| 5    | GM17458     | Gasket           | 1              |
| 6    | GM17483     | Spacer           | 1              |

# Common hardware; procure locally

# Group 2a: Water Pump



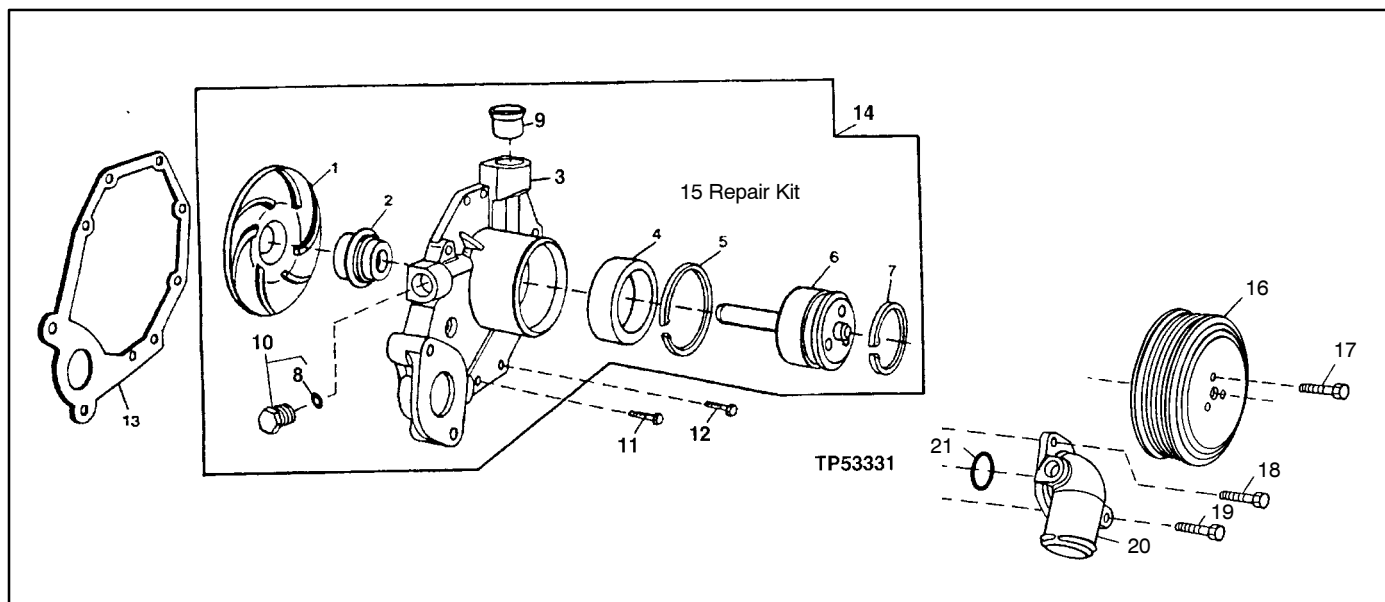
TP26492

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| Item | Part Number | Description                    | Quantity  |   |
|------|-------------|--------------------------------|-----------|---|
|      |             |                                | Variation |   |
|      |             |                                | 1         | 2 |
| 1    | #           | Screw, cap, 3/8-16 x 1 1/2 in. | 4         | 4 |
| 1    | #           | Screw, cap, 3/8-16 x 1 in.     | 1         | 1 |
| 1    | #           | Screw, 3/8-16 x 2 1/4 in.      | 1         | 1 |
| 2    | 224030      | Pulley                         | 1         | 1 |
| 3    | #           | Plug, pipe, 1/2 NPT            | 1         | 1 |
| 4    | X           | Tube, 17 mm (66 in.)           | 1         | 1 |
| 5    | X           | Bearing                        | 1         | 1 |
| 6    | 224169      | Kit, bearing                   | 1         | 1 |
| 7    | #           | Washer, lock, 3/8 in.          | 1         | 1 |
| 8    | #           | Nut, 3/8-16                    | 1         | 1 |
| 9    | #           | Screw, cap, 3/8-16 x 2 1/2 in. | 1         | 1 |
| 9    | #           | Screw, cap, 3/8-16 x 3 in.     | 1         | 1 |
| 9    | #           | Screw, 3/8-16 x 1 3/4 in.      | 1         | 1 |
| 10   | X           | Impeller                       | 1         | 1 |
| 11   | 224029      | Gasket                         | 1         | 1 |
| 12   | X           | Cover                          | 1         |   |
| 12   | 336484      | Cover                          |           | 1 |
| 13   | 223628      | Gasket                         | 1         | 1 |
| 14   | X           | Housing                        | 1         | 1 |
| 15   | #           | Stud                           | 1         | 1 |
| 16   | 224002      | Pump, water                    | 1         | 1 |

# Common hardware; procure locally  
X Not sold separately

## Group 2a: Water Pump, continued



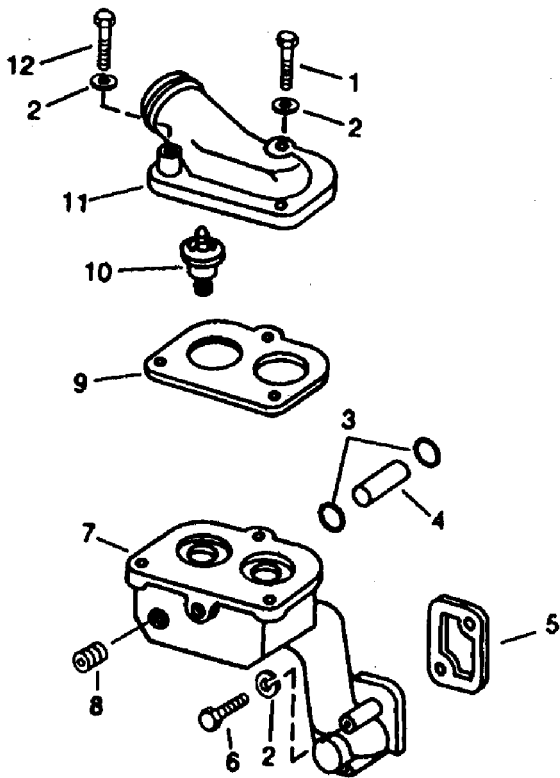
| Item | Part Number | Description                                    | Quantity    |
|------|-------------|------------------------------------------------|-------------|
|      |             |                                                | Variation 3 |
| 1    | X           | Impeller                                       | 1           |
| 2    | X           | Seal                                           | 1           |
| 3    | X           | Housing                                        | 1           |
| 4    | X           | Bearing, ball                                  | 1           |
| 5    | X           | Ring                                           | 1           |
| 6    | X           | Shaft                                          | 1           |
| 7    | 360003      | Ring, snap                                     | 1           |
| 8    | 360176      | O-ring                                         | 1           |
| 9    | 360116      | Seal                                           | 1           |
| 10   | 360014      | Plug                                           | 1           |
| 11   | #           | Screw, M6 x 30                                 | 3           |
| 12   | #           | Screw, M6 x 25                                 | 5           |
| 13   | 360124      | Gasket                                         | 1           |
| 14   | GM29382     | Pump, water                                    | 1           |
| 15   | 360061      | Kit, water pump repair (includes items 1-7, 9) | 1           |
| 16   | 360085      | Pulley, water pump                             | 1           |
| 17   | #           | Screw, M6 x 12                                 | 3           |
| 18   | #           | Screw, M8 x 25                                 | 1           |
| 19   | #           | Screw, M8 x 65                                 | 1           |
| 20   | 360109      | Adapter, water pump                            | 1           |
| 21   | 224174      | O-ring                                         | 1           |

# Common hardware; procure locally

X Not sold separately

| Item | Part Number | Description               | Quantity  |      |      |
|------|-------------|---------------------------|-----------|------|------|
|      |             |                           | Variation |      |      |
|      |             |                           | 4403      | 2001 | 5702 |
| 1    | —           | Impeller                  | 1         |      |      |
| 2    | —           | Seal                      | 1         |      |      |
| 3    | —           | Housing                   | 1         |      |      |
| 3    | GM17443     | Filter                    | 2         |      |      |
| 4    | —           | Ball bearing              | 1         |      |      |
| 5    | —           | Ring                      | 1         |      |      |
| 6    | —           | Shaft                     | 1         |      |      |
| 7    | 360003      | Ring, snap                | 1         |      |      |
| 9    | 360116      | Gasket, water bypass tube | 1         |      |      |
| 10   | 360014      | Plug                      | 2         |      |      |
| 11   | #           | Screw, M6 x 25            | 5         |      |      |
| 12   | #           | Screw, M6 x 30            | 3         |      |      |
| 13   | 360124      | Gasket, water pump        | 1         |      |      |
| 14   | GM29382     | Pump, water               | 1         |      |      |
| 15   | GM17551     | Kit, water pump           | 1         |      |      |
| 16   | 360085      | Pulley, water pump        |           | 1    |      |
| 17   | #           | Screw, M6 x 12            |           | 3    |      |
| 18   | #           | Screw, M8 x 25            |           |      | 1    |
| 19   | #           | Screw, M8 x 65            |           |      | 1    |
| 20   | 360109      | Adapter, water pump       |           |      | 1    |
| 21   | 224172      | O-ring                    |           |      | 1    |

# Group 2b: Thermostat

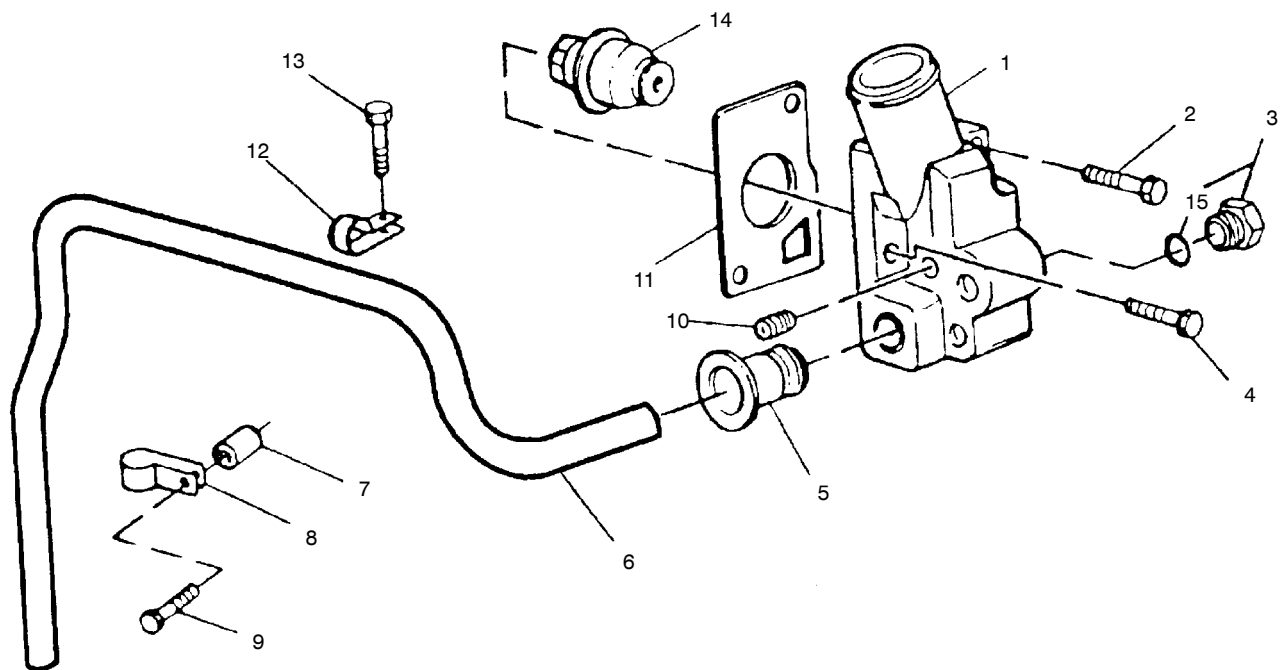


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| Item | Part Number | Description                    | Quantity    |
|------|-------------|--------------------------------|-------------|
|      |             |                                | Variation 1 |
| 1    | #           | Screw, cap, 3/8-16 x 1 in.     | 1           |
| 2    | #           | Washer, lock, 3/8 in.          | 1           |
| 3    | 224028      | O-ring                         | 1           |
| 4    | 224025      | Tube                           | 1           |
| 5    | 224020      | Gasket                         | 1           |
| 6    | #           | Screw, cap, 3/8-16 x 3 1/2 in. | 1           |
| 7    | 224036      | Housing                        | 1           |
| 8    | #           | Plug, pipe, 1/2 NPT            | 1           |
| 9    | 224012      | Gasket                         | 1           |
| 10   | 223676      | Thermostat                     | 1           |
| 11   | 224013      | Cover                          | 1           |
| 12   | #           | Screw, 3/8-16 x 2 in.          | 1           |

# Common hardware; procure locally

## Group 2b: Thermostat, continued



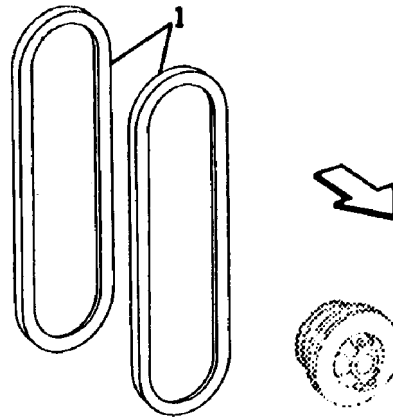
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| Item | Part Number | Description                             | Quantity  |      |
|------|-------------|-----------------------------------------|-----------|------|
|      |             |                                         | Variation |      |
|      |             |                                         | 2         | 2102 |
| 1    | 360126      | Cover, thermostat                       | 1         | 1    |
| 2    | #           | Screw, M10 x 70                         | 1         |      |
| 3    | 360013      | Plug                                    | 1         | 2    |
| 4    | #           | Screw, M10 x 30                         | 2         | 1    |
| 4    | #           | Screw, M10 x 70                         |           | 1    |
| 5    | 360116      | Gasket, water bypass tube               | 1         | 1    |
| 6    | 360142      | Tube                                    | 1         | 1    |
| 7    | #           | Washer, 0.423 in. x 0.675 in. x 3/8 in. | 1         |      |
| 8    | 360121      | Clamp                                   | 1         | 1    |
| 9    | #           | Screw, M8 x 60                          | 1         |      |
| 10   | #           | Plug, pipe, 1/2 in.                     | 3         |      |
| 10   | GM15403     | Plug, pipe                              |           | 3    |
| 11   | 360484      | Gasket, thermostat cover                | 1         | 1    |
| 12   | 360120      | Clamp                                   | 1         | 1    |
| 13   | #           | Screw, M8 x 60                          | 1         |      |
| 13   | #           | Screw, M12 x 25                         |           | 1    |
| 14   | 223595      | Thermostat                              | 1         | 1    |
| 15   | GM21508     | O-ring                                  |           | 2    |

# Common hardware; procure locally

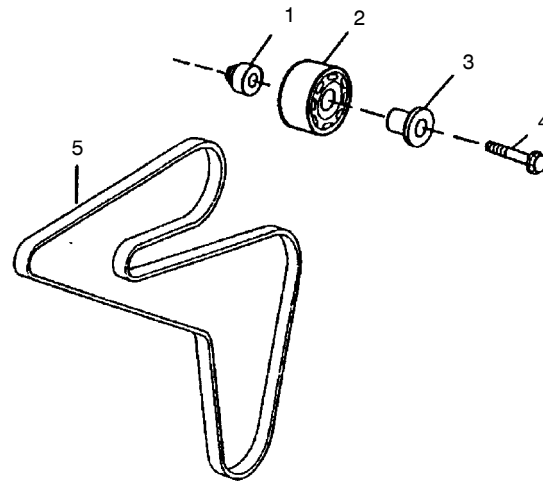
Thermostat Variation 2102:  
223595 (engine serial number 119711 and before)  
GM32812 (engine serial number 119712 and after)

## Group 2c: Fan Belt



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| Item | Part Number | Description                                                                     | Quantity  |   |
|------|-------------|---------------------------------------------------------------------------------|-----------|---|
|      |             |                                                                                 | Variation |   |
|      |             |                                                                                 | 1         | 2 |
| 1    | 224256      | Set, belt, match set, engine model 6059T                                        | 1         |   |
| 1    | 223995      | Set, belt, match set, engine model CD6059T with serial numbers before 166391    | 1         |   |
| 1    | 336593      | Set, belt, match set, engine model CD6059T with serial numbers 166391 and after | 1         |   |
| 1    | 360177      | Belt, fan, poly-V, 1650 mm                                                      |           | 1 |

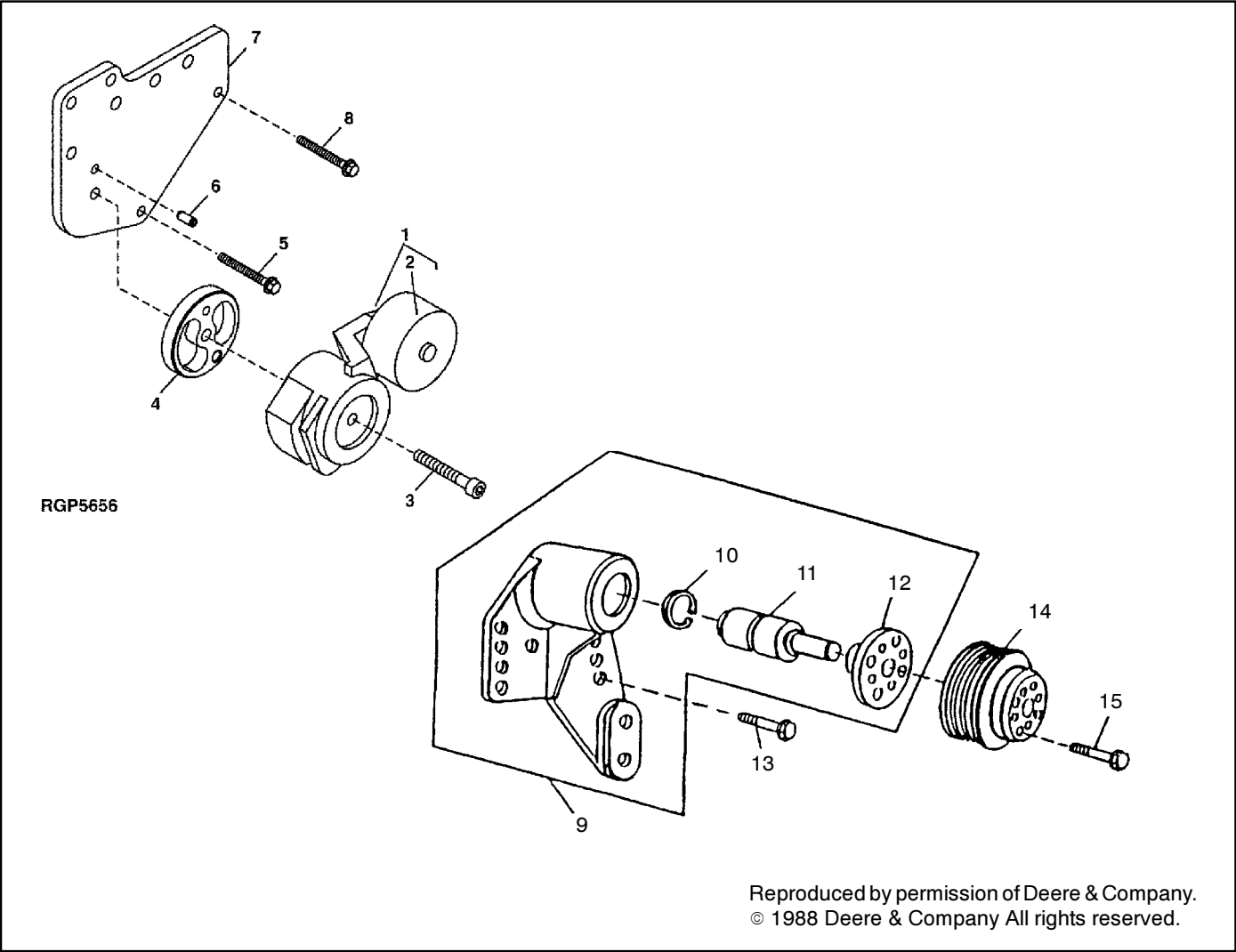


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| Item    | Part Number        | Description                                                                           | Quantity  |                      |
|---------|--------------------|---------------------------------------------------------------------------------------|-----------|----------------------|
|         |                    |                                                                                       | Variation |                      |
|         |                    |                                                                                       | 3         | 2417<br><del>4</del> |
| 1       | GM23835            | Spacer                                                                                | 1         |                      |
| 2       | GM17529            | Pulley                                                                                | 1         |                      |
| 3       | GM17488            | Sleeve                                                                                | 1         |                      |
| 4       | #                  | Screw, M10 x 65                                                                       | 1         |                      |
| 5       | GM24519            | Belt, 1600 mm (engine option code 2411; genset specs GM21528-GA1 through GM21528-GA8) | 1         |                      |
| GM28327 | <del>GM31600</del> | Belt, 1570 mm (engine option code 2405) 240R                                          | 1         |                      |
| 5       | GM24518            | Belt                                                                                  |           | 1                    |

# Common hardware; procure locally

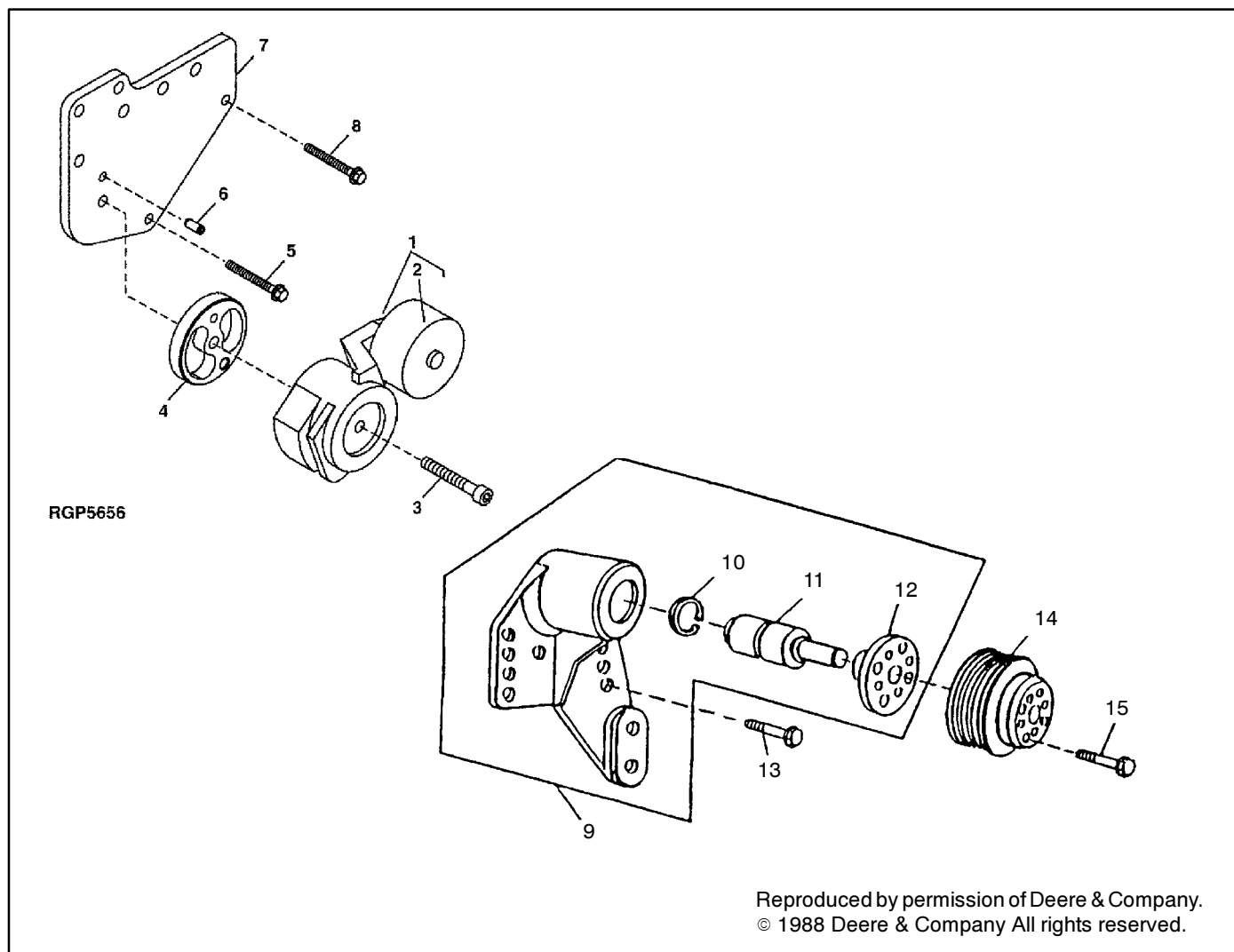
# Group 2d: Fan Drive



| Item | Part Number | Description      | Quantity    |
|------|-------------|------------------|-------------|
|      |             |                  | Variation 3 |
| 1    | 360075      | Tensioner        | 1           |
| 3    | #           | Screw, M10 x 65  | 1           |
| 9    | 360030      | Housing, bearing | 1           |
| 10   | 223730      | Ring, snap       | 1           |
| 11   | 360095      | Bearing          | 1           |
| 12   | 360096      | Hub              | 1           |
| 13   | #           | Screw, M10 x 35  | 4           |
| 14   | 360143      | Sheave, pulley   | 1           |
| 15   | #           | Screw, M10 x 20  | 4           |

# Common hardware; procure locally

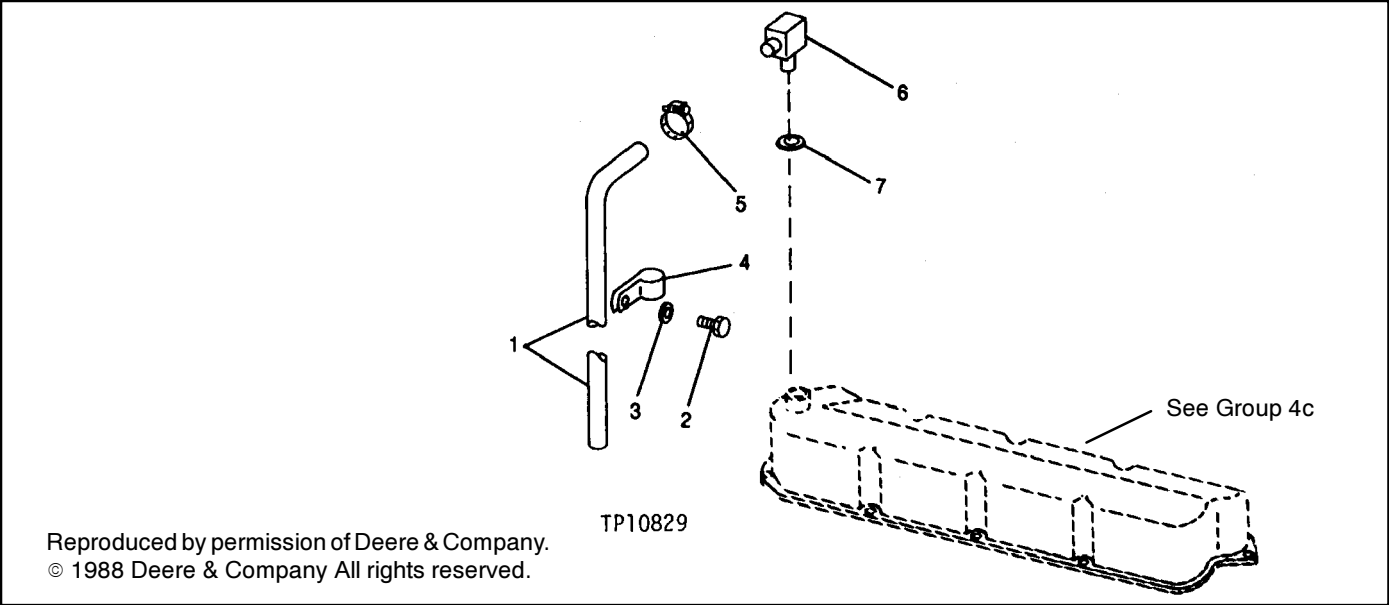
## Group 2d: Fan Drive



| Item | Part Number | Description                                                                    | Quantity  |      |      |   |      |
|------|-------------|--------------------------------------------------------------------------------|-----------|------|------|---|------|
|      |             |                                                                                | Variation |      |      |   |      |
|      |             |                                                                                | 8702      | 2301 | 2312 | 4 | 8610 |
| 1    | 360075      | Tensioner                                                                      | 1         |      |      |   |      |
| 2    | —           | Bolt                                                                           | 1         |      |      |   |      |
| 3    | #           | Screw, M10 x 70                                                                | 1         |      |      |   |      |
| 4    | GM24520     | Spacer                                                                         | 1         |      |      |   |      |
| 5    | #           | Screw, M8 x 60                                                                 | 1         |      |      |   |      |
| 6    | #           | Pin, spring, 8 x 30 mm                                                         | 1         |      |      |   |      |
| 7    | GM24521     | Support                                                                        | 1         |      |      |   |      |
| 9    | 360030      | Bearing housing                                                                |           | 1    |      |   |      |
| 9    | GM23844     | Support                                                                        |           |      | 1    |   |      |
| 10   | 360005      | Ring, snap                                                                     |           | 1    |      |   |      |
| 10   | 223730      | Ring, snap                                                                     |           |      | 1    |   |      |
| 11   | 360095      | Bearing                                                                        |           | 1    |      |   |      |
| 11   | —           | Shaft                                                                          |           |      | 1    |   |      |
| 12   | 360096      | Hub                                                                            |           | 1    |      |   |      |
| 12   | —           | Hub                                                                            |           |      | 1    |   |      |
| 13   | #           | Screw, M10 x 35                                                                |           | 4    | 4    |   |      |
| 14   | GM24522     | Pulley (engine option code 8606; genset specs GM21528-GA1 through GM21528-GA8) |           |      |      | 1 |      |
| 14   | 360143      | Pulley (engine option code 8605)                                               |           |      |      | 1 |      |
| 14   | 360578      | Pulley, fan                                                                    |           |      |      |   | 1    |
| 15   | #           | Screw, M10 x 20                                                                |           |      |      | 4 | 4    |

# Common hardware; procure locally

# Group 3: Vent Tube

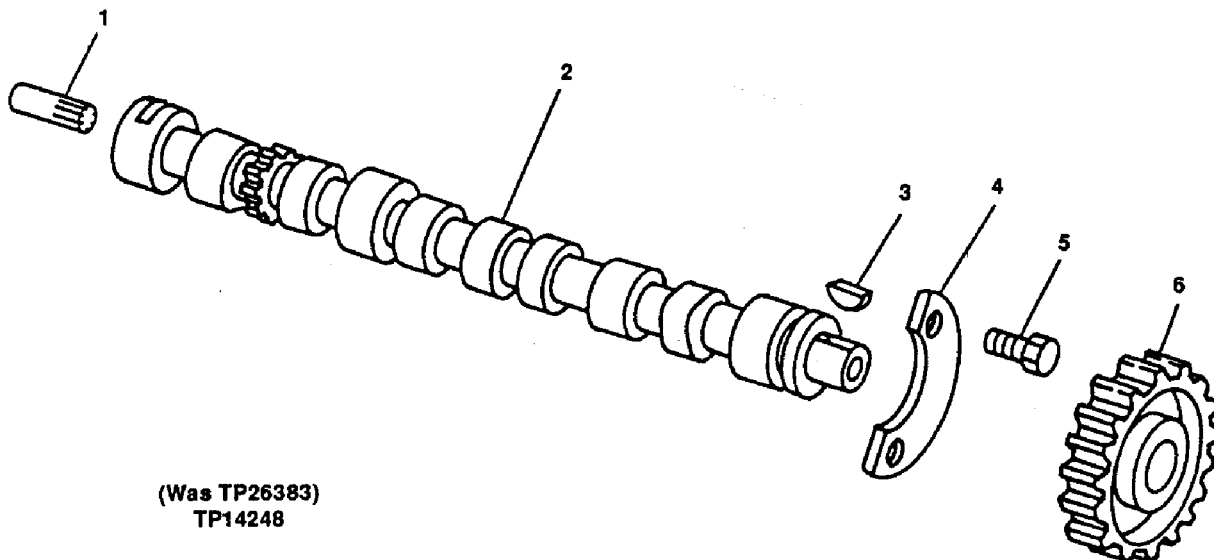


| Item | Part Number | Description                      | Quantity  |   |
|------|-------------|----------------------------------|-----------|---|
|      |             |                                  | Variation |   |
|      |             |                                  | 1         | 2 |
| 1    | 224237      | Hose                             | 1         |   |
| 1    | 223450      | Hose                             |           | 1 |
| 2    | #           | Screw, 3/8-16 x 7/8 in.          | 1         |   |
| 2    | #           | Screw, M8 x 20                   |           | 1 |
| 3    | #           | Washer, 13/32 x 11/16 x 0.06 in. | 1         |   |
| 3    | #           | Washer, lock, 3/8 in.            | 1         |   |
| 4    | #           | Clamp                            | 1         | 1 |
| 5    | #           | Clamp                            | 1         |   |
| 6    | 223551      | Fitting, elbow                   | 1         |   |
| 6    | 360098      | Fitting, elbow                   |           | 1 |
| 7    | 223491      | O-ring                           | 1         |   |
| 7    | 223851      | O-ring                           |           | 1 |

| Item | Part Number | Description     | Quantity  |  |
|------|-------------|-----------------|-----------|--|
|      |             |                 | Variation |  |
|      |             |                 | 2905      |  |
| 1    | 223450      | Hose            | 1         |  |
| 2    | #           | Screw, M10 x 16 | 1         |  |
| 4    | 360530      | Clamp           | 1         |  |
| 4    | GM24524     | Bracket         | 1         |  |
| 6    | GM24523     | Fitting, elbow  | 1         |  |
| 7    | 223851      | O-ring          | 1         |  |

# Common hardware; procure locally

## Group 4a: Camshaft

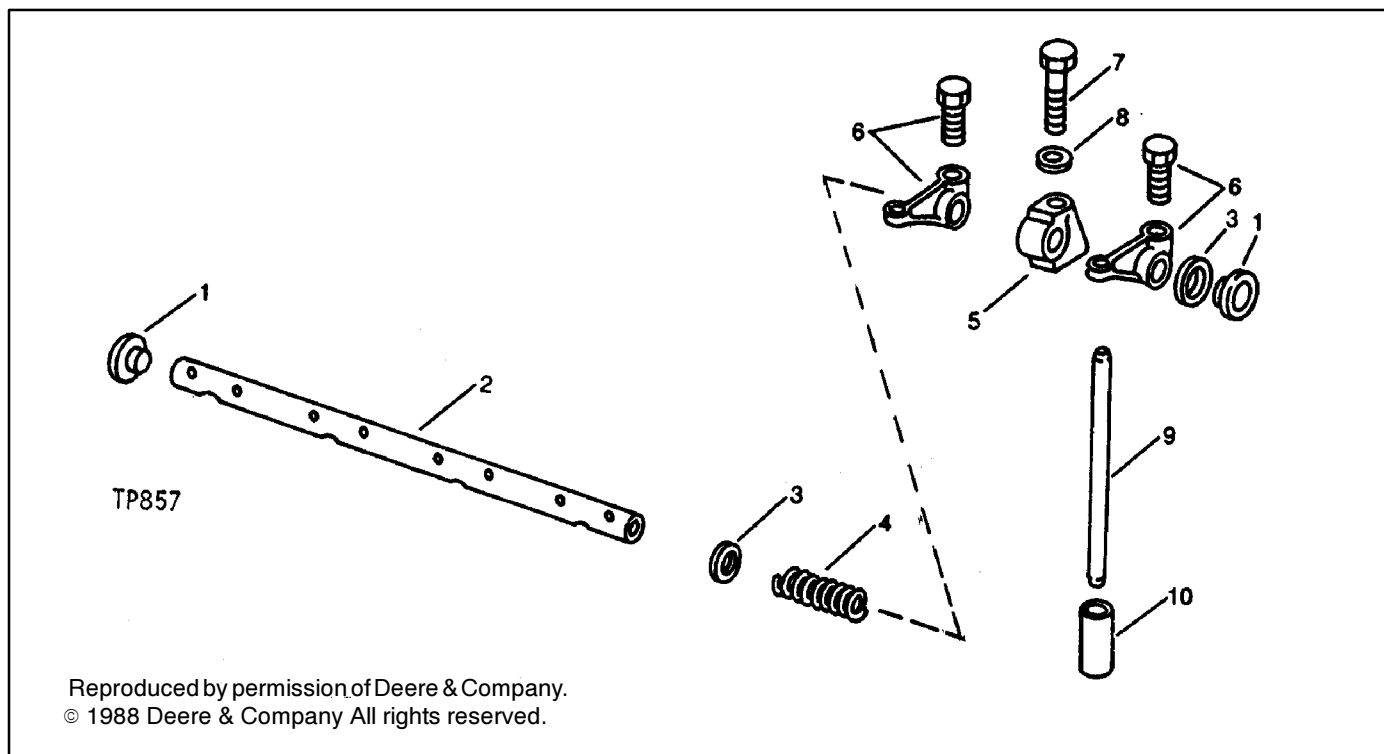


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| Item | Part Number | Description                   | Quantity |             |      |
|------|-------------|-------------------------------|----------|-------------|------|
|      |             |                               | 1        | Variation 2 | 4603 |
| 1    | 224242      | Gear                          | 1        |             |      |
| 2    | 224057      | Camshaft                      | 1        |             |      |
| 2    | 360160      | Camshaft                      |          | 1           |      |
| 2    | GM18857     | Camshaft (includes gear, key) |          |             | 1    |
| 3    | 223654      | Key, shaft                    | 1        |             |      |
| 3    | 360158      | Key, shaft                    |          | 1           | 1    |
| 4    | 223610      | Plate, thrust                 | 1        |             |      |
| 4    | 360154      | Plate, thrust                 |          | 1           |      |
| 5    | #           | Screw, 3/8-16 x 1 in.         | 2        |             |      |
| 5    | #           | Screw, M8 x 25                |          | 2           |      |
| 6    | 223609      | Gear, 48 teeth                | 1        |             |      |
| 6    | 360161      | Gear, 60 teeth                |          | 1           |      |

