

WSM

WORKSHOP MANUAL
TRACTOR

M9000DT-M
(SUPPLEMENT)

Kubota

TO THE READER

Use this workshop manual together with workshop manual for M6800, M6800S, M8200 and M9000.

In this section, the main additional function and altered position of M9000DT-M tractor from M6800, M6800S, M8200, M9000 tractor are explained separately in two items, "Mechanism" and "Servicing" for each section.

As for the items which are not explained in this section, refer to M6800, M6800S, M8200, M9000 workshop manual.

■ Mechanism

Information on the construction and function are included for M9000DT-M tractor. This part should be understood before proceeding with troubleshooting, disassembling and servicing.

■ Servicing

For M9000DT-M tractor, there are troubleshooting, servicing specification lists, checking and adjusting, disassembling and assembling, and servicing which cover procedures, precautions, factory specifications and allowable limits.

All information illustrations and specifications contained in this manual are based on the latest product information available at the time of publication.

The right is reserved to make changes in all information at any time without notice.

September 2001

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SPECIFICATIONS

| Model | | M9000DT-M | | |
|--------------------------|---|---|---|--|
| | | Standard | With 80 in. wide axle | |
| Engine | Model | V3300-TIE / V3300-TIE2 | | |
| | Type | Vertical, water-cooled, 4-cycle diesel engine | | |
| | No. of cylinders | 4 | | |
| | Total displacement | 3318 cm ³ (202.5 cu.in.) | | |
| | Bore and stroke | 98 × 110 mm (3.9 × 4.3 in.) | | |
| | Net power | 67.2 kW (90 HP)* | | |
| | PTO power (factory observed) | 59.7 kW (80 HP)* / 2600 min ⁻¹ (rpm) | | |
| | Maximum torque | 311 N·m (31.7 kgf·m, 229.4 ft·lbs) / 1400 to 1600 min ⁻¹ (rpm) | | |
| | Battery capacity | 12 V, CCA 1000A | | |
| | Fuel | Diesel fuel No. 1 [below -10 °C (14 °F)], Diesel fuel No. 2 [above -10 °C (14 °F)] | | |
| | Fuel tank capacity | 90 L (23.8 U.S.gals., 19.8 Imp.gals.) | | |
| | Engine oil capacity | 10.7 L (11.3 U.S.qts., 9.4 Imp.qts.) | | |
| | Coolant capacity | 9.0 L (9.5 U.S.qts., 7.92 Imp.qts.) | | |
| Dimensions | Overall length | 4060 mm (159.8 in.) | | |
| | Overall width (Minimum tread) | 2010 mm (79.1 in.) | 2470 mm (97.2 in.) | |
| | Overall height (with ROPS) | 2730 mm (107.4 in.) | | |
| | Wheel base | 2250 mm (88.5 in.) | | |
| | Tread | Front | 1565 mm (61.6 in.), 1665 mm (65.6 in.) | 1830 mm (72 in.), 1925 mm (75.8 in.), 2025 mm (79.7 in.) |
| | | Rear | 1525 mm (60.0 in.), 1630 mm (64.2 in.) | 1845 mm (72.6 in.), 1940 mm (76.3 in.), 2045 mm (80.6 in.) |
| Minimum ground clearance | 642 mm (25.3 in.) DRIVE CASE | | | |
| Weight (with ROPS) | | 3240 kg (7143 lbs) | 3320 kg (7319 lbs) | |
| Travelling system | Standard tire size | Front | 13.6 - 38 | |
| | | Rear | 13.6 - 38 | |
| | Clutch | Single dry plate | | |
| | Steering | Hydraulic power steering | | |
| | Transmission | 12 forward and 12 reverse fully synchronized main and shuttle transmission with creep speed | | |
| | Brake system | Multiple wet disk mechanical | | |
| Differential | Bevel gears with diff. lock (Front, Rear) | | | |
| Hydraulic system | Hydraulic control system | Position, draft and mix control | | |
| | Pump capacity | 64.3 L (67.9 U.S.qts., 56.6 Imp.qts.)/min. | | |
| | Three point hitch | Category II | | |
| | Maximum lifting force | At lifting points | 2500 kg (5560 lbs) [3400 kg (7496 lbs) : with assist cylinder] at lower link end with links horizontal | |
| | | 24 in. behind lifting point | 2100 kg (4630 lbs) [2900 kg (6393 lbs) : with assist cylinder] | |
| | Remote hydraulic control | One remote valve | | |
| | System pressure | 19.6 MPa (200 kgf/cm ² , 2846.6 psi) | | |
| Traction system | Swinging drawbar, adjustable in direction | | | |
| PTO | Live PTO (Independent) | Direction of turning | Clockwise, viewed from tractor rear | |
| | | Standard PTO | 540 min ⁻¹ (rpm) at 2205 engine min ⁻¹ (rpm) | |

NOTE: *Manufacturer's estimate The company reserves the right to change the specifications without notice.

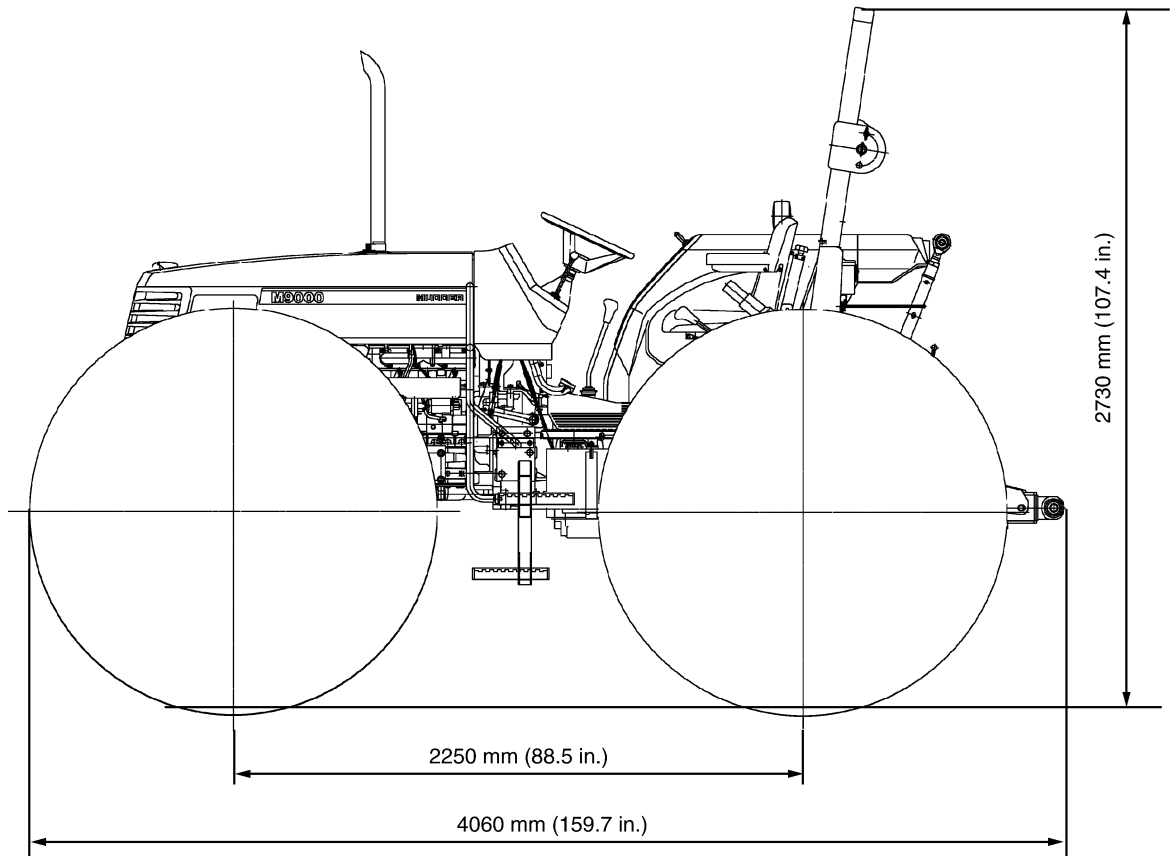
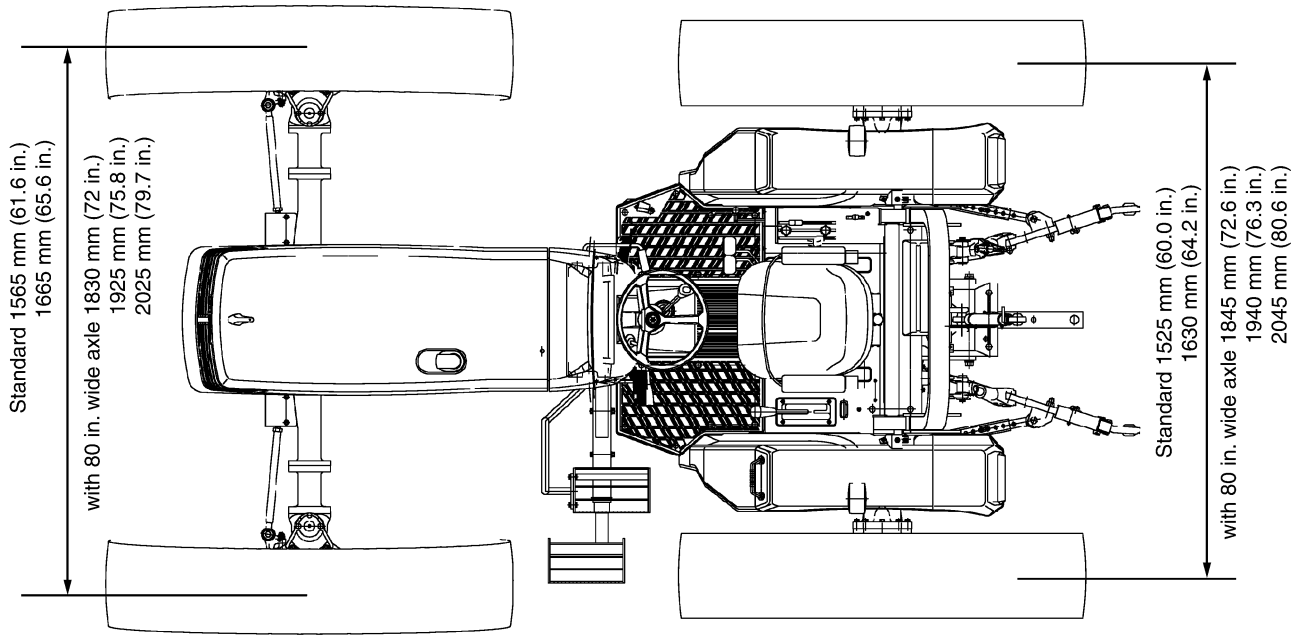
| Model | | M9000DTMC | | |
|--------------------------|-------------------------------|---|---|--|
| | | Standard | With 80 in. wide axle | |
| Engine | Model | V3300-TIE / V3300-TIE2 | | |
| | Type | Vertical, water-cooled, 4-cycle diesel engine | | |
| | No. of cylinders | 4 | | |
| | Total displacement | 3318 cm ³ (202.5 cu.in.) | | |
| | Bore and stroke | 98 × 110 mm (3.9 × 4.3 in.) | | |
| | Net power | 67.2 kW (90 HP)* | | |
| | PTO power (factory observed) | 59.7 kW (80 HP)* / 2600 min ⁻¹ (rpm) | | |
| | Maximum torque | 311 N·m (31.7 kgf·m, 229.4 ft·lbs) / 1400 to 1600 min ⁻¹ (rpm) | | |
| | Battery capacity | 12 V, CCA 1000A | | |
| | Fuel | Diesel fuel No. 1 [below -10 °C (14 °F)], Diesel fuel No. 2 [above -10 °C (14 °F)] | | |
| | Fuel tank capacity | 110 L (29.1 U.S.gals., 24.2 Imp.gals.) | | |
| | Engine oil capacity | 10.7 L (11.3 U.S.qts., 9.4 Imp.qts.) | | |
| | Coolant capacity | 9.0 L (9.5 U.S.qts., 7.92 Imp.qts.) | | |
| Dimensions | Overall length | 4060 mm (159.8 in.) | | |
| | Overall width (Minimum tread) | 2010 mm (79.1 in.) | 2470 mm (97.2 in.) | |
| | Overall height (with CABIN) | 2760 mm (108.7 in.) | | |
| | Wheel base | 2250 mm (88.5 in.) | | |
| | Tread | Front | 1565 mm (61.6 in.), 1665 mm (65.6 in.) | 1830 mm (72 in.), 1925 mm (75.8 in.), 2025 mm (79.7 in.) |
| | | Rear | 1525 mm (60.0 in.), 1630 mm (64.2 in.) | 1845 mm (72.6 in.), 1940 mm (76.3 in.) 2045 mm (80.6 in.) |
| Minimum ground clearance | 642 mm (25.3 in.) DRIVE CASE | | | |
| Weight (with CABIN) | | 3470 kg (7650 lbs) | 3550 kg (7826 lbs) | |
| Travelling system | Standard tire size | Front | 13.6 - 38 | |
| | | Rear | 13.6 - 38 | |
| | Clutch | Single dry plate | | |
| | Steering | Hydraulic power steering | | |
| | Transmission | 12 forward and 12 reverse fully synchronized main and shuttle transmission with creep speed | | |
| | Brake system | Multiple wet disk mechanical | | |
| | Differential | Bevel gears with diff. lock (Front, Rear) | | |
| Hydraulic system | Hydraulic control system | | Position, draft and mix control | |
| | Pump capacity | | 64.3 L (67.9 U.S.qts., 56.6 Imp.qts.)/min. | |
| | Three point hitch | | Category II | |
| | Maximum lifting force | At lifting points | 2500 kg (5560 lbs) [3400 kg (7496 lbs) : with assist cylinder] at lower link end with links horizontal | |
| | | 24 in. behind lifting point | 2100 kg (4630 lbs) [2900 kg (6393 lbs) : with assist cylinder] | |
| | Remote hydraulic control | | One remote valve | |
| | System pressure | | 19.6 MPa (200 kgf/cm ² , 2846.6 psi) | |
| Traction system | | Swinging drawbar, adjustable in direction | | |
| PTO | Live PTO (Independent) | Direction of turning | Clockwise, viewed from tractor rear | |
| | | Standard PTO | 540 min ⁻¹ (rpm) at 2205 engine min ⁻¹ (rpm) | |