# Common hardware; procure locally

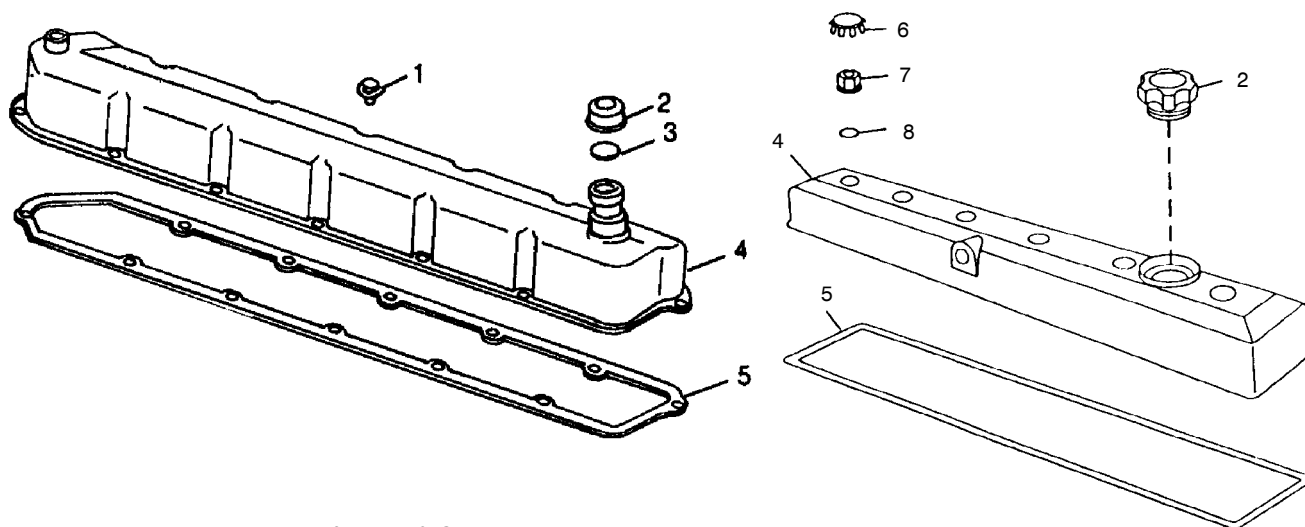
## Group 4b: Rocker Arms & Push Rods



| Item | Part Number | Description                                        | Quantity  |    |    |      |
|------|-------------|----------------------------------------------------|-----------|----|----|------|
|      |             |                                                    | Variation |    |    |      |
|      |             |                                                    | 1         | 2  | 3  | 4902 |
| 1    | 223480      | Plug                                               | 2         | 2  | 2  | 2    |
| 2    | 224021      | Shaft (also order item 5 support and item 7 screw) | 1         | 1  | 1  | 1    |
| 2    | 360132      | Shaft                                              |           |    |    |      |
| 3    | 223634      | Washer                                             | 2         | 2  | 2  | 2    |
| 4    | 223632      | Spring                                             | 5         | 5  | 5  | 5    |
| 5    | 223633      | Support (also order item 2 shaft and item 7 screw) | 6         | 6  |    |      |
| 5    | 360112      | Support                                            |           |    | 6  | 6    |
| 6    | 223592      | Arm, rocker                                        | 12        | 12 |    |      |
| 6    | 360072      | Arm, rocker                                        |           |    | 12 | 12   |
| 6    | #           | Nut, M10                                           |           |    |    | 1    |
| 7    | #           | Screw, 3/8-16 x 2 1/2 in.                          | 6         | 6  |    |      |
| 7    | 360118      | Stud                                               |           |    | 6  | 6    |
| 8    | 223756      | Washer                                             | 6         | 6  | 6  | 6    |
| 9    | 352027      | Rod, push                                          | 12        |    |    |      |
| 9    | 336490      | Rod, push                                          |           | 12 |    |      |
| 9    | 352026      | Rod, push                                          |           |    | 12 | 12   |
| 10   | 223611      | Tappet                                             | 12        | 12 |    |      |
| 10   | 360135      | Tappet                                             |           |    | 12 | 12   |

# Common hardware; procure locally

## Group 4c: Rocker Arm Cover

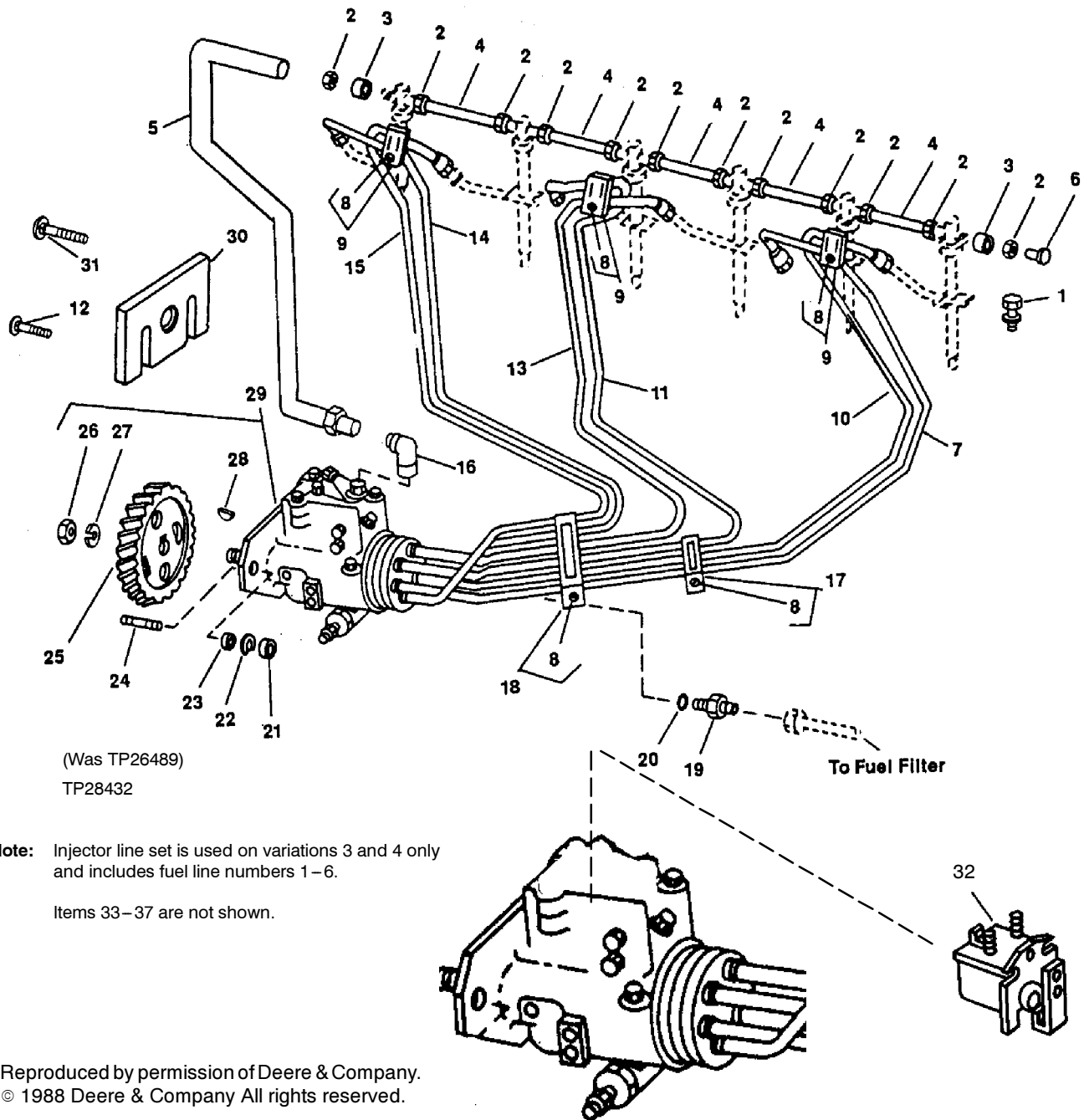


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| Item | Part Number | Description                      | Quantity |    |             |      |      |
|------|-------------|----------------------------------|----------|----|-------------|------|------|
|      |             |                                  | 1        | 2  | Variation 3 | 1102 | 1108 |
| 1    | #           | Screw with washer                | 12       | 12 |             |      |      |
| 2    | 223630      | Cap, oil fill                    | 1        | 1  |             |      |      |
| 2    | 360018      | Cap, oil fill (includes packing) |          |    | 1           | 1    | 1    |
| 2    | GM17493     | Packing                          |          |    |             | 1    | 1    |
| 3    | 223636      | Gasket                           | 1        | 1  |             |      |      |
| 4    | 224003      | Cover, valve                     | 1        |    |             |      |      |
| 4    | 336480      | Cover, valve                     |          | 1  |             |      |      |
| 4    | GM18817     | Cover                            |          |    | 1           | 1    |      |
| 4    | GM24525     | Cover, valve                     |          |    |             |      | 1    |
| 5    | 224150      | Gasket                           | 1        | 1  |             |      |      |
| 5    | 360134      | Gasket                           |          |    | 1           | 1    | 1    |
| 6    | 360004      | Plug                             |          |    | 6           | 6    | 6    |
| 7    | 360138      | Nut                              |          |    | 6           | 6    | 6    |
| 8    | 360139      | O-ring                           |          |    | 6           | 6    | 6    |

# Common hardware; procure locally

## Group 5a: Fuel Injection Pump



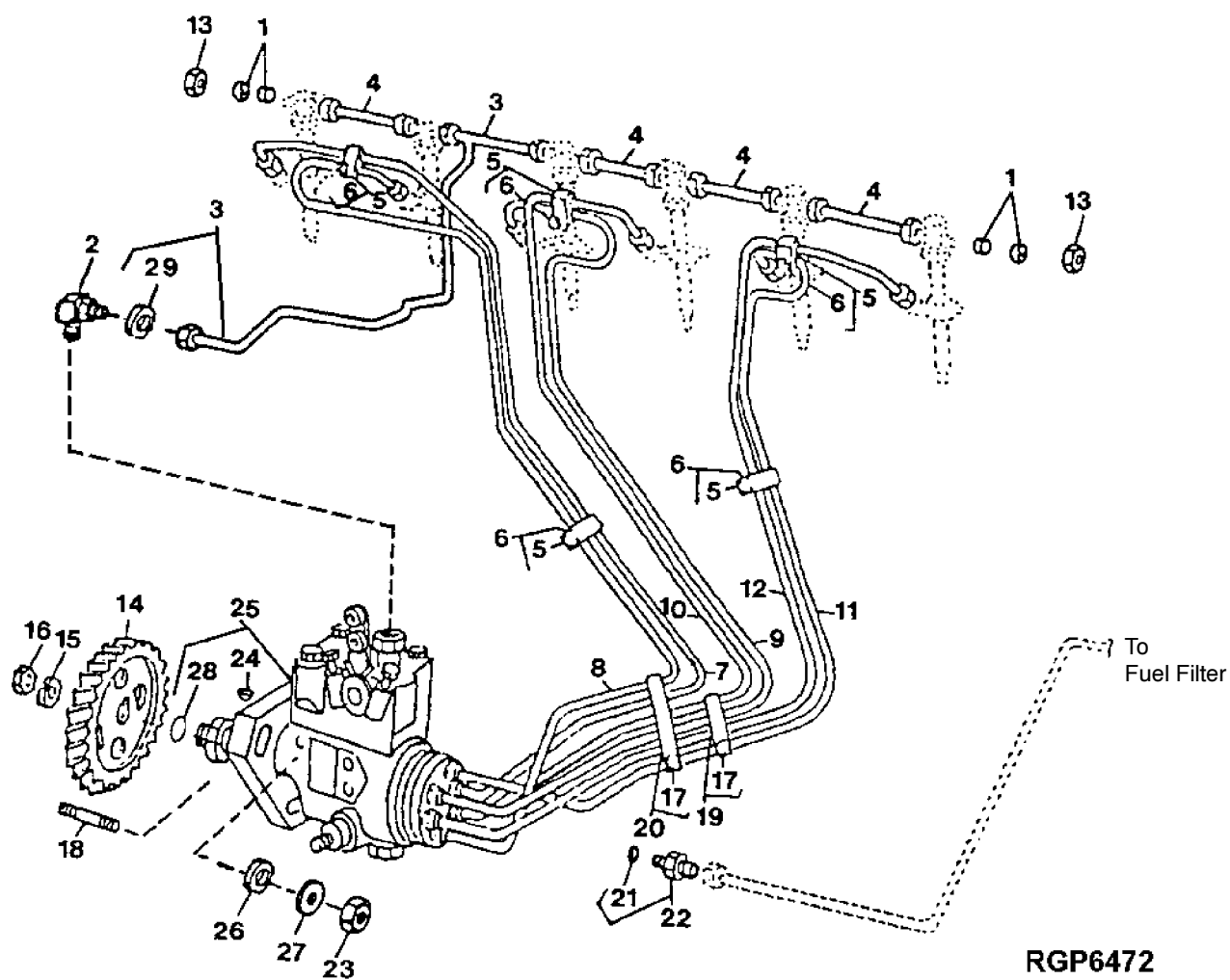
## Group 5a: Fuel Injection Pump

| Item | Part Number | Description                                               | Quantity Variation |    |    |    |    |    |    |    |
|------|-------------|-----------------------------------------------------------|--------------------|----|----|----|----|----|----|----|
|      |             |                                                           | 1                  | 2  | 3  | 4  | 5  | 6  | 7  | 8  |
| 1    | #           | Screw, cap                                                | 1                  | 1  | 1  | 1  |    |    |    |    |
| 2    | 223477      | Fitting                                                   | 12                 | 12 | 12 | 12 |    |    |    |    |
| 2    | 360141      | Nut                                                       |                    |    |    |    | 12 | 12 | 12 | 12 |
| 3    | 223476      | Packing, seal                                             | 12                 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 4    | 223504      | Tube, leakoff                                             | 5                  | 5  | 5  | 5  | 5  | 5  | 5  | 5  |
| 5    | 224185      | Line, fuel, leakoff                                       | 1                  | 1  | 1  | 1  |    |    |    |    |
| 5    | 360035      | Line, fuel                                                |                    |    |    |    | 1  | 1  |    |    |
| 6    | #           | Rivet, 1/4 x 5/8 in.                                      | 1                  | 1  | 1  | 1  |    |    |    |    |
| 6    | 223710      | Plug                                                      |                    |    |    |    | 1  | 1  | 1  | 1  |
| 7    | 224253      | Line, No. 5 fuel                                          | 1                  | 1  |    |    |    |    |    |    |
| 7    | 336482      | Set, injection line (includes line nos. 1-6)              |                    |    | 1  | 1  |    |    |    |    |
| 7    | 360042      | Line, No. 5 fuel                                          |                    |    |    |    | 1  | 1  | 1  | 1  |
| 8    | #           | Screw, cap, M6 x 10                                       | 5                  | 5  | 5  | 5  | 5  | 5  | 5  | 5  |
| 9    | 223572      | Clamp                                                     | 3                  | 3  | 3  | 3  | 3  | 3  | 3  | 3  |
| 10   | 224254      | Line, No. 6 fuel                                          | 1                  | 1  |    |    |    |    |    |    |
| 10   | X           | Set, injection line (see item 7)                          |                    |    | 1  | 1  |    |    |    |    |
| 10   | 360043      | Line, No. 6 fuel                                          |                    |    |    |    | 1  | 1  | 1  | 1  |
| 11   | 224251      | Line, No. 3 fuel                                          | 1                  | 1  |    |    |    |    |    |    |
| 11   | X           | Set, injection line (see item 7)                          |                    |    | 1  | 1  |    |    |    |    |
| 11   | 360040      | Line, No. 3 fuel                                          |                    |    |    |    | 1  | 1  | 1  | 1  |
| 12   | #           | Screw, M6 x 40 (used with item 30 puller)                 | 1                  | 1  | 1  | 1  |    |    |    |    |
| 13   | 224252      | Line, No. 4 fuel                                          | 1                  | 1  |    |    |    |    |    |    |
| 13   | X           | Set, injection line (see item 7)                          |                    |    | 1  | 1  |    |    |    |    |
| 13   | 360041      | Line, No. 4 fuel                                          |                    |    |    |    | 1  | 1  | 1  | 1  |
| 14   | 224246      | Line, No. 1 fuel                                          | 1                  | 1  |    |    |    |    |    |    |
| 14   | X           | Set, injection line (see item 7)                          |                    |    | 1  | 1  |    |    |    |    |
| 14   | 360038      | Line, No. 1 fuel                                          |                    |    |    |    | 1  | 1  | 1  | 1  |
| 15   | 224250      | Line, No. 2 fuel                                          | 1                  | 1  |    |    |    |    |    |    |
| 15   | X           | Set, injection line (see item 7)                          |                    |    | 1  | 1  |    |    |    |    |
| 15   | 360039      | Line, No. 2 fuel                                          |                    |    |    |    | 1  | 1  | 1  | 1  |
| 16   | 224174      | Fitting, elbow                                            | 1                  | 1  |    |    |    |    |    |    |
| 16   | 360036      | Fitting                                                   |                    |    |    |    | 1  | 1  | 1  | 1  |
| 17   | 224071      | Clamp (lines 3, 5, and 6)                                 | 1                  | 1  | 1  | 1  |    |    |    |    |
| 17   | 223573      | Clamp (lines 3, 4, 5, and 6)                              |                    |    |    |    | 1  | 1  | 1  | 1  |
| 18   | 224070      | Clamp                                                     | 1                  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| 19   | 224154      | Fitting, elbow                                            | 1                  | 1  | 1  | 1  |    |    |    |    |
| 19   | 360037      | Fitting                                                   |                    |    |    |    | 1  | 1  | 1  | 1  |
| 20   | 223456      | O-ring                                                    | 1                  | 1  | 1  | 1  |    |    |    |    |
| 20   | 360178      | O-ring                                                    |                    |    |    |    | 1  | 1  | 1  | 1  |
| 21   | #           | Nut, 5/16-18                                              | 3                  | 3  | 3  | 3  | 3  | 3  | 3  | 3  |
| 22   | #           | Washer, lock, 5/16 in.                                    | 3                  | 3  | 3  | 3  |    |    |    |    |
| 23   | #           | Washer                                                    | 3                  | 3  | 3  | 3  |    |    |    |    |
| 24   | #           | Stud                                                      | 3                  | 3  | 3  | 3  | 3  | 3  |    |    |
| 25   | 224238      | Gear                                                      | 1                  | 1  | 1  | 1  |    |    |    |    |
| 25   | 360153      | Gear                                                      |                    |    |    |    | 1  | 1  | 1  | 1  |
| 26   | 224161      | Nut                                                       | 1                  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| 27   | #           | Washer, lock                                              | 1                  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| 28   | 223406      | Key, shaft                                                | 1                  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| 29   | 224255      | Pump, fuel injection                                      | 1                  |    | 1  |    |    |    |    |    |
| 29   | 224163      | Pump, fuel injection                                      |                    | 1  |    | 1  |    |    |    |    |
| 29   | 360070      | Pump, fuel injection                                      |                    |    |    |    | 1  |    |    |    |
| 29   | 360069      | Pump, fuel injection                                      |                    |    |    |    |    | 1  |    |    |
| 29   | 360068      | Pump, fuel injection                                      |                    |    |    |    |    |    | 1  |    |
| 29   | 360045      | Pump, fuel injection                                      |                    |    |    |    |    |    |    | 1  |
| 30   | -           | Puller (service tool to remove pump; no longer available) | 1                  | 1  | 1  | 1  |    |    |    |    |
| 31   | #           | Screw, 1/2-13 x 1 1/4 (used with item 30 puller)          | 1                  | 1  | 1  | 1  |    |    |    |    |
| 32   | 224367      | Solenoid, fuel shutoff                                    | 1                  | 1  | 1  | 1  |    |    |    |    |
| 33   | #           | Screw, M8 x 16                                            |                    |    |    |    | 1  | 1  | 1  | 1  |
| 34   | 360088      | Bracket                                                   |                    |    |    |    | 1  | 1  | 1  | 1  |
| 35   | 360171      | Clamp                                                     |                    |    |    |    | 1  | 1  | 1  | 1  |
| 36   | #           | Nut, M8                                                   |                    |    |    |    | 1  | 1  | 1  | 1  |
| 37   | 360007      | Clamp, black (lines 5 and 6)                              |                    |    |    |    | 1  | 1  | 1  | 1  |

# Common hardware; procure locally

X Not sold separately

## Group 5a: Fuel Injection Pump, continued

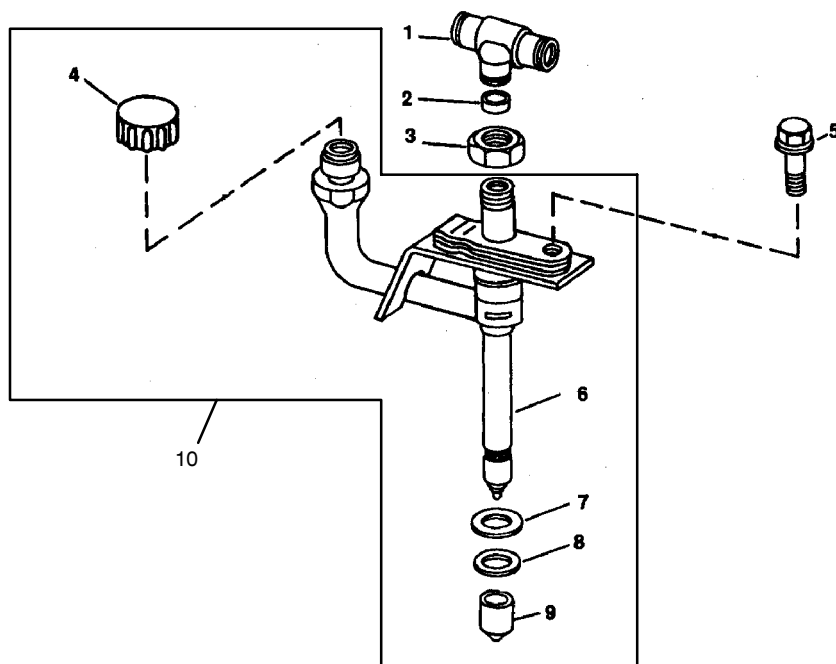


## Group 5a: Fuel Injection Pump, continued

| Item | Part Number | Description          | Quantity  |      |      |      |      |      |      |      |
|------|-------------|----------------------|-----------|------|------|------|------|------|------|------|
|      |             |                      | Variation |      |      |      |      |      |      |      |
|      |             |                      | 16GS      | 16GT | 16ML | 16LX | 16LY | 16MJ | 16MK | 16MM |
| 1    | 223710      | Plug                 | 2         | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| 2    | 223837      | Fitting, elbow       | 1         | 1    | 1    | 1    | 1    | 1    | 1    | 1    |
| 3    | GM17549     | Fuel line            | 1         | 1    | 1    | 1    | 1    | 1    | 1    | 1    |
| 4    | 360535      | Tube                 | 4         | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| 5    | 223572      | Clamp                | 5         | 5    | 5    | 5    | 5    | 5    | 5    | 5    |
| 6    | #           | Screw, cap, M6 x 12  | 5         | 5    | 5    | 5    | 5    | 5    | 5    | 5    |
| 7    | 360038      | Line, fuel no. 1     | 1         | 1    | 1    | 1    | 1    | 1    | 1    | 1    |
| 8    | 360039      | Line, fuel no. 2     | 1         | 1    | 1    | 1    | 1    | 1    | 1    | 1    |
| 9    | 360040      | Line, fuel no. 3     | 1         | 1    | 1    | 1    | 1    | 1    | 1    | 1    |
| 10   | 360041      | Line, fuel no. 4     | 1         | 1    | 1    | 1    | 1    | 1    | 1    | 1    |
| 11   | 360042      | Line, fuel no. 5     | 1         | 1    | 1    | 1    | 1    | 1    | 1    | 1    |
| 12   | 360043      | Line, fuel no. 6     | 1         | 1    | 1    | 1    | 1    | 1    | 1    | 1    |
| 13   | 360141      | Nut                  | 2         | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| 14   | 360153      | Gear, 60 teeth       | 1         | 1    | 1    | 1    | 1    | 1    | 1    | 1    |
| 15   | GM17456     | Washer               | 1         | 1    | 1    | 1    | 1    | 1    | 1    | 1    |
| 16   | 224161      | Nut                  | 1         | 1    | 1    | 1    | 1    | 1    | 1    | 1    |
| 17   | #           | Screw, cap, M6 x 12  | 2         | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| 18   | 360092      | Stud                 | 3         | 3    | 3    | 3    | 3    | 3    | 3    | 3    |
| 19   | 223573      | Clamp                | 1         | 1    | 1    | 1    | 1    | 1    | 1    | 1    |
| 20   | 224070      | Clamp                | 1         | 1    | 1    | 1    | 1    | 1    | 1    | 1    |
| 21   | 360178      | O-ring               | 1         | 1    | 1    | 1    | 1    | 1    | 1    | 1    |
| 22   | 360037      | Fitting              | 1         | 1    | 1    | 1    | 1    | 1    | 1    | 1    |
| 23   | #           | Nut, M8              | 3         | 3    | 3    | 3    | 3    | 3    | 3    | 3    |
| 24   | 223406      | Key, woodruff        | 1         | 1    | 1    | 1    | 1    | 1    | 1    | 1    |
| 25   | GM24526     | Pump, fuel injection | 1         |      |      |      |      |      |      |      |
| 25   | GM24532     | Pump, fuel injection |           | 1    |      |      |      |      |      |      |
| 25   | GM24528     | Pump, fuel injection |           |      |      | 1    |      |      |      |      |
| 25   | GM24533     | Pump, fuel injection |           |      |      |      | 1    |      |      |      |
| 25   | GM24527     | Pump, fuel injection |           |      |      |      |      | 1    |      |      |
| 25   | GM24530     | Pump, fuel injection |           |      |      |      |      |      | 1    |      |
| 25   | GM24529     | Pump, fuel injection |           |      | 1    |      |      |      |      |      |
| 25   | GM24531     | Pump, fuel injection |           |      |      |      |      |      |      | 1    |
| 26   | 224338      | Washer               | 3         | 3    | 3    | 3    | 3    | 3    | 3    | 3    |
| 27   | #           | Washer, lock         | 3         | 3    | 3    | 3    | 3    | 3    | 3    | 3    |
| 28   | GM17487     | O-ring               | 1         | 1    | 1    | 1    | 1    | 1    | 1    | 1    |
| 29   | 223476      | Packing              | 2         | 2    | 2    | 2    | 2    | 2    | 2    | 2    |

# Common hardware; procure locally

## Group 5b: Fuel Injection Nozzle



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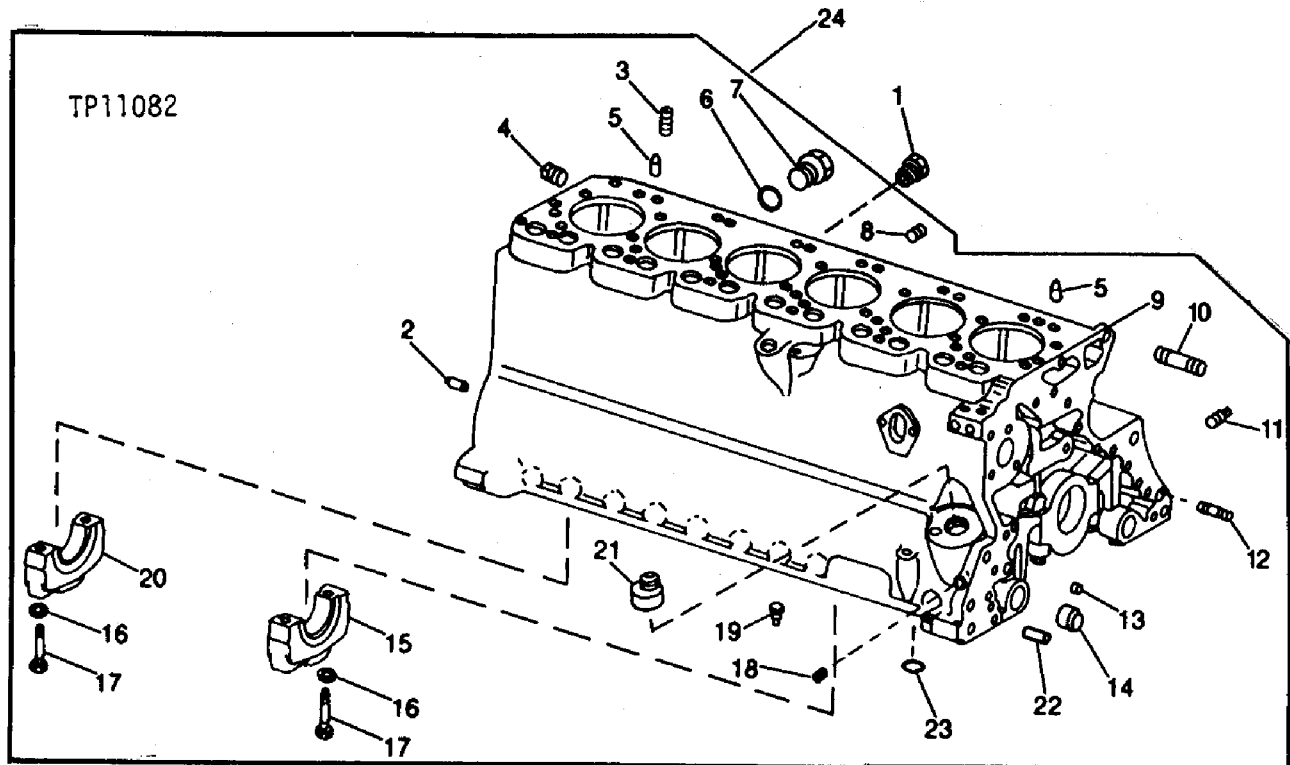
TP26862 (was TP26494)

| Item | Part Number | Description       | Quantity Variation |   |
|------|-------------|-------------------|--------------------|---|
|      |             |                   | 1                  | 2 |
| 1    | 223519      | Fitting, tee      | 1                  |   |
| 1    | 360167      | Fitting, tee      |                    | 1 |
| 2    | 223518      | Sleeve            | 1                  | 1 |
| 3    | 223517      | Nut               | 1                  | 1 |
| 4    | 223660      | Plug              | 1                  |   |
| 5    | 224188      | Screw, cap        | 1                  |   |
| 5    | 360091      | Screw             |                    | 1 |
| 6    | X           | Nozzle            | 1                  | 1 |
| 7    | X           | Packing, seal     | 1                  | 1 |
| 8    | X           | Washer            | 1                  | 1 |
| 9    | 224257      | Plug              | 1                  | 1 |
| 10   | 224171      | Nozzle, injection | 1                  |   |
| 10   | 360017      | Nozzle, injection |                    | 1 |

X Not sold separately

| Item | Part Number | Description       | Quantity Variation |      |                                |      |      |      |      |      |
|------|-------------|-------------------|--------------------|------|--------------------------------|------|------|------|------|------|
|      |             |                   | 16GS               | 16GT | 16 <del>LM</del> <sup>ML</sup> | 16LX | 16LY | 16MJ | 16MK | 16MM |
| 1    | 360167      | Fitting, tee      | 1                  | 1    | 1                              | 1    | 1    | 1    | 1    | 1    |
| 2    | 223518      | Washer            | 1                  | 1    | 1                              | 1    | 1    | 1    | 1    | 1    |
| 3    | 223517      | Nut, tube         | 1                  | 1    | 1                              | 1    | 1    | 1    | 1    | 1    |
| 4    | —           | Cap/hat           | 1                  | 1    | 1                              | 1    | 1    | 1    | 1    | 1    |
| 5    | 360091      | Screw             | 1                  | 1    | 1                              | 1    | 1    | 1    | 1    | 1    |
| 6    | —           | Nozzle            | 1                  | 1    | 1                              | 1    | 1    | 1    | 1    | 1    |
| 7    | 224285      | Packing           | 1                  | 1    | 1                              | 1    | 1    | 1    | 1    | 1    |
| 8    | 224270      | Seal              | 1                  | 1    | 1                              | 1    | 1    | 1    | 1    | 1    |
| 8    | GM17473     | Washer            | 1                  | 1    | 1                              | 1    | 1    | 1    | 1    | 1    |
| 9    | 224257      | Plug              | 1                  | 1    | 1                              | 1    | 1    | 1    | 1    | 1    |
| 10   | 360017      | Nozzle, injection | 1                  | 1    | 1                              | 1    | 1    | 1    | 1    | 1    |

## Group 7: Cylinder Block



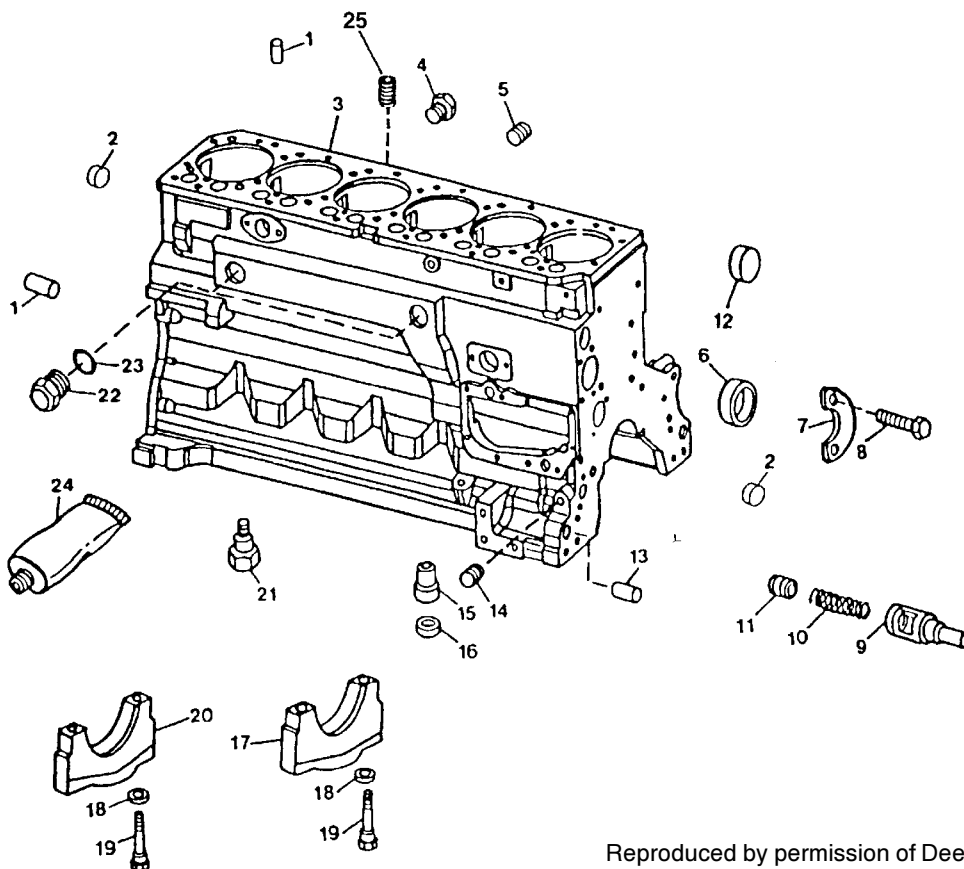
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| Item | Part Number | Description                                   | Quantity<br>Variation<br>1 |
|------|-------------|-----------------------------------------------|----------------------------|
| 1    | 223802      | Plug, pipe                                    | 1                          |
| 2    | 223472      | Pin, dowel                                    | 2                          |
| 3    | #           | Plug, pipe, 1/2 NPT                           | 1                          |
| 4    | #           | Plug, pipe, 1 NPT, 1/2 in. square countersunk | 1                          |
| 5    | 223472      | Pin, dowel                                    | 1                          |
| 6    | 223988      | O-ring                                        | 1                          |
| 7    | 223462      | Plug, drain                                   | 1                          |
| 8    | #           | Plug, pipe, 1/4 NPT                           | 1                          |
| 9    | X           | Block, cylinder                               | 1                          |
| 10   | 223662      | Stud                                          | 2                          |
| 11   | #           | Plug, pipe, 1/8 NPT, square countersunk       | 7                          |
| 12   | X           | Stud                                          | 1                          |
| 13   | X           | Cap                                           | 2                          |
| 14   | X           | Bushing, oil pressure relief valve            | 1                          |
| 15   | 223503      | Cap, main bearing                             | 6                          |
| 16   | 224089      | Washer                                        | 14                         |
| 17   | 223639      | Screw                                         | 14                         |
| 18   | #           | Plug, pipe, 3/8 NPT                           | 1                          |
| 19   | X           | Orifice                                       | 6                          |
| 20   | 223516      | Cap, rear main bearing                        | 1                          |
| 21   | 223638      | Nipple, threaded                              | 1                          |
| 22   | X           | Pin, dowel                                    | 2                          |
| 23   | 223512      | O-ring, oil pump tube                         | 1                          |
| 24   | 224081      | Block, cylinder                               | 1                          |

# Common hardware; procure locally

X Not sold separately

## Group 7: Cylinder Block, continued



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| Item | Part Number | Description                          | Quantity<br>Variation<br>2 |
|------|-------------|--------------------------------------|----------------------------|
| 1    | 223472      | Pin, dowel                           | 1                          |
| 2    | X           | Cap                                  | 1                          |
| 3    | -           | Block, cylinder (see short block)    | 1                          |
| 4    | #           | Plug, pipe, 1/4 NPT                  | 1                          |
| 5    | #           | Plug, pipe, 1/8 NPT, sq. countersunk | 7                          |
| 6    | 352246      | Bushing, camshaft                    | 1                          |
| 7    | 360154      | Plate, thrust                        | 1                          |
| 8    | #           | Screw, M8 x 25                       | 2                          |
| 9    | 360103      | Valve, engine oil bypass             | 1                          |
| 10   | 360080      | Spring                               | 1                          |
| 11   | X           | Bushing                              | 1                          |
| 12   | 360093      | Plug                                 | 1                          |
| 13   | X           | Pin, dowel                           | 2                          |
| 14   | #           | Plug, pipe, 1 in.                    | 1                          |
| 15   | 360087      | Bushing                              | 1                          |
| 16   | 223512      | O-ring                               | 1                          |
| 17   | 360084      | Cap, main bearing                    | 1                          |
| 18   | 224089      | Washer                               | 14                         |
| 19   | 223639      | Screw, cap                           | 14                         |
| 20   | 360151      | Cap, main thrust bearing             | 1                          |
| 21   | 360146      | Jet                                  | 6                          |
| 22   | 223462      | Plug, drain                          | 2                          |
| 23   | 223988      | O-ring                               | 2                          |
| 24   | 360173      | Gasket, plastic                      | 1                          |
| 25   | #           | Plug, pipe, 1/2 in.                  | 1                          |

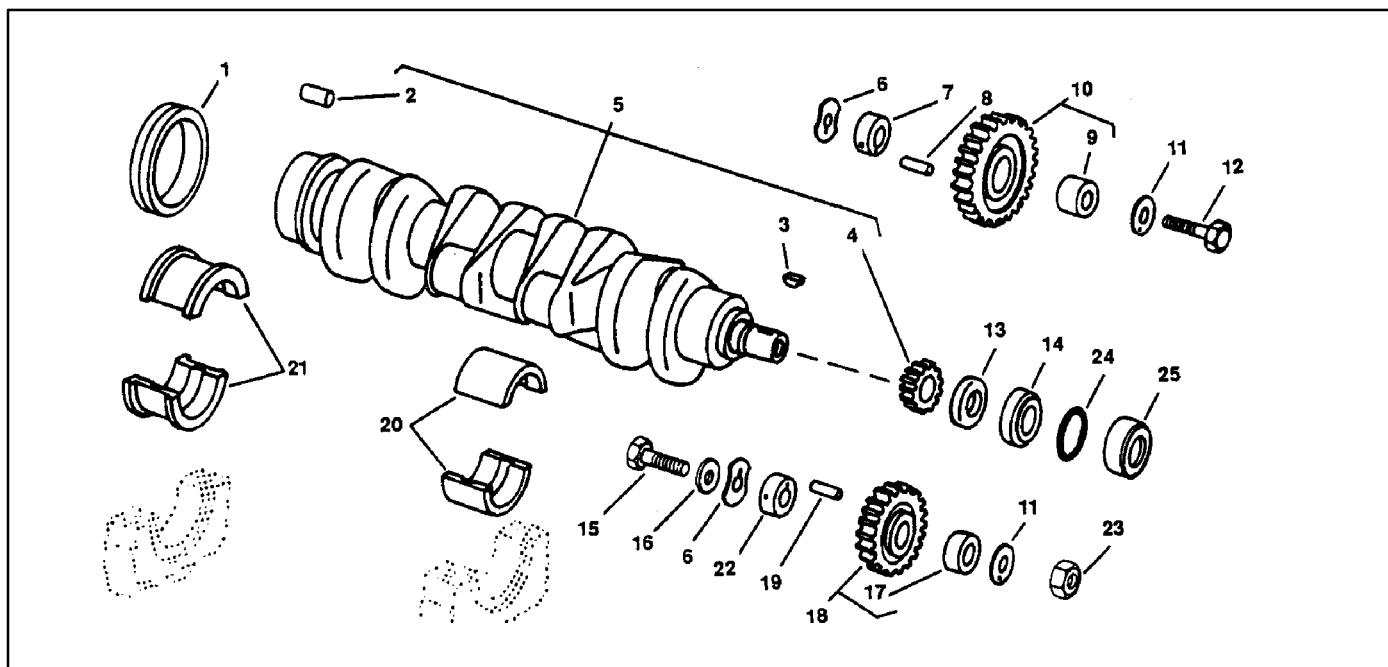
| Item | Part Number | Description                       | Quantity<br>Variation<br>4603 |
|------|-------------|-----------------------------------|-------------------------------|
| 1    | 223472      | Dowel pin                         | 4                             |
| 2    | 360517      | Cap                               | 2                             |
| 3    | GM24534     | Ball                              | 1                             |
| 3    | —           | Block, cylinder (see short block) | 1                             |
| 4    | 223802      | Plug, pipe                        | AR                            |
| 5    | 224268      | Plug, pipe                        | 7                             |
| 5    | 223435      | Drain valve                       | 1                             |
| 6    | 352246      | Bushing                           | 1                             |
| 7    | 360154      | Plate, thrust                     | 1                             |
| 8    | #           | Screw, M8x 25                     | 2                             |
| 9    | 360103      | Valve, engine oil bypass          | 1                             |
| 10   | 360080      | Spring                            | 1                             |
| 11   | 360518      | Bushing                           | 1                             |
| 12   | 360093      | Plug                              | 1                             |
| 13   | 352064      | Dowel pin                         | 2                             |
| 14   | #           | Plug, pipe, 3/8 in.               | 1                             |
| 15   | 360087      | Bushing                           | 1                             |
| 16   | 223512      | O-ring                            | 1                             |
| 17   | 360084      | Cap, main bearing                 | 6                             |
| 18   | 224089      | Washer                            | 14                            |
| 19   | 223639      | Screw, cap                        | 14                            |
| 20   | 360151      | Cap, main thrust bearing          | 1                             |
| 21   | 360146      | Jet                               | 6                             |
| 22   | 223462      | Plug, drain                       | 2                             |
| 23   | 223988      | O-ring                            | 2                             |
| 25   | GM15403     | Plug, pipe                        | 1                             |

# Common hardware; procure locally

AR As required

X Not sold separately

## Group 8a: Crankshaft

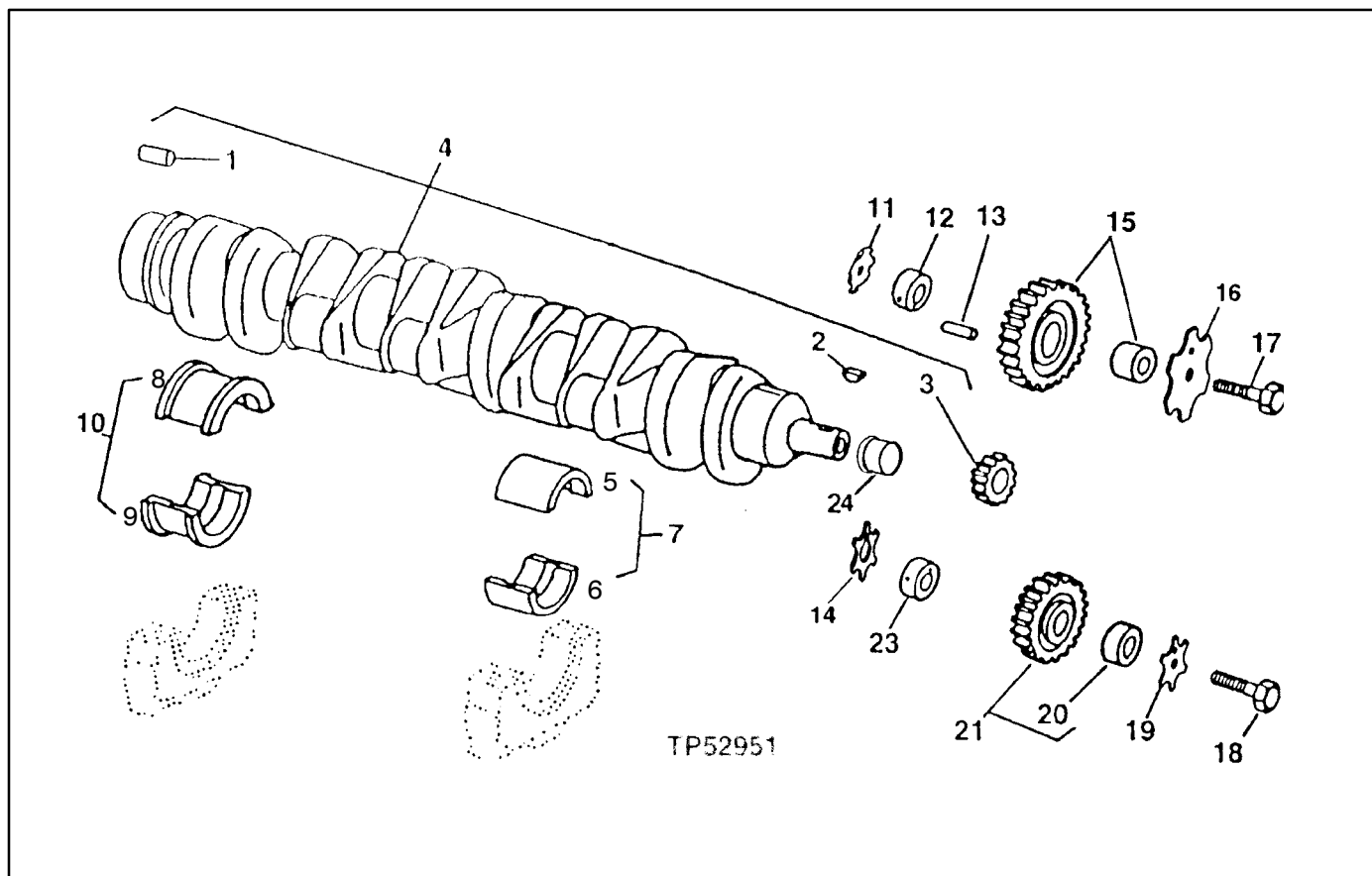


| Item | Part Number | Description                             | Quantity Variation |   |
|------|-------------|-----------------------------------------|--------------------|---|
|      |             |                                         | 1                  | 2 |
| 1    | 223583      | Seal                                    | 1                  | 1 |
| 2    | 223472      | Pin, dowel                              | 1                  | 1 |
| 3    | 223407      | Key, shaft, 1/8 x 5/8 in.               | 1                  | 1 |
| 4    | 223615      | Gear                                    | 1                  | 1 |
| 5    | 224004      | Crankshaft                              | 1                  | 1 |
| 6    | 223649      | Washer, thrust                          | 2                  |   |
| 6    | 336487      | Washer, thrust                          |                    | 2 |
| 7    | 224186      | Shaft, pin                              | 1                  |   |
| 7    | 336489      | Shaft, pin                              |                    | 1 |
| 8    | 223408      | Pin, spring, 3/16 x 1 1/8 in.           | 1                  |   |
| 9    | 223606      | Bushing                                 | 1                  |   |
| 10   | 223432      | Gear, 55 teeth                          | 1                  | 1 |
| 11   | 223651      | Washer, thrust                          | 2                  |   |
| 11   | 336488      | Washer, thrust                          |                    | 2 |
| 12   | 223652      | Screw                                   | 1                  | 1 |
| 13   | 223607      | Slinger, oil                            | 1                  | 1 |
| 14   | 223422      | Seal                                    | 1                  | 1 |
| 15   | #           | Screw, cap, 1/2-20 x 2 1/8 in.          | 1                  | 1 |
| 16   | X           | Washer                                  | 2                  | 2 |
| 17   | 223984      | Bushing                                 | 1                  | 1 |
| 18   | 223729      | Gear, 45 teeth                          | 1                  | 1 |
| 19   | 223408      | Pin, spring, 3/16 x 1 1/8 in.           | 1                  |   |
| 20   | 223728      | Bearing, standard                       | 4                  | 4 |
| 20   | 223719      | Bearing, 0.05 mm (0.002 in.), undersize | 4                  | 4 |
| 20   | 223720      | Bearing, 0.25 mm (0.010 in.), undersize | 4                  | 4 |
| 20   | 223721      | Bearing, 0.51 mm (0.020 in.), undersize | 4                  | 4 |
| 20   | 223722      | Bearing, 0.76 mm (0.030 in.), undersize | 4                  | 4 |
| 21   | 223727      | Bearing, standard                       | 1                  | 1 |
| 21   | 223723      | Bearing, 0.05 mm (0.002 in.), undersize | 1                  | 1 |
| 21   | 223724      | Bearing, 0.25 mm (0.010 in.), undersize | 1                  | 1 |
| 21   | 223725      | Bearing, 0.51 mm (0.020 in.), undersize | 1                  | 1 |
| 21   | 223726      | Bearing, 0.76 mm (0.030 in.), undersize | 1                  | 1 |
| 22   | 224186      | Shaft, pin                              | 1                  |   |
| 22   | 336489      | Shaft, pin                              |                    | 1 |
| 23   | #           | Nut, 1/2-13                             | 1                  | 1 |
| 24   | 224007      | Ring                                    | 1                  | 1 |
| 25   | 224056      | Sleeve                                  | 1                  | 1 |

# Common hardware; procure locally

X Not sold separately

## Group 8a: Crankshaft, continued

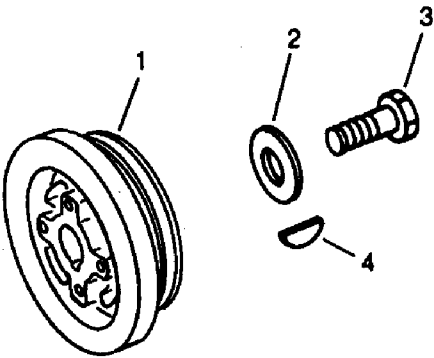


| Item | Part Number | Description                       | Quantity    |
|------|-------------|-----------------------------------|-------------|
|      |             |                                   | Variation 3 |
| 1    | 223472      | Pin, dowel                        | 1           |
| 2    | #           | Key, shaft, 4 mm x 16 mm          | 1           |
| 3    | 360099      | Gear, 30 teeth                    | 1           |
| 4    | 360019      | Crankshaft (also order item 24)   | 1           |
| 7    | 360049      | Bearing, standard                 | 6           |
| 7    | 360055      | Bearing, undersize, 0.254 mm      | 6           |
| 10   | 360050      | Bearing, standard                 | 1           |
| 10   | 360059      | Bearing, undersize, 0.254 mm      | 1           |
| 11   | 360113      | Washer, lock                      | 1           |
| 12   | 360101      | Shaft                             | 1           |
| 13   | 360179      | Pin, spring, 3/16 in. x 1 3/4 in. | 1           |
| 14   | 336446      | Washer, thrust                    | 1           |
| 15   | 360020      | Gear                              | 1           |
| 16   | 360147      | Washer, thrust                    | 1           |
| 17   | #           | Screw, M10 x 65                   | 1           |
| 18   | #           | Screw, M10 x 50                   | 1           |
| 19   | 360148      | Washer, thrust                    | 1           |
| 20   | 360082      | Bushing                           | 1           |
| 21   | 360021      | Gear                              | 1           |
| 23   | 360083      | Shaft                             | 1           |
| 24   | 360032      | Sleeve                            | 1           |

| Item | Part Number | Description                | Quantity       |                |
|------|-------------|----------------------------|----------------|----------------|
|      |             |                            | Variation 4703 | Variation 3601 |
| 1    | 223472      | Dowel pin                  | 1              |                |
| 2    | 360503      | Key, shaft                 | 1              |                |
| 3    | 360099      | Gear 30 teeth              | 1              |                |
| 4    | GM18796     | Crankshaft                 | 1              |                |
| 5    | —           | Bearing                    | 6              |                |
| 6    | —           | Bearing                    | 6              |                |
| 7    | 360049      | Bearing, standard          | 6              |                |
| 7    | 360055      | Bearing, undersize .254 mm | 6              |                |
| 8    | —           | Bearing                    | 1              |                |
| 9    | —           | Bearing                    | 1              |                |
| 10   | 360050      | Bearing, standard          | 1              |                |
| 10   | 360056      | Bearing, undersize .254 mm | 1              |                |
| 11   | 336446      | Washer, thrust             |                | 1              |
| 12   | 224186      | Pin                        |                | 1              |
| 15   | GM23841     | Gear, upper idler          |                | 1              |
| 16   | 360148      | Washer, thrust             |                | 1              |
| 17   | #           | Screw                      |                | 1              |
| 18   | #           | Screw, M10 x 50            |                | 1              |
| 19   | 360148      | Washer, thrust             |                | 1              |
| 20   | 360082      | Bushing                    |                | 1              |
| 21   | 360021      | Gear                       |                | 1              |

# Common hardware; procure locally

# Group 8b: Crankshaft Pulley



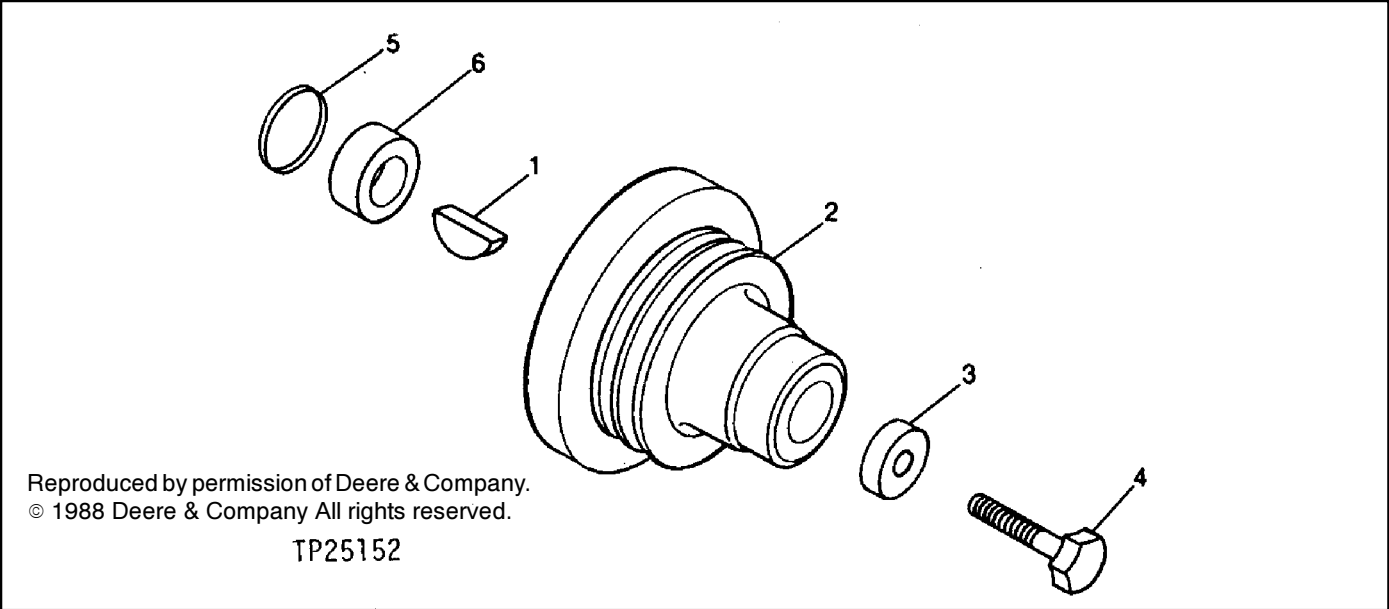
TP26377

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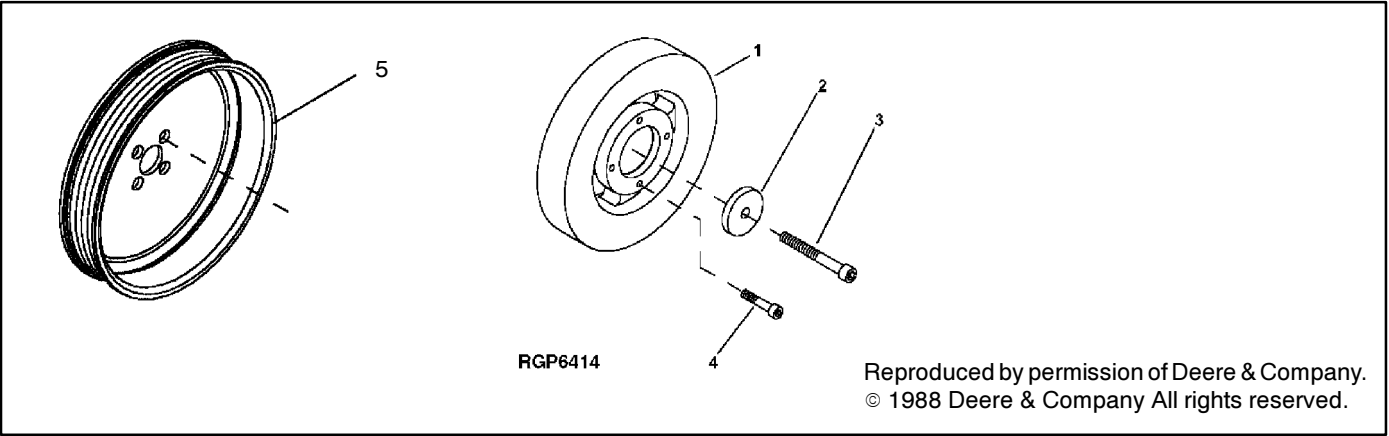
| Item | Part Number | Description                    | Quantity    |             |
|------|-------------|--------------------------------|-------------|-------------|
|      |             |                                | Variation 1 | Variation 3 |
| 1    | 224063      | Pulley with dampener           | 1           |             |
| 1    | 360157      | Pulley, crankshaft             |             | 1           |
| 2    | #           | Washer, M12, 0.472 in.         | 1           |             |
| 3    | 223541      | Screw, cap, 1/2-13 x 1 3/4 in. | 1           |             |
| 3    | 360111      | Screw, cap                     |             | 4           |
| 4    | #           | Key, shaft, 5/16 x 1 1/8 in.   | 1           |             |

# Common hardware; procure locally

Group 8b: Crankshaft Pulley, continued



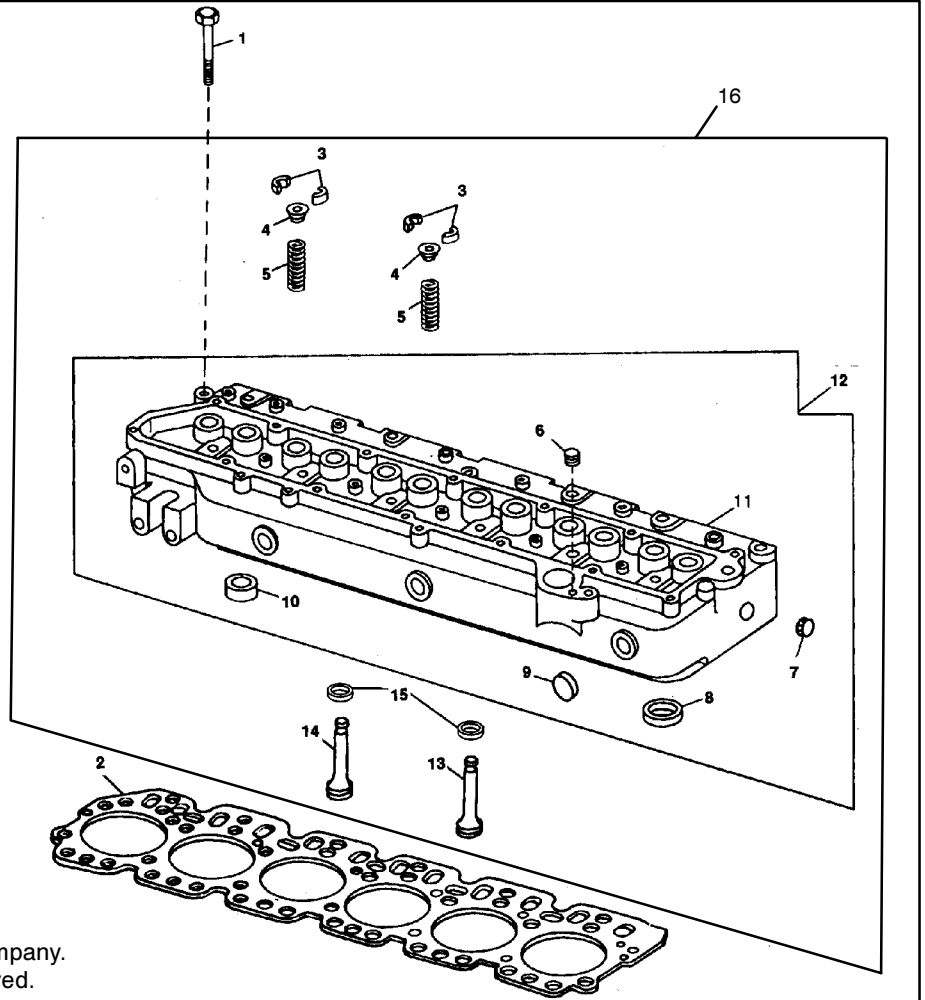
| Item | Part Number | Description                  | Quantity    |
|------|-------------|------------------------------|-------------|
|      |             |                              | Variation 2 |
| 1    | #           | Shaft, key, 5/16 x 1 1/8 in. | 1           |
| 2    | 224180      | Pulley with dampener, idler  | 1           |
| 3    | #           | Spacer, M12, 0.472 in.       | 1           |
| 4    | 223541      | Screw, cap, 1/2 x 1 3/4      | 1           |
| 5    | 224007      | Ring                         | 1           |
| 6    | 224056      | Sleeve                       | 1           |



| Item | Part Number | Description                                                                                | Quantity |             |      |
|------|-------------|--------------------------------------------------------------------------------------------|----------|-------------|------|
|      |             |                                                                                            | 6803     | Variation 4 | 1306 |
| 1    | GM18795     | Dampener, torsional                                                                        | 1        |             |      |
| 2    | GM18721     | Washer                                                                                     | 1        |             |      |
| 3    | #           | Screw, M12 x 100                                                                           | 1        |             |      |
| 4    | #           | Screw, M10 x 50                                                                            | 4        |             |      |
| 5    | 360157      | Pulley, crankshaft (engine option code 1305; genset specs GM21528-GA1 through GM21528-GA8) |          | 1           |      |
| 5    | 360576      | Pulley, crankshaft (engine option code 1306)                                               |          | 1           | 1    |

# Common hardware; procure locally

## Group 9: Cylinder Head



TP28391 (was TP26717)

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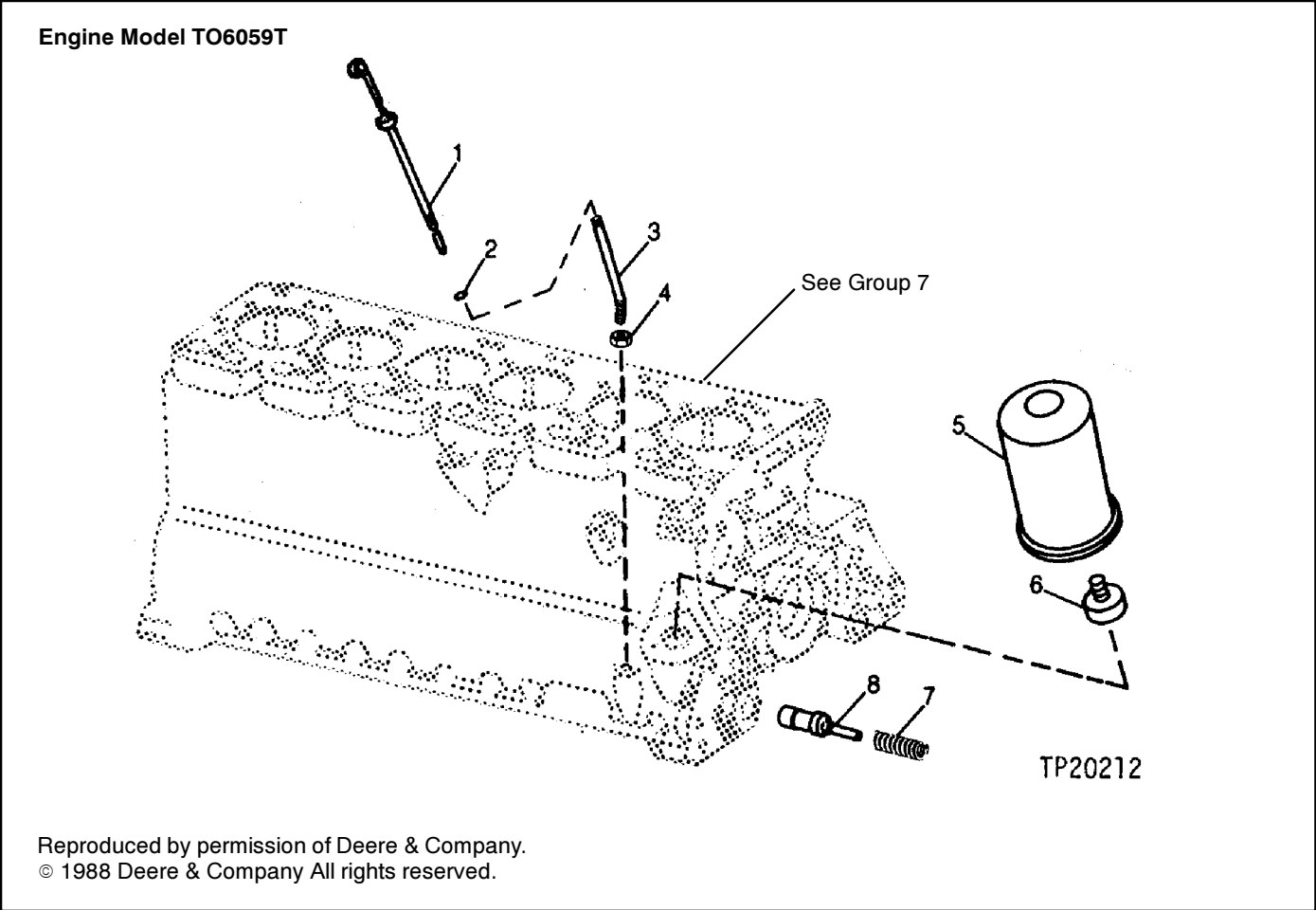
| Item | Part Number | Description                                    | Quantity  |    |    |      |
|------|-------------|------------------------------------------------|-----------|----|----|------|
|      |             |                                                | Variation |    |    |      |
|      |             |                                                | 1         | 2  | 3  | 5107 |
| 1    | 224164      | Screw, cap                                     | 26        | 26 | 26 | 26   |
| 2    | 224178      | Gasket                                         | 1         | 1  |    |      |
| 2    | 360094      | Gasket, cylinder head                          |           |    | 1  | 1    |
| 3    | 224184      | Lock                                           | 24        | 24 | 24 | 24   |
| 4    | 224176      | Rotator                                        | 12        | 12 | 12 | 12   |
| 5    | 223455      | Spring                                         | 12        | 12 | 12 | 12   |
| 6    | #           | Plug, pipe, 1/8 NPT, square countersunk        | 1         |    |    |      |
| 6    | 224268      | Plug, pipe                                     |           |    | 1  | 1    |
| 7    | 223409      | Cap                                            | 2         |    |    |      |
| 7    | 223448      | Cap                                            |           | 2  | 1  | 1    |
| 8    | 224162      | Insert, intake valve seat, standard            | 6         | 6  | 6  | 6    |
| 8    | 224289      | Insert, intake valve seat, oversize            | 6         | 6  | 6  | AR   |
| 9    | 224157      | Cap                                            | 3         |    | 3  | 1    |
| 9    | 223448      | Cap                                            |           | 3  |    |      |
| 9    | 360174      | Fitting (not as shown)                         |           |    | 1  | 1    |
| 10   | 224166      | Insert, exhaust valve seat, standard           | 6         | 6  | 6  | 6    |
| 10   | 224288      | Insert, exhaust valve seat, oversize           | 6         | 6  | 6  | AR   |
| 11   | X           | Head, cylinder                                 | 1         | 1  | 1  |      |
| 12   | 224183      | Head, cylinder                                 | 1         | 1  |    |      |
| 13   | 224156      | Valve, exhaust, standard                       | 6         | 6  | 6  | 6    |
| 13   | 224153      | Valve, exhaust, 0.015 in. (0.381 mm), oversize | 6         | 6  | 6  | AR   |
| 13   | 224151      | Valve, exhaust, 0.030 in. (0.762 mm), oversize | 6         | 6  | 6  | AR   |
| 14   | 224168      | Valve, intake, standard                        | 6         | 6  | 6  | 6    |
| 14   | 224193      | Valve, intake, 0.015 in. (0.381 mm), oversize  | 6         | 6  | 6  | AR   |
| 14   | 224197      | Valve, intake, 0.030 in. (0.762 mm), oversize  | 6         | 6  | 6  | AR   |
| 15   | 224243      | Seal                                           | 12        | 12 | 12 | 12   |
| 16   | 360022      | Head, cylinder                                 |           |    | 1  | 1    |

# Common hardware; procure locally

AR As required

X Not sold separately

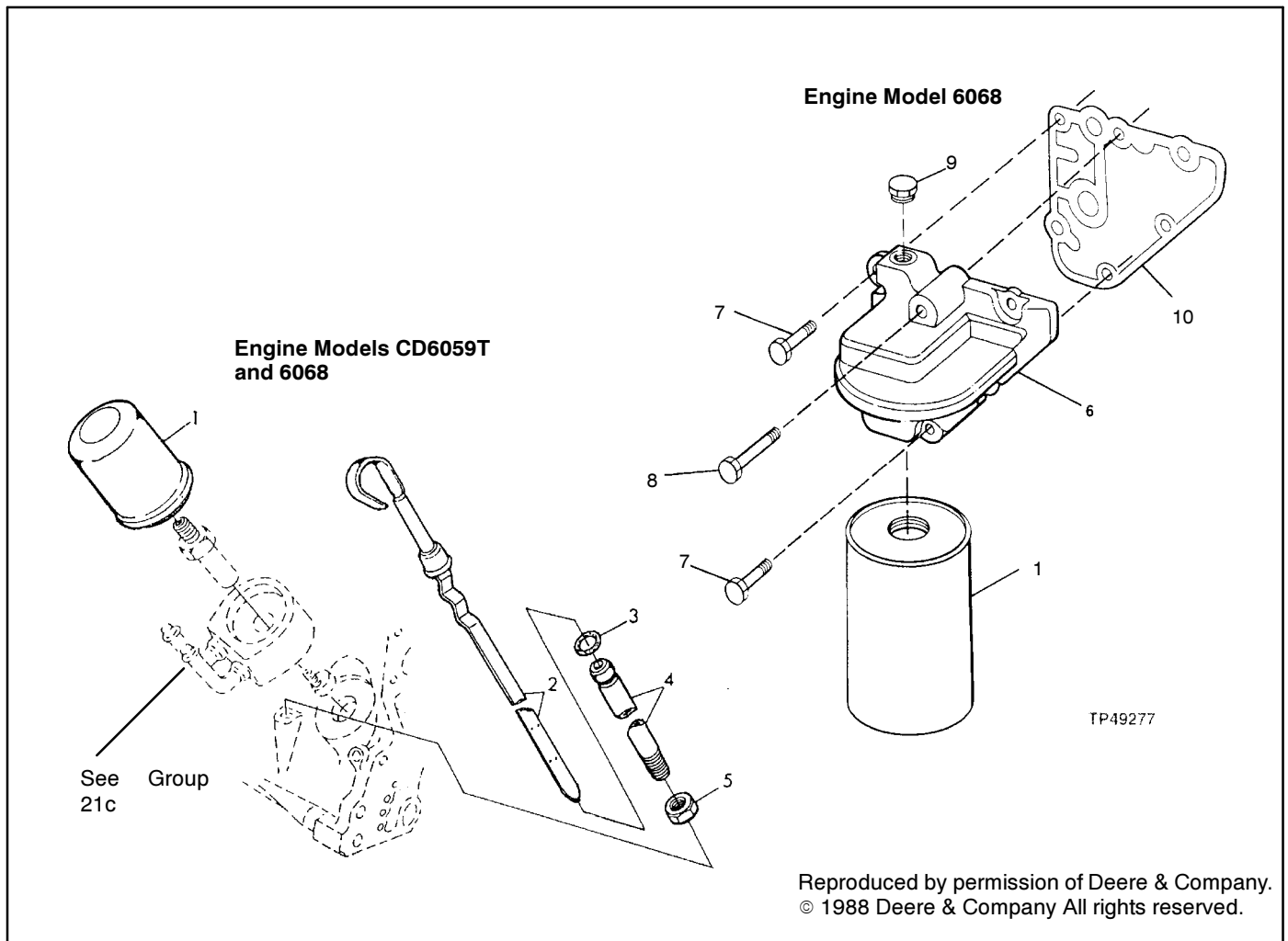
# Group10: Oil Filter and Dipstick



| Item | Part Number | Description      | Quantity    |
|------|-------------|------------------|-------------|
|      |             |                  | Variation 1 |
| 1    | 223443      | Dipstick         | 1           |
| 2    | 223454      | O-ring           | 1           |
| 3    | 223542      | Nipple, threaded | 1           |
| 4    | #           | Nut, 1/2-13      | 1           |
| 5    | 223604      | Filter, oil      | 1           |
| 6    | 223638      | Nipple, threaded | 1           |
| 7    | 223465      | Spring           | 1           |
| 8    | 223507      | Valve            | 1           |