NOTE: *Manufacture's estimate The company reserves the right to change the specifications without notice.

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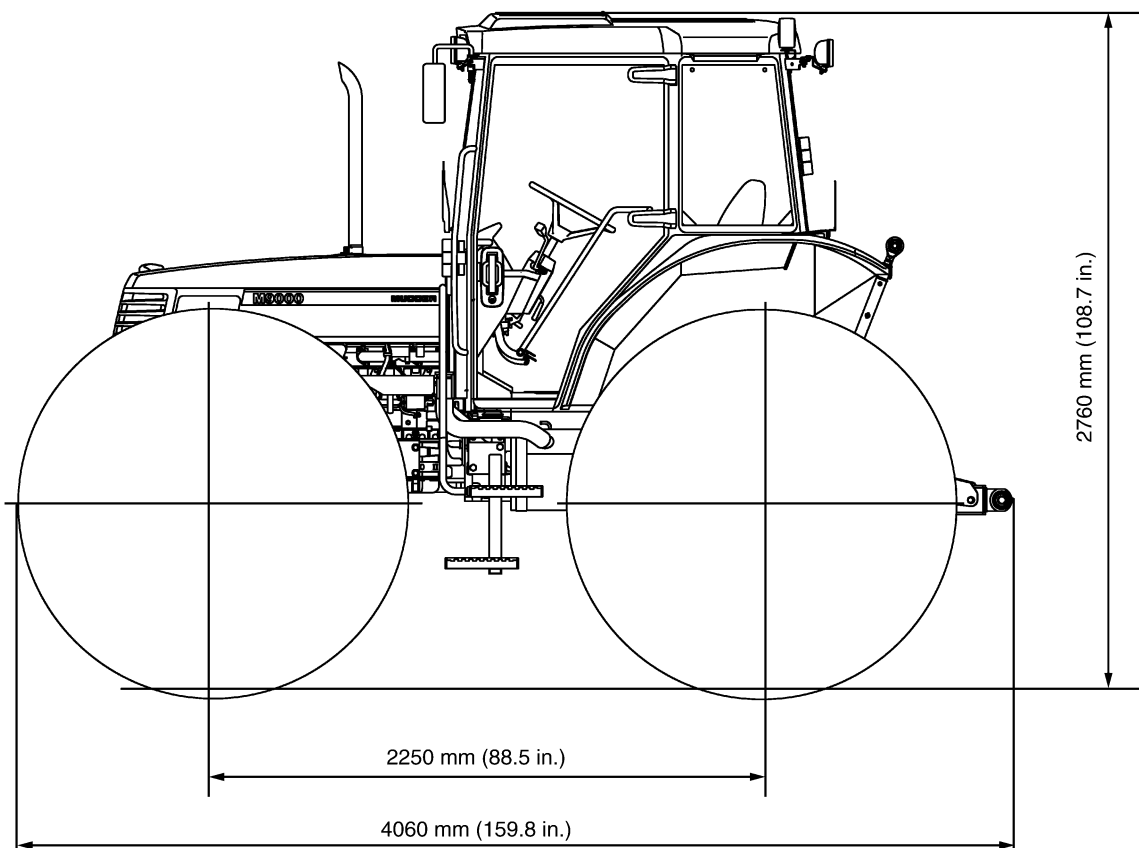
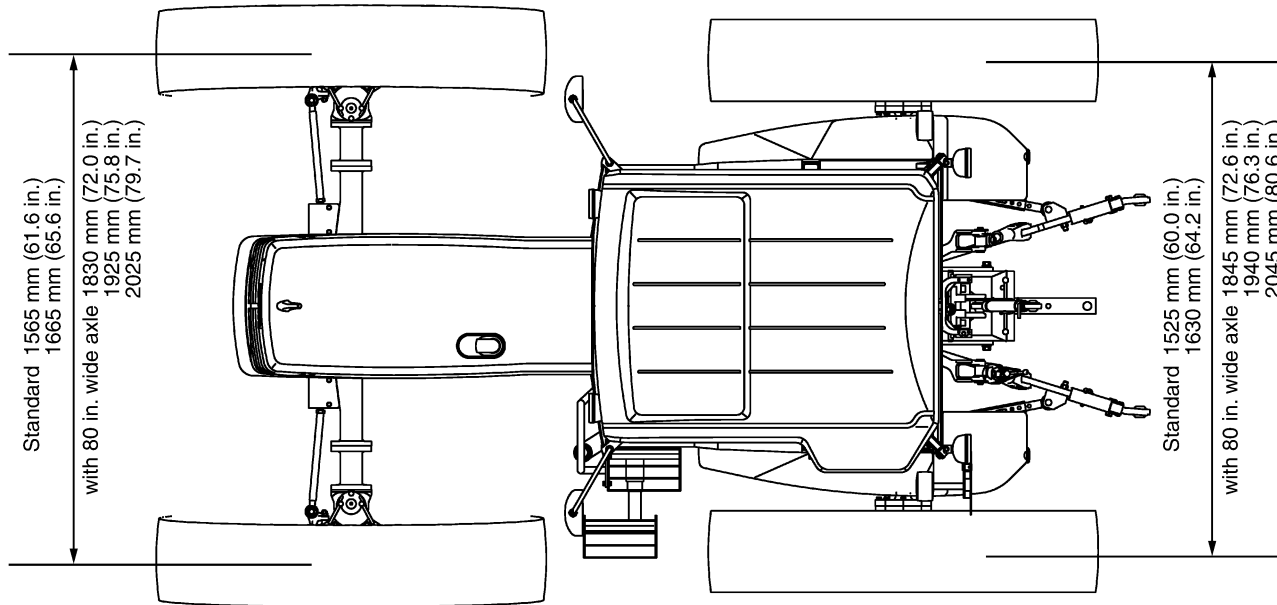
DIMENSIONS

[ROPS TYPE]



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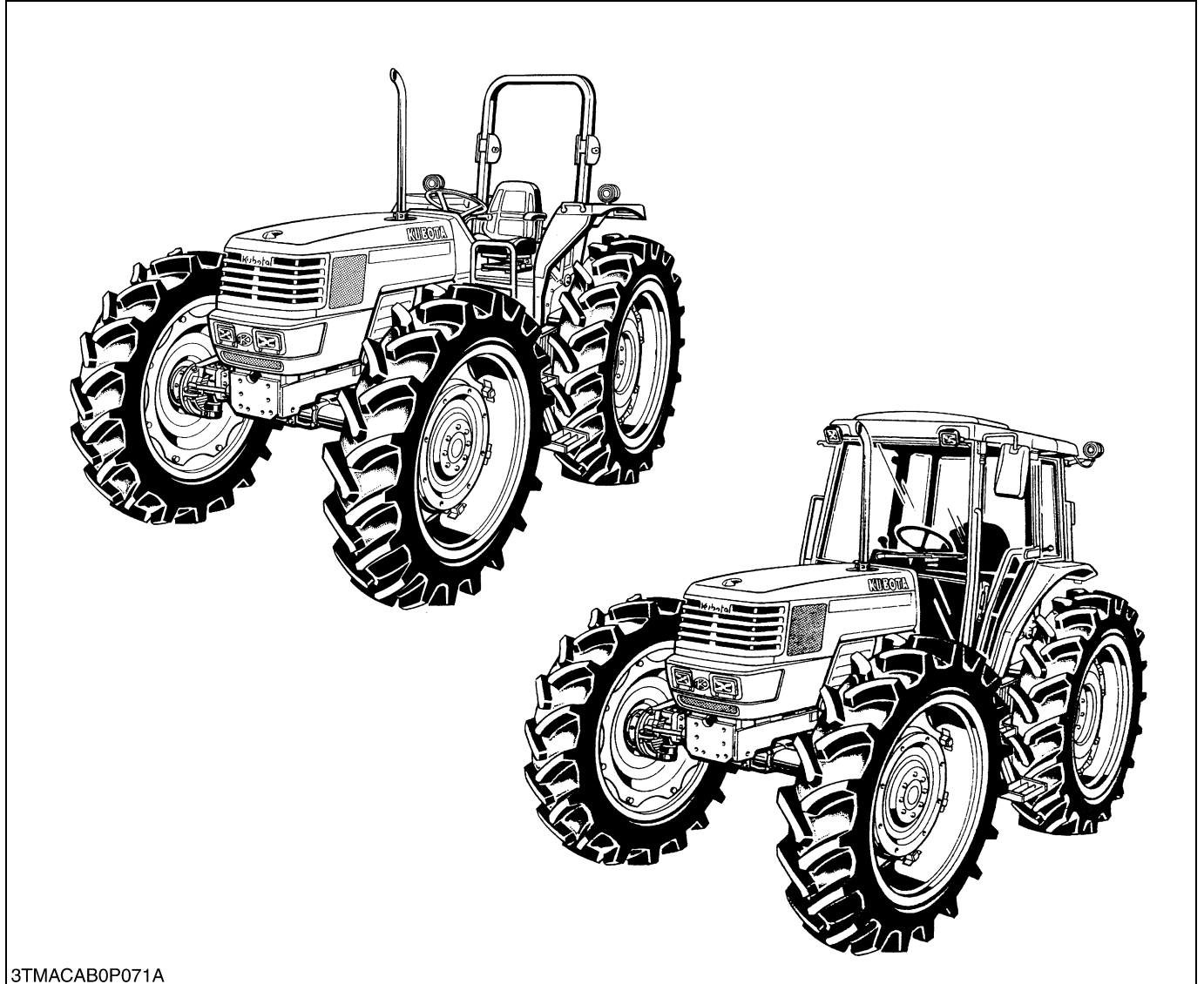
[CABIN TYPE]



3TMACABFP005A

1. GENERAL

[1] FEATURE



3TMACAB0P071A

1. New Transmission
Forward 12 / Reverse 12 Speeds
2. Ground Clearance (642 mm, 25.3 in. Drive case)
3. Tread Adjusting
Standard : 1525 to 2045 mm (60 to 68 in.)
80 in. with wide axle (option) : 1830 to 2025 mm (72 to 80 in.)
4. Rear axle drop type
5. Handrail (ROPS Type Only)

[2] LUBRICANTS, FUEL AND COOLANT

| | Place | Capacity | | Lubricants, fuel and coolant |
|-----------------|-----------------------------|--|--|--|
| | | Standard | With 80 in. wide axle | |
| 1 | Fuel | 90 L 23.8 U.S.gals. 19.8 Imp.gals. | | No. 2-D diesel fuel No. 1-D diesel fuel if temperature is below -10 °C (14 °F) |
| 2 | Coolant | 9.0 L 9.5 U.S.qts. 7.9 Imp.qts. | | Fresh clean water with anti-freeze |
| 3 | Engine crankcase | 10.7 L 11.3 U.S.qts. 9.4 Imp.qts. | | Engine oil : API service Classification CD Below 0 °C (32 °F) : SAE10W, 10W-30 or 10W-40 0 to 25 °C (32 to 77 °F): SAE20, 10W-30 or 10W-40 Above 25 °C (77 °F): SAE30, 10W-30 or 10W-40 |
| 4 | Transmission case | 56 L 59.2 U.S.qts. 49.3 Imp.qts. | 57 L 60.1 U.S.qts. 50.2 Imp.qts. | KUBOTA UDT or SUPER UDT fluid* |
| 5 | Front differential case oil | 6.0 L 6.3 U.S.qts. 5.3 Imp.qts. | 7.0 L 7.3 U.S.qts. 6.2 Imp.qts. | KUBOTA SUPER UDT fluid or SAE80, 90 gear oil |
| 6 | Front axle gear case oil | 3.5 L 3.7 U.S.qts. 3.1 Imp.qts. | | |
| Greasing | | | | |
| | Place | No. of greasing point | Capacity | Type of grease |
| 7 | Front wheel case support | 2 | Until grease overflows | Multipurpose type grease |
| | Front axle support | 2 | | |
| | Top link | 2 | | |
| | Top link bracket | 2 | | |
| | Lift rod | 3 | | |
| | Battery terminal | 2 | Moderate amount | |

* KUBOTA original transmission hydraulic fluid.

[3] MAINTENANCE

| No. | Item | | Period | Service Interval | | | | | | | | | | After purchase | | Important | Reference page | |
|-----|--|-------------------|---------|------------------|----|-----|-----|-----|-----|-----|-----|------|------|----------------|---------|-----------|----------------|----------|
| | | | | 50 | 50 | 100 | 200 | 300 | 400 | 600 | 800 | 1500 | 3000 | 1 year | 2 years | | | |
| 1 | Clutch | | Adjust | ★ | | ☆ | | | | | | | | | | | | G-18 |
| 2 | Engine oil | | Change | ★ | | | ☆ | | | | | | | | | | | G-16 |
| 3 | Hydraulic oil filter | | Replace | ★ | | | | ☆ | | | | | | | | | | G-17 |
| 4 | Engine oil Filter | | Replace | ★ | | | | | ☆ | | | | | | | | | G-16 |
| 5 | Water separator | | Clean | ★ | | | | | ☆ | | | | | | | | | G-27 |
| 6 | Transmission fluid | | Change | ★ | | | | | | ☆ | | | | | | | | MG-4 |
| 7 | Front axle differential case oil | | Change | ★ | | | | | | ☆ | | | | | | | | MG-5 |
| 8 | Front axle gear case oil | | Change | ★ | | | | | | | | | | | | | | G-29 |
| 9 | Engine start system | | Check | | ☆ | | | | | | | | | | | | | G-19 |
| 10 | Wheel bolt torque | | Check | | ☆ | | | | | | | | | | | | | MG-4 |
| 11 | Greasing | | — | | | ☆ | | | | | | | | | | | | G-24 |
| 12 | Battery condition | | Check | | | ☆ | | | | | | | | | | | | G-21 |
| 13 | Air cleaner element [Double type] | Primary element | Clean | | | ☆ | | | | | | | | | | * | | G-22 |
| | | | Replace | | | | | | | | | | | ☆ | | ** | @ | G-22 |
| | | Secondary element | Replace | | | | | | | | | | | ☆ | | | | G-22 |
| 14 | Fan belt | | Adjust | | | ☆ | | | | | | | | | | | | G-23 |
| 15 | Brake | | Adjust | | | ☆ | | | | | | | | | | | | G-23 |
| 16 | Radiator hose and clamp | | Check | | | | ☆ | | | | | | | | | | | G-25 |
| | | | Replace | | | | | | | | | | | | ☆ | | | G-25 |
| 17 | Power steering oil line | | Check | | | | ☆ | | | | | | | | | | | G-25 |
| | | | Replace | | | | | | | | | | | | ☆ | | | G-25 |
| 18 | Fuel line | | Check | | | | ☆ | | | | | | | | | | | G-25 |
| | | | Replace | | | | | | | | | | | | ☆ | | @ | G-25 |
| 19 | Toe-in | | Adjust | | | | ☆ | | | | | | | | | | | G-26 |
| 20 | Intake air line | | Check | | | | ☆ | | | | | | | | | | | — |
| | | | Replace | | | | | | | | | | | | ☆ | *** | @ | — |
| 21 | Fuel filter element | | Replace | | | | | ☆ | | | | | | | | | @ | G-27 |
| 22 | Front axle pivot | | Adjust | | | | | | ☆ | | | | | | | | | G-29 |
| 23 | Engine valve clearance | | Adjust | | | | | | | ☆ | | | | | | ☆ | | 1-S19 |
| 24 | Fuel injection nozzle injection pressure | | Check | | | | | | | | ☆ | | | | | | @ | 1-S68 |
| 25 | Injection pump | | Check | | | | | | | | | ☆ | | | | | @ | 1-S67 |
| 26 | Cooling system | | Flush | | | | | | | | | | | ☆ | | | | G-30, 31 |
| 27 | Coolant | | Change | | | | | | | | | | | ☆ | | | | G-30, 31 |
| 28 | Fuel system | | Bleed | | | | | | | | | | | | | | | G-32 |
| 29 | Clutch housing water | | Drain | | | | | | | | | | | | | | | G-32 |
| 30 | Fuse | | Replace | | | | | | | | | | | | | | | G-33 |
| 31 | Light bulb | | Replace | | | | | | | | | | | | | | | G-33 |

■ IMPORTANT

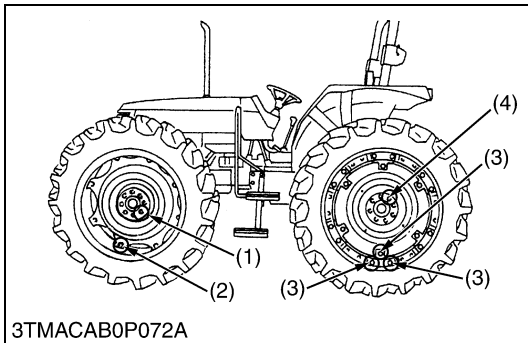
- The jobs indicated by ★ must be done after the first 50 hours of operation.
- * : Air cleaner should be cleaned more often in dusty conditions than in normal conditions.
- ** : Every year or every 6 times of cleaning.
- *** : Replace only if necessary.
- The items listed above (@ marked) are registered as emission related critical parts by KUBOTA in the U.S.EPA nonroad emission regulation. As the engine owner, you are responsible for the performance of the required maintenance on the engine according to the above instruction.