# Common hardware; procure locally

# Group 10: Oil Filter and Dipstick



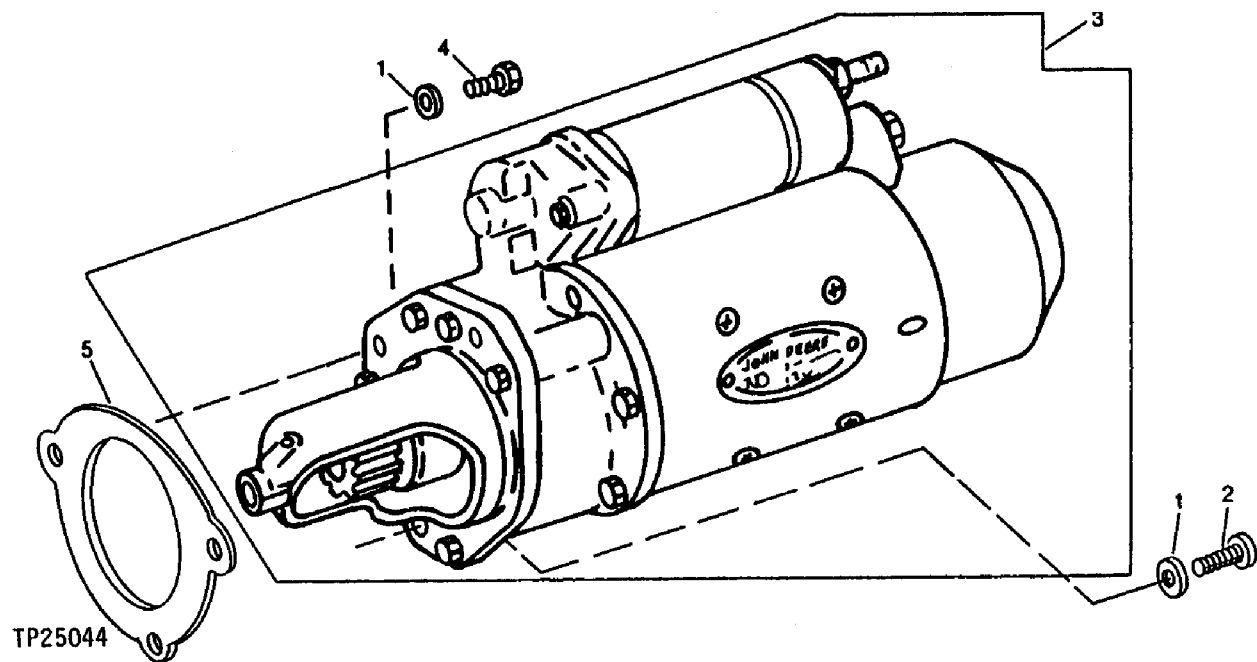
| Item | Part Number | Description                                                    | Quantity    |             |
|------|-------------|----------------------------------------------------------------|-------------|-------------|
|      |             |                                                                | Variation 1 | Variation 2 |
| 1    | 223604      | Filter, oil                                                    | 1           |             |
| 1    | 360031      | Filter, oil                                                    |             | 1           |
| 2    | 223443      | Dipstick, CD6059TF with serial numbers before 158390           | 1           |             |
| 2    | 336589      | Dipstick, CD6059TF with serial number 158390 and after         | 1           |             |
| 2    | 360073      | Dipstick                                                       |             | 1           |
| 3    | 223454      | O-ring                                                         | 1           | 1           |
| 4    | 223542      | Nipple, threaded, CD6059TF with serial numbers before 158390   | 1           |             |
| 4    | 336590      | Nipple, threaded, CD6059TF with serial number 158390 and after | 1           |             |
| 4    | 360144      | Tube, dipstick                                                 |             | 2           |
| 5    | #           | Nut, 1/2 in.                                                   | 1           |             |
| 6    | 360033      | Adapter, oil filter                                            |             | 1           |
| 7    | #           | Screw, M8 x 65                                                 |             | 4           |
| 7    | #           | Screw, M8 x 100                                                |             | 1           |
| 8    | #           | Screw, M8 x 20                                                 |             | 1           |
| 9    | 360016      | Plug                                                           |             | 1           |
| 10   | 360133      | Gasket, oil filter header                                      |             | 1           |

# Common hardware; procure locally  
AR As required

| Item | Part Number | Description         | Quantity       |                |                |
|------|-------------|---------------------|----------------|----------------|----------------|
|      |             |                     | Variation 4002 | Variation 8802 | Variation 8803 |
| 1    | 360031      | Filter, oil         |                | 1              | 1              |
| 2    | 360073      | Dipstick            | 1              |                |                |
| 3    | 360522      | Plug                | 1              |                |                |
| 4    | 360144      | Tube, dipstick      | 1              |                |                |
| 6    | GM17437     | O-ring              |                | 2              |                |
| 6    | GM17500     | Filter head         |                | 1              |                |
| 6    | GM17447     | Fitting             |                | 2              |                |
| 6    | 360033      | Adapter, oil filter |                |                | 1              |
| 7    | #           | Screw, M8 x 20      |                | 1              |                |
| 7    | #           | Screw, M8 x 65      |                | 5              | 5              |
| 7    | GM24536     | Screw               |                |                | 1              |
| 9    | 360016      | Plug                |                | AR             |                |
| 9    | 360557      | O-ring              |                | 1              | 2              |
| 9    | GM24535     | Plug                |                |                | 2              |
| 10   | GM17472     | Gasket              |                | 1              |                |
| 10   | GM24537     | Gasket              |                |                | 1              |

# Group 11a: Starter Motor

Engine model 6059 with serial numbers 317121 and below



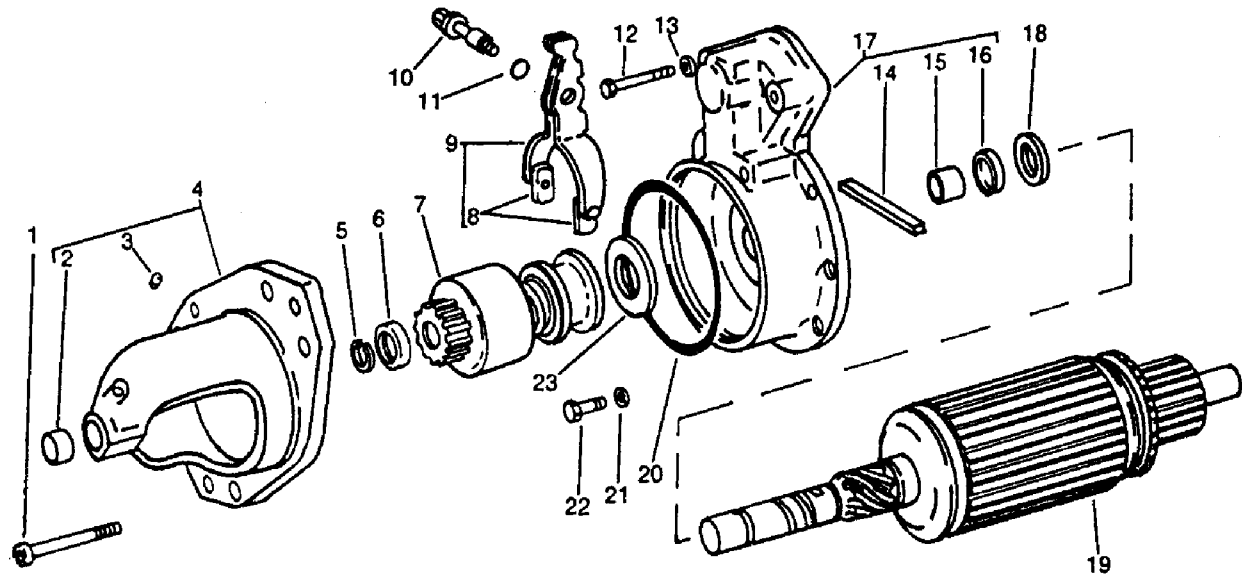
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| Item | Part Number | Description                    | Quantity    |
|------|-------------|--------------------------------|-------------|
|      |             |                                | Variation 1 |
| 1    | #           | Washer, lock, 3/8 in.          | 3           |
| 2    | #           | Screw, cap, 3/8-16 x 1 1/4 in. | 2           |
| 3    | 223987      | Motor, starter                 | 1           |
| 4    | #           | Screw, 3/8-16 x 1 1/4 in.      | 1           |
| 5    | 223791      | Gasket                         | 1           |

# Common hardware; procure locally

## Group 11b: Starter Drive

Engine model 6059 with serial numbers 317121 and below



TP1233

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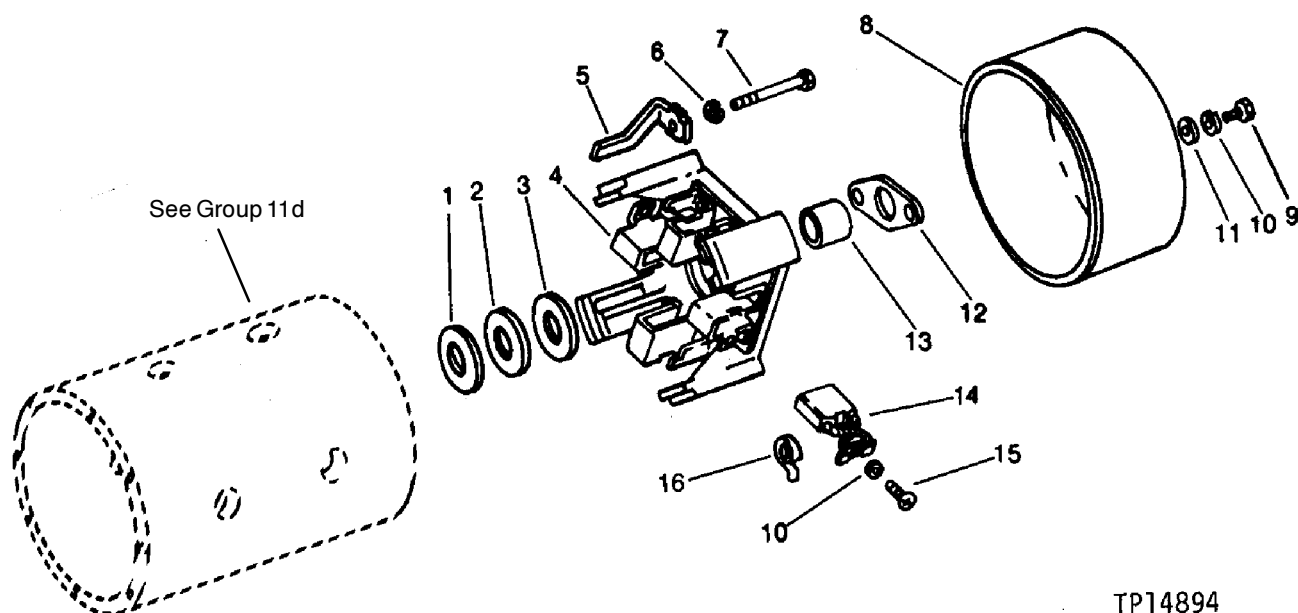
| Item | Part Number | Description            | Quantity    |
|------|-------------|------------------------|-------------|
|      |             |                        | Variation 1 |
| 1    | #           | Screw                  | 6           |
| 2    | X           | Bushing                | 1           |
| 3    | X           | Plug                   | 1           |
| 4    | X           | Housing                | 1           |
| 5    | X           | Ring, snap             | 1           |
| 6    | X           | Stop                   | 1           |
| 7    | 223678      | Drive                  | 1           |
| 8    | X           | Plate, wear            | 2           |
| 9    | 223685      | Arm                    | 1           |
| 10   | X           | Shaft                  | 1           |
| 11   | X           | O-ring                 | 1           |
| 12   | #           | Screw                  | 2           |
| 13   | #           | Washer, lock, 1/4 in.  | 2           |
| 14   | X           | Wick                   | 1           |
| 15   | X           | Bushing                | 1           |
| 16   | X           | Seal                   | 1           |
| 17   | X           | Housing                | 1           |
| 18   | X           | Washer, thrust         | 1           |
| 19   | X           | Armature               | 1           |
| 20   | #           | Washer                 | 1           |
| 21   | #           | Washer, lock, 9/16 in. | 2           |
| 22   | #           | Screw                  | 2           |
| 23   | X           | Ring, wear             | 1           |

# Common hardware; procure locally

X Not sold separately

## Group 11c: Starter End Frame

Engine model 6059 with serial numbers 317121 and below



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| Item | Part Number | Description                    | Quantity    |
|------|-------------|--------------------------------|-------------|
|      |             |                                | Variation 1 |
| 1    | X           | Shim, 0.18 mm (0.007 in.)      | AR          |
| 2    | X           | Shim, 0.50 mm (0.019 in.)      | AR          |
| 3    | X           | Washer, thrust                 | 1           |
| 4    | 223679      | Frame                          | 1           |
| 5    | X           | Bracket                        | 2           |
| 6    | #           | Washer, lock, 9/16 in.         | 2           |
| 7    | #           | Screw                          | 2           |
| 8    | X           | Cover                          | 1           |
| 9    | #           | Screw                          | 2           |
| 10   | #           | Washer, #10 lock               | 6           |
| 11   | #           | Washer, 7/32 x 1/2 x 0.048 in. | 2           |
| 12   | X           | Gasket                         | 1           |
| 13   | X           | Bushing                        | 1           |
| 14   | 223785      | Brush, carbon                  | 4           |
| 15   | #           | Screw                          | 4           |
| 16   | X           | Spring                         | 4           |

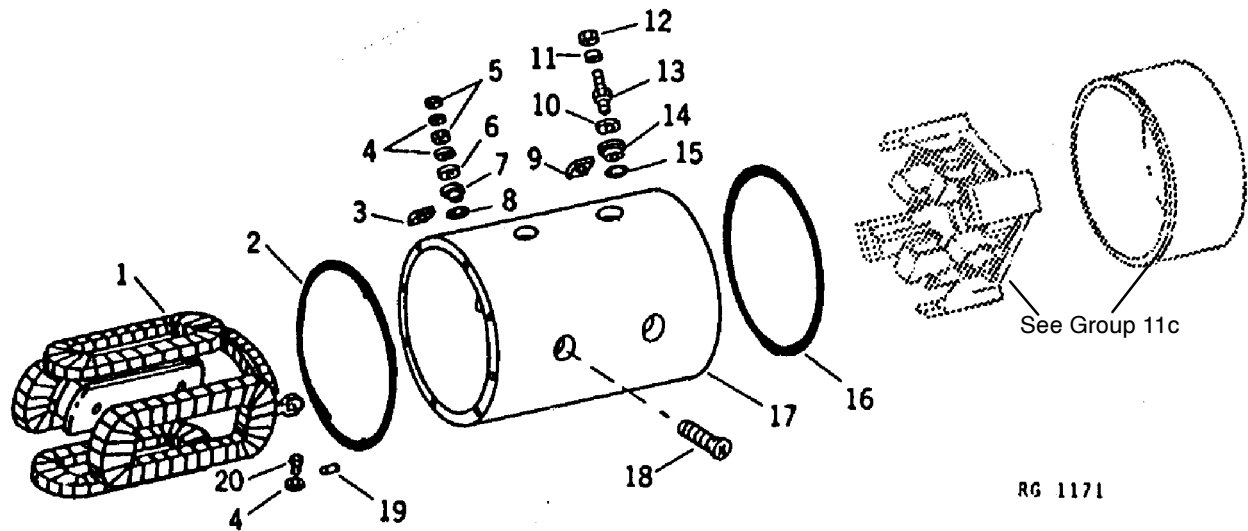
# Common hardware; procure locally

X Not sold separately

AR As required

## Group 11d: Starter Main Frame

Engine model 6059 with serial numbers 317121 and below



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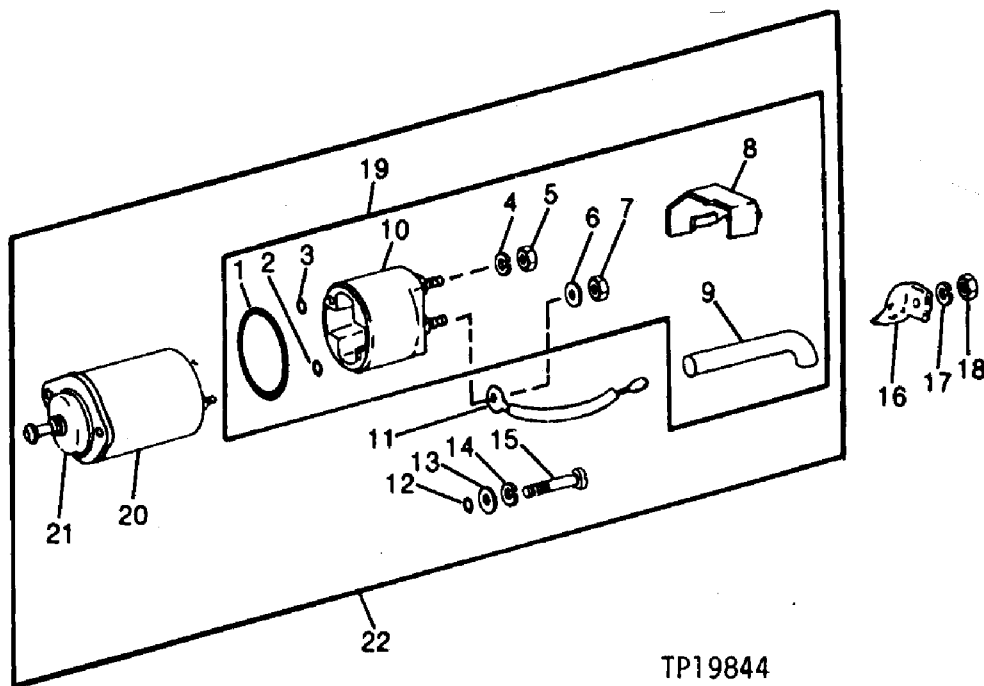
| Item | Part Number | Description                    | Quantity    |
|------|-------------|--------------------------------|-------------|
|      |             |                                | Variation 1 |
| 1    | 223926      | Coil, field winding            | 1           |
| 2    | 223784      | O-ring                         | 1           |
| 3    | #           | Washer                         | 1           |
| 4    | #           | Washer, #10 lock               | 3           |
| 5    | #           | Nut                            | 2           |
| 6    | #           | Washer, 7/32 x 1/2 x 0.048 in. | 1           |
| 7    | #           | Washer                         | 1           |
| 8    | X           | O-ring                         | 1           |
| 9    | X           | Bushing                        | 1           |
| 10   | #           | Washer                         | 1           |
| 11   | #           | Washer, lock                   | 1           |
| 12   | #           | Nut                            | 1           |
| 13   | #           | Bolt                           | 1           |
| 14   | #           | Washer                         | 1           |
| 15   | X           | O-ring                         | 1           |
| 16   | X           | O-ring                         | 1           |
| 17   | X           | Frame                          | 1           |
| 18   | #           | Screw                          | 8           |
| 19   | X           | Pin, dowel                     | 1           |
| 20   | #           | Screw                          | 1           |

# Common hardware; procure locally

X Not sold separately

## Group 11e: Starter Solenoid

Engine model 6059 with serial numbers 317121 and below



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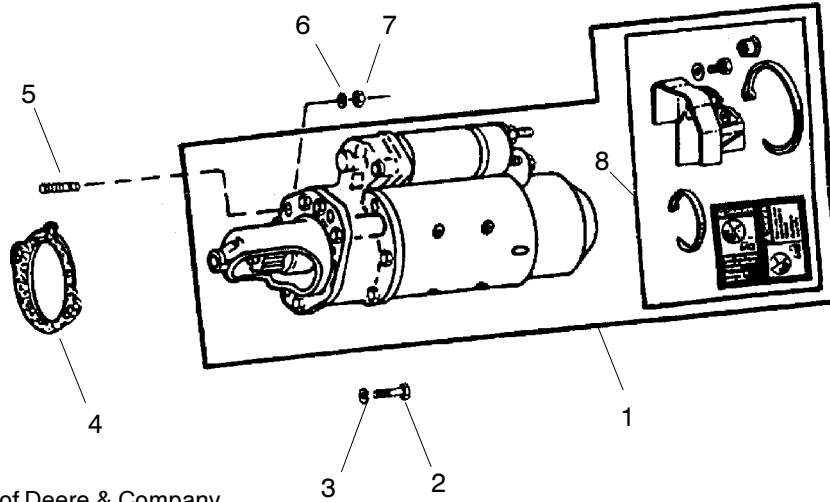
| Item | Part Number | Description                      | Quantity<br>Variation<br>1 |
|------|-------------|----------------------------------|----------------------------|
| 1    | X           | Gasket                           | 1                          |
| 2    | #           | Washer                           | 1                          |
| 3    | X           | Shim                             | 1                          |
| 4    | #           | Washer, lock, 5/16 in.           | 1                          |
| 5    | #           | Nut                              | 1                          |
| 6    | #           | Washer, #10 lock                 | 1                          |
| 7    | #           | Nut, 10-24                       | 2                          |
| 8    | 224177      | Shield                           | 1                          |
| 9    | X           | Hose                             | 1                          |
| 10   | X           | Cover                            | 1                          |
| 11   | X           | Wire                             | 1                          |
| 12   | X           | O-ring                           | 2                          |
| 13   | #           | Washer, 13/32 x 13/16 x 0.06 in. | 2                          |
| 14   | #           | Washer, lock, 1/4 in.            | 2                          |
| 15   | #           | Screw                            | 2                          |
| 16   | #           | Connector                        | 1                          |
| 17   | #           | Washer, lock                     | 2                          |
| 18   | #           | Nut, 3/8-16                      | 2                          |
| 19   | 223928      | Switch                           | 1                          |
| 20   | X           | Switch                           | 1                          |
| 21   | X           | Boot                             | 1                          |
| 22   | 223927      | Switch                           | 1                          |

# Common hardware; procure locally

X Not sold separately

# Group 11a-11d: Starter Motor

Engine model 6059 with serial numbers above 317121  
Engine model 6068 with serial numbers 709445 and below



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| Item | Part Number | Description                     | Quantity  |   |   |
|------|-------------|---------------------------------|-----------|---|---|
|      |             |                                 | Variation |   |   |
|      |             |                                 | 1         | 2 | 3 |
| 1    | 224369      | Kit, starter                    | 1         |   |   |
| 1    | 360051      | Starter, 24 volt                |           | 1 |   |
| 1    | 360052      | Starter, 12 volt                |           |   | 1 |
| 2    | #           | Screw, cap, 3/8 in. x 1 3/8 in. | 2         |   |   |
| 2    | #           | Screw, M10 x 30                 |           | 3 | 3 |
| 3    | #           | Washer, lock, 3/8 in.           | 3         |   |   |
| 4    | 233791      | Gasket                          | 1         | 1 | 1 |
| 5    | #           | Stud                            | 1         |   |   |
| 6    | #           | Washer, lock, 3/8 in.           | 1         |   |   |
| 7    | #           | Nut, 3/8 in.                    | 2         |   |   |
| 8    | X           | Cover                           | 1         | 1 | 1 |

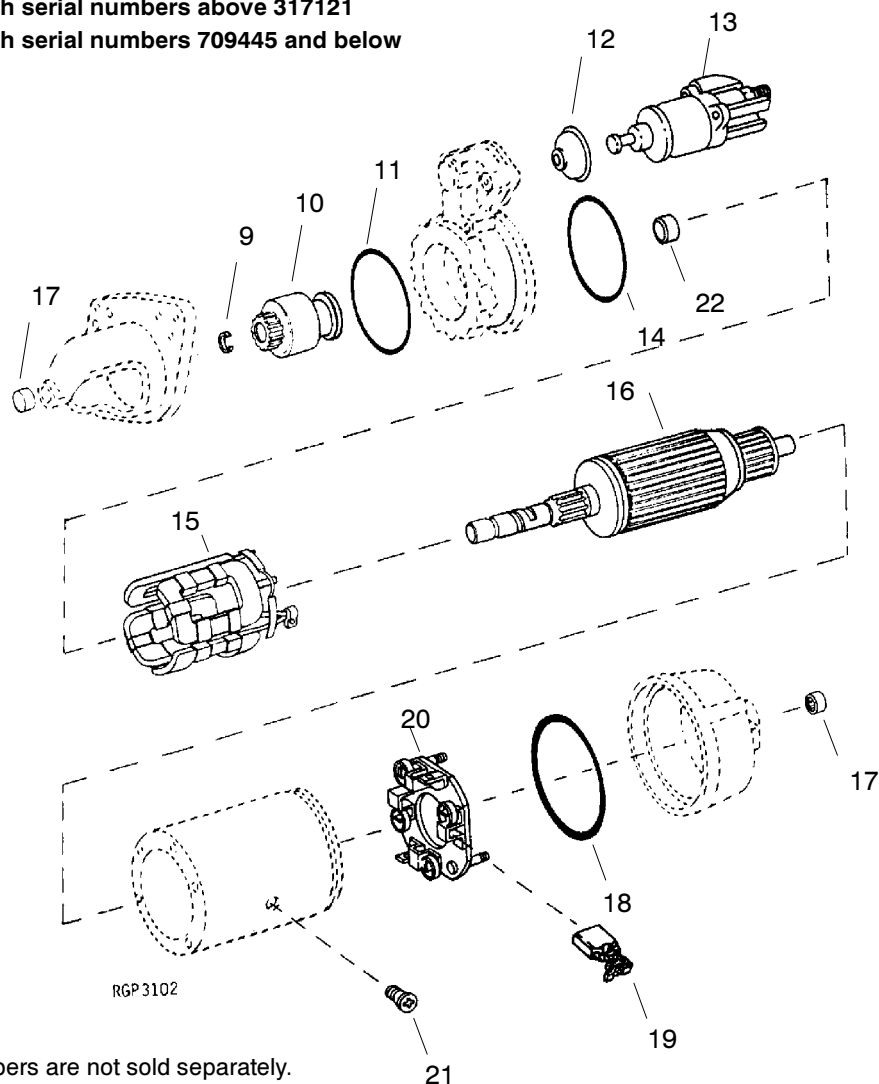
# Common hardware; procure locally

X Not sold separately

## Group 11a-11d: Starter Motor, continued

Engine model 6059 with serial numbers above 317121

Engine model 6068 with serial numbers 709445 and below



Parts without item numbers are not sold separately.

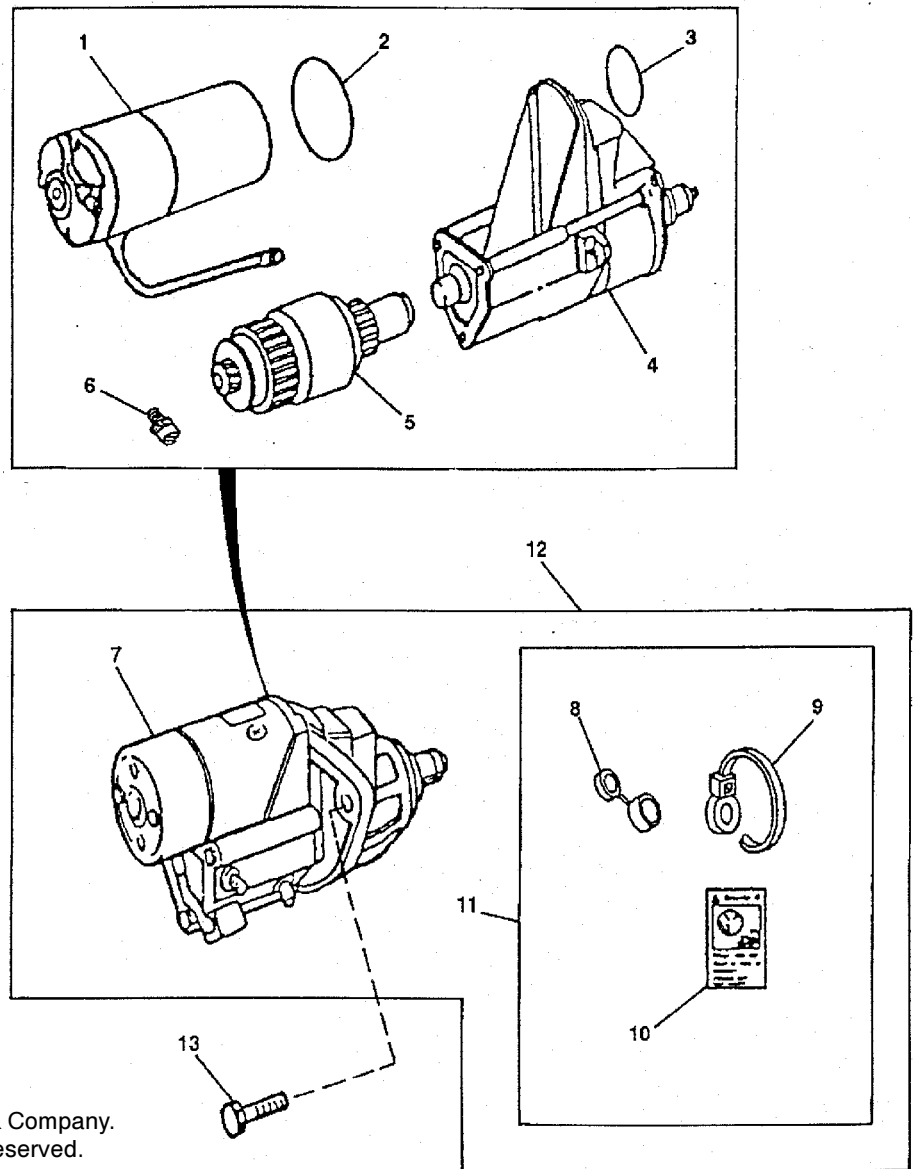
| Item | Part Number | Description         | Quantity  |   |   |
|------|-------------|---------------------|-----------|---|---|
|      |             |                     | Variation |   |   |
|      |             |                     | 1         | 2 | 3 |
| 9    | 336154      | Ring, snap          | 1         |   |   |
| 9    | 360163      | Ring, snap          |           | 1 | 1 |
| 10   | 336151      | Clutch              | 1         |   |   |
| 11   | X           | Packing             | 1         | 1 | 1 |
| 12   | X           | Cover               | 1         | 1 | 1 |
| 13   | 224370      | Switch              | 1         |   |   |
| 13   | 360008      | Switch              |           | 1 |   |
| 13   | 360012      | Switch              |           |   | 1 |
| 14   | X           | O-ring              | 1         | 1 | 1 |
| 15   | X           | Coil, field winding | 1         | 1 | 1 |
| 16   | X           | Armature            | 1         | 1 | 1 |
| 17   | 360011      | Bearing, needle     | 1         | 1 | 1 |
| 18   | X           | O-ring              | 1         | 1 | 1 |
| 19   | 360009      | Brush               | 4         | 4 | 4 |
| 20   | X           | Holder              | 1         | 1 | 1 |
| 21   | #           | Screw, cap          | 1         | 1 | 1 |
| 22   | 360077      | Bushing             | 2         | 2 | 2 |

# Common hardware; procure locally

X Not sold separately

# Group 11a-11d: Starter Motor, continued

Engine model 6068 with serial numbers above 709445

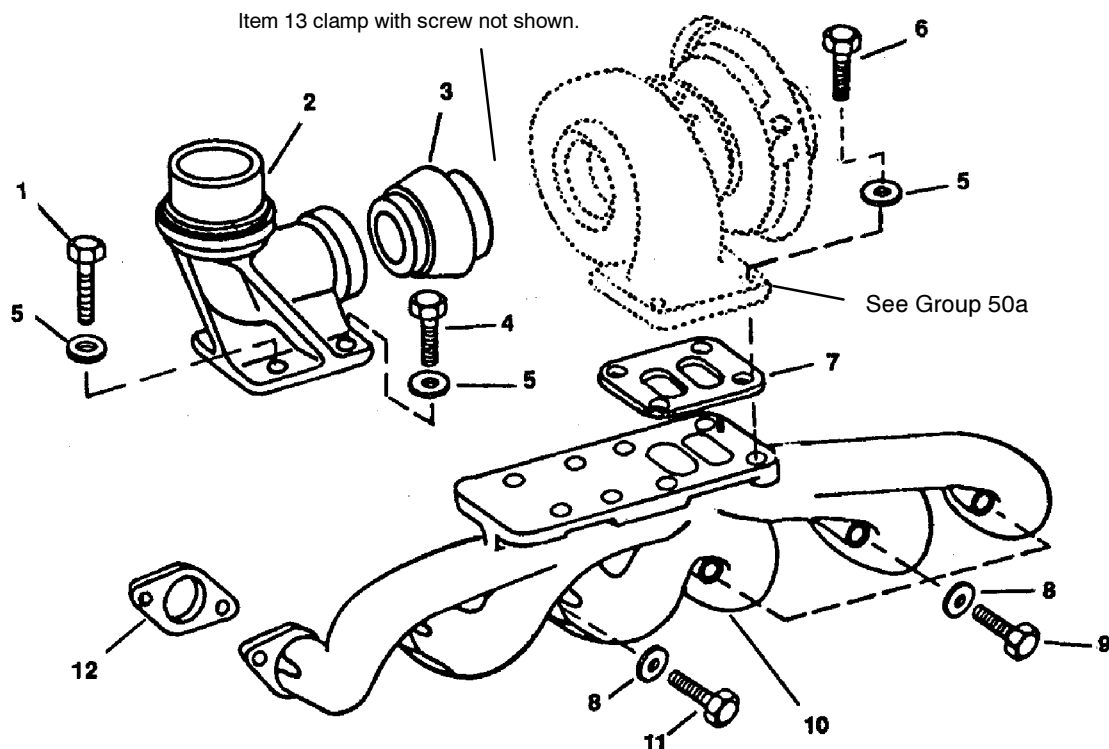


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| Item | Part Number | Description                  | Quantity  |      |
|------|-------------|------------------------------|-----------|------|
|      |             |                              | Variation |      |
|      |             |                              | 3006      | 3041 |
| 1    | —           | Motor                        | 1         | 1    |
| 2    | GM17463     | Seal                         | 1         | 1    |
| 3    | GM17464     | O-ring                       | 1         | 1    |
| 4    | GM17544     | Switch                       | 1         |      |
| 4    | GM17546     | Switch                       |           | 1    |
| 5    | GM17545     | Clutch                       | 1         |      |
| 5    | GM17547     | Clutch                       |           | 1    |
| 6    | GM18874     | Screw, with washer, M5 x 0.8 | 1         | 1    |
| 7    | —           | Motor, starter               | 1         | 1    |
| 8    | —           | Cover                        | 1         | 1    |
| 9    | GM17495     | Tie band                     | 1         | 1    |
| 10   | GM17554     | Label                        | 1         | 1    |
| 11   | GM17548     | Kit                          | 1         | 1    |
| 12   | 352390      | Starter                      | 1         |      |
| 12   | GM16801     | Starter, 24 V                |           | 1    |
| 13   | #           | Screw, M10 x 30              | 3         | 3    |

# Common hardware; procure locally

## Group 12: Exhaust Manifold



Item 1 and 6 nut not shown.

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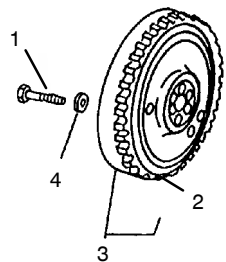
TP28443 (was TP26379)

| Item | Part Number | Description                                     | Quantity  |    |      |      |
|------|-------------|-------------------------------------------------|-----------|----|------|------|
|      |             |                                                 | Variation |    |      |      |
|      |             |                                                 | 1         | 2  | 2809 | 6401 |
| 1    | #           | Screw, cap, 3/8-16 x 1 1/2 in.                  | 2         |    |      |      |
| 1    | #           | Screw, M10 x 40                                 |           | 4  |      | 4    |
| 1    | #           | Nut, M10 flange (not shown)                     |           | 4  |      | 4    |
| 2    | 223495      | Fitting, elbow, turbocharger to exhaust fitting | 1         |    |      |      |
| 2    | 360117      | Elbow, pipe                                     |           | 1  |      | 1    |
| 3    | 223538      | Adapter                                         | 1         |    |      |      |
| 3    | 223891      | Adapter                                         |           | 1  |      | 1    |
| 4    | #           | Screw                                           | 2         |    |      |      |
| 5    | #           | Washer, 13/32 x 13/16 x 0.06 in.                | 8         |    |      |      |
| 6    | #           | Screw, 3/8-16 x 1 1/8 in.                       | 4         |    |      |      |
| 6    | #           | Screw, M10 x 40                                 |           | 4  |      |      |
| 6    | #           | Nut, M10 flange (not shown)                     |           | 4  |      |      |
| 7    | 223898      | Gasket                                          | 1         |    |      |      |
| 7    | 360137      | Gasket                                          |           | 1  |      |      |
| 8    | #           | Washer, 13/32 x 23/32 x 0.12 in.                | 12        |    |      |      |
| 9    | #           | Screw, 3/8-16 x 3 1/2 in.                       | 3         |    |      |      |
| 9    | #           | Screw, M10 x 80                                 |           |    | 12   |      |
| 9    | #           | Screw, M12 x 90                                 |           | 12 |      |      |
| 10   | 224098      | Manifold, exhaust                               | 1         |    |      |      |
| 10   | 360152      | Manifold, exhaust                               |           | 1  | 1    |      |
| 11   | #           | Screw, 3/8-16 x 1 1/4 in.                       | 9         |    |      |      |
| 12   | 223547      | Gasket                                          | 6         | 6  | 6    |      |
| 13   | 224132      | Clamp with screw (not shown)                    |           | 1  |      | 1    |

# Common hardware; procure locally

# Group 13a: Flywheel

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TP26795 (was TP26386)

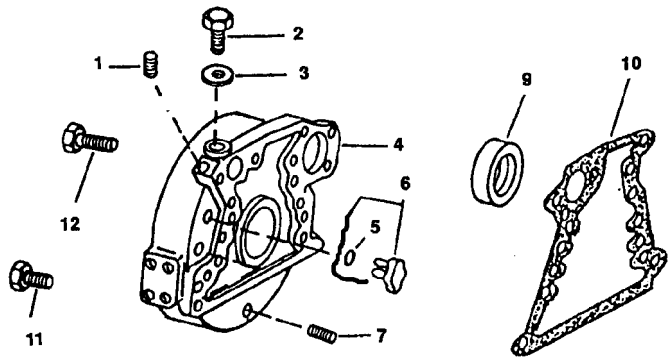
| Item | Part Number | Description                     | Quantity  |   |      |
|------|-------------|---------------------------------|-----------|---|------|
|      |             |                                 | Variation |   |      |
|      |             |                                 | 1         | 2 | 1503 |
| 1    | #           | Screw, Grade 8, 1/2 x 1 1/2 in. | 4         |   |      |
| 1    | #           | Screw, M12 x 40                 |           | 4 |      |
| 1    | 360581      | Bolt                            |           |   | 6    |
| 2    | 223750      | Gear, 129 teeth                 | 1         | 1 | 1    |
| 3    | 224079      | Flywheel                        | 1         |   |      |
| 3    | 360023      | Flywheel                        |           | 1 |      |
| 3    | GM17501     | Flywheel                        |           |   | 1    |
| 4    | 223983      | Washer                          | 4         |   |      |
| 4    | 360175      | Washer                          |           | 4 |      |

# Common hardware; procure locally

# Group 13b: Flywheel Housing

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Item 12 washer not shown.