Please see the Warranty Statement in detail.

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[4] CHECK AND MAINTENANCE

(1) Check Points of Initial 50 Hours



Checking Wheel Mounting Nuts Tightening Torque

⚠ CAUTION

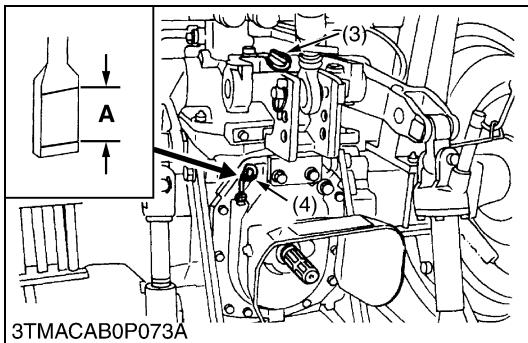
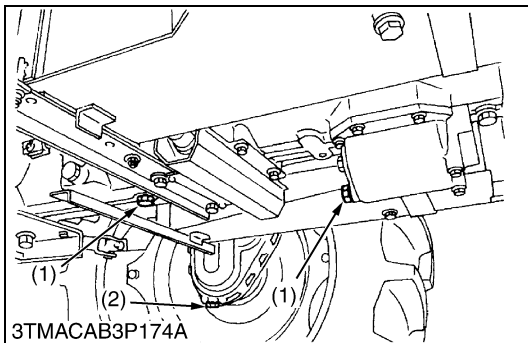
- Never operate tractor with a loose rim, wheel, or axle.
 - Any time bolts and nuts are loosened, retighten to specified torque.
 - Check all bolts and nuts frequently and keep them tight.
1. Check the wheel mounting nut regularly especially when new. If there are loosened, tighten as follows.

| | | |
|-------------------|--------------------------|---|
| Tightening torque | Front wheel mounting nut | 260 to 304 N-m 26.5 to 31.0 kgf-m 192 to 224 ft-lbs |
| | Front wheel rim bolt | 198 to 279 N-m 20.2 to 28.4 kgf-m 146 to 205 ft-lbs |
| | Rear wheel mounting nut | 260 to 304 N-m 26.5 to 31.0 kgf-m 192 to 224 ft-lbs |
| | Rim clamp bolt | 305 to 373 N-m 31.1 to 38.0 kgf-m 225 to 275 ft-lbs |

- (1) Front Wheel Mounting Nut (3) Rim Clamp Bolt
 (2) Front Wheel Rim Bolt (4) Rear Wheel Mounting Nut

W1042468

(2) Check Points of Every 600 Hours



Changing Transmission Fluid

⚠ CAUTION

- Allow engine to cool down sufficiently, oil can be hot and can burn.
1. To drain the used oil, remove the drain plug (1) and (2) at the bottom of the transmission case and drop axle case and drain the oil completely into the oil pan.
 2. After drain reinstall the drain plug (1) and (2).
 3. Fill with the new KUBOTA SUPER UDT fluid up to the upper notch on the dipstick (4). (See page MG-2.)
 4. After running the engine for a few minutes, stop the engine and check the oil level again, add oil to prescribed level.

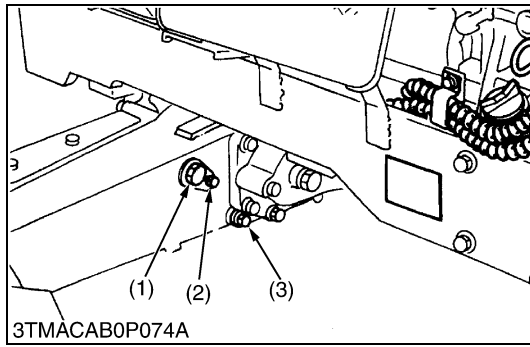
■ IMPORTANT

- Do not operate the tractor immediately after changing the transmission fluid.
- Run the engine at medium speed for a few minutes to prevent damage to the transmission.

| | | |
|--------------|-----------------------|--|
| Oil Capacity | Standard | 56 L 59.2 U.S.qts. 49.3 Imp.qts. |
| | With 80 in. wide axle | 57 L 60.1 U.S.qts. 50.2 Imp.qts. |

- (1) Drain Plug
 (2) Drain Plug (both side)
 (3) Oil Inlet
 (4) Dipstick

A : Oil level acceptable within this range.



Changing Front Differential Case Oil

1. To drain the used oil, remove the drain plug (3) and oil inlet port plug (1) at the front differential case and drain the oil completely into the oil pan.
2. After draining reinstall the drain plug (3).
3. Remove the oil level check plug (2).
4. Fill with the new oil up to the lower rim of check plug port.
(See page MG-2.)
5. After filling reinstall the oil inlet port plug (1) and check plug (2).

| | | |
|--------------|-----------------------|---------------------------------------|
| Oil Capacity | Standard | 6.0 L 6.3 U.S.qts. 5.3 Imp.qts. |
| | With 80 in. wide axle | 7.0 L 7.3 U.S.qts. 6.2 Imp.qts. |

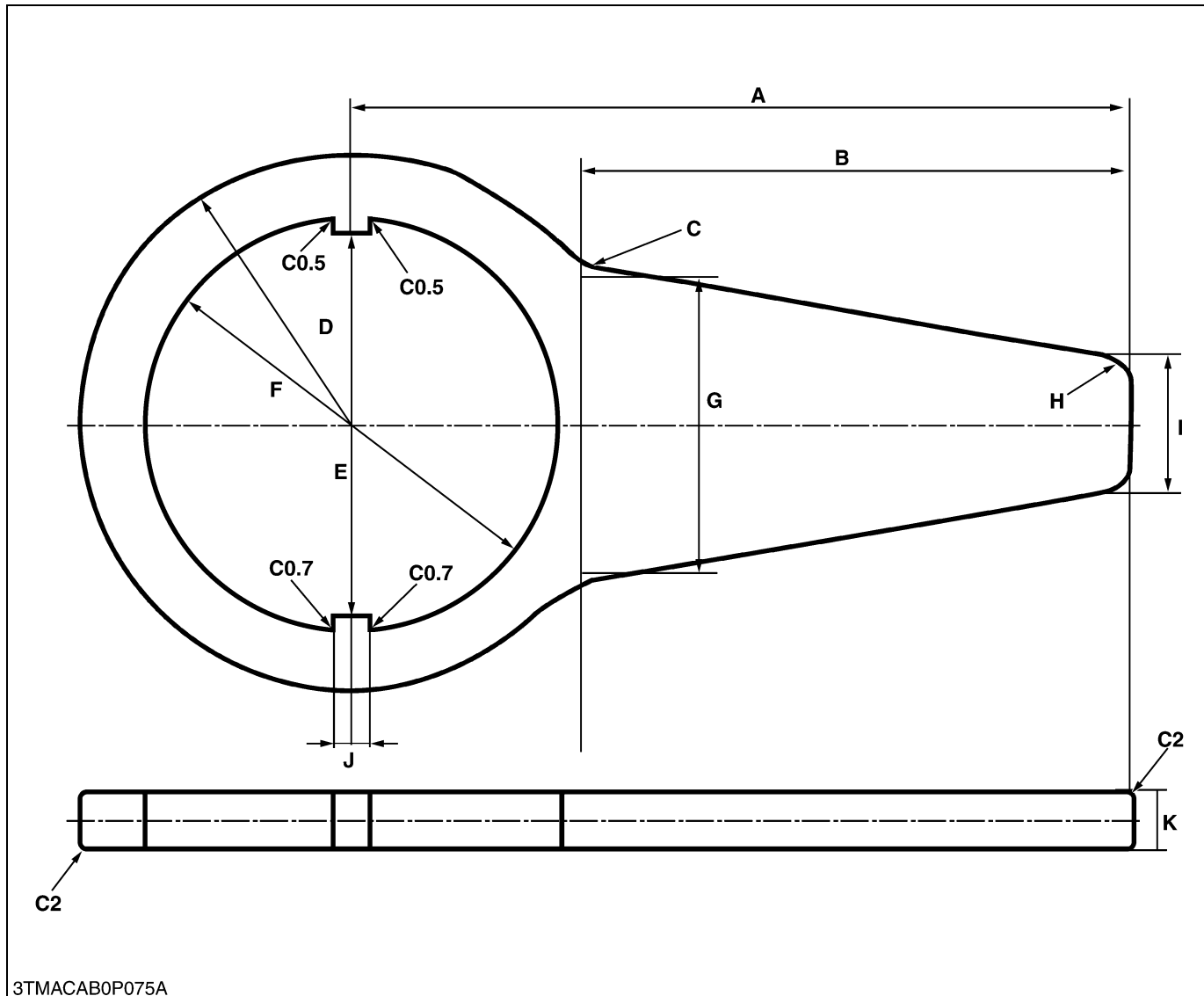
- (1) Oil Inlet Port Plug
(2) Check Plug

- (3) Drain Plug

W1017992

[5] SPECIAL TOOL**Rear Axle Nut Wrench 92**

Application: Use for removing and installing a rear axle nut.



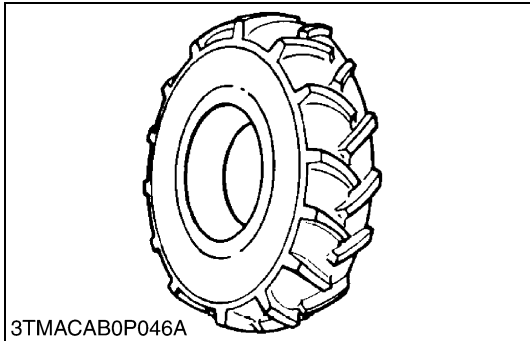
| | | | |
|---|--|------|---------------------------------|
| A | 177 mm (6.97 in.) | H | 10 mm radius (0.39 in. radius) |
| B | 130 mm (51.2 in.) | I | 30 mm (1.18 in.) |
| C | 20 mm radius (0.79 in. radius) | J | 7.6 to 7.8 mm (0.3 to 0.31 in.) |
| D | 59.5 mm radius (2.34 in. radius) | K | 14 mm (0.55 in.) |
| E | 85.5 to 86.1 mm (3.37 to 3.39 in.) | C0.5 | Chamfer 0.5 mm (0.0197 in.) |
| F | 92.5 to 93.1 mm dia. (3.64 to 3.67 in. dia.) | C0.7 | Chamfer 0.7 mm (0.0276 in.) |
| G | 69 mm (2.72 in.) | C2 | Chamfer 2 mm (0.079 in.) |

[6] TIRES

(1) Type of Tire

■ **IMPORTANT**

- Do not use tires larger than specified.