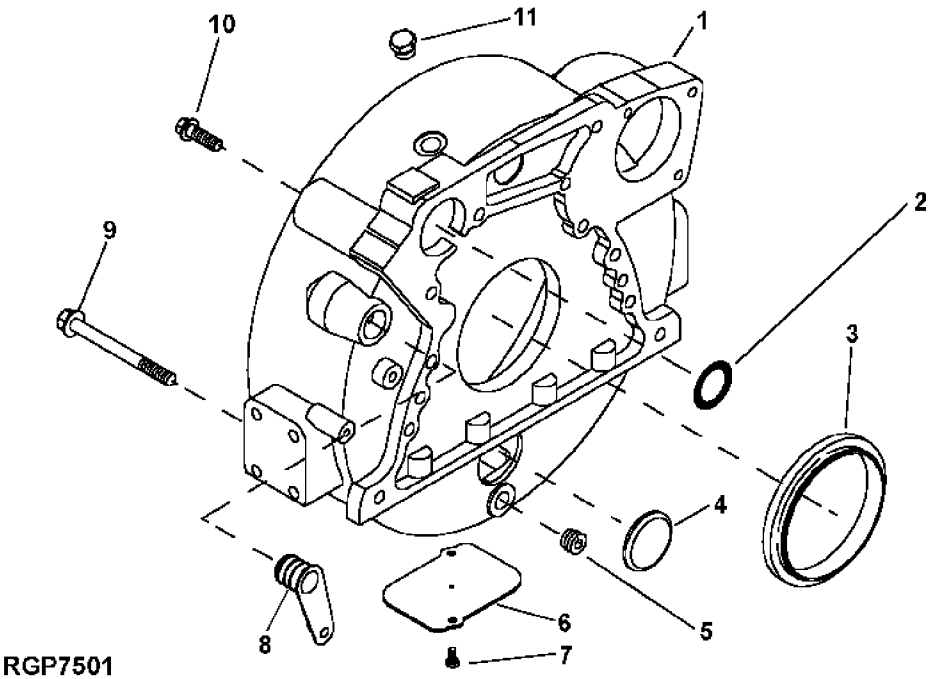


TP28400 (was TP26386)

| Item | Part Number | Description               | Quantity  |   |   |
|------|-------------|---------------------------|-----------|---|---|
|      |             |                           | Variation |   |   |
|      |             |                           | 1         | 2 | 3 |
| 1    | #           | Plug, pipe, 1/8 NPT       | 1         | 1 |   |
| 2    | 223451      | Plug, drain               | 1         | 1 |   |
| 3    | 223603      | Washer                    | 1         | 1 |   |
| 4    | 224181      | Housing                   | 1         |   |   |
| 4    | 336481      | Housing                   |           | 1 |   |
| 4    | 360115      | Housing                   |           |   | 1 |
| 5    | 223747      | O-ring                    | 1         | 1 |   |
| 6    | 223683      | Plug                      | 1         | 1 |   |
| 6    | 360149      | Plug                      |           |   | 1 |
| 7    | #           | Plug, pipe, 1/2 NPT       | 1         | 1 |   |
| 9    | 223583      | Seal with wear ring       | 1         | 1 |   |
| 10   | 223558      | Gasket                    | 1         | 1 |   |
| 11   | #           | Screw, 5/8-11 x 2 1/2 in. | 4         | 4 |   |
| 11   | #           | Screw, M12 x 50           |           |   | 4 |
| 12   | #           | Screw, 1/2-13 x 1 3/8 in. | 8         | 8 |   |
| 12   | #           | Screw, M12 x 40           |           |   | 8 |
| 12   | #           | Washer (not shown)        |           |   | 8 |

# Common hardware; procure locally

# Group 13b: Flywheel Housing, continued

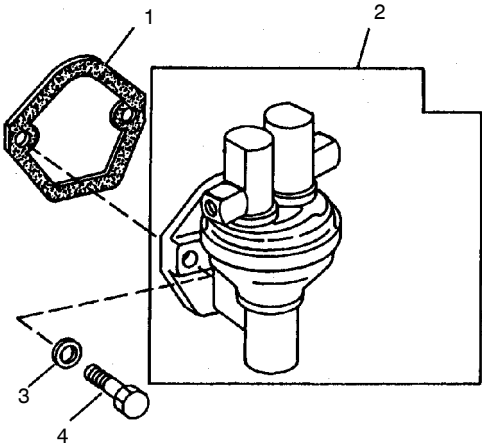


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| Item | Part Number | Description         | Quantity       |
|------|-------------|---------------------|----------------|
|      |             |                     | Variation 1406 |
| 1    | GM24539     | Housing, flywheel   | 1              |
| 2    | GM24540     | O-ring              | 1              |
| 3    | 223583      | Seal                | 1              |
| 4    | GM17553     | Cap                 | 1              |
| 5    | #           | Plug, pipe, 1/2 in. | 1              |
| 6    | GM17449     | Plate               | 1              |
| 7    | #           | Screw, cap          | 2              |
| 8    | 360149      | Plug                | 1              |
| 9    | #           | Screw, M12 x 50     | 4              |
| 10   | 360581      | Bolt                | 8              |
| 11   | GM17468     | Fitting             | 1              |

# Common hardware; procure locally

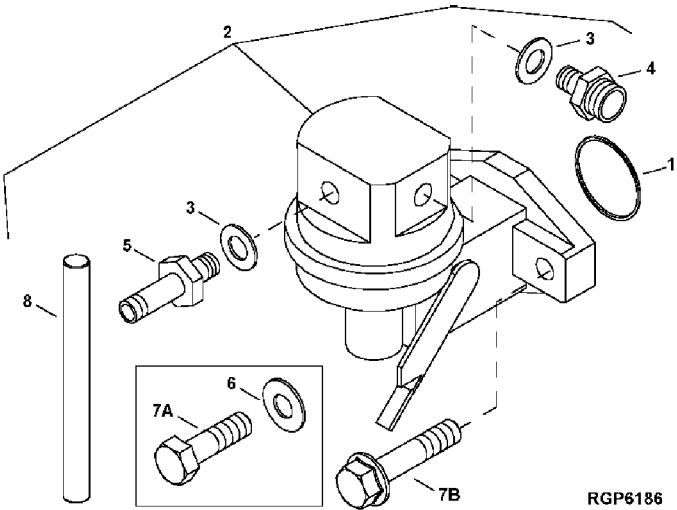
# Group 14: Fuel Pump



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| Item | Part Number | Description                | Quantity    |             |
|------|-------------|----------------------------|-------------|-------------|
|      |             |                            | Variation 1 | Variation 2 |
| 1    | 223557      | Gasket                     | 1           |             |
| 2    | 223585      | Pump, fuel transfer        | 1           |             |
| 2    | 360071      | Pump, fuel transfer        |             | 1           |
| 3    | #           | Washer                     | 2           | 2           |
| 4    | #           | Screw, 5/16-18 x 1 1/4 in. | 2           | 2           |
| 5    | 360159      | Rod, push (not shown)      |             | 1           |

# Common hardware; procure locally

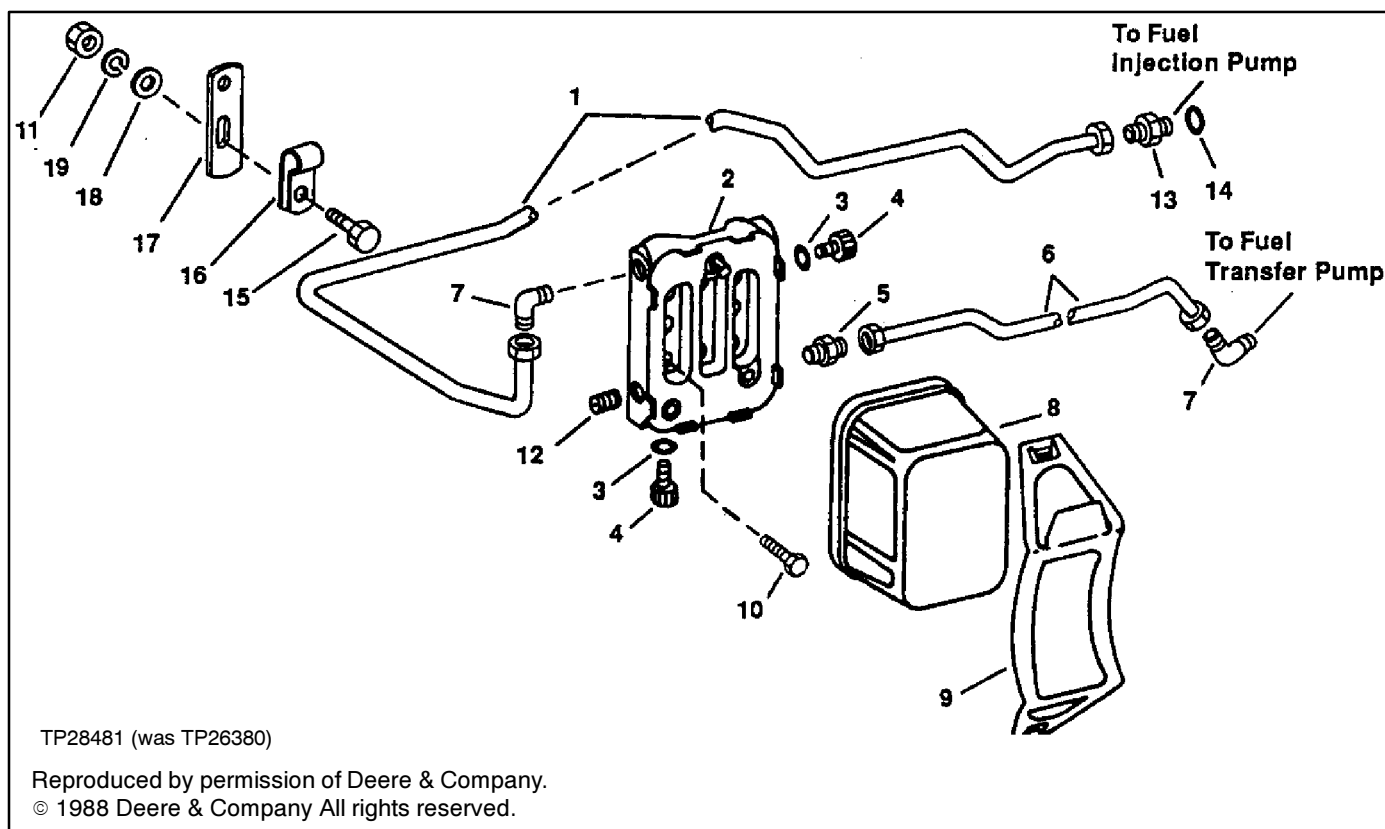


RGP6186

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| Item | Part Number | Description              | Quantity       |
|------|-------------|--------------------------|----------------|
|      |             |                          | Variation 3702 |
| 1    | 360119      | O-ring                   | 1              |
| 2    | 360071      | Pump, fuel transfer      | 1              |
| 3    | GM17471     | O-ring                   | 2              |
| 4    | GM17470     | Fitting                  | 1              |
| 5    | GM18722     | Fitting                  | 1              |
| 6    | —           | Washer, 8.4 x16 x 1.6 mm | 2              |
| 7A   | —           | Screw, cap               | 2              |
| 7B   | GM17525     | Screw, cap               | 2              |
| 8    | 360159      | Rod, push                | 1              |

## Group 15: Fuel Filter



| Item | Part Number | Description                             | Quantity  |
|------|-------------|-----------------------------------------|-----------|
|      |             |                                         | Variation |
| 1    | 224165      | Line, fuel                              | 1         |
| 2    | 223413      | Housing                                 | 1         |
| 3    | 224010      | Washer                                  | 2         |
| 4    | 223467      | Plug, drain                             | 2         |
| 5    | 223457      | Fitting                                 | 1         |
| 6    | 224175      | Line, fuel                              | 1         |
| 7    | 223534      | Fitting, elbow                          | 3         |
| 8    | 223953      | Filter, fuel (square)*                  | 1         |
| 9    | 223505      | Clamp                                   | 1         |
| 10   | #           | Screw, 3/8-16 x 7/8 in.                 | 2         |
| 11   | #           | Nut, 5/16-18                            | 1         |
| 12   | #           | Plug, pipe, 1/8 NPT, square countersunk | 1         |
| 13   | 224154      | Fitting                                 | 1         |
| 14   | 223456      | O-ring                                  | 1         |
| 15   | #           | Screw, 3/8-16 x 7/8 in.                 | 1         |
| 16   | 223655      | Clip                                    | 1         |
| 17   | 223492      | Strap                                   | 1         |
| 18   | #           | Washer, 13/32 x 11/16 x 0.06 in.        | 1         |
| 19   | #           | Washer, lock, 3/8 in.                   | 1         |

#Common hardware; procure locally

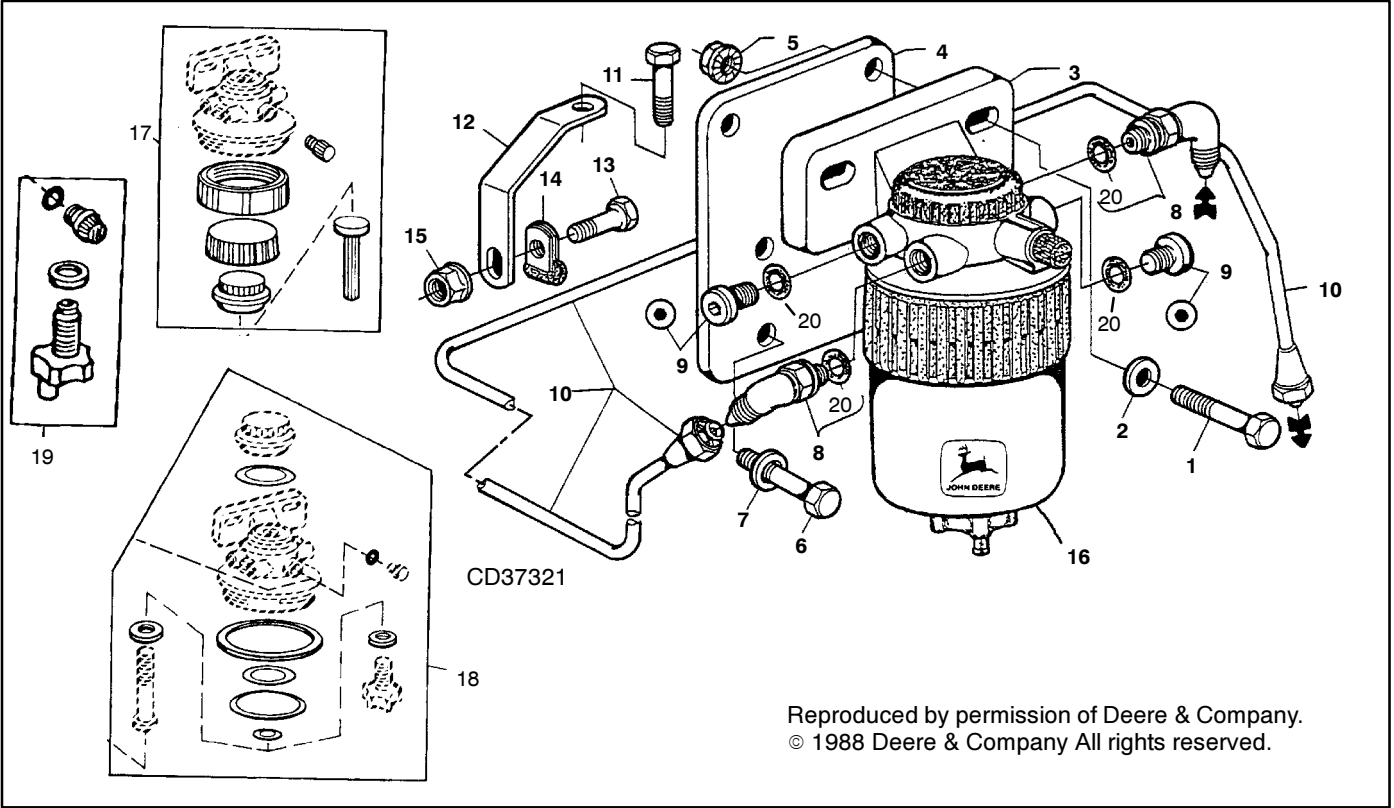
\* See table "6059 Engine Serial Number-Contingent Fuel Filters" below  
for 6059 engine models

### 6059 Engine Serial Number-Contingent Fuel Filters

Use the serial number to verify the fuel filter type on 6059 engine models. Find your serial number on the nameplate and choose the fuel filter type from the chart below. The round filter (variations 2 and 3) is shown on the next page.

| Serial Number     | Fuel Filter Type |
|-------------------|------------------|
| 334913 and before | Square           |
| After 334913      | Round            |

# Group 15: Fuel Filter



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| Item | Part Number | Description                 | Quantity    |   |
|------|-------------|-----------------------------|-------------|---|
|      |             |                             | Variation 2 | 3 |
| 1    | #           | Screw, 3/8 in. x 1 1/2 in.  | 2           |   |
| 1    | #           | Screw, M10 x 25             |             | 2 |
| 2    | #           | Washer, 3/8 in.             | 1           |   |
| 3    | 336969      | Housing, fuel filter        | 1           |   |
| 3    | 275500      | Housing, fuel filter        |             | 1 |
| 4    | 336547      | Bracket                     | 1           |   |
| 5    | #           | Nut, lock, 3/8 in.          | 2           |   |
| 6    | #           | Screw, 3/8 in. x 7/8 in.    | 2           |   |
| 7    | #           | Washer, 3/8 in.             | 2           |   |
| 8    | 336550      | Fitting, elbow              | 2           |   |
| 9    | #           | Plug, 0.703 in. x 0.490 in. | 2           |   |
| 9    | 360015      | Plug                        |             | 2 |

| Item | Part Number | Description                     | Quantity    |   |
|------|-------------|---------------------------------|-------------|---|
|      |             |                                 | Variation 2 | 3 |
| 10   | 336546      | Line, fuel inlet                | 1           |   |
| 10   | 360034      | Line, fuel inlet                |             | 1 |
| 11   | #           | Screw, 3/8 in. x 2 in.          | 1           |   |
| 12   | 336548      | Bracket                         | 1           |   |
| 12   | 360088      | Strap, bracket                  |             | 1 |
| 13   | #           | Screw, 5/16 in. x 3/4 in.       | 1           |   |
| 14   | 336549      | Clamp                           | 1           |   |
| 14   | 360171      | Clamp                           |             | 1 |
| 15   | #           | Nut, flange, 5/16 in.           | 1           |   |
| 15   | #           | Nut, M8                         |             | 1 |
| 16   | 224795      | Filter, fuel* (round)           | 1           |   |
| 16   | 275501      | Filter, fuel* (round)           |             | 1 |
| 17   | 222773      | Kit, fuel filter                |             | 1 |
| 18   | 222772      | Kit, fuel filter seal           |             | 1 |
| 19   | 360048      | Kit, bleed plug and drain valve |             | 1 |
| 20   | 360178      | O-ring                          |             | 1 |

#Common hardware; procure locally

\* See table "6059 Engine Serial Number-Contingent Fuel Filters" below for 6059 engine models

## 6059 Engine Serial Number-Contingent Fuel Filters

Use the serial number to verify the fuel filter type on 6059 engine models. Find your serial number on the nameplate and choose the fuel filter type from the chart below. The square filter (variation 1) is shown on the next page.

| Serial Number     | Fuel Filter Type |
|-------------------|------------------|
| 334913 and before | Square           |
| After 334913      | Round            |

## Group 15: Fuel Filter, continued

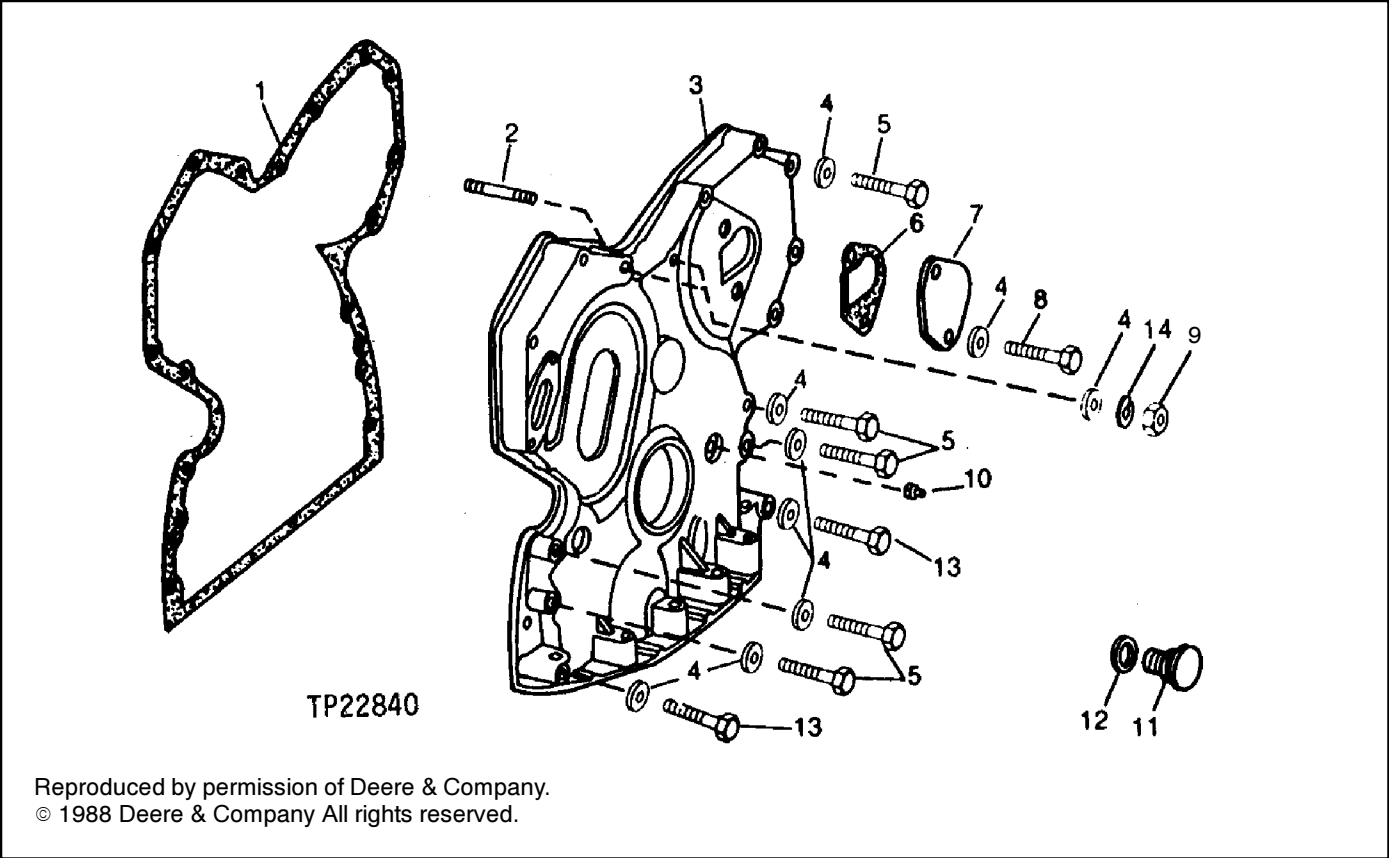


## Group 15: Fuel Filter, continued

| Item | Part Number | Description                    | Quantity       |
|------|-------------|--------------------------------|----------------|
|      |             |                                | Variation 3518 |
| 1    | 222773      | Seal kit                       | 1              |
| 2    | 275502      | Fuel line                      | 1              |
| 3    | 360178      | O-ring                         | 2              |
| 4    | 360037      | Fitting                        | 2              |
| 5    | 360015      | Plug                           | 2              |
| 6    | 352053      | Ring                           | 1              |
| 7    | GM17444     | Drain plug                     | 1              |
| 8    | #           | Washer, 10.5 x 18 x 1.6 mm     | 2              |
| 8    | #           | Screw, M10 x 25                | 2              |
| 9    | 222772      | Seal kit                       | 1              |
| 10   | 275501      | Filter, fuel                   | 1              |
| 11   | 275500      | Housing, fuel filter           | 1              |
| 12   | 360034      | Line, fuel                     | 1              |
| 13   | #           | Nut, flange, M8                | 1              |
| 14   | 360171      | Clip                           | 1              |
| 15   | 360088      | Strap (bracket)                | 1              |
| 16   | #           | Screw, M8 x 16                 | 1              |
| 18   | 360048      | Kit, bleed plug & drain valve  | 1              |
| 19   | GM17543     | Seal kit                       | 1              |
| 21   | GM18850     | Kit, fuel filter heater (24 V) | 1              |
| 21   | GM18822     | Kit, fuel filter heater (12 V) | 1              |
| 22   | GM17494     | Sealing washer                 | 4              |

# Common hardware; procure locally

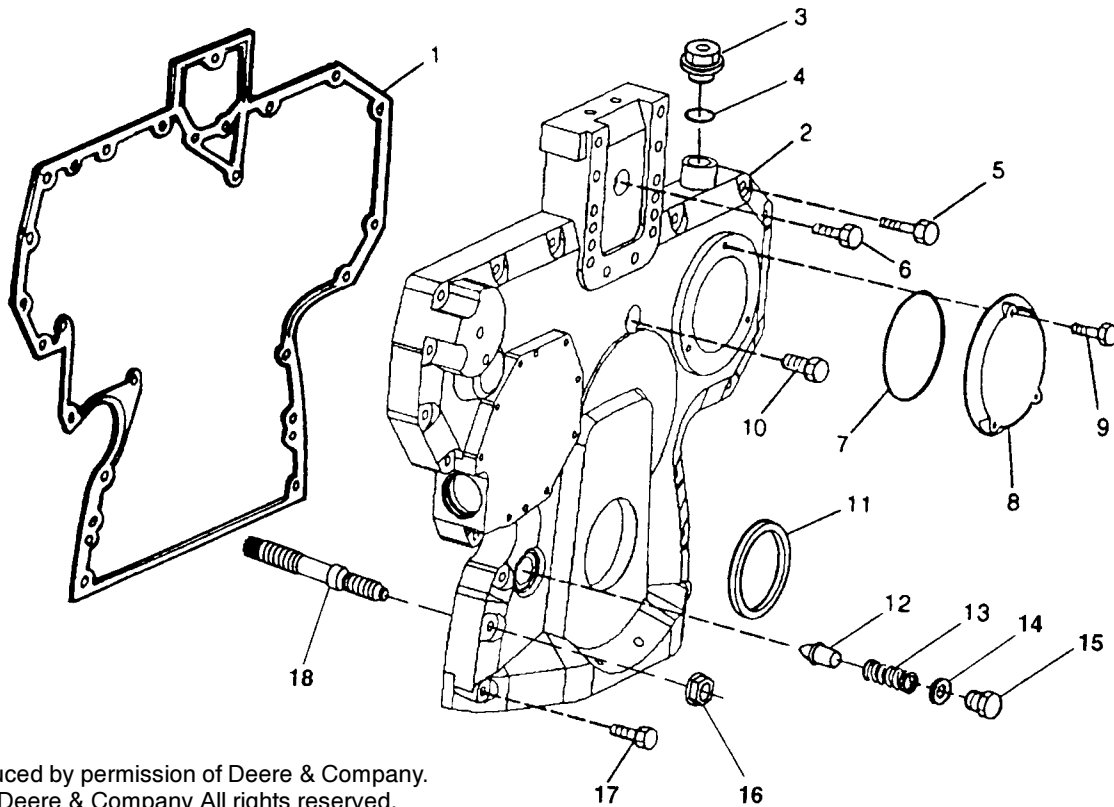
# Group 18: Timing Gear Cover



| Item | Part Number | Description                          | Quantity  |
|------|-------------|--------------------------------------|-----------|
|      |             |                                      | Variation |
| 1    | 223620      | Gasket                               | 1         |
| 2    | 223662      | Stud                                 | 2         |
| 3    | 223586      | Cover                                | 1         |
| 4    | #           | Washer, 13/32 x 23/32 x 0.12 in.     | 16        |
| 5    | #           | Screw, cap, 3/8-16 x 1 7/8 in.       | 10        |
| 6    | 223515      | Gasket                               | 1         |
| 7    | 223637      | Cover                                | 1         |
| 8    | #           | Screw, 3/8-16 x 7/8 in.              | 2         |
| 9    | #           | Nut, 3/8-16                          | 2         |
| 10   | #           | Plug, hex pipe, 1/4 NPT, countersunk | 1         |
| 11   | 223653      | Fitting, pipe                        | 1         |
| 12   | 223410      | Washer, aluminum                     | 1         |
| 13   | #           | Screw, 3/8-16 x 2 1/2 in.            | 2         |
| 14   | #           | Washer, lock, 3/8 in.                | 2         |

# Common hardware; procure locally

## Group 18: Timing Gear Cover



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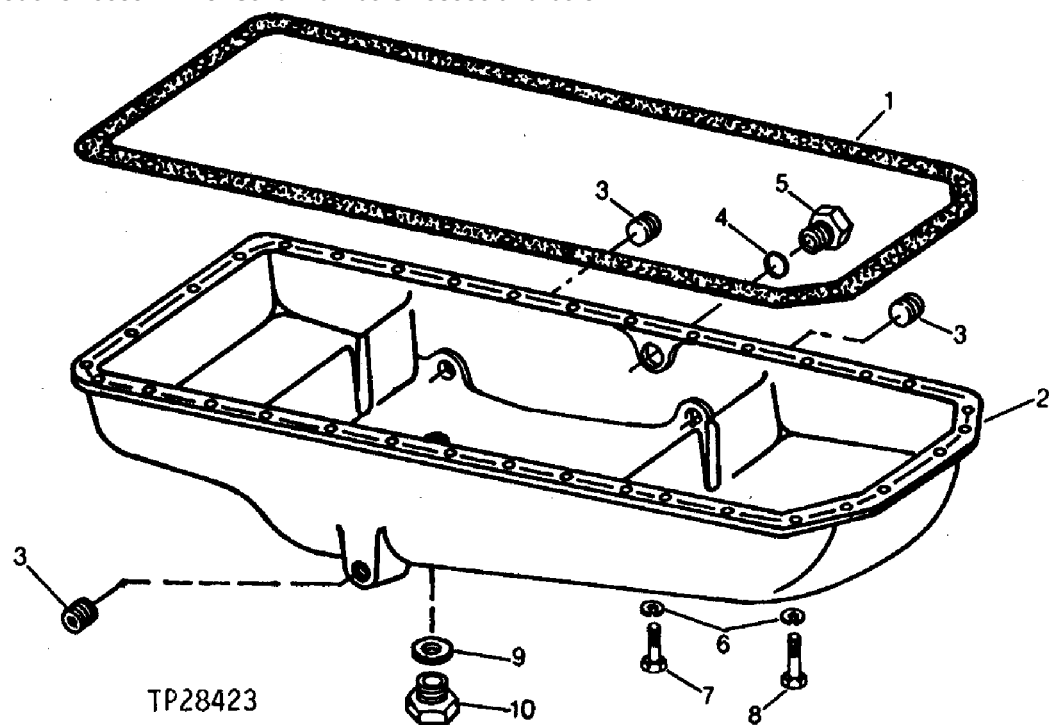
| Item | Part Number | Description     | Quantity  |
|------|-------------|-----------------|-----------|
|      |             |                 | Variation |
| 1    | 360125      | Gasket          | 2         |
| 2    | 360108      | Cover           | 1         |
| 3    | 360078      | Plug, drain     | 2         |
| 4    | 360180      | O-ring          | 1         |
| 5    | #           | Screw, M8 x 40  | 6         |
| 5    | #           | Screw, M8 x 25  | 1         |
| 5    | #           | Screw           | 1         |
| 6    | #           | Screw, M8 x 25  | 1         |
| 7    | 360107      | O-ring          | 1         |
| 8    | 360105      | Cover           | 1         |
| 9    | #           | Screw, M6 x 16  | 3         |
| 10   | #           | Screw, M8 x 60  | 1         |
| 11   | 360181      | Kit, seal       | 1         |
| 12   | 224058      | Valve           | 1         |
| 13   | 224095      | Spring          | 1         |
| 14   | 223410      | Washer          | 1         |
| 15   | 223653      | Plug, fitting   | 1         |
| 16   | #           | Nut, M10 flange | 4         |
| 17   | #           | Screw, M8 x 55  | 2         |
| 18   | 360140      | Stud            | 4         |

| Item | Part Number | Description           | Quantity       |
|------|-------------|-----------------------|----------------|
|      |             |                       | Variation 4403 |
| 1    | 360125      | Gasket, gear cover    | 1              |
| 2    | 360108      | Cover, gear           | 1              |
| 3    | GM17508     | Plug                  | 1              |
| 4    | 360180      | O-ring, 17.3 x 2.2 mm | 1              |
| 5    | #           | Screw, M8 x 60        | 1              |
| 5    | #           | Screw, M8 x 45        | 1              |
| 5    | #           | Screw, M8 x 55        | 2              |
| 5    | #           | Screw, M8 x 40        | 10             |
| 6    | #           | Screw, M8 x 35        | 1              |
| 7    | 360107      | O-ring                | 1              |
| 8    | 360105      | Cover                 | 1              |
| 9    | #           | Screw, M6 x 16        | 3              |
| 10   | 360512      | Screw                 | 1              |
| 11   | 360181      | Seal kit              | 1              |
| 16   | #           | Nut, flange, M10      | 6              |

# Common hardware; procure locally

# Group 21a: Oil Pan

Engine model TO6059  
Engine model CD6059TF with serial numbers 158930 and below



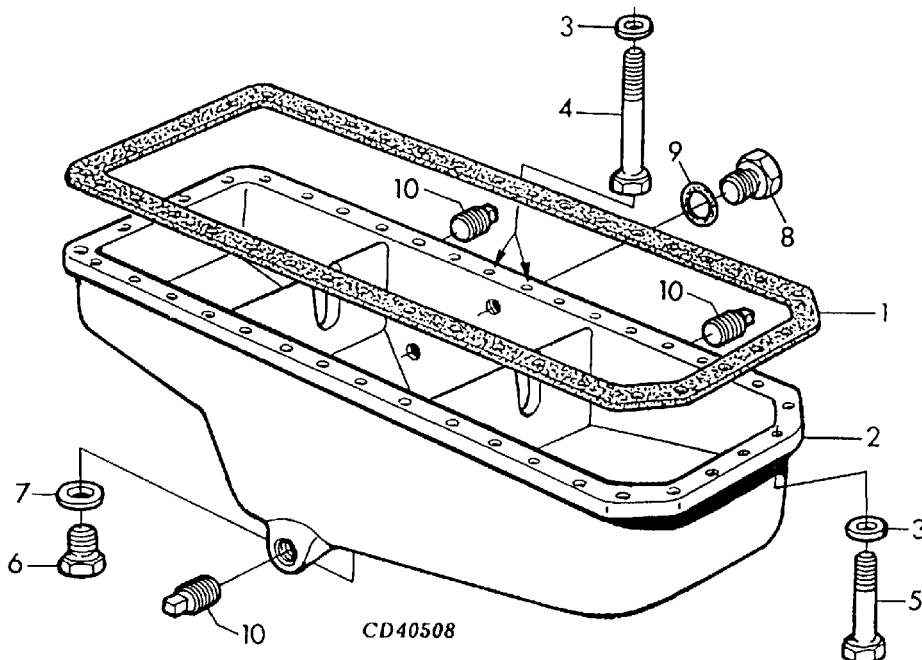
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| Item | Part Number | Description                             | Quantity    |
|------|-------------|-----------------------------------------|-------------|
|      |             |                                         | Variation 1 |
| 1    | 224189      | Gasket                                  | 1           |
| 2    | 224241      | Pan, oil                                | 1           |
| 3    | #           | Plug, pipe, 1/2 NPT                     | 3           |
| 4    | 223466      | O-ring                                  | 1           |
| 5    | 223458      | Plug, drain                             | 1           |
| 6    | #           | Washer, lock, 3/8 in.                   | 8           |
| 7    | #           | Screw, flanged head, 3/8-16 x 1 1/8 in. | 28          |
| 7    | #           | Screw, cap, 3/8-16 x 2 in.              | 2           |
| 8    | #           | Screw, 3/8-16 x 1 1/2                   | 4           |
| 8    | #           | Screw, 3/8-16 x 1 1/4                   | 2           |
| 9    | 223603      | Washer                                  | 1           |
| 10   | 223451      | Plug, drain                             | 1           |

# Common hardware; procure locally

## Group 21a: Oil Pan

**Engine model CD6059 with serial numbers above 158930**  
**Engine model 6068**

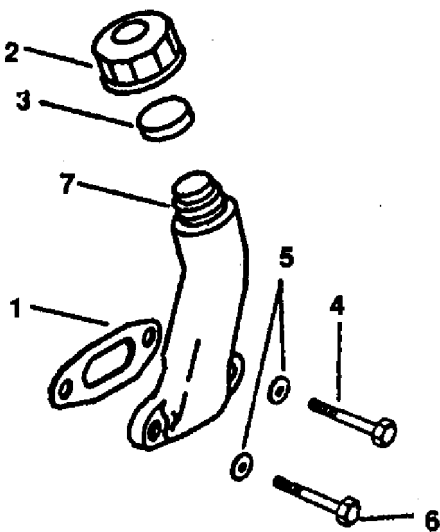


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| Item | Part Number | Description                     | Quantity  |    |      |      |
|------|-------------|---------------------------------|-----------|----|------|------|
|      |             |                                 | Variation |    |      |      |
|      |             |                                 | 1         | 2  | 1907 | 1924 |
| 1    | 224189      | Gasket                          | 1         |    |      |      |
| 1    | 360123      | Gasket                          |           | 1  | 1    | 1    |
| 2    | 336629      | Pan, oil                        | 1         |    |      |      |
| 2    | 360162      | Pan, oil                        |           | 1  | 1    |      |
| 2    | GM24542     | Pan, oil                        |           |    |      | 1    |
| 3    | #           | Washer, 10 mm x 18 mm x 2.5 mm  | 36        |    |      |      |
| 4    | #           | Screw, cap, 3/8 in. x 2 in.     | 2         |    |      |      |
| 4    | #           | Screw, M8 x 45                  |           | 2  | 4    | 4    |
| 5    | #           | Screw, cap, 3/8 in. x 1 1/8 in. | 34        |    |      |      |
| 5    | #           | Screw, M8 x 25                  |           | 28 | 26   | 26   |
| 5    | #           | Screw, M8 x 30                  |           | 6  | 6    | 6    |
| 6    | 223451      | Plug, drain                     | 1         |    |      |      |
| 6    | 360079      | Plug                            |           | 1  |      |      |
| 6    | 360014      | Plug                            |           |    | 2    | 2    |
| 7    | 336591      | O-ring                          | 1         |    |      |      |
| 7    | 360176      | O-ring                          |           | 1  |      |      |
| 8    | 223458      | Plug, drain                     | 1         |    |      |      |
| 8    | 360079      | Plug                            |           | 1  |      |      |
| 8    | GM17498     | Fitting                         |           |    |      | 2    |
| 9    | 223466      | O-ring                          | 1         |    |      |      |
| 9    | 360176      | O-ring                          |           | 1  | 2    | 2    |
| 9    | GM17437     | O-ring                          |           |    |      | 2    |
| 10   | #           | Fitting, 7/8-20 x 1/2-14 NPT    | 1         |    |      |      |
| 10   | #           | Plug, pipe                      | 3         |    |      |      |

## # Common hardware; procure locally

# Group 21b: Oil Fill Tube

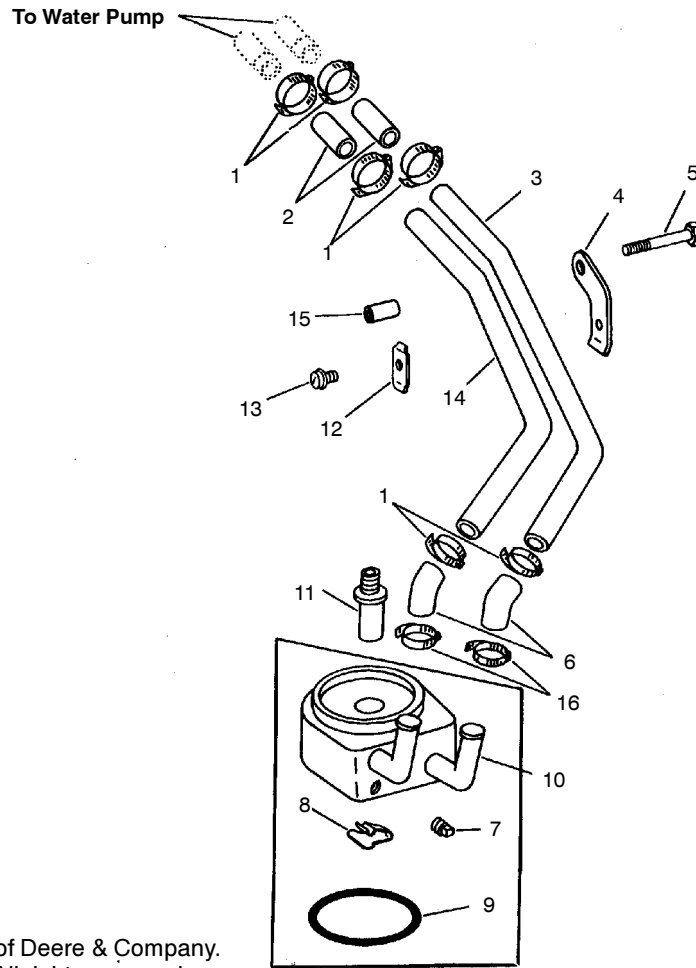


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| Item | Part Number | Description                      | Quantity  |   |
|------|-------------|----------------------------------|-----------|---|
|      |             |                                  | Variation |   |
|      |             |                                  | 1         | 2 |
| 1    | 223559      | Gasket                           | 1         |   |
| 1    | 360090      | Gasket                           |           | 1 |
| 2    | 223549      | Plug                             | 1         |   |
| 3    | 223636      | Gasket                           | 1         |   |
| 4    | #           | Screw, cap, 3/8-16 x 1 5/8 in.   | 1         |   |
| 5    | #           | Washer, 13/32 x 23/32 x 0.12 in. | 2         |   |
| 6    | #           | Screw, 3/8-16 x 3 in.            | 1         |   |
| 6    | 360067      | Screw, cap                       |           | 2 |
| 7    | 223584      | Neck, filler                     | 1         |   |
| 7    | 360089      | Cover (not shown)                |           | 1 |

# Common hardware; procure locally

## Group 21c: Oil Cooler



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TP28353 (was TP26364)

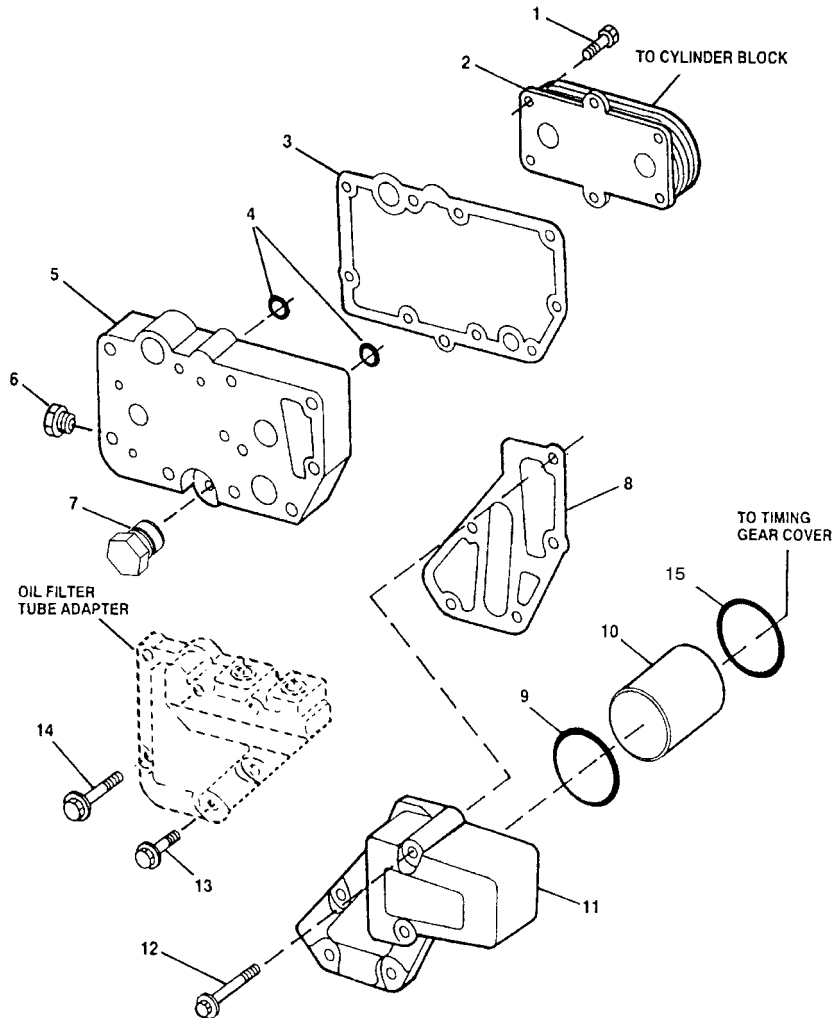
223506

| Item | Part Number       | Description                    | Quantity  |   |
|------|-------------------|--------------------------------|-----------|---|
|      |                   |                                | Variation |   |
|      |                   |                                | 1         | 2 |
| 1    | #                 | Clamp                          | 8         | 8 |
| 2    | #                 | Hose, 5/8 in. ID               | 2         | 2 |
| 3    | 224039            | Tube, lower                    | 1         |   |
| 3    | 336493            | Tube, lower                    |           | 1 |
| 4    | 224022            | Flange                         | 1         |   |
| 4    | X                 | Flange (see item 12)           |           | 1 |
| 5    | #                 | Screw, cap, 3/8-16 x 3 1/4 in. | 1         | 1 |
| 6    | 224061            | Hose                           | 2         |   |
| 6    | 336463            | Hose                           |           | 2 |
| 7    | 223493            | Plug, drain                    | 1         | 1 |
| 8    | 223514            | Clip                           | 1         | 1 |
| 9    | 224240            | Washer                         | 1         |   |
| 9    | <del>233506</del> | Washer                         |           | 1 |
| 10   | 224085            | Cooler, oil                    | 1         |   |
| 10   | 336492            | Cooler, oil                    |           | 1 |
| 11   | 223661            | Nipple, threaded               | 1         | 1 |
| 12   | 224023            | Clamp, half                    | 1         |   |
| 12   | 336496            | Clamp                          |           | 1 |
| 13   | #                 | Screw                          | 1         | 1 |
| 14   | 224038            | Tube, upper                    | 1         |   |
| 14   | 336494            | Tube, upper                    |           | 1 |
| 15   | #                 | Spacer, 0.423 x 0.675 x 1 in.  | 1         | 1 |
| 16   | #                 | Clamp                          | 2         | 2 |

# Common hardware; procure locally

X Not sold separately

## Group 21c: Oil Cooler, continued



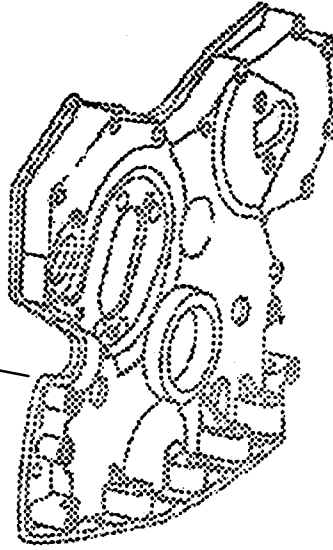
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| Item | Part Number | Description            | Quantity  |      |
|------|-------------|------------------------|-----------|------|
|      |             |                        | Variation |      |
|      |             |                        | 3         | 5902 |
| 1    | #           | Screw                  | 6         | 6    |
| 2    | 275503      | Cooler, oil            | 1         | 1    |
| 3    | 360130      | Gasket                 | 1         | 1    |
| 4    | 360170      | O-ring                 | 2         | 2    |
| 5    | 360127      | Housing                | 1         | 1    |
| 6    | 360014      | Plug (includes O-ring) | 1         | 1    |
| 6    | 360176      | O-ring                 | 1         | 1    |
| 7    | 360015      | Plug (includes O-ring) | 1         | 1    |
| 7    | 360178      | O-ring                 | 1         | 1    |
| 8    | 360131      | Gasket                 | 1         |      |
| 8    | GM17479     | Gasket                 |           | 1    |
| 9    | 360164      | O-ring                 | 1         | 1    |
| 10   | 360086      | Tube                   | 1         | 1    |
| 11   | 360128      | Adapter                | 1         |      |
| 11   | GM17462     | Adapter                |           | 1    |
| 12   | #           | Screw, M8 x 100        | 2         | 2    |
| 13   | #           | Screw, M8 x 20         | 2         | 1    |
| 14   | #           | Screw, M8 x 65         | 2         | 2    |
| 15   | GM24543     | O-ring                 | 1         | 1    |

# Common hardware; procure locally

## Group 21d: Pressure Regulating Valve

See Group 48

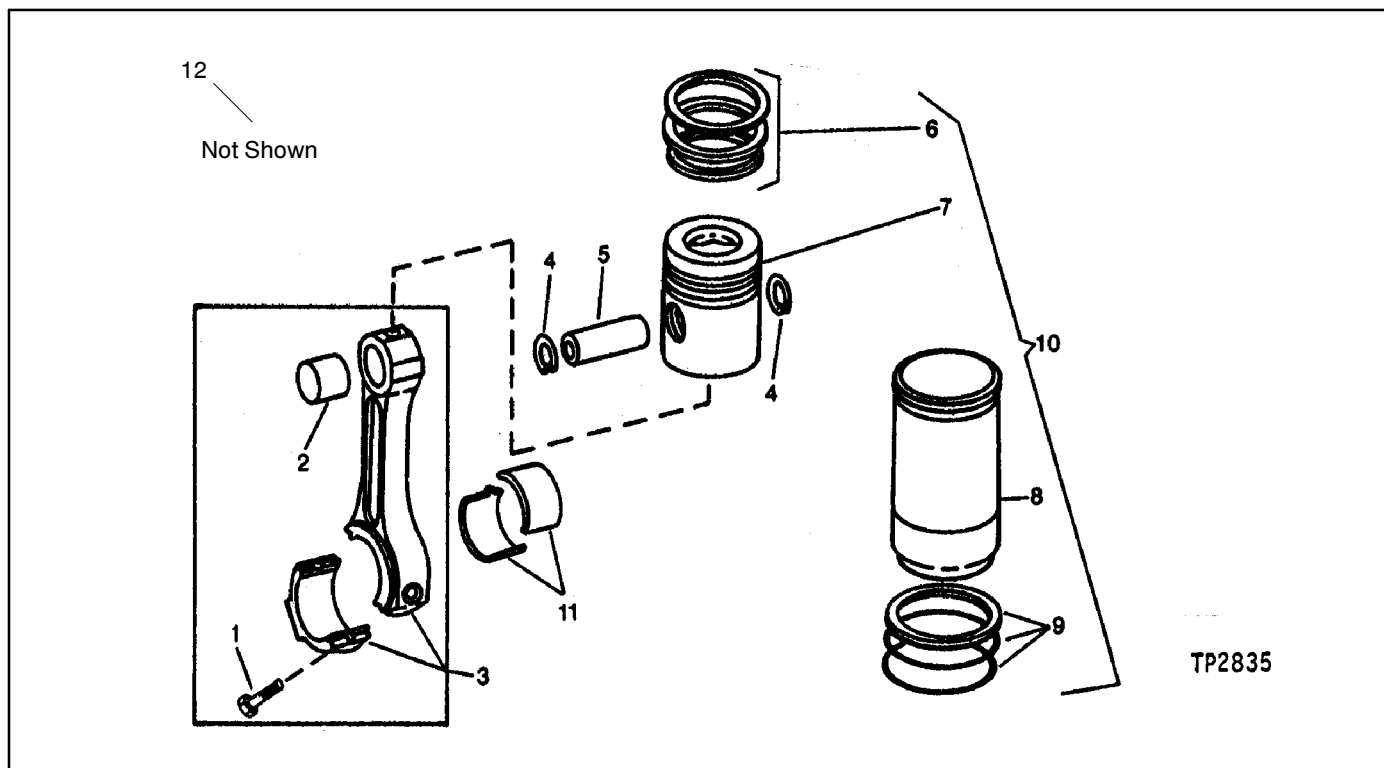


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TP28438 (was TP1016)

| Item | Part Number | Description   | Quantity  |      |
|------|-------------|---------------|-----------|------|
|      |             |               | Variation |      |
|      |             |               | 1         | 5001 |
| 1    | 224058      | Valve         | 1         | 1    |
| 2    | 224095      | Spring        | 1         | 1    |
| 3    | 223410      | Washer        | 1         | 1    |
| 4    | 223653      | Fitting, plug | 1         | 1    |
| 4    | 336454      | Fitting, plug |           | 1    |

## Group 22: Piston and Connecting Rod



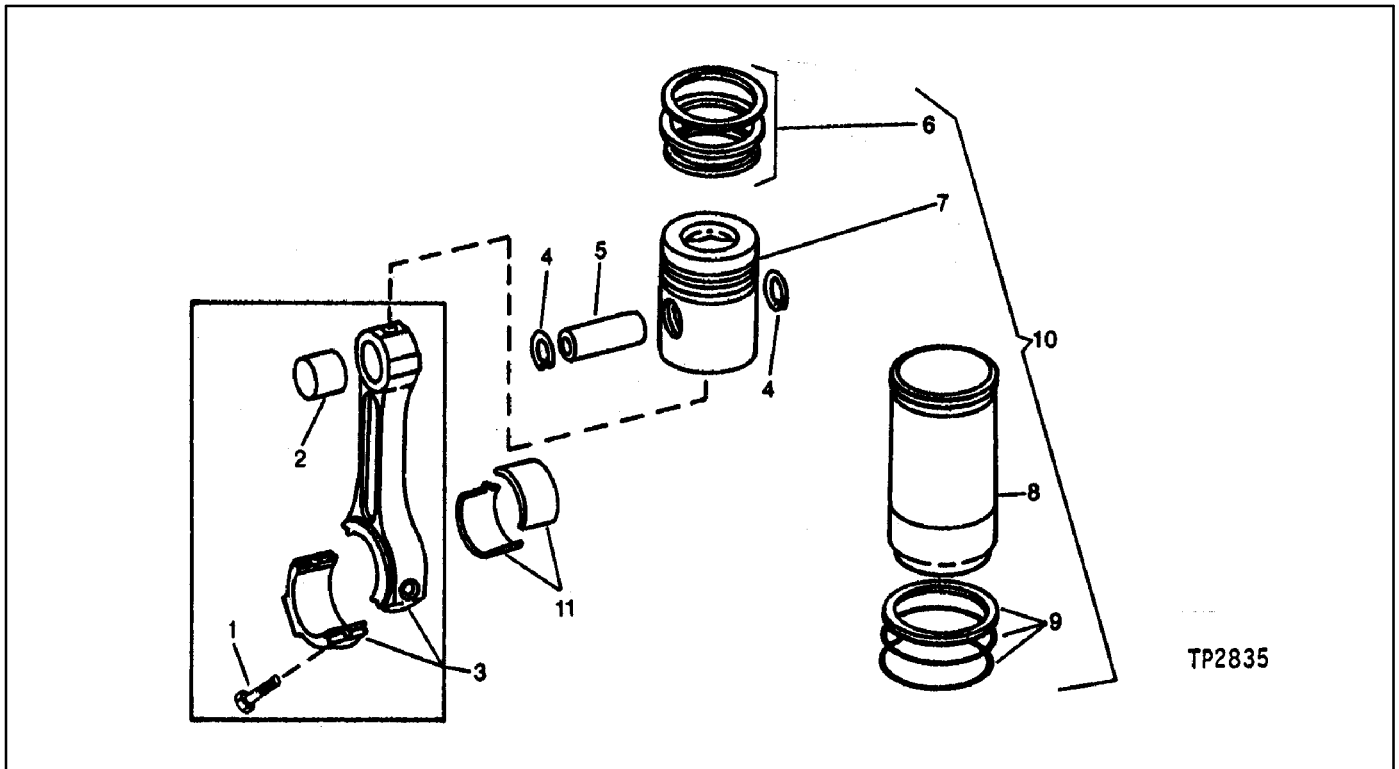
| Item | Part Number | Description                             | Quantity  |                 |                 |
|------|-------------|-----------------------------------------|-----------|-----------------|-----------------|
|      |             |                                         | Variation |                 |                 |
|      |             |                                         | 1         | 2               | 3               |
| 1    | 223528      | Screw                                   | 12        |                 |                 |
| 1    | 360081      | Screw                                   |           | 12              | 12              |
| 2    | 223499      | Bushing                                 | 6         |                 |                 |
| 2    | 360145      | Bushing                                 |           | 6               | 6               |
| 3    | 224245      | Rod, connecting                         | 6         |                 |                 |
| 3    | 360047      | Rod, connecting                         |           | 6               | 6               |
| 4    | 223479      | Ring, snap                              | 12        |                 |                 |
| 4    | 223452      | Ring, snap                              |           | 12              | 12              |
| 5    | 223488      | Pin, piston                             | 6         |                 |                 |
| 5    | 360114      | Pin, piston                             |           | <del>12</del> 6 | <del>12</del> 6 |
| 6    | 223565      | Kit, piston ring (set of 3)             | 6         |                 |                 |
| 6    | 360066      | Kit, ring                               |           | 6               | 6               |
| 7    | 223570      | Piston                                  | AR        |                 |                 |
| 7    | X           | Piston                                  |           | AR              | AR              |
| 8    | X           | Liner, cylinder                         | 6         | 6               | 6               |
| 9    | 223419      | Kit, O-ring                             | 6         | 6               | 6               |
| 10   | 223594      | Kit, piston and ring                    | AR        |                 |                 |
| 10   | 360059      | Kit, piston and ring                    |           | AR              |                 |
| 10   | 360060      | Kit, piston and ring                    |           |                 | AR              |
| 11   | 223423      | Bearing, standard (set of 2)            | 6         |                 |                 |
| 11   | 360053      | Bearing, standard (set of 2)            |           | 6               | 6               |
| 11   | 223425      | Bearing, 0.05 mm (0.002 in.), undersize | 6         |                 |                 |
| 11   | 223426      | Bearing, 0.25 mm (0.010 in.), undersize | 6         |                 |                 |
| 11   | 360054      | Bearing, 0.25 mm (0.010 in.), undersize |           | 6               |                 |
| 11   | 223427      | Bearing, 0.51 mm (0.020 in.), undersize | 6         |                 |                 |
| 11   | 223428      | Bearing, 0.76 mm (0.030 in.), undersize | 6         |                 |                 |
| 12   | 223415      | Lubricant (not shown)                   | 1         | 1               | 1               |

AR As required

X Not sold separately

**Note:** Order item 12 lubricant with item 8 cylinder liner.

## Group 22: Piston and Connecting Rod

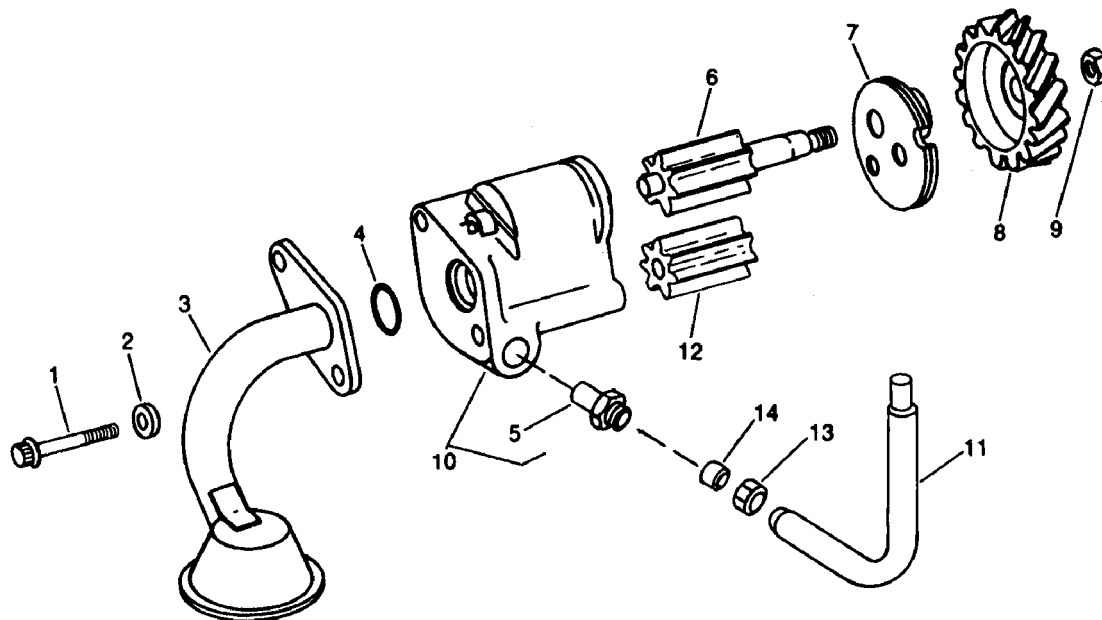


| Item | Part Number | Description               | Quantity       |
|------|-------------|---------------------------|----------------|
|      |             |                           | Variation 4810 |
| 1    | GM17477     | Screw                     | 12             |
| 2    | GM17446     | Bushing                   | 6              |
| 3    | GM17610     | Rod, connecting           | 6              |
| 4    | 223479      | Ring, snap                | 12             |
| 5    | GM17450     | Pin, piston               | 6              |
| 6    | GM17541     | Kit, ring                 | 6              |
| 9    | 223419      | Kit, O-ring               | 6              |
| 10   | 360060      | Kit, piston and ring      | 6              |
| 11   | 360053      | Bearing, standard         | 6              |
| 11   | 360054      | Bearing, .25 mm undersize | 6              |
| 12   | 223415      | Bearing, .25 mm undersize | 6              |

## Group 25: Oil Pump

Engine model TO6059

Engine model CD6059TF with serial numbers 158930 and below



TP21780

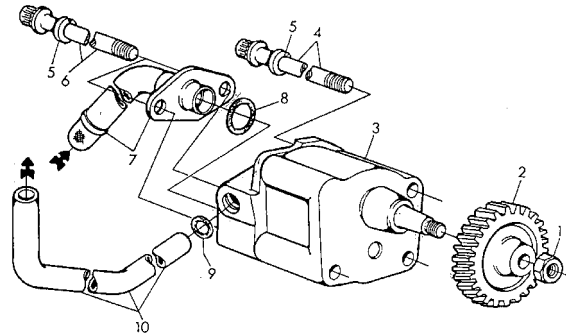
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| Item | Part Number | Description                        | Quantity Variation |   |
|------|-------------|------------------------------------|--------------------|---|
|      |             |                                    | 1                  | 2 |
| 1    | #           | Screw, cap (also order (2) 224159) | 2                  | 2 |
| 2    | 224159      | Washer                             | 2                  | 2 |
| 3    | 223993      | Intake, oil pump                   | 1                  |   |
| 3    | 336491      | Intake, oil pump                   |                    | 1 |
| 4    | 224035      | O-ring                             | 1                  | 1 |
| 5    | GM31601     | Adapter                            | 1                  | 1 |
| 6    | 223998      | Shaft                              | 1                  | 1 |
| 7    | GM31602     | Cover                              | 1                  | 1 |
| 8    | 223631      | Gear, 33 teeth                     | 1                  | 1 |
| 9    | #           | Nut, 1/2-13                        | 1                  | 1 |
| 10   | 224065      | Housing                            | 1                  | 1 |
| 11   | 224052      | Tube, oil                          | 1                  | 1 |
| 12   | 224037      | Gear, 7 teeth                      | 1                  | 1 |
| 13   | 224050      | Fitting                            | 1                  | 1 |
| 14   | 224051      | Sleeve                             | 1                  | 1 |

# Common hardware; procure locally

## Group 25: Oil Pump

Engine model CD6059 with serial numbers above 158930  
Engine model 6068



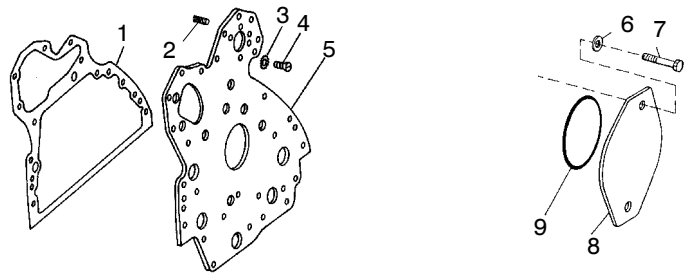
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| Item | Part Number | Description           | Quantity    |   |
|------|-------------|-----------------------|-------------|---|
|      |             |                       | Variation 2 | 3 |
| 1    | #           | Nut, 1/2-13           | 1           |   |
| 1    | #           | Nut, M12              |             | 1 |
| 2    | 223631      | Gear                  | 1           |   |
| 2    | 360100      | Gear, 30 teeth        |             | 1 |
| 3    | 336584      | Pump, oil             | 1           |   |
| 3    | 360028      | Pump, oil             |             | 1 |
| 4    | 224274      | Screw, cap            | 3           |   |
| 4    | #           | Screw, M8 x 65        |             | 2 |
| 5    | #           | Washer, lock, 3/8 in. | 1           |   |
| 6    | #           | Screw, cap, 99 mm     | 2           |   |
| 6    | #           | Screw, M8 x 100       |             | 2 |
| 7    | 336457      | Intake, oil pump      | 1           |   |
| 7    | 360024      | Intake, oil pump      |             | 1 |
| 8    | 224035      | O-ring                | 1           | 1 |
| 9    | 223511      | O-ring                | 1           |   |
| 9    | 336458      | O-ring                |             | 1 |
| 10   | 360104      | Tube                  | 1           | 1 |

| Item | Part Number | Description      | Quantity       |      |
|------|-------------|------------------|----------------|------|
|      |             |                  | Variation 1907 | 5001 |
| 1    | #           | Nut, M12         |                | 1    |
| 2    | 360524      | Gear, 30 teeth   |                | 1    |
| 3    | 360028      | Housing          |                | 1    |
| 4    | #           | Screw, M8 x 65   |                | 2    |
| 6    | #           | Screw, M8 x 100  | 2              | 2    |
| 7    | GM18872     | Intake, oil pump | 1              |      |
| 7    | GM24541     | Intake, oil pump | 1              |      |
| 8    | 224035      | O-ring           | 1              | 1    |
| 9    | 336458      | O-ring           |                | 1    |
| 10   | 360104      | Tube             |                | 1    |

## Group 29: Front Plate

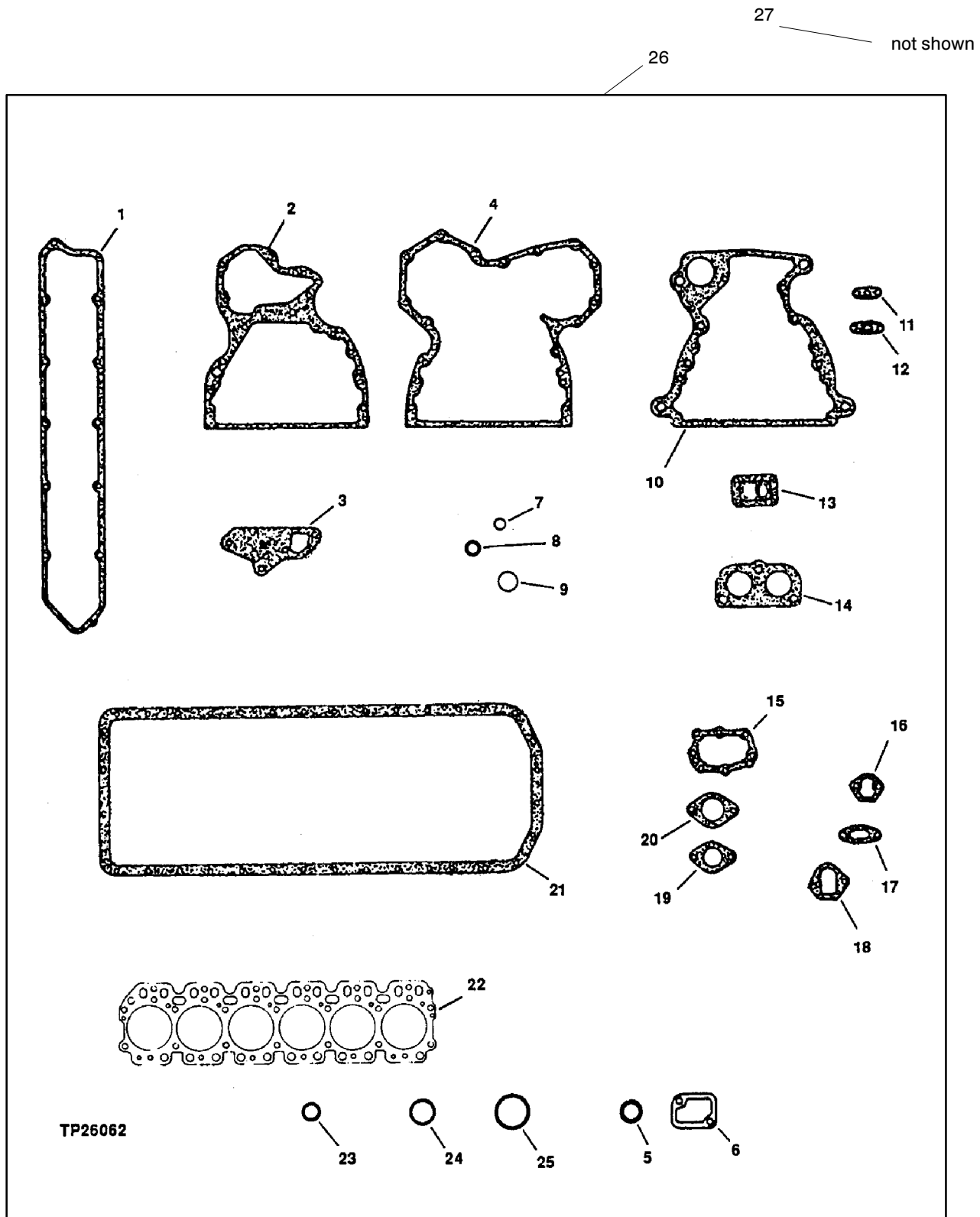
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| Item | Part Number | Description                         | Quantity    |             |      |
|------|-------------|-------------------------------------|-------------|-------------|------|
|      |             |                                     | Variation 1 | Variation 2 | 3601 |
| 1    | 223548      | Gasket                              | 1           |             |      |
| 1    | GM23829     | Plate, front                        |             |             | 1    |
| 2    | 223442      | Screw, set, 0.438 in. diameter      | 8           |             |      |
| 2    | 223445      | Screw, set, 0.375 in. diameter      | 2           |             |      |
| 2    | 360092      | Stud                                |             | 3           | 3    |
| 3    | #           | Washer, lock, 3/8 in. est. tooth    | 5           |             |      |
| 4    | 360516      | Screw                               |             |             | 4    |
| 4    | #           | Screw                               | 5           |             |      |
| 4    | #           | Screw                               |             | 6           | 6    |
| 5    | 223566      | Plate (also order item 2 set screw) | 1           |             |      |
| 5    | 360110      | Plate                               |             | 1           | 1    |
| 6    | #           | Washer, 13 mm x 24 mm x 2.54 mm     |             | 2           | 2    |
| 7    | #           | Screw, M12 x 35                     |             | 2           | 2    |
| 8    | 360129      | Cover                               |             | 1           | 1    |
| 9    | 360172      | O-ring                              |             | 1           | 1    |