The following tires can be mounted on mode M9000DT-M.

| Model | Type of Tire | Front | Rear |
|-----------|--------------|-----------------------------|-----------------------------|
| M9000DT-M | Farm Tire | 13.6-38, 6PR 9.5R48, 6PR | 13.6-38, 6PR 9.5R48, 6PR |

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(2) Tire Pressure

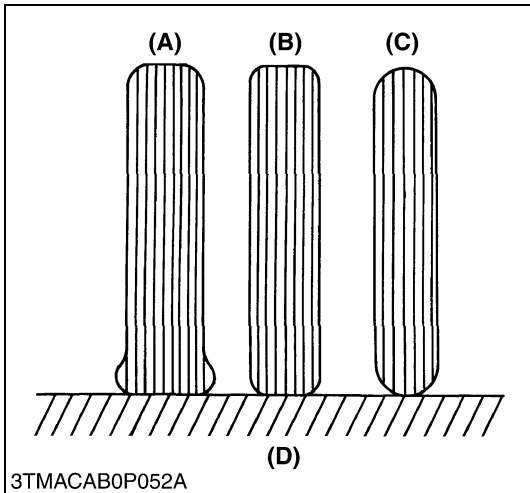


WARNING

- To avoid personal injury :
 - Do not attempt to mount a tire. This should be done by a qualified person with the proper equipment.
 - Always maintain the correct tire pressure. Do not inflate tires above the recommended pressure shown in the operator's manual

■ **IMPORTANT**

- Do not use tires larger than specified.



3TMACAB0P052A

Through the tire pressure is factory-set to the prescribed level, it naturally drops slowly in the course of time. Thus, check it every day and inflate as necessary.

To inflate the wheel tires, use an air compressor or hand pump.

■ **Recommended Inflation Pressure**

- Maintain the pressure shown below for normal use.

| | Tire sizes | Inflation pressure |
|-------|----------------|--|
| Front | 13.6 – 38, 6PR | 150 kPa (1.5 kgf/cm ² , 22 psi) |
| | 9.5R48, 6PR | 200 kPa (2.0 kgf/cm ² , 30 psi) |
| Rear | 13.6 – 38, 6PR | 150 kPa (1.5 kgf/cm ² , 22 psi) |
| | 9.5R48, 6PR | 200 kPa (2.0 kgf/cm ² , 30 psi) |

■ **NOTE**

- Maintain the maximum pressure in front tires, if using a front loader or when equipped with lots of front weight.

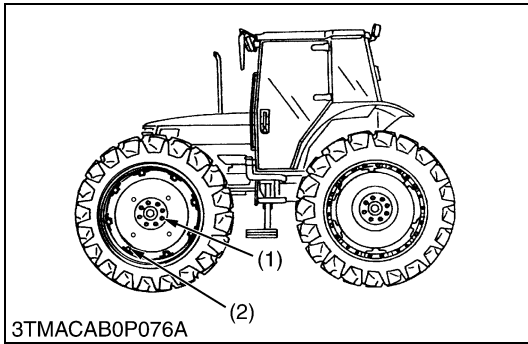
(A) Insufficient
(B) Standard

(C) Excessive
(D) Ground

W1043580

(3) Treads Adjustment

(A) Front Wheel



Front tread width can be adjusted as shown with the standard equipped tires.

To change the tread width

1. Remove the wheel rim and disk mounting bolts.
2. Change the position of the rim and disk (right and left) to the desired position, and tighten the bolt.
3. Adjust the toe-in [2 to 8 mm (0.1 to 0.3 in.)].

IMPORTANT

- Always attach wheels as shown in the drawing.
- If not attached as illustrated, transmission parts may be damaged.
- When re-fitting or adjusting a wheel, tighten the bolts to the following torques then recheck after driving the tractor 200 m (200 yards) and thereafter according to service interval.

NOTE

- Wheels with beveled or tapered holes, use the tapered side of lug nut.

| | | |
|-------------------|--------------------------|---|
| Tightening torque | Front wheel mounting nut | 260 to 304 N-m 26.5 to 31.0 kgf-m 192 to 224 ft-lbs |
| | Front wheel rim nut | 198 to 278 N-m 20.2 to 28.4 kgf-m 146 to 205 ft-lbs |

(1) Front Wheel Mounting Nut

(2) Front Wheel Rim Nut

W1031994

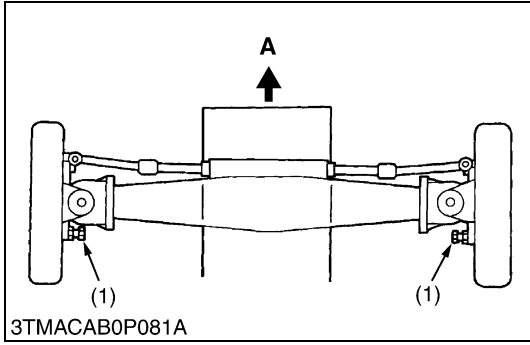
| | | | |
|-----------------------|------------------|--------------------|--------------------|
| Standard | - | 1565 mm (61.6 in.) | 1665 mm (65.6 in.) |
| With 80 in. wide axle | 1830 mm (72 in.) | 1925 mm (75.8 in.) | 2025 mm (79.7 in.) |
| 13.6-38 | | | |
| | 3TMACAB0P077A | 3TMACAB0P078A | 3TMACAB0P079A |

A : Tread

W1031401

| | | |
|-----------------------|--------------------|--------------------|
| Standard | 1550 mm (61.1 in.) | 1655 mm (65.3 in.) |
| With 80 in. wide axle | 1910 mm (75.4 in.) | 2015 mm (79.5 in.) |
| 9.5R48 | | |
| | 3TMACAB0P080A | |

(B) Adjustment Front Wheel Turning Stopper Bolt



Take the following steps to adjust the turning angle with the stopper.

1. Slightly tighten the stopper bolt.
2. Start the engine. Turn the steering wheel to the right and left to get the stopper two or three times into contact with the bevel gear case. (This is to position the stopper's contact face.)
3. Then hold the stopper with an adjustable wrench to prevent it from getting out of position. Finally tighten the stopper bolt to the specified torque.

■ IMPORTANT

- The turning angle varies depending on the presence or absence of the front weight bumper as well as the tire size. Adjust the stopper bolt with these factors in mind.
- Make sure that stopper bolts are always tightened to the correct torque.

(1) Stopper Bolt

A : Front

W1020179

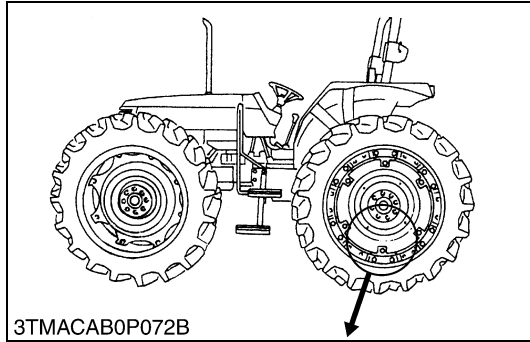
| Stopper bolts adjustment (ex. LH stopper bolt) | | |
|--|--|--|
| Tread | 2025 mm (79.7 in.) 2015 mm (79.5 in.) | 1925 mm (75.8 in.) 1830 mm (72 in.) 1910 mm (75.4 in.) |
| Stopper | <p>3TMACAB0P082A</p> | <p>3TMACAB0P083A</p> |
| Tread | 1665 mm (65.6 in.) 1655 mm (65.3 in.) | 1565 mm (61.6 in.) 1550 mm (61.1 in.) |
| Stopper | <p>3TMACAB0P084A</p> | <p>3TMACAB0P085A</p> |

L1 : 12 mm (0.47 in.)

L2 : 3 mm (0.19 in.)

B : Stopper Bolt

(C) Rear Wheels



Rear tread width ranges from approximately 1525 to 2045 mm (60 to 80 in.) and is adjustable in 100 mm (4 in.) increments.

To change the rear tread.

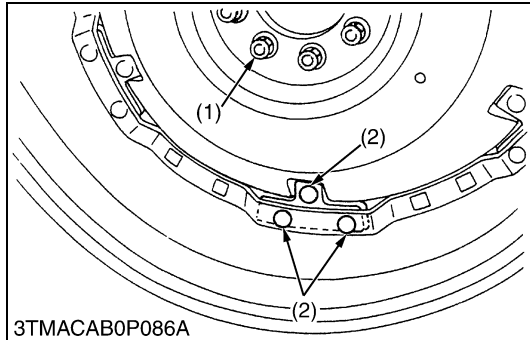
1. Remove the clamp mounting bolts.
2. Change the clamp position of the rim and disk to the desired position, and tighten the bolts.

| | | |
|-------------------|-------------------------|---|
| Tightening torque | Rear wheel mounting nut | 260 to 304 N-m 26.5 to 31.0 kgf-m 191.8 to 224.2 ft-lbs |
|-------------------|-------------------------|---|

(1) Rear Wheel Mounting Nut

(2) Rim Clamp Bolt

W1021223



| | | | |
|-----------------------|----------------------|----------------------|----------------------|
| Standard | - | 1525 mm (60.0 in.) | 1630 mm (64.2 in.) |
| With 80 in. wide axle | 1845 mm (72.6 in.) | 1940 mm (76.3 in.) | 2045 mm (80.6 in.) |
| 13.6-38 | <p>3TMACAB0P087A</p> | <p>3TMACAB0P088A</p> | <p>3TMACAB0P089A</p> |