# Common hardware; procure locally

# Group 39a: Overhaul Gasket Set



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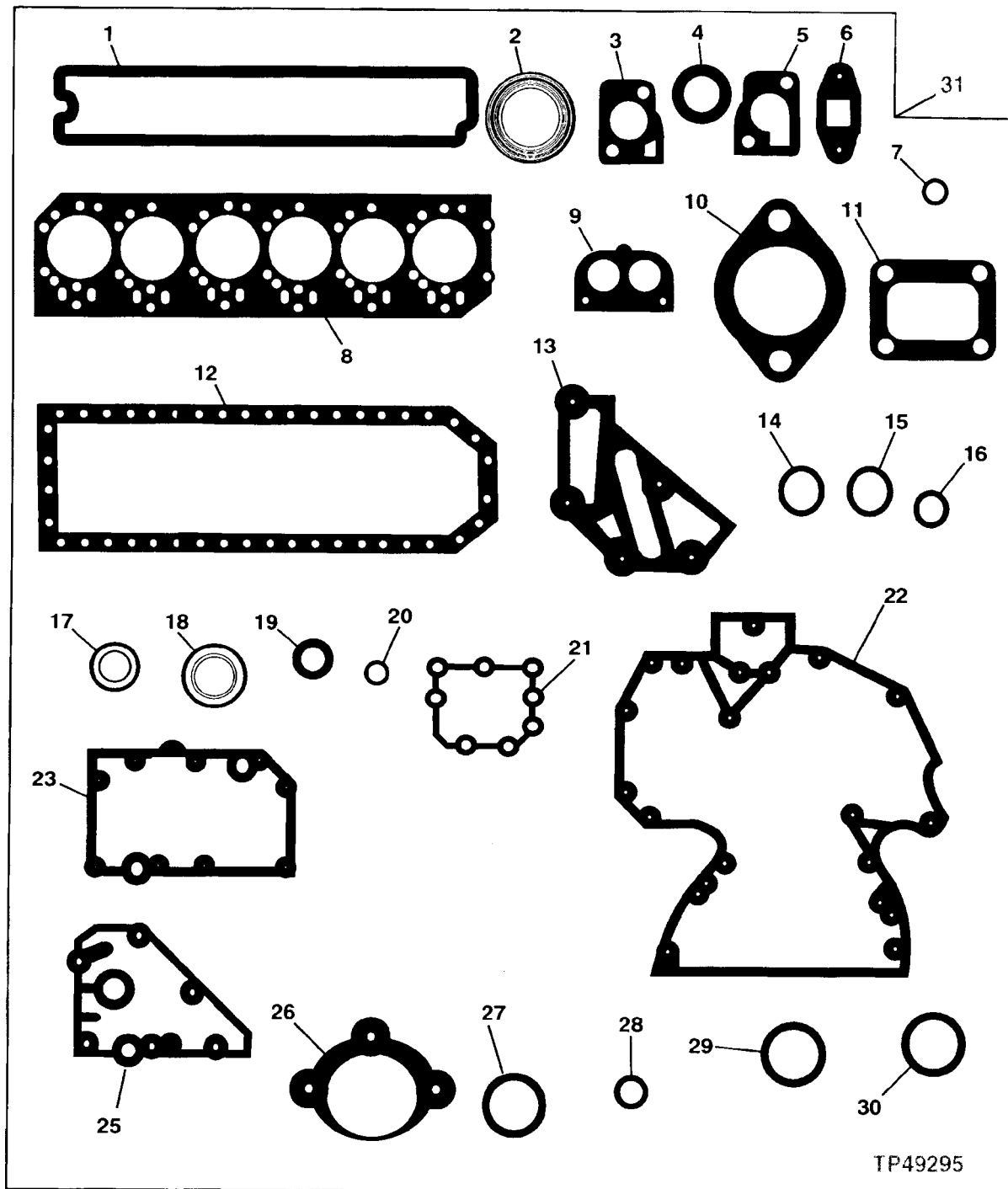
## Group 39a: Overhaul Gasket Set

| Item | Part Number | Description                                 | Quantity    |
|------|-------------|---------------------------------------------|-------------|
|      |             |                                             | Variation 1 |
| 1    | 224150      | Gasket, rocker arm cover                    | 1           |
| 2    | 223548      | Gasket, cylinder block plate                | 1           |
| 3    | 223628      | Gasket, water pump                          | 1           |
| 4    | 223620      | Gasket, timing gear cover                   | 1           |
| 5    | 224035      | O-ring, oil pump intake to oil pump housing | 1           |
| 6    | 224020      | Gasket, thermostat housing water outlet     | 1           |
| 7    | X           | O-ring, oil pump inlet tube                 | 1           |
| 7    | X           | O-ring, oil pump outlet tube                | 1           |
| 8    | 223491      | O-ring, vent tube                           | 1           |
| 9    | 223636      | Gasket, oil filler cap                      | 1           |
| 10   | 223558      | Gasket, flywheel housing                    | 1           |
| 11   | X           | Gasket, turbocharger oil inlet              | 1           |
| 12   | 224239      | Gasket, turbocharger oil outlet             | 1           |
| 13   | 223898      | Gasket, turbocharger                        | 1           |
| 14   | 224012      | Gasket, thermostat cover                    | 1           |
| 15   | X           | Gasket, timing gear opening cover           | 1           |
| 16   | 223557      | Gasket, fuel pump                           | 1           |
| 17   | 223559      | Gasket, oil filter inlet                    | 1           |
| 18   | 223515      | Gasket, injection pump cover                | 1           |
| 19   | 223547      | Gasket, exhaust manifold                    | 6           |
| 20   | 223532      | Gasket, air inlet                           | 2           |
| 21   | 224189      | Gasket, oil pan                             | 1           |
| 22   | 224178      | Gasket, cylinder head                       | 1           |
| 23   | X           | O-ring, valve stem                          | 12          |
| 24   | 224028      | O-ring, thermostat bypass tube              | 1           |
| 24   | 224028      | O-ring, water pump bypass tube              | 1           |
| 25   | 223506      | Washer, oil cooler                          | 1           |
| 26   | 224167      | Kit, gasket                                 | 1           |
| 27   | 223419      | Kit, cylinder liner packing (not shown)     | 6           |

X Not sold separately

**Note:** For a complete set of gaskets, order items 26 and 27

## Group 39a: Overhaul Gasket Set, continued

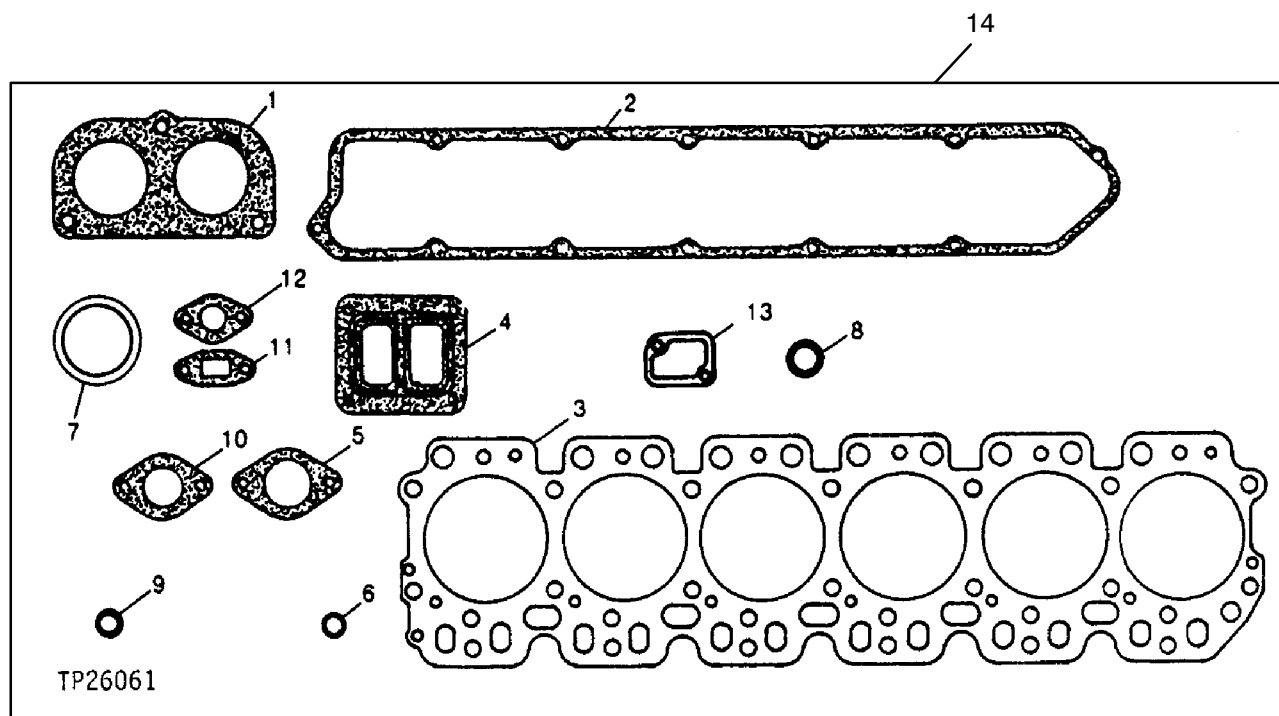


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## Group 39a: Overhaul Gasket Set, continued

| Item | Part Number | Description                                                                                                        | Quantity  |   |      |
|------|-------------|--------------------------------------------------------------------------------------------------------------------|-----------|---|------|
|      |             |                                                                                                                    | Variation |   |      |
|      |             |                                                                                                                    | 2         | 3 | 9901 |
| 1    | 360134      | Gasket, rocker arm cover                                                                                           | 1         | 1 | 1    |
| 2    | 223547      | Gasket, exhaust manifold                                                                                           | 6         | 6 | 6    |
| 3    | 360106      | Gasket, thermostat cover                                                                                           | 1         | 1 | 1    |
| 3    | 360484      | Gasket, thermostat cover                                                                                           |           |   | 1    |
| 4    | 360116      | Gasket, water bypass tube                                                                                          | 2         | 2 | 2    |
| 5    | 360122      | Gasket, thermostat housing                                                                                         | 1         | 1 | 1    |
| 6    | 360136      | Gasket, turbocharger oil outlet tube                                                                               | 1         | 1 | 1    |
| 7    | 360139      | Gasket, rocker arm cover stud                                                                                      | 4         | 4 | 4    |
| 8    | 360094      | Gasket, cylinder head                                                                                              | 1         | 1 | 1    |
| 9    | 224012      | Gasket, thermostat cover                                                                                           | 1         | 1 | 1    |
| 10   | 223532      | Gasket, air inlet                                                                                                  | 1         | 1 | 1    |
| 11   | 360137      | Gasket, turbocharger to exhaust manifold                                                                           | 1         | 1 | 1    |
| 12   | 360123      | Gasket, engine oil pan                                                                                             | 1         | 1 | 1    |
| 13   | 360131      | Gasket, coolant passage adapter                                                                                    | 1         | 1 |      |
| 13   | GM17479     | Gasket                                                                                                             |           |   | 1    |
| 14   | 223512      | O-ring, oil pump tube connector                                                                                    | 1         | 1 | 1    |
| 15   | 336458      | O-ring, oil pump outlet tube to cover                                                                              | 1         | 1 | 1    |
| 16   | 224035      | O-ring, oil pump intake tube                                                                                       | 1         | 1 | 1    |
| 17   | 223410      | Washer, oil pressure regulator plug                                                                                | 1         | 1 | 1    |
| 18   | 223583      | Seal, rear oil                                                                                                     | 1         | 1 | 1    |
| 19   | 360181      | Kit, front oil seal                                                                                                | 1         | 1 | 1    |
| 20   | 360119      | O-ring, fuel transfer pump                                                                                         | 1         | 1 | 1    |
| 21   | 360124      | Gasket, water pump                                                                                                 | 1         | 1 | 1    |
| 22   | 360125      | Gasket, timing gear cover                                                                                          | 1         | 1 | 1    |
| 22   | GM17467     | Gasket                                                                                                             |           |   | 1    |
| 23   | 360130      | Gasket, oil cooler housing                                                                                         | 1         | 1 | 1    |
| 25   | 360133      | Gasket, oil filter header                                                                                          | 1         | 1 | 1    |
| 25   | GM17472     | Gasket                                                                                                             |           |   | 1    |
| 26   | 223791      | Gasket, starting motor                                                                                             | 1         | 1 | 1    |
| 27   | 223851      | O-ring, remote oil filter tubes                                                                                    | 1         | 1 | 4    |
| 28   | 224172      | O-ring, water pump inlet                                                                                           | 1         | 1 | 1    |
| 29   | 360164      | O-ring, connector tube to timing gear cover                                                                        | 1         | 1 | 2    |
| 30   | 360170      | O-ring, oil cooler to housing                                                                                      | 1         | 1 | 2    |
| —    | GM17466     | Gasket                                                                                                             |           |   | 2    |
| 31   | 360064      | Kit, gasket (includes items 1–29 and connecting rod bearings, engine main bearings, and piston-cylinder liner kit) | 1         |   |      |
| 31   | 360065      | Kit, gasket (includes items 1–29 and connecting rod bearings, engine main bearings, and piston-cylinder liner kit) |           | 1 |      |
| 31   | GM24544     | Kit, engine overhaul gasket                                                                                        |           |   | 1    |

## Group 39b: Cylinder Head Gasket Set

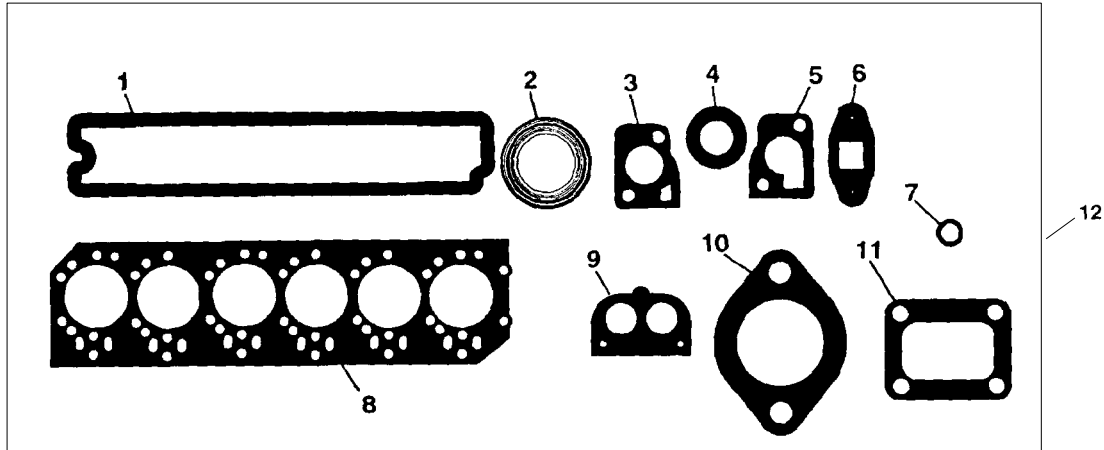


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| Item | Part Number | Description                             | Quantity    |
|------|-------------|-----------------------------------------|-------------|
|      |             |                                         | Variation 1 |
| 1    | 224012      | Gasket, thermostat cover                | 1           |
| 2    | 224150      | Gasket, rocker arm cover                | 1           |
| 3    | 224178      | Gasket, cylinder head                   | 1           |
| 4    | 223898      | Gasket, turbocharger                    | 1           |
| 5    | 223532      | Gasket, air inlet                       | 2           |
| 6    | 224028      | O-ring, water bypass tube               | 2           |
| 7    | X           | O-ring                                  | 1           |
| 8    | X           | O-ring, valve stem                      | 12          |
| 9    | 223491      | O-ring, vent tube                       | 1           |
| 10   | 223547      | Gasket, exhaust manifold                | 6           |
| 11   | 224239      | Gasket, turbocharger oil outlet         | 1           |
| 12   | X           | Gasket, turbocharger oil inlet          | 1           |
| 13   | 224020      | Gasket, thermostat housing water outlet | 1           |
| 14   | 224179      | Kit, gasket                             | 1           |

X Not sold separately

## Group 39b: Cylinder Head Gasket Set



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| Item | Part Number | Description                              | Quantity Variation |      |
|------|-------------|------------------------------------------|--------------------|------|
|      |             |                                          | 2                  | 9901 |
| 1    | 360134      | Gasket, rocker arm cover                 | 1                  | 1    |
| 2    | 223547      | Gasket, exhaust manifold                 | 6                  | 4    |
| 3    | 360106      | Gasket, thermostat cover                 | 1                  | 1    |
| 3    | 360484      | Gasket, thermostat cover                 |                    | 1    |
| 4    | 360116      | Gasket, water bypass tube                | 2                  | 2    |
| 5    | 360122      | Gasket, thermostat housing               | 1                  | 1    |
| 6    | 360136      | Gasket, turbocharger oil outlet tube     | 1                  | 1    |
| 7    | 360139      | Gasket, rocker arm cover stud            | 4                  | 4    |
| 8    | 360094      | Gasket, cylinder head                    | 1                  | 1    |
| 9    | 224012      | Gasket, thermostat cover                 | 1                  | 1    |
| 10   | 223532      | Gasket, air inlet                        | 1                  | 1    |
| 11   | 360137      | Gasket, turbocharger to exhaust manifold | 1                  | 1    |
| 12   | 360063      | Gasket set, cylinder head                | 1                  | 1    |

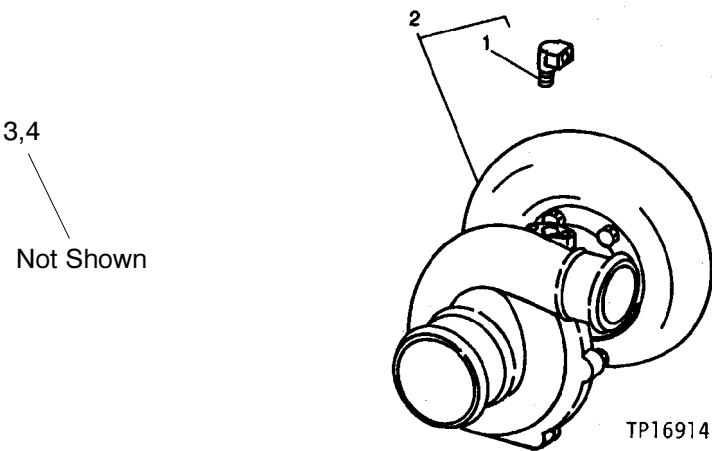
## Group 42: Short Block

| Item | Part Number | Description           | Quantity Variation |   |   |      |
|------|-------------|-----------------------|--------------------|---|---|------|
|      |             |                       | 1                  | 2 | 3 | 9901 |
| 1    | 224082      | Block assembly, short | 1                  |   |   |      |
| 1    | 360057      | Block assembly, short |                    | 1 |   |      |
| 1    | 360058      | Block assembly, short |                    |   | 1 | 1    |

**Note:** Also order Overhaul Gasket Kit (Group 39a) and Crankshaft Seal (Group 8a).

# Group 50a: Turbocharger

Engine model TO6059  
Engine model CD6059TF with serial numbers 190482 and below

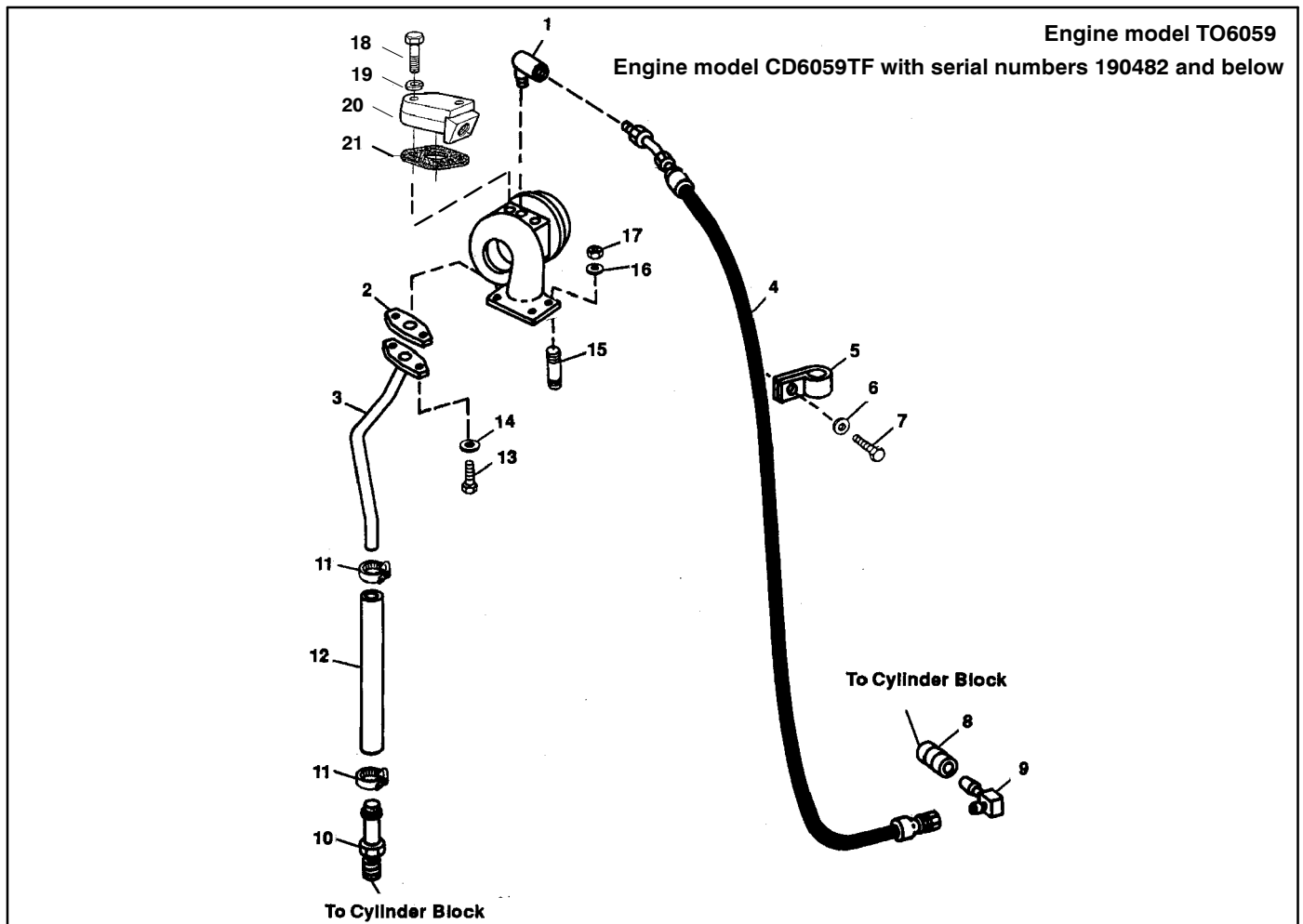


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| Item | Part Number | Description           | Quantity  |   |   |
|------|-------------|-----------------------|-----------|---|---|
|      |             |                       | Variation |   |   |
|      |             |                       | 1         | 2 | 3 |
| 1    | 223602      | Fitting, elbow        | 1         | 1 |   |
| 1    | 360006      | Adapter               |           |   | 1 |
| 1    | 360165      | O-ring (not shown)    |           |   | 1 |
| 2    | 224084      | Turbocharger          | 1         |   |   |
| 2    | 336497      | Turbocharger          |           | 1 |   |
| 2    | 360044      | Turbocharger          |           |   | 1 |
| 3    | X           | Housing, center       | 1         | 1 | 1 |
| 4    | X           | Kit, screw and washer | 1         | 1 | 1 |

X Not sold separately

# Group 50b: Turbocharger Oil Lines



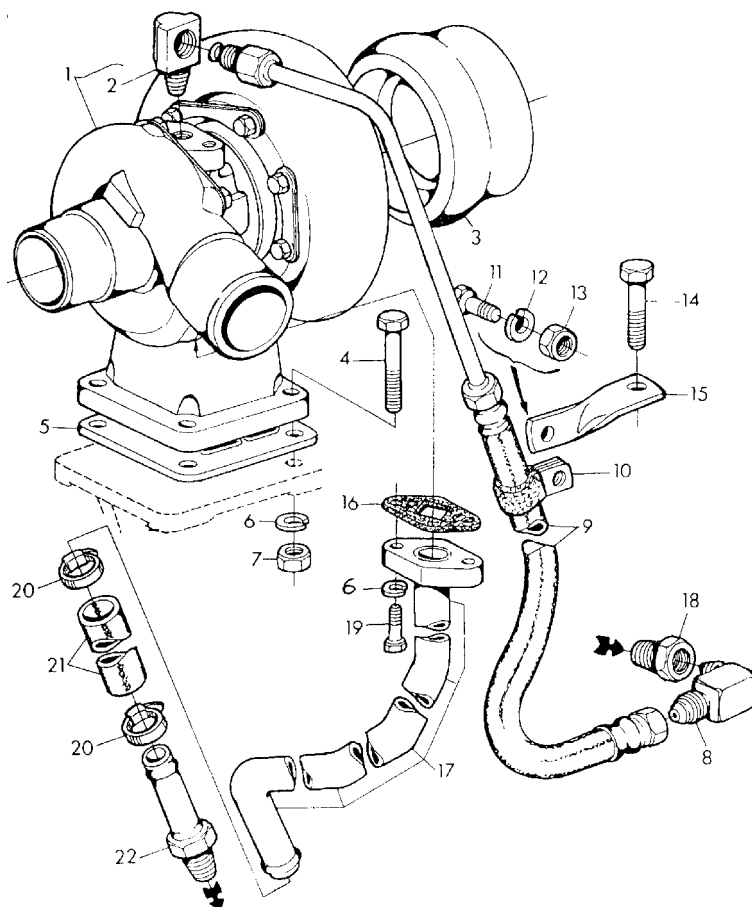
| Item | Part Number | Description                      | Quantity  |   |
|------|-------------|----------------------------------|-----------|---|
|      |             |                                  | Variation |   |
| 1    |             |                                  | 1         | 2 |
| 1    | 223602      | Fitting, elbow                   | 1         | 1 |
| 2    | 224239      | Gasket                           | 1         |   |
| 2    | 336503      | Gasket                           |           | 1 |
| 3    | 224195      | Line, oil                        | 1         |   |
| 3    | 336502      | Line, oil                        |           | 1 |
| 4    | 224173      | Hose                             | 1         |   |
| 4    | 336498      | Hose                             |           | 1 |
| 5    | X           | Clamp                            | 1         | 1 |
| 6    | #           | Washer, 13/32 x 11/16 x 0.06 in. | 1         | 1 |
| 7    | #           | Screw, 3/8-16 x 1 1/8 in.        | 1         | 1 |
| 8    | 223405      | Adapter, 3/8 NPT                 | 1         |   |
| 8    | 336469      | Fitting, tee, 1/8-27 NPT         |           | 1 |
| 9    | 223412      | Fitting, elbow                   | 1         |   |
| 9    | 223457      | Connector, 1/8-27 NPT x 1/2-20   |           | 1 |
| 10   | 223461      | Fitting, hose                    | 1         |   |
| 10   | 336504      | Adapter                          |           | 1 |
| 11   | #           | Clamp                            | 2         | 2 |
| 12   | 223531      | Hose; cut to length              | 1         | 1 |
| 13   | #           | Screw, 3/8-16 x 7/8 in.          | 2         | 2 |
| 14   | #           | Washer, lock, 3/8 in.            | 2         | 2 |
| 15   | #           | Stud, 3/8-16                     | 4         | 4 |
| 16   | #           | Washer, 13/32 x 13/16 x 1/16 in. | 4         | 4 |
| 17   | #           | Nut, 3/8-16                      | 4         | 4 |
| 18   | #           | Screw, cap, 5/16 x 2 in.         |           | 2 |
| 19   | #           | Washer, lock, 5/16 in.           |           | 3 |
| 20   | 336500      | Adapter, oil line                |           | 1 |
| 21   | 336501      | Gasket                           |           | 1 |

# Common hardware; procure locally

X Not sold separately

## Group 50b: Turbocharger Oil Lines, continued

Engine model CD6059TF with serial numbers 190483 and above  
Engine model 6068



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## Group 50b: Turbocharger Oil Lines, continued

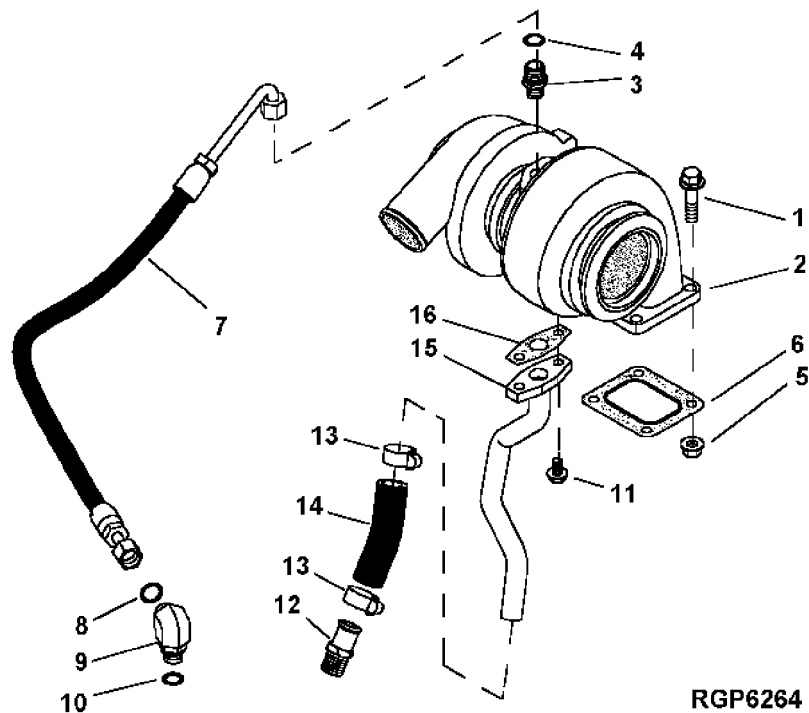
| Item | Part Number | Description                     | Quantity  |   |
|------|-------------|---------------------------------|-----------|---|
|      |             |                                 | Variation |   |
|      |             |                                 | 2         | 3 |
| 1    | 336497      | Kit, turbocharger               | 1         |   |
| 1    | 360044      | Turbocharger                    |           | 1 |
| 2    | 223602      | Fitting, elbow, 1/4-18 NPT      | 1         |   |
| 2    | 360006      | Adapter                         |           | 1 |
| 3    | X           | Adapter                         | 1         |   |
| 4    | #           | Screw, cap, 3/8 in. x 1 1/8 in. | 4         |   |
| 4    | #           | Screw, M10 x 40                 |           | 4 |
| 5    | 223483      | Gasket                          | 1         |   |
| 5    | 360137      | Gasket                          |           | 1 |
| 6    | #           | Washer, lock, 3/8 in.           | 6         |   |
| 7    | #           | Nut, 3/8 in.                    | 4         |   |
| 7    | #           | Nut, M10                        |           | 4 |
| 8    | 223412      | Fitting, 3/8-18 NPT x 9/16-18   | 1         |   |
| 8    | #           | Fitting, elbow                  |           | 1 |
| 8    | #           | O-ring, 0.364 in. x 0.070 in.   |           | 1 |
| 8    | #           | O-ring, 13.3 mm x 2.2 mm        |           | 1 |
| 9    | 336594      | Hose                            | 1         |   |
| 9    | 360025      | Line, oil                       |           | 1 |
| 10   | #           | Clamp                           | 1         |   |
| 11   | #           | Screw, cap, 5/16 in. x 5/8 in.  | 1         |   |
| 12   | #           | Washer, lock, 8.1 mm            | 1         |   |
| 13   | #           | Nut, 5/16 in.                   | 1         |   |
| 14   | #           | Screw, cap, 3/8 in. x 3/4 in.   | 1         |   |
| 15   | #           | Strap                           | 1         |   |
| 16   | 223556      | Gasket                          | 1         |   |
| 16   | 360136      | Gasket                          |           | 1 |
| 17   | 336595      | Line, oil                       | 1         |   |
| 17   | 360026      | Line, oil                       |           | 1 |
| 18   | 223405      | Adapter                         | 1         |   |
| 19   | #           | Screw, cap                      | 2         |   |
| 19   | #           | Screw, M8 x 20                  |           | 2 |
| 20   | 336475      | Clamp                           | 2         |   |
| 20   | 360062      | Clamp                           |           | 2 |
| 21   | 336596      | Hose                            | 1         |   |
| 21   | 360097      | Hose                            |           | 1 |
| 22   | 336504      | Fitting                         | 1         |   |
| 22   | 360102      | Fitting                         |           | 1 |

# Common hardware; procure locally

X Not sold separately

## Group 50b: Turbocharger Oil Lines, continued

Engine model 6068

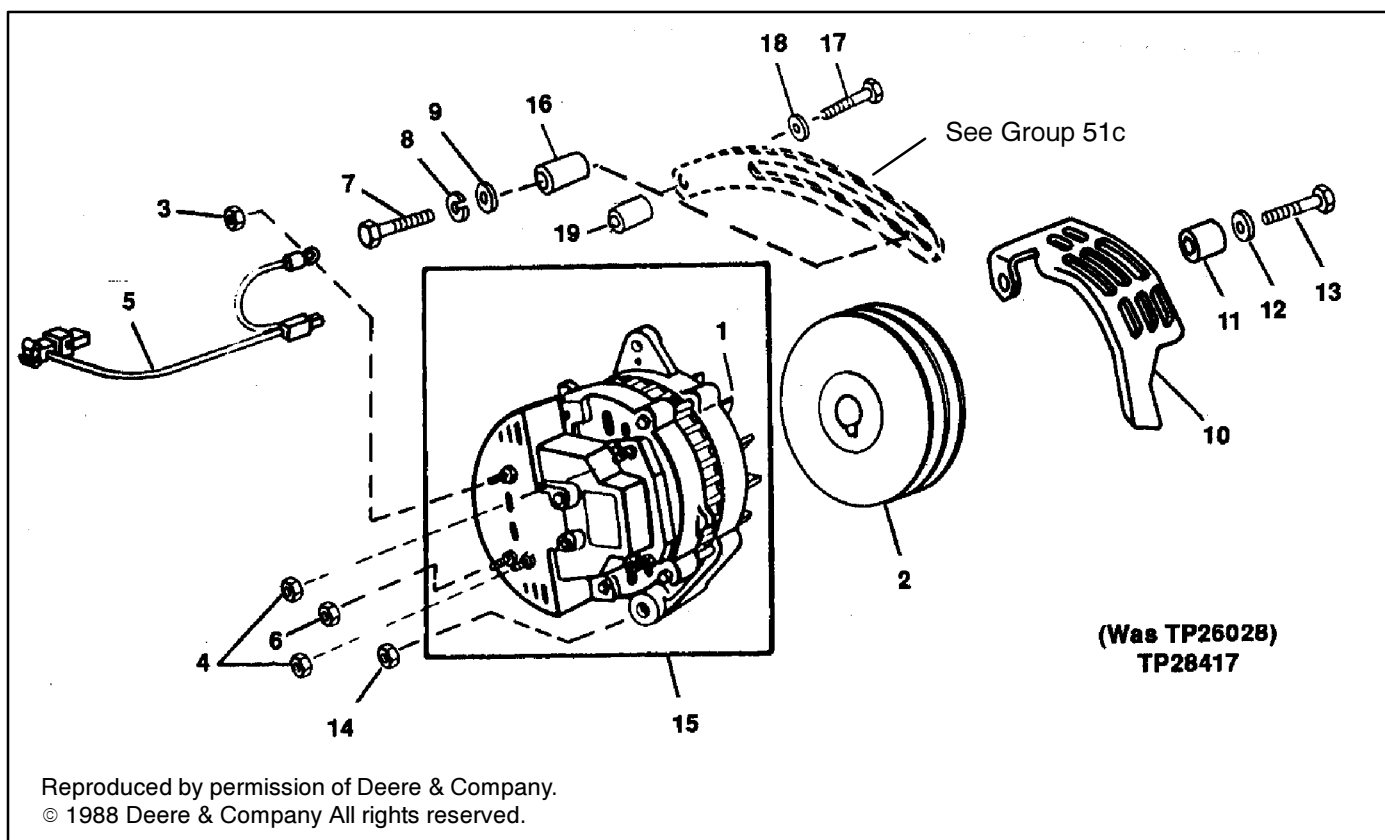


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| Item | Part Number | Description                       | Quantity  |      |      |      |
|------|-------------|-----------------------------------|-----------|------|------|------|
|      |             |                                   | Variation |      |      |      |
|      |             |                                   | 6594      | 6595 | 65AC | 65AG |
| 1    | #           | Screw, cap, M10 x 40              | 4         | 4    | 4    | 4    |
| 2    | GM24546     | Turbocharger                      | 1         | 1    |      |      |
| 2    | GM24545     | Turbocharger                      |           |      | 1    |      |
| 2    | GM24547     | Turbocharger                      |           |      |      | 1    |
| 3    | 360006      | Adapter                           | 1         | 1    | 1    | 1    |
| 4    | 360165      | O-ring                            | 1         | 1    | 1    | 1    |
| 5    | #           | Nut, flange, M10                  | 4         | 4    | 4    | 4    |
| 6    | 360137      | Gasket, turbo to exhaust manifold | 1         | 1    | 1    | 1    |
| 7    | GM23842     | Oil line                          |           |      | 1    |      |
| 7    | GM24549     | Hose, hydraulic                   | 1         | 1    |      | 1    |
| 8    | 360555      | O-ring                            | 1         | 1    | 1    | 1    |
| 9    | 360556      | Fitting, elbow, 45 deg.           | 1         | 1    | 1    | 1    |
| 10   | 360557      | O-ring                            | 2         | 2    | 2    | 2    |
| 11   | #           | Screw, M8 x 20                    | 2         | 2    | 2    | 2    |
| 12   | GM21492     | Fitting, hose                     | 1         | 1    | 1    | 1    |
| 13   | 360062      | Clamp                             | 2         | 2    | 2    | 2    |
| 14   | 224055      | Hose                              | 1         | 1    | 1    | 1    |
| 15   | 360025      | Oil line                          | 1         | 1    | 1    | 1    |
| 16   | 360136      | Gasket, turbo oil outlet tube     | 1         | 1    | 1    | 1    |