(1) Rear Wheel Rim

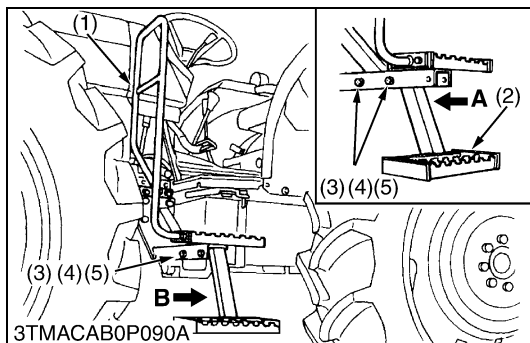
(2) Rear Wheel Disc

(3) Clamp

(4) Tread

W1030296

(4) Auxiliary Steps



Reposition the auxiliary steps, as required according to the tread.

| | | |
|-------------------|------|---|
| Tightening torque | Bolt | 77 to 90 N-m 7.9 to 9.2 kgf-m 57 to 67 ft-lbs |
|-------------------|------|---|

| | | |
|-----------------|---------|-------------------------------------|
| Auxiliary steps | Tread A | 1515 to 1615 mm 59.6 to 63.6 in. |
| | Tread B | 1830 to 2030 mm 72 to 80 in. |

(1) Handrail

(2) Auxiliary Step

(3) Bolt

(4) Spring Washer

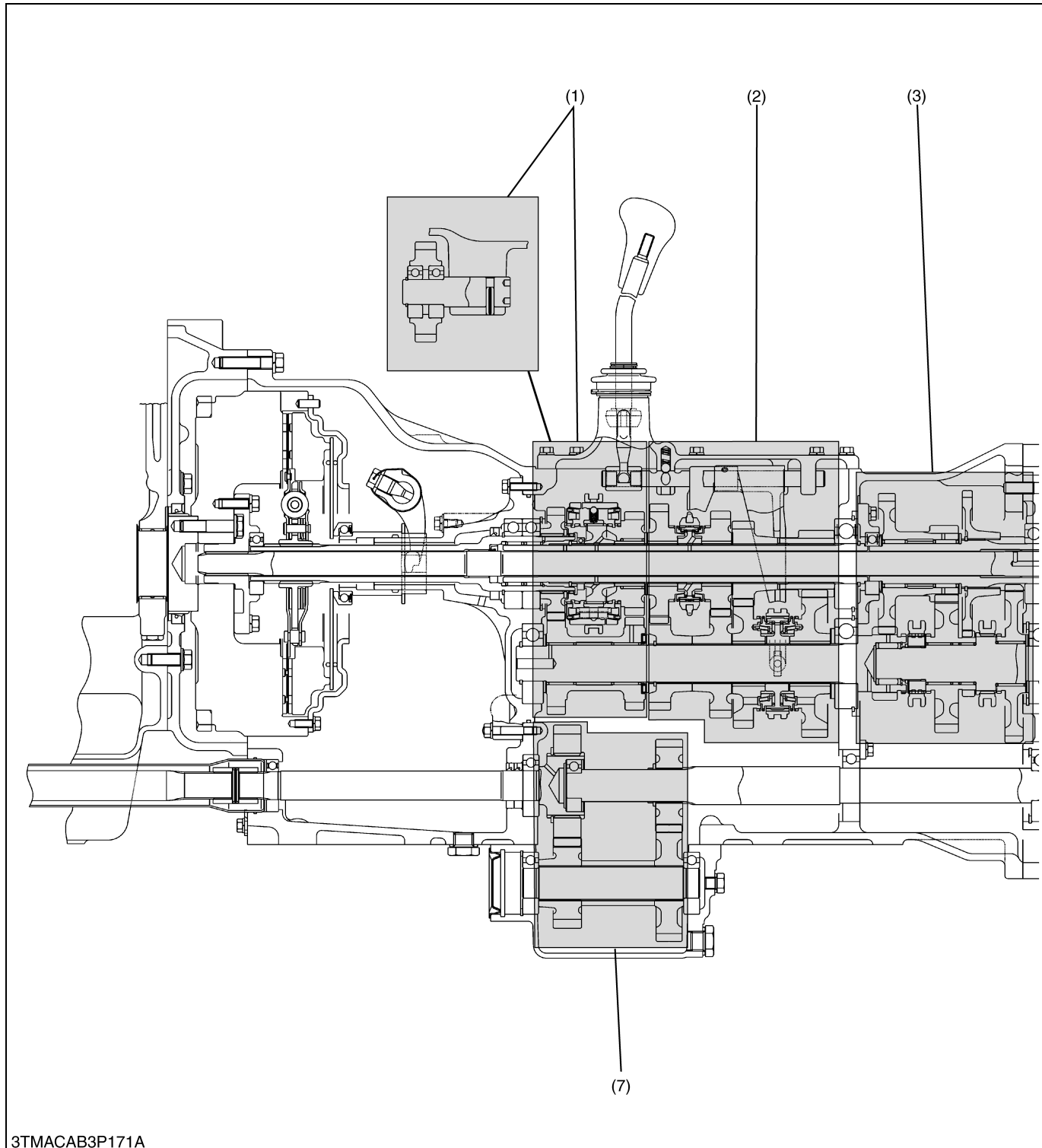
(5) Nut

W1044475

3. TRANSMISSION

[1] MECHANISM

(1) Structure



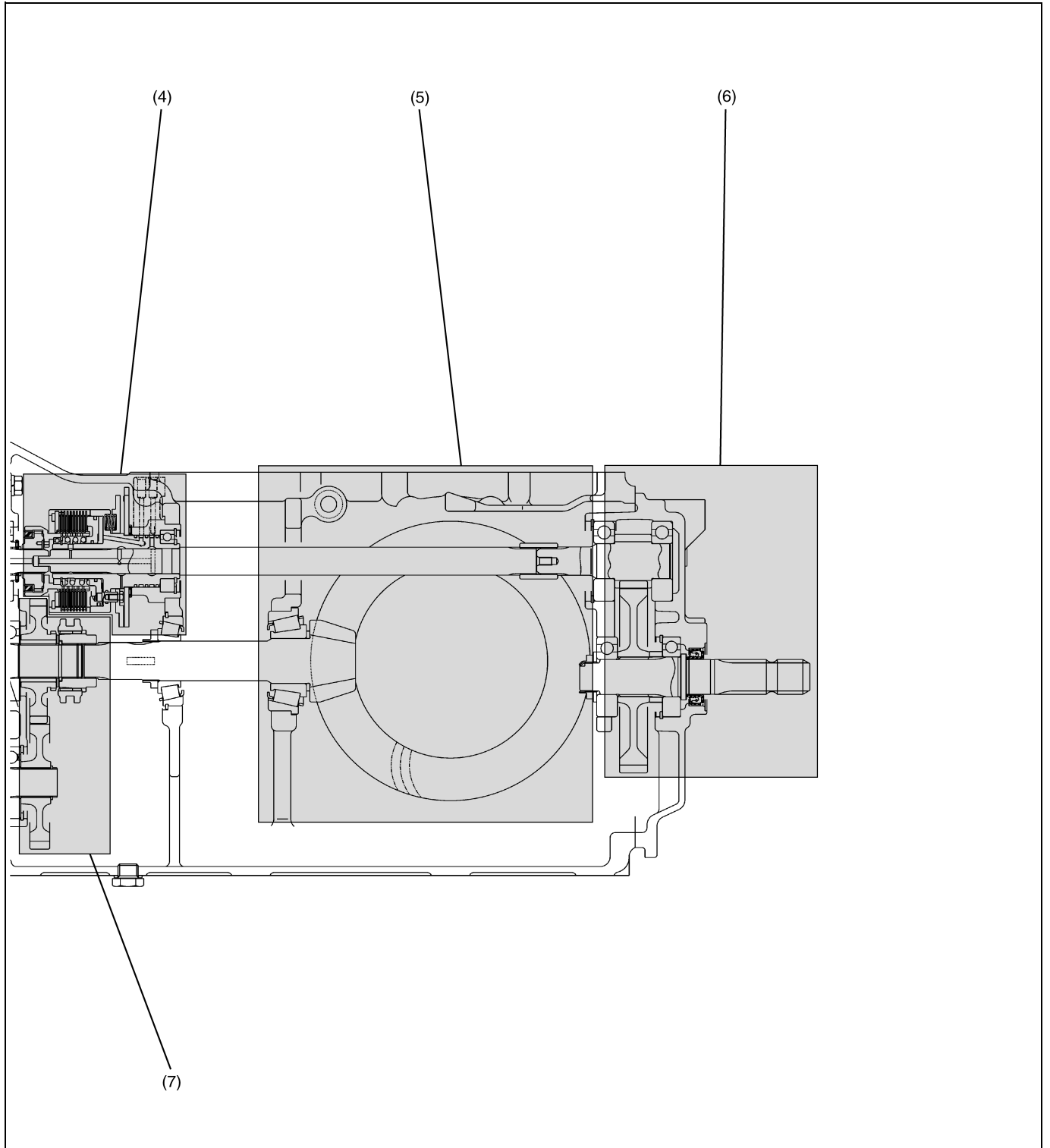
3TMACAB3P171A

(1) Shuttle Shift Section (Forward-Reverse)

(3) Hi-Lo, Creep Shift Section

(4) PTO Clutch Section

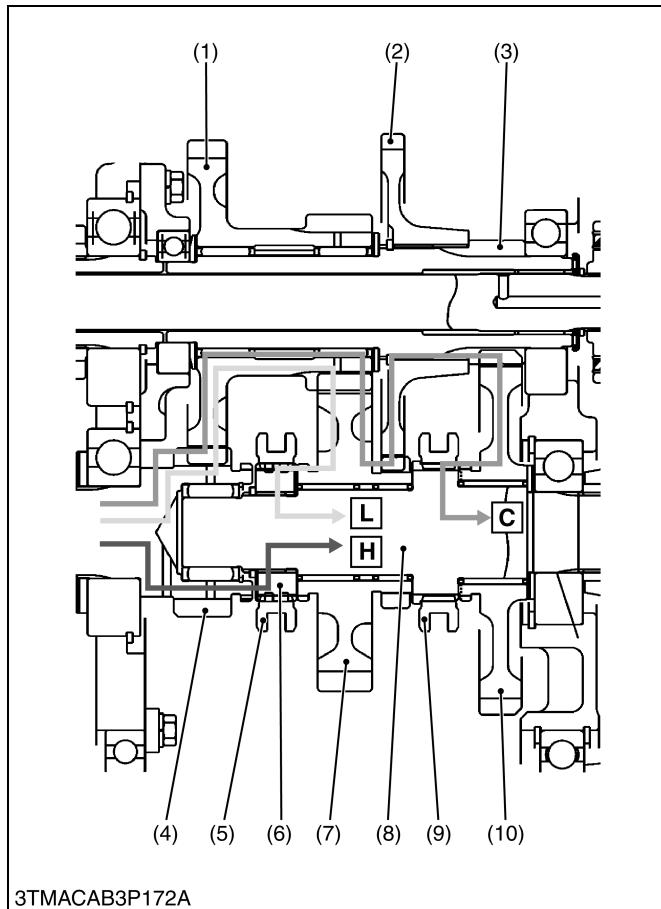
(2) Main Gear Shift Section



(5) Differential Gear Section

(6) PTO Gear Section

(7) Four Wheel Drive Section

(2) Travelling System**(A) Hi-Lo, Creep Shift Section****■ Hi-Lo, Creep Shift****■ Hi Range**

18T Gear Shaft (4) → Shifter (5) → Hub (6) → Shaft (8).