# Common hardware; procure locally

## Group 51a: Alternator



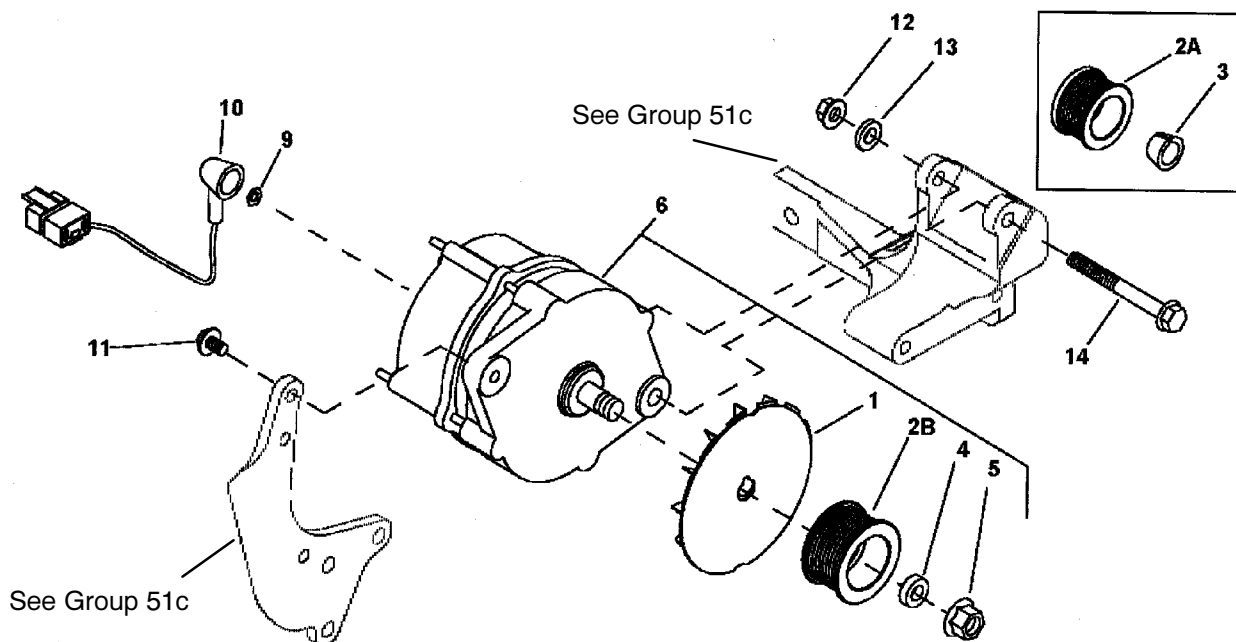
| Item | Part Number | Description                      | Quantity Variation |   |   |
|------|-------------|----------------------------------|--------------------|---|---|
|      |             |                                  | 1                  | 2 | 3 |
| 1    | X           | Fan                              | 1                  | 1 | 1 |
| 2    | 224258      | Sheave (pulley)                  | 1                  |   |   |
| 2    | 360168      | Sheave (pulley)                  |                    | 1 | 1 |
| 3    | #           | Nut, lock, M6                    | 1                  |   |   |
| 4    | #           | Nut, M5                          | 2                  |   |   |
| 5    | 224235      | Harness, wiring                  | 1                  |   |   |
| 5    | 360046      | Harness, wiring                  |                    | 1 | 1 |
| 6    | #           | Nut, M5                          | 1                  |   |   |
| 7    | #           | Screw, cap, M8 x 25              | 1                  |   |   |
| 7    | #           | Screw, M8 x 50                   | 1                  |   |   |
| 8    | #           | Washer, lock, 5/16 in.           | 1                  |   |   |
| 9    | #           | Washer, 11/32 x 1 x 0.194 in.    | 1                  |   |   |
| 10   | 223485      | Shield                           | 1                  |   |   |
| 11   | #           | Spacer, 0.423 x 0.675 x 1 in.    | 1                  |   |   |
| 11   | 360169      | Bushing                          |                    | 1 | 1 |
| 12   | #           | Washer, M10                      | 1                  |   |   |
| 12   | 224331      | Washer                           |                    | 1 | 1 |
| 13   | #           | Screw, cap, M10 x 75             | 1                  |   |   |
| 13   | #           | Nut, M16                         |                    | 1 | 1 |
| 14   | #           | Nut, M10                         | 1                  |   |   |
| 15   | 224244      | Alternator, 12 volt              | 1                  |   |   |
| 15   | 336915      | Alternator, 24 volt              | 1                  |   |   |
| 15   | 360001      | Alternator, 12 volt              |                    | 1 |   |
| 15   | 360002      | Alternator, 24 volt              |                    |   | 1 |
| 16   | #           | Spacer, 0.493 x 0.675 x 7/16 in. | 1                  |   |   |
| 17   | #           | Screw, 3/8-16 x 3 1/4 in.        | 1                  |   |   |
| 18   | #           | Washer, 0.343 x 0.75 x 5/64 in.  | 1                  |   |   |
| 19   | #           | Spacer, 3/8 x 1 7/16             | 1                  |   |   |

# Common hardware; procure locally

NA Not available

X Not sold separately

## Group 51a: Alternator, continued

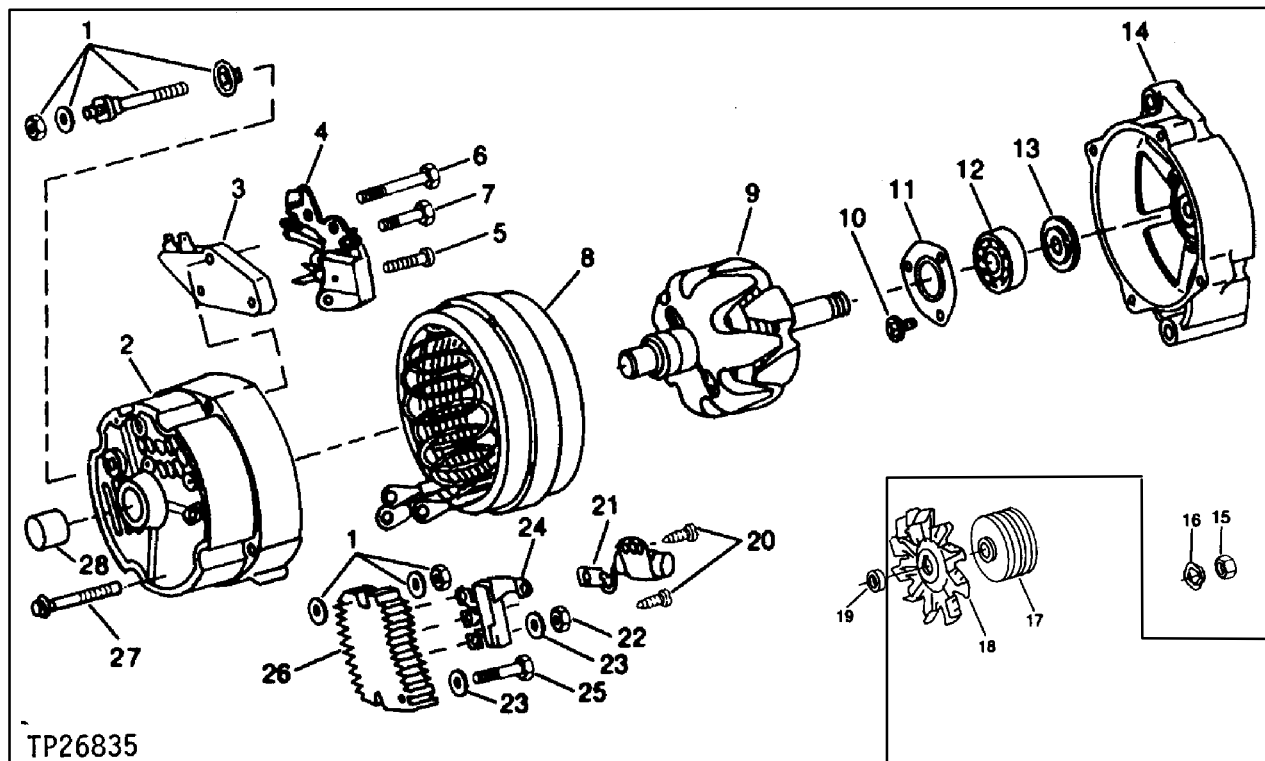


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| Item | Part Number | Description        | Quantity  |      |
|------|-------------|--------------------|-----------|------|
|      |             |                    | Variation |      |
|      |             |                    | 3104      | 3122 |
| 1    | 360588      | Fan                | 1         |      |
| 2A   | 360168      | Pulley, alternator | 1         |      |
| 2B   | GM17485     | Pulley, alternator | 1         |      |
| 3    | 360169      | Bushing            | 1         |      |
| 4    | GM18719     | Washer             | 1         |      |
| 5    | #           | Nut, flange, M10   | 1         |      |
| 6    | GM17440     | Alternator, 24 V   | 1         |      |
| 6    | GM23850     | Alternator         |           | 1    |
| 9    | #           | Nut, M5            | 1         | 1    |
| 10   | GM17528     | Connector          | 1         |      |
| 10   | GM21518     | Harness, wiring    |           | 1    |
| 11   | #           | Screw, M8 x 25     | 1         | 1    |
| 11   | 360166      | Washer (not shown) |           | 1    |
| 12   | #           | Nut, flange, M10   | 1         | 1    |
| 13   | 360166      | Washer             | 1         | 1    |
| 14   | #           | Screw, M10 x 100   | 1         | 1    |

# Common hardware; procure locally

## Group 51b: Alternator Components



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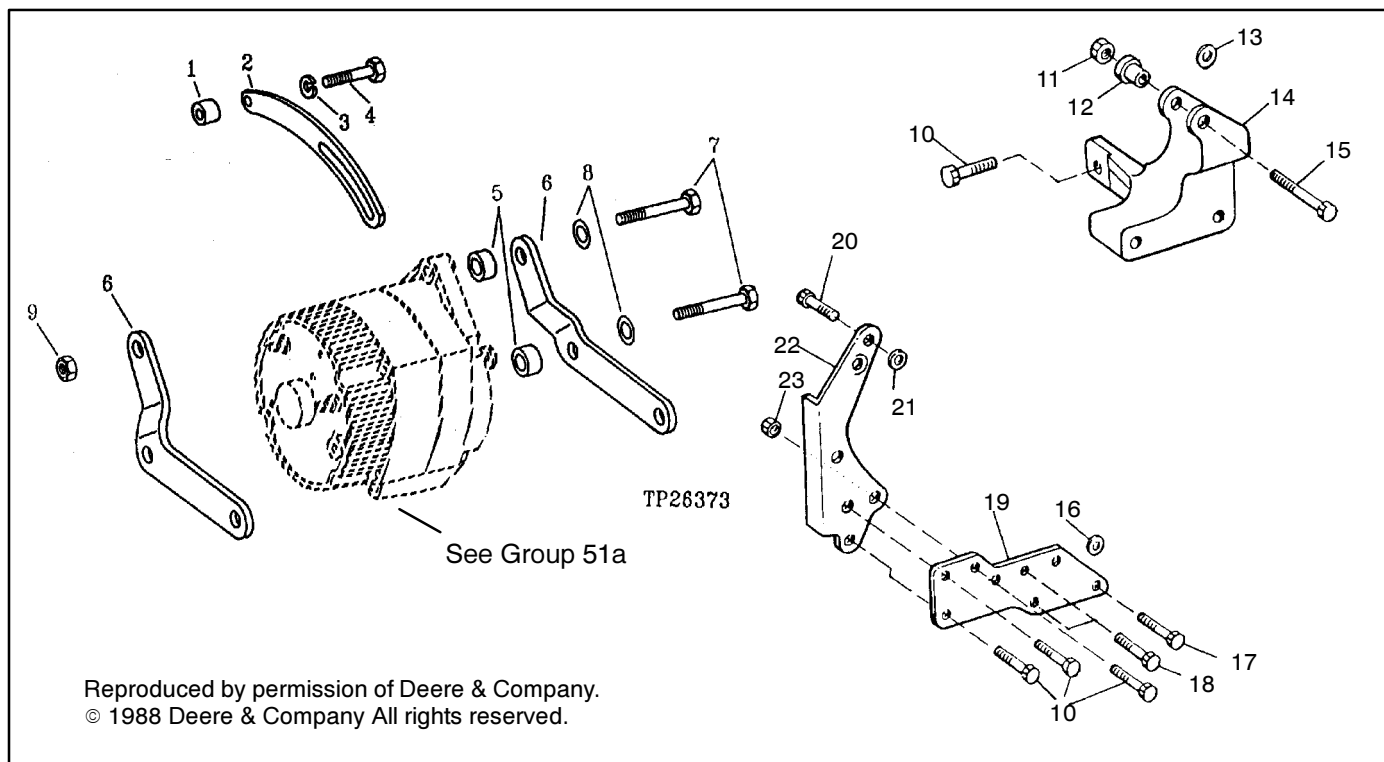
29

| Item | Part Number | Description                 | Quantity  |   |   |
|------|-------------|-----------------------------|-----------|---|---|
|      |             |                             | Variation |   |   |
|      |             |                             | 1         | 2 | 3 |
| 1    | X           | Terminal                    | 1         | 1 | 1 |
| 2    | X           | Housing                     | 1         | 1 | 1 |
| 3    | X           | Regulator, voltage          | 1         | 1 | 1 |
| 4    | X           | Holder, carbon brush        | 1         | 1 | 1 |
| 5    | X           | Screw                       | 1         | 1 | 1 |
| 6    | X           | Screw                       | 1         | 1 | 1 |
| 7    | X           | Screw                       | 2         | 2 | 2 |
| 8    | X           | Stator                      | 1         | 1 | 1 |
| 9    | X           | Rotor                       | 1         | 1 | 1 |
| 10   | X           | Screw, #10 x 1/2 in.        | 3         | 3 | 3 |
| 11   | X           | Retainer                    | 1         | 1 | 1 |
| 12   | X           | Bearing                     | 1         | 1 | 1 |
| 13   | X           | Shim                        | 1         | 1 | 1 |
| 14   | X           | Housing                     | 1         | 1 | 1 |
| 15   | X           | Nut                         | 1         | 1 | 1 |
| 16   | X           | Washer                      | 1         | 1 | 1 |
| 17   | X           | Pulley                      | 1         | 1 | 1 |
| 18   | X           | Fan                         | 1         | 1 | 1 |
| 19   | X           | Washer, outer               | 1         | 1 | 1 |
| 20   | X           | Screw, #8 x 5/8 in.         | 2         | 2 | 2 |
| 21   | X           | Capacitor                   | 1         | 1 | 1 |
| 22   | X           | Nut, 0.164 in.              | 3         | 3 | 3 |
| 23   | X           | Washer, #8                  | 3         | 3 | 3 |
| 24   | X           | Diode, trio, negative       | 1         | 1 | 1 |
| 25   | X           | Screw, #8 x 7/8 in.         | 1         | 1 | 1 |
| 26   | X           | Rectifier, bridge, positive | 1         | 1 | 1 |
| 27   | X           | Bolt                        | 4         | 4 | 4 |
| 28   | X           | Bearing, roller             | 1         | 1 | 1 |
| 29   | 224244      | Alternator                  | 1         |   |   |
| 29   | 360001      | Alternator, 12 volt         |           | 1 |   |
| 29   | 360002      | Alternator, 24 volt         |           |   | 1 |

NA Not available

X Not sold separately

## Group 51c: Alternator Mounting



| Item | Part Number | Description                       | Quantity |             |      |
|------|-------------|-----------------------------------|----------|-------------|------|
|      |             |                                   | 1        | Variation 2 | 6201 |
| 1    | #           | Washer, 0.493 x 0.675 x 5/16 in.  | 1        |             |      |
| 2    | 224099      | Strap                             | 1        |             |      |
| 3    | #           | Washer, 3/8 in.                   | 1        |             |      |
| 4    | #           | Screw, 3/8-16 x 2 1/4 in.         | 1        |             |      |
| 5    | #           | Spacer, 3/8 x 7/16 in.            | 2        |             |      |
| 6    | 224033      | Bracket                           | 2        |             |      |
| 7    | #           | Screw, 3/8-16 x 3 in.             | 2        |             |      |
| 8    | #           | Washer, 13/32 x 23/32 x 0.12 in.  | 2        |             |      |
| 9    | #           | Nut, 3/8-16                       | 2        |             |      |
| 10   | #           | Screw, M10 x 30                   |          | 1           | 5    |
| 11   | #           | Nut, flange, M10                  |          | 1           | 3    |
| 12   | 360076      | Bushing                           |          | 1           | 1    |
| 13   | 360166      | Washer, thrust                    |          | 1           |      |
| 14   | 360150      | Bracket                           |          | 1           | 1    |
| 15   | #           | Screw, M10 x 25                   |          |             | 2    |
| 15   | #           | Screw, M10 x 100                  |          | 1           |      |
| 16   | #           | Washer                            |          | 1           |      |
| 17   | #           | Screw, M8 x 60                    |          | 2           |      |
| 18   | #           | Screw, cap, M10 x 25              |          | 2           |      |
| 19   | 360155      | Bracket                           |          | 1           |      |
| 20   | #           | Screw, M8 x 25                    |          | 1           |      |
| 21   | #           | Washer, 8.128 x 15.748 x 3.937 mm |          | 1           |      |
| 22   | 360156      | Strap, alternator                 |          | 11          |      |
| 22   | GM17455     | Strap                             |          |             | 1    |
| 23   | #           | Nut, flange, M10                  |          | 3           |      |

# Common hardware; procure locally

# Appendix A Common Hardware Identification

| Screw/Bolts/Studs                            |                                                                                     |
|----------------------------------------------|-------------------------------------------------------------------------------------|
| Head Styles                                  |                                                                                     |
| Hex Head or Machine Head                     |    |
| Hex Head or Machine Head with Washer         |    |
| Flat Head (FHM)                              |    |
| Round Head (RHM)                             |    |
| Pan Head                                     |    |
| Hex Socket Head Cap or Allen™ Head Cap       |    |
| Hex Socket Head or Allen™ Head Shoulder Bolt |    |
| Sheet Metal Screw                            |    |
| Stud                                         |    |
| Drive Styles                                 |                                                                                     |
| Hex                                          |    |
| Hex and Slotted                              |   |
| Phillips®                                    |  |
| Slotted                                      |  |
| Hex Socket                                   |  |

| Nuts                         |                                                                                     |
|------------------------------|-------------------------------------------------------------------------------------|
| Nut Styles                   |                                                                                     |
| Hex Head                     |    |
| Lock or Elastic              |    |
| Square                       |    |
| Cap or Acorn                 |    |
| Wing                         |    |
| Washers                      |                                                                                     |
| Washer Styles                |                                                                                     |
| Plain                        |    |
| Split Lock or Spring         |    |
| Spring or Wave               |    |
| External Tooth Lock          |    |
| Internal Tooth Lock          |    |
| Internal-External Tooth Lock |  |

| Hardness Grades                       |                                                                                                                                                                         |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| American Standard                     |                                                                                                                                                                         |
| Grade 2                               |   |
| Grade 5                               |   |
| Grade 8                               |                                                                                      |
| Grade 8/9 (Hex Socket Head)           |                                                                                      |
| Metric                                |                                                                                                                                                                         |
| Number stamped on hardware; 5.8 shown |                                                                                      |

Allen™ head screw is a trademark of Holo-Krome Co.

Phillips® screw is a registered trademark of Phillips Screw Company.

## Sample Dimensions

### American Standard (Screws, Bolts, Studs, and Nuts)

1/4-20 x 1  
 — Length In Inches (Screws and Bolts)  
 — Threads Per Inch  
 — Major Thread Diameter In Fractional Inches Or Screw Number Size

### Metric (Screws, Bolts, Studs, and Nuts)

M8-1.25 x 20  
 — Length In Millimeters (Screws and Bolts)  
 — Distance Between Threads In Millimeters  
 — Major Thread Diameter In Millimeters

### Plain Washers

9/32 x 5/8 x 1/16  
 — Thickness  
 — External Dimension  
 — Internal Dimension

### Lock Washers

5/8  
 — Internal Dimension

# Appendix B Common Hardware List

The Common Hardware List lists part numbers and dimensions for common hardware items.

## American Standard

| Part No.                        | Dimensions     | Part No.                     | Dimensions     | Part No.        | Dimensions | Type                   |
|---------------------------------|----------------|------------------------------|----------------|-----------------|------------|------------------------|
| <b>Hex Head Bolts (Grade 5)</b> |                | <b>Hex Head Bolts, cont.</b> |                | <b>Hex Nuts</b> |            |                        |
| X-465-17                        | 1/4-20 x .38   | X-6024-5                     | 7/16-14 x .75  | X-6009-1        | 1-8        | Standard               |
| X-465-6                         | 1/4-20 x .50   | X-6024-2                     | 7/16-14 x 1.00 | X-6210-3        | 6-32       | Whiz                   |
| X-465-2                         | 1/4-20 x .62   | X-6024-8                     | 7/16-14 x 1.25 | X-6210-4        | 8-32       | Whiz                   |
| X-465-16                        | 1/4-20 x .75   | X-6024-3                     | 7/16-14 x 1.50 | X-6210-5        | 10-24      | Whiz                   |
| X-465-18                        | 1/4-20 x .88   | X-6024-4                     | 7/16-14 x 2.00 | X-6210-1        | 10-32      | Whiz                   |
| X-465-7                         | 1/4-20 x 1.00  | X-6024-11                    | 7/16-14 x 2.75 | X-6210-2        | 1/4-20     | Spiralock              |
| X-465-8                         | 1/4-20 x 1.25  | X-6024-12                    | 7/16-14 x 6.50 | X-6210-6        | 1/4-28     | Spiralock              |
| X-465-9                         | 1/4-20 x 1.50  | X-129-15                     | 1/2-13 x .75   | X-6210-7        | 5/16-18    | Spiralock              |
| X-465-10                        | 1/4-20 x 1.75  | X-129-17                     | 1/2-13 x 1.00  | X-6210-8        | 5/16-24    | Spiralock              |
| X-465-11                        | 1/4-20 x 2.00  | X-129-18                     | 1/2-13 x 1.25  | X-6210-9        | 3/8-16     | Spiralock              |
| X-465-12                        | 1/4-20 x 2.25  | X-129-19                     | 1/2-13 x 1.50  | X-6210-10       | 3/8-24     | Spiralock              |
| X-465-14                        | 1/4-20 x 2.75  | X-129-20                     | 1/2-13 x 1.75  | X-6210-11       | 7/16-14    | Spiralock              |
| X-465-21                        | 1/4-20 x 5.00  | X-129-21                     | 1/2-13 x 2.00  | X-6210-12       | 1/2-13     | Spiralock              |
| X-465-25                        | 1/4-28 x .38   | X-129-22                     | 1/2-13 x 2.25  | X-6210-15       | 7/16-20    | Spiralock              |
| X-465-20                        | 1/4-28 x 1.00  | X-129-23                     | 1/2-13 x 2.50  | X-6210-14       | 1/2-20     | Spiralock              |
| X-125-33                        | 5/16-18 x .50  | X-129-24                     | 1/2-13 x 2.75  | X-85-3          | 5/8-11     | Standard               |
| X-125-23                        | 5/16-18 x .62  | X-129-25                     | 1/2-13 x 3.00  | X-88-12         | 3/4-10     | Standard               |
| X-125-3                         | 5/16-18 x .75  | X-129-27                     | 1/2-13 x 3.50  | X-89-2          | 1/2-20     | Standard               |
| X-125-31                        | 5/16-18 x .88  | X-129-29                     | 1/2-13 x 4.00  | <b>Washers</b>  |            |                        |
| X-125-5                         | 5/16-18 x 1.00 | X-129-30                     | 1/2-13 x 4.50  | <b>Part No.</b> | <b>ID</b>  | <b>OD</b>              |
| X-125-24                        | 5/16-18 x 1.25 | X-463-9                      | 1/2-13 x 5.50  |                 |            | <b>Thick.</b>          |
| X-125-34                        | 5/16-18 x 1.50 | X-129-44                     | 1/2-13 x 6.00  |                 |            | <b>Bolt/<br/>Screw</b> |
| X-125-25                        | 5/16-18 x 1.75 | X-129-51                     | 1/2-20 x .75   | X-25-46         | .125       | .250                   |
| X-125-26                        | 5/16-18 x 2.00 | X-129-45                     | 1/2-20 x 1.25  | X-25-9          | .156       | .375                   |
| 230578                          | 5/16-18 x 2.25 | X-129-52                     | 1/2-20 x 1.50  | X-25-48         | .188       | .438                   |
| X-125-29                        | 5/16-18 x 2.50 | X-6021-3                     | 5/8-11 x 1.00  | X-25-36         | .219       | .500                   |
| X-125-27                        | 5/16-18 x 2.75 | X-6021-4                     | 5/8-11 x 1.25  | X-25-40         | .281       | .625                   |
| X-125-28                        | 5/16-18 x 3.00 | X-6021-2                     | 5/8-11 x 1.50  | X-25-85         | .344       | .687                   |
| X-125-22                        | 5/16-18 x 4.50 | X-6021-1                     | 5/8-11 x 1.75  | X-25-37         | .406       | .812                   |
| X-125-32                        | 5/16-18 x 5.00 | 273049                       | 5/8-11 x 2.00  | X-25-34         | .469       | .922                   |
| X-125-35                        | 5/16-18 x 5.50 | X-6021-5                     | 5/8-11 x 2.25  | X-25-26         | .531       | 1.062                  |
| X-125-36                        | 5/16-18 x 6.00 | X-6021-6                     | 5/8-11 x 2.50  | X-25-15         | .656       | 1.312                  |
| X-125-40                        | 5/16-18 x 6.50 | X-6021-7                     | 5/8-11 x 2.75  | X-25-29         | .812       | 1.469                  |
| X-125-43                        | 5/16-24 x 1.75 | X-6021-12                    | 5/8-11 x 3.75  | X-25-127        | 1.062      | 2.000                  |
| X-125-44                        | 5/16-24 x 2.50 | X-6021-11                    | 5/8-11 x 4.50  |                 |            |                        |
| X-125-30                        | 5/16-24 x .75  | X-6021-10                    | 5/8-11 x 6.00  |                 |            |                        |
| X-125-39                        | 5/16-24 x 2.00 | X-6021-9                     | 5/8-18 x 2.50  |                 |            |                        |
| X-125-38                        | 5/16-24 x 2.75 | X-6239-1                     | 3/4-10 x 1.00  |                 |            |                        |
| X-6238-2                        | 3/8-16 x .62   | X-6239-8                     | 3/4-10 x 1.25  |                 |            |                        |
| X-6238-10                       | 3/8-16 x .75   | X-6239-2                     | 3/4-10 x 1.50  |                 |            |                        |
| X-6238-3                        | 3/8-16 x .88   | X-6239-3                     | 3/4-10 x 2.00  |                 |            |                        |
| X-6238-11                       | 3/8-16 x 1.00  | X-6239-4                     | 3/4-10 x 2.50  |                 |            |                        |
| X-6238-4                        | 3/8-16 x 1.25  | X-6239-5                     | 3/4-10 x 3.00  |                 |            |                        |
| X-6238-5                        | 3/8-16 x 1.50  | X-6239-6                     | 3/4-10 x 3.50  |                 |            |                        |
| X-6238-1                        | 3/8-16 x 1.75  | X-792-1                      | 1-8 x 2.25     |                 |            |                        |
| X-6238-6                        | 3/8-16 x 2.00  | X-792-5                      | 1-8 x 3.00     |                 |            |                        |
| X-6238-17                       | 3/8-16 x 2.25  | X-792-8                      | 1-8 x 5.00     |                 |            |                        |
| X-6238-7                        | 3/8-16 x 2.50  |                              |                |                 |            |                        |
| X-6238-8                        | 3/8-16 x 2.75  |                              |                |                 |            |                        |
| X-6238-9                        | 3/8-16 x 3.00  |                              |                |                 |            |                        |
| X-6238-19                       | 3/8-16 x 3.25  |                              |                |                 |            |                        |
| X-6238-12                       | 3/8-16 x 3.50  |                              |                |                 |            |                        |
| X-6238-20                       | 3/8-16 x 3.75  |                              |                |                 |            |                        |
| X-6238-13                       | 3/8-16 x 4.50  |                              |                |                 |            |                        |
| X-6238-18                       | 3/8-16 x 5.50  |                              |                |                 |            |                        |
| X-6238-25                       | 3/8-16 x 6.50  |                              |                |                 |            |                        |
| X-6238-14                       | 3/8-24 x .75   |                              |                |                 |            |                        |
| X-6238-16                       | 3/8-24 x 1.25  |                              |                |                 |            |                        |
| X-6238-21                       | 3/8-24 x 4.00  |                              |                |                 |            |                        |
| X-6238-22                       | 3/8-24 x 4.50  |                              |                |                 |            |                        |

## Metric

Hex head bolts are hardness grade 8.8 unless noted.

| Part No.                               | Dimensions     |
|----------------------------------------|----------------|
| <b>Hex Head Bolts (partial thread)</b> |                |
| M931-05055-60                          | M5-0.80 x 55   |
| M931-06040-60                          | M6-1.00 x 40   |
| M931-06055-60                          | M6-1.00 x 55   |
| M931-06060-60                          | M6-1.00 x 60   |
| M931-06070-60                          | M6-1.00 x 70   |
| M931-06070-SS                          | M6-1.00 x 70   |
| M931-06075-60                          | M6-1.00 x 75   |
| M931-06090-60                          | M6-1.00 x 90   |
| M931-06150-60                          | M6-1.00 x 150  |
| M931-08035-60                          | M8-1.25 x 35   |
| M931-08040-60                          | M8-1.25 x 40   |
| M931-08040-82                          | M8-1.25 x 40*  |
| M931-08045-60                          | M8-1.25 x 45   |
| M931-08050-60                          | M8-1.25 x 50   |
| M931-08055-60                          | M8-1.25 x 55   |
| M931-08055-82                          | M8-1.25 x 55*  |
| M931-08060-60                          | M8-1.25 x 60   |
| M931-08070-60                          | M8-1.25 x 70   |
| M931-08070-82                          | M8-1.25 x 70*  |
| M931-08075-60                          | M8-1.25 x 75   |
| M931-08080-60                          | M8-1.25 x 80   |
| M931-08090-60                          | M8-1.25 x 90   |
| M931-08095-60                          | M8-1.25 x 95   |
| M931-08100-60                          | M8-1.25 x 100  |
| M931-08120-60                          | M8-1.25 x 120  |
| M931-08130-60                          | M8-1.25 x 130  |
| M931-08140-60                          | M8-1.25 x 140  |
| M931-10040-82                          | M10-1.25 x 40* |
| M931-10040-60                          | M10-1.50 x 40  |
| M931-10045-60                          | M10-1.50 x 45  |
| M931-10050-60                          | M10-1.50 x 50  |
| M931-10055-60                          | M10-1.50 x 55  |
| M931-10060-60                          | M10-1.50 x 60  |
| M931-10065-60                          | M10-1.50 x 65  |
| M931-10070-60                          | M10-1.50 x 70  |
| M931-10080-60                          | M10-1.50 x 80  |
| M931-10090-60                          | M10-1.50 x 90  |
| M931-10090-82                          | M10-1.50 x 90* |
| M931-10100-60                          | M10-1.50 x 100 |
| M931-10110-60                          | M10-1.50 x 110 |
| M931-10120-60                          | M10-1.50 x 120 |
| M931-10130-60                          | M10-1.50 x 130 |
| M931-10140-60                          | M10-1.50 x 140 |
| M931-10180-60                          | M10-1.50 x 180 |
| M931-12045-60                          | M12-1.75 x 45  |
| M960-12050-60                          | M12-1.25 x 50  |
| M960-12050-82                          | M12-1.25 x 50* |
| M931-12050-60                          | M12-1.75 x 50  |
| M931-12055-60                          | M12-1.75 x 55  |
| M931-12060-60                          | M12-1.75 x 60  |
| M931-12065-60                          | M12-1.75 x 65  |
| M931-12075-60                          | M12-1.75 x 75  |
| M931-12080-60                          | M12-1.75 x 80  |
| M931-12090-60                          | M12-1.75 x 90  |
| M931-12100-60                          | M12-1.75 x 100 |
| M931-12110-60                          | M12-1.75 x 110 |
| M960-16090-60                          | M16-1.50 x 90  |
| M931-16090-60                          | M16-2.00 x 90  |
| M931-16100-60                          | M16-2.00 x 100 |
| M931-20065-60                          | M20-2.50 x 65  |
| M931-20120-60                          | M20-2.50 x 120 |
| M931-20160-60                          | M20-2.50 x 160 |
| M931-22090-60                          | M22-2.50 x 90  |
| M931-22120-60                          | M22-2.50 x 120 |
| M931-22160-60                          | M22-2.50 x 160 |
| M931-24090-60                          | M24-3.00 x 90  |
| M931-24120-60                          | M24-3.00 x 120 |
| M931-24160-60                          | M24-3.00 x 160 |

| Part No.                            | Dimensions     |
|-------------------------------------|----------------|
| <b>Hex Head Bolts (full thread)</b> |                |
| M933-04006-60                       | M4-0.70 x 6    |
| M933-05035-60                       | M5-0.80 x 35   |
| M933-05050-60                       | M5-0.80 x 50   |
| M933-06010-60                       | M6-1.00 x 10   |
| M933-06014-60                       | M6-1.00 x 14   |
| M933-06016-60                       | M6-1.00 x 16   |
| M933-06020-60                       | M6-1.00 x 20   |
| M933-06025-60                       | M6-1.00 x 25   |
| M933-06040-60                       | M6-1.00 x 40   |
| M933-06050-60                       | M6-1.00 x 50   |
| M933-08012-60                       | M8-1.25 x 12   |
| M933-08016-60                       | M8-1.25 x 16   |
| M933-08020-60                       | M8-1.25 x 20   |
| M933-08025-60                       | M8-1.25 x 25   |
| M933-08030-60                       | M8-1.25 x 30   |
| M933-08030-82                       | M8-1.25 x 30*  |
| M933-10012-60                       | M10-1.50 x 12  |
| M961-10020-60                       | M10-1.25 x 20  |
| M933-10020-60                       | M10-1.50 x 20  |
| M933-10025-60                       | M10-1.50 x 25  |
| M961-10030-60                       | M10-1.25 x 30  |
| M933-10030-60                       | M10-1.50 x 30  |
| M933-10030-82                       | M10-1.50 x 30* |
| M961-10035-60                       | M10-1.25 x 35  |
| M933-10035-60                       | M10-1.50 x 35  |
| M933-12016-60                       | M12-1.75 x 16  |
| M933-12020-60                       | M12-1.75 x 20  |
| M933-12025-60                       | M12-1.75 x 25  |
| M933-12025-82                       | M12-1.75 x 25* |
| M961-12030-60                       | M12-1.25 x 30  |
| M933-12030-60                       | M12-1.75 x 30  |
| M933-12035-60                       | M12-1.75 x 35  |
| M961-12040-82                       | M12-1.25 x 40* |
| M933-12040-60                       | M12-1.75 x 40  |
| M933-12040-82                       | M12-1.75 x 40* |
| M961-14025-60                       | M14-1.50 x 25  |
| M933-14025-60                       | M14-2.00 x 25  |
| M961-16025-60                       | M16-1.50 x 25  |
| M933-16025-60                       | M16-2.00 x 25  |
| M961-16030-82                       | M16-1.50 x 30* |
| M933-16030-82                       | M16-2.00 x 30* |
| M933-16035-60                       | M16-2.00 x 35  |
| M961-16040-60                       | M16-1.50 x 40  |
| M933-16040-60                       | M16-2.00 x 40  |
| M933-16050-60                       | M16-2.00 x 50  |
| M933-16050-82                       | M16-2.00 x 50* |
| M933-16060-60                       | M16-2.00 x 60  |
| M933-18035-60                       | M18-2.50 x 35  |
| M933-18050-60                       | M18-2.50 x 50  |
| M933-18060-60                       | M18-2.50 x 60  |
| M933-20050-60                       | M20-2.50 x 50  |
| M933-20055-60                       | M20-2.50 x 55  |

### Pan Head Machine Screws

|                 |               |
|-----------------|---------------|
| M7985A-03010-20 | M3-0.50 x 10  |
| M7985A-03012-20 | M3-0.50 x 12  |
| M7985A-04010-20 | M4-0.70 x 10  |
| M7985A-04020-20 | M4-0.70 x 20  |
| M7985A-04100-20 | M4-0.70 x 100 |
| M7985A-05010-20 | M5-0.80 x 10  |
| M7985A-05012-20 | M5-0.80 x 12  |
| M7985A-05016-20 | M5-0.80 x 16  |
| M7985A-05100-20 | M5-0.80 x 100 |
| M7985A-06100-20 | M6-1.00 x 100 |

### Flat Head Machine Screws

|                |              |
|----------------|--------------|
| M965A-04012-SS | M4-0.70 x 12 |
| M965A-05012-SS | M5-0.80 x 12 |
| M965A-05016-20 | M5-0.80 x 16 |

| Part No.        | Dimensions | Type         |
|-----------------|------------|--------------|
| <b>Hex Nuts</b> |            |              |
| M934-03-50      | M3-0.50    | Standard     |
| M934-035-50     | M3.5-0.50  | Standard     |
| M934-04-50      | M4-0.70    | Standard     |
| M934-05-50      | M5-0.80    | Standard     |
| M982-05-80      | M5-0.80    | Elastic Stop |
| M934-06-60      | M6-1.00    | Standard     |
| M934-06-64      | M6-1.00    | Std. (green) |
| M6923-06-80     | M6-1.00    | Spirallock   |
| M982-06-80      | M6-1.00    | Elastic Stop |
| M934-08-60      | M8-1.25    | Standard     |
| M6923-08-80     | M8-1.25    | Spirallock   |
| M982-08-80      | M8-1.25    | Elastic Stop |
| M934-10-60      | M10-1.50   | Standard     |
| M934-10-60F     | M10-1.25   | Standard     |
| M6923-10-80     | M10-1.50   | Spirallock   |
| M6923-10-62     | M10-1.50   | Spirallock†  |
| M982-10-80      | M10-1.50   | Elastic Stop |
| M934-12-60      | M12-1.75   | Standard     |
| M934-12-60F     | M12-1.25   | Standard     |
| M6923-12-80     | M12-1.75   | Spirallock   |
| M982-12-80      | M12-1.75   | Elastic Stop |
| M982-14-80      | M14-2.00   | Elastic Stop |
| M6923-16-80     | M16-2.00   | Spirallock   |
| M982-16-80      | M16-2.00   | Elastic Stop |
| M934-18-80      | M18-2.5    | Standard     |
| M982-18-80      | M18-2.50   | Elastic Stop |
| M934-20-80      | M20-2.50   | Standard     |
| M982-20-80      | M20-2.50   | Elastic Stop |
| M934-22-60      | M22-2.50   | Standard     |
| M934-24-80      | M24-3.00   | Standard     |
| M982-24-80      | M24-3.00   | Elastic Stop |
| M934-30-80      | M30-3.50   | Standard     |

### Washers

| Part No.    | ID   | OD   | Bolt/<br>Thick. | Screw |
|-------------|------|------|-----------------|-------|
| M125A-03-80 | 3.2  | 7.0  | 0.5             | M3    |
| M125A-04-80 | 4.3  | 9.0  | 0.8             | M4    |
| M125A-05-80 | 5.3  | 10.0 | 1.0             | M5    |
| M125A-06-80 | 6.4  | 12.0 | 1.6             | M6    |
| M125A-08-80 | 8.4  | 16.0 | 1.6             | M8    |
| M125A-10-80 | 10.5 | 20.0 | 2.0             | M10   |
| M125A-12-80 | 13.0 | 24.0 | 2.5             | M12   |
| M125A-14-80 | 15.0 | 28.0 | 2.5             | M14   |
| M125A-16-80 | 17.0 | 30.0 | 3.0             | M16   |
| M125A-18-80 | 19.0 | 34.0 | 3.0             | M18   |
| M125A-20-80 | 21.0 | 37.0 | 3.0             | M20   |
| M125A-24-80 | 25.0 | 44.0 | 4.0             | M24   |

\* This metric hex bolt's hardness is grade 10.9.

† This metric hex nut's hardness is grade 8.