■ Low Range

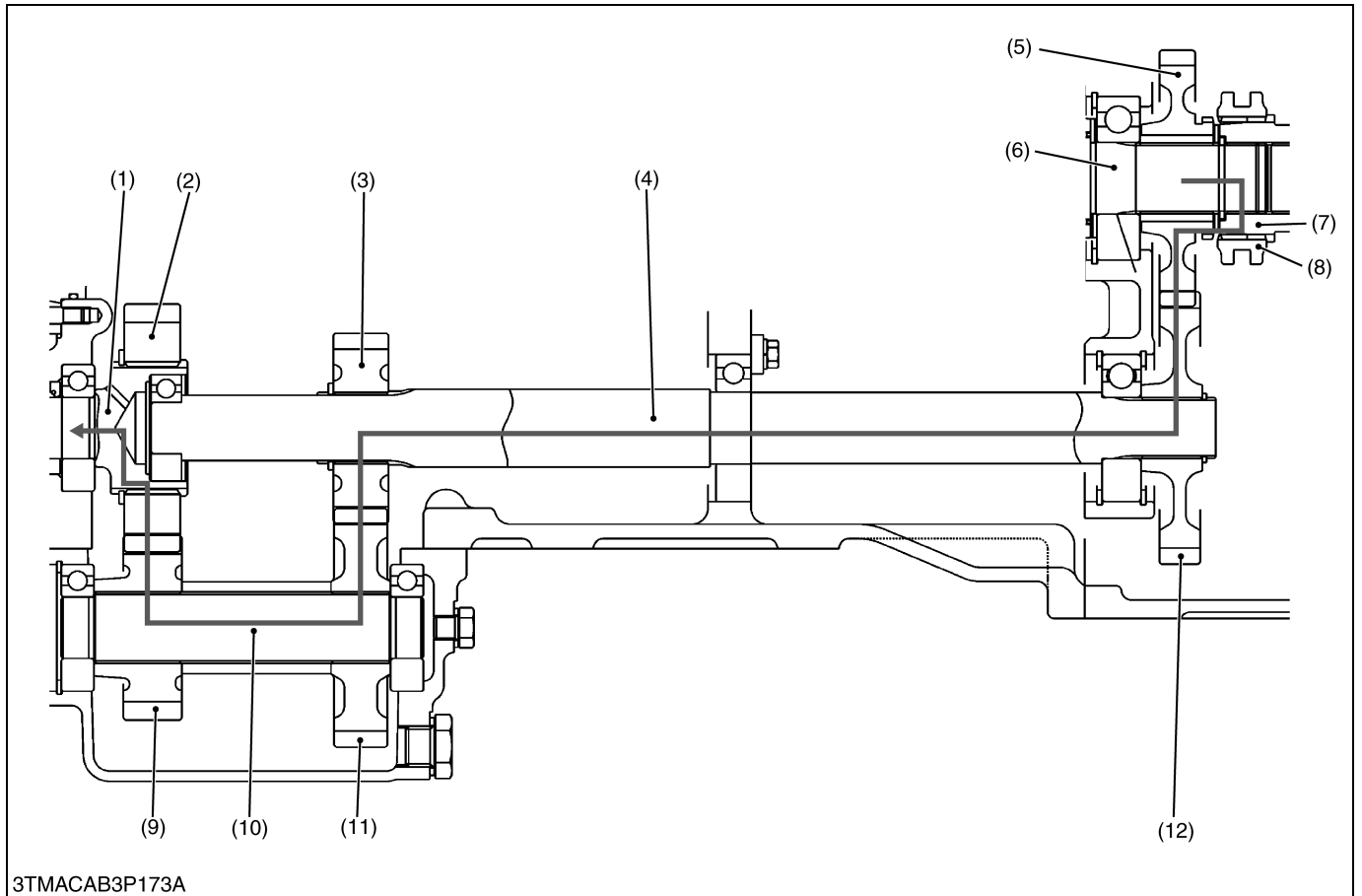
18T Gear Shaft (4) → 38T-19T Gear (1) → 37T-19T Gear (7) → Shifter (5) → Hub (6) → Shaft (8)

■ Creep Range

18T Gear Shaft (4) → 38T-19T Gear (1) → 37T-19T Gear (7) → 47T Gear (2) → 15T Gear Shaft (3) → 51T Gear (10) → Shifter (9) → Shaft (8)

- | | |
|--------------------|------------------|
| (1) 38T-19T Gear | (6) Hub |
| (2) 47T Gear | (7) 37T-19T Gear |
| (3) 15T Gear Shaft | (8) Shaft |
| (4) 18T Gear Shaft | (9) Shifter |
| (5) Shifter | (10) 51T Gear |

W1012972

(B) Four Wheel Shift Section

3TMACAB3P173A

- | | | | |
|-----------------------|-----------------------|--------------|---------------|
| (1) Propeller Shaft 2 | (4) Propeller Shaft 1 | (7) Coupling | (10) Shaft 2 |
| (2) 28T Gear | (5) 33T Gear | (8) Shifter | (11) 31T Gear |
| (3) 24T Gear | (6) Shaft 1 | (9) 20T Gear | (12) 36T Gear |

■ 4 Wheel Drive Engaged

Shaft 1 (6) → Coupling (7) → Shifter (8) → 33T Gear (5) → 36T Gear (12) → Propeller Shaft 1 (4) → 24T Gear (3) → 31T Gear (11) → Shaft 2 (10) → 20T Gear (9) → 28T Gear (2) → Propeller Shaft 2 (1).

[2] SERVICING

(1) Servicing specifications

| Item | | Factory Specification | Allowable Limit |
|---------------------|-----------|-----------------------------|-----------------|
| Shuttle Rod | Length | 268 mm 10.55 in. | – |
| Auxiliary Shift Rod | Length L1 | Approx. 318 mm 12.52 in. | – |
| Auxiliary Shift Rod | Length L2 | Approx. 250 mm 9.84 in. | – |

W1013874

(2) Tightening Torques

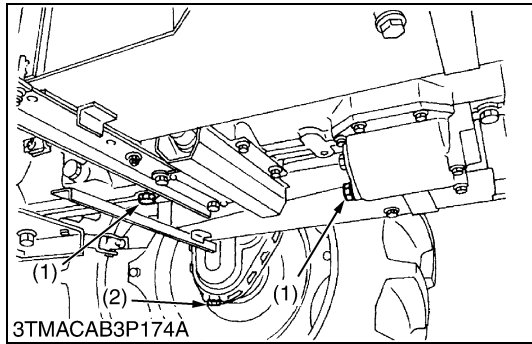
Tightening torques of screws, bolts and nuts on the table below are especially specified.
(For general use screws, bolts and nuts : See page G-13.)

| Item | N-m | kgf-m | ft-lbs |
|---|----------------|--------------|----------------|
| Main delivery pipe and return pipe retaining nut | 46.6 to 51.0 | 4.8 to 5.2 | 34.7 to 37.6 |
| Turning delivery hose retaining nut | 24.5 to 29.4 | 2.5 to 3.0 | 18.1 to 21.7 |
| Steering controller mounting screws | 48.1 to 55.9 | 4.9 to 5.7 | 35.4 to 41.2 |
| Starter's terminal B mounting nut | 8.8 to 11.8 | 0.9 to 1.2 | 6.5 to 8.7 |
| Gear case mounting screw | 48.1 to 55.9 | 4.9 to 5.7 | 35.4 to 41.2 |
| Engine and clutch housing mounting screw, nut | 77.5 to 90.2 | 7.9 to 9.2 | 57.1 to 66.5 |
| Engine and clutch housing mounting stud bolt | 38.2 to 45.1 | 3.9 to 4.6 | 28.2 to 33.3 |
| Rear wheel mounting nut | 260 to 304 | 26.5 to 31.0 | 192 to 224 |
| ROPS mounting screw M16 grade 9 screw | 260 to 304 | 26.5 to 31.0 | 192 to 224 |
| Pedal frame mounting screw | 77.5 to 90.2 | 7.9 to 9.2 | 57.1 to 66.5 |
| Transmission case and clutch housing mounting screw | 77.5 to 90.2 | 7.9 to 9.2 | 57.1 to 66.5 |
| Transmission case and clutch housing mounting nut | 103.0 to 117.7 | 10.5 to 12.0 | 76.0 to 86.8 |
| Speed change cover mounting screw | 23.5 to 27.5 | 2.4 to 2.8 | 17.4 to 20.3 |
| Release fork setting screw | 166.7 to 186.3 | 17.0 to 19.0 | 122.9 to 137.4 |
| Bearing holder 1 mounting screw and nut | 23.5 to 27.5 | 2.4 to 2.8 | 17.4 to 20.3 |
| Bearing holder 2 mounting screw | 77.5 to 90.2 | 7.9 to 9.2 | 57.1 to 66.5 |
| Bearing holder 3 mounting screw | 23.5 to 27.5 | 2.4 to 2.8 | 17.4 to 20.3 |

W1012736

(3) Checking, Disassembling and Servicing

(A) Separating Engine and Clutch Housing Case



Draining Transmission Fluid

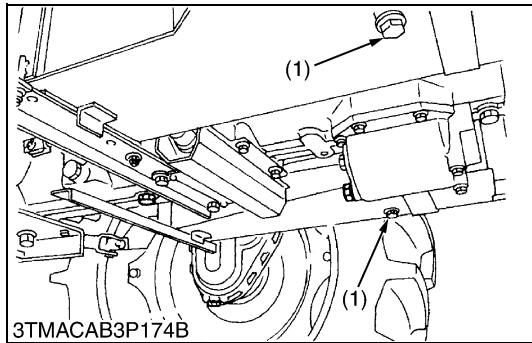
1. Remove the drain plug (1), (2).
2. Drain the transmission fluid.
3. Reinstall the drain plug (1).

| | | | |
|--------------------|----------|-----------------------|--|
| Transmission fluid | Capacity | Standard | 56.0 L 59.2 U.S.qts. 49.3 Imp.qts. |
| | | With 80 in. wide axle | 57.0 L 60.1 U.S.qts. 50.2 Imp.qts. |

(1) Drain Plug

(2) Drain Plug (Both side)

W1010679



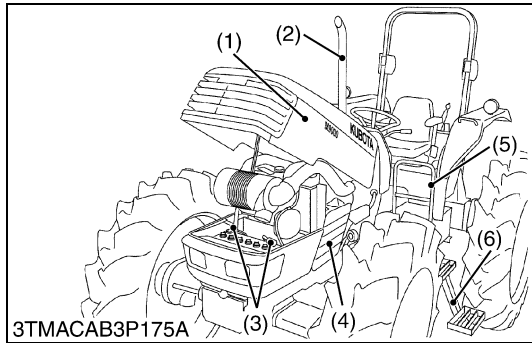
Draining Fuel

1. Place oil pans under the fuel tank.
2. Remove the drain plug (1).
3. Drain the fuel.
4. Reinstall the drain plug (1).

| | |
|----------|--|
| Capacity | 90.0 L 23.8 U.S.gals. 19.8 Imp.gals. |
|----------|--|

(1) Drain Plug

W1010823



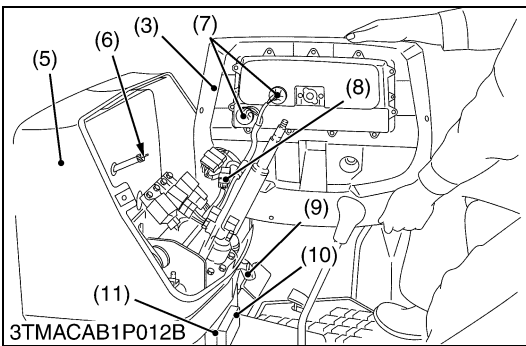
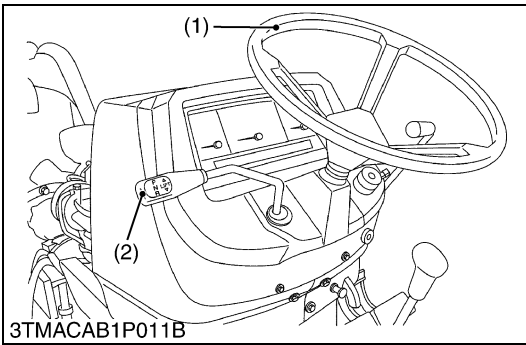
Muffler and Bonnet

1. Remove the muffler (2).
2. Remove the bonnet (1).
3. Disconnect the battery's cable (3).
4. Disconnect the head light 3P connectors.
5. Remove the side cover (4).
6. Remove the handrail (5) and auxiliary step (6).

(1) Bonnet
(2) Muffler (Upper)
(3) Battery Cable

(4) Side Cover
(5) Handrail
(6) Auxiliary Step

W1011064

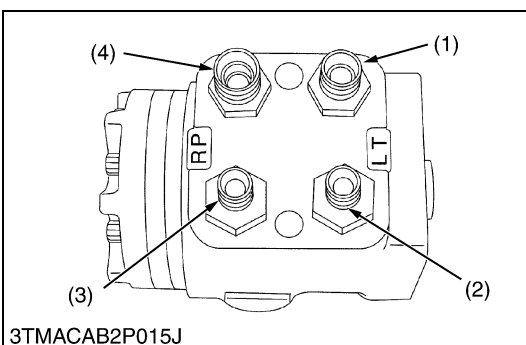
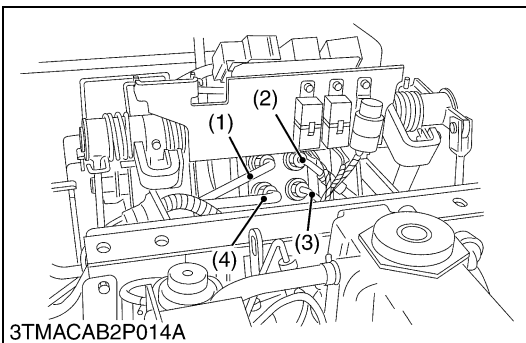


Steering Wheel, Meter Panel and Bonnet

1. Remove the steering wheel (1) with a steering wheel puller (Code No. 07916-5-1090).
2. Remove the shuttle lever grip (2).
3. Remove the meter panel mounting screw and disconnect the meter cable (4).
4. Disconnect the connectors (6).
5. Disconnect the main switch connector (7) and headlight switch connector, hazard and turn signal switch connector.
6. Disconnect the engine stop cable (8) at the engine side.
7. Remove the rear bonnet (3).
8. Remove the fuse box (9) and cover (10).

- | | |
|------------------------|---------------------------|
| (1) Steering Wheel | (6) Connectors |
| (2) Shuttle Lever Grip | (7) Main Switch Connector |
| (3) Rear Bonnet | (8) Engine Stop Cable |
| (4) Meter Cable | (9) Fuse Box |
| (5) Meter Panel | (10) Cover |

W1011214



Piping for Power Steering

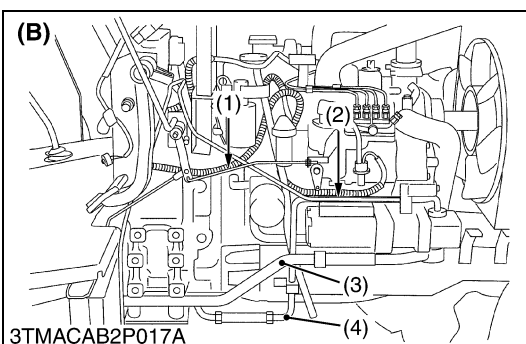
1. Disconnect the turning delivery hoses (2) and (3).
2. Disconnect the main delivery pipe (4).
3. Disconnect the return pipe (1).
4. Remove the steering controller mounting screws.
5. Remove the steering controller.

(When reassembling)

| | | |
|-------------------|--|---|
| Tightening torque | Main delivery pipe and return pipe retaining nut | 46.6 to 51.0 N·m 4.8 to 5.2 kgf·m 34.7 to 37.6 ft·lbs |
| | Turning delivery hose retaining nut | 24.5 to 29.4 N·m 2.5 to 3.0 kgf·m 18.1 to 21.7 ft·lbs |
| | Steering controller mounting screws | 48.1 to 55.9 N·m 4.9 to 5.7 kgf·m 35.4 to 41.2 ft·lbs |

- | | |
|--------------------------------|---------------------------------|
| (1) Return Pipe | (3) Right Turning Delivery Pipe |
| (2) Left Turning Delivery Pipe | (4) Main Delivery Pipe |

W1011609

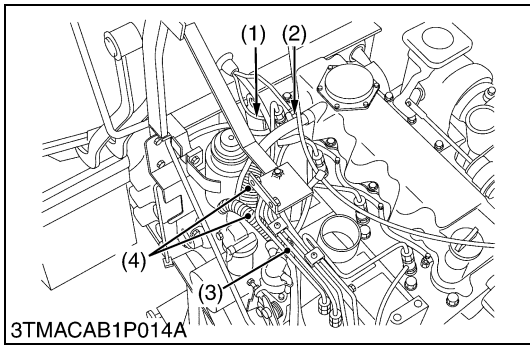


Piping for 3-Point Hydraulic System

1. Remove the accelerator rod (1).
2. Remove the suction pipe (3).
3. Remove the delivery pipe (4) for 3-point hydraulic system.
4. Remove the delivery pipe (2) for power steering.

- | | |
|---------------------|------------------|
| (1) Accelerator Rod | (3) Suction Pipe |
| (2) Delivery Pipe | (4) Delivery |

W1011808

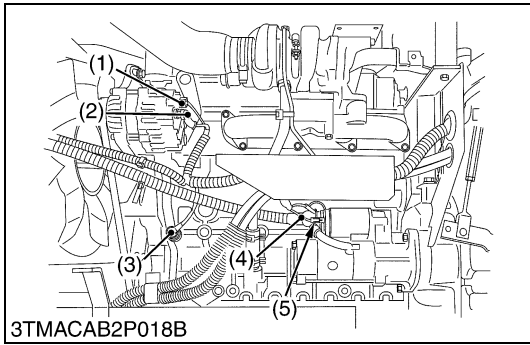


Wire Harness R.H. and Fuel Pipes

1. Disconnect the **3P** connector for solenoid valve (3).
2. Disconnect the wiring lead (2) from the glow plug.
3. Disconnect the coolant thermo sensor **1P** connector (1).
4. Remove the fuel pipes.

- (1) Coolant Thermo Sensor **1P** Connector
- (2) Wiring Lead for Glow Plug
- (3) **3P** Connector for Solenoid Valve
- (4) Fuel Pipes

W1011919



Wire Harness L.H.

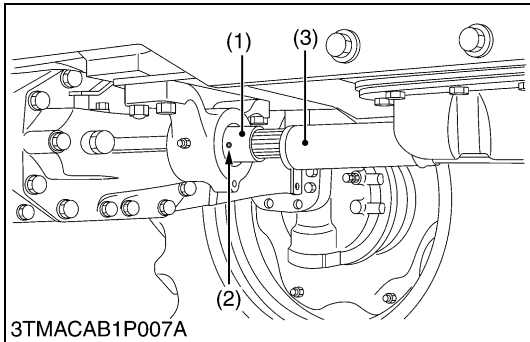
1. Disconnect the alternator **2P** connector (1) and **B** terminal (2).
2. Disconnect the starter motor **C** terminal (5) and **B** terminal (4).
3. Disconnect the engine oil pressure switch terminal (3).

(When reassembling)

| | | |
|-------------------|--|--|
| Tightening torque | Starter's terminal B mounting nut | 8.8 to 11.8 N-m 0.9 to 1.2 kgf-m 6.5 to 8.7 ft-lbs |
|-------------------|--|--|

- (1) Alternator **2P** Connector
- (2) Alternator **B** terminal
- (3) Engine Oil Pressure Switch Terminal
- (4) Starter Motor **B** Terminal
- (5) Starter Motor **C** Terminal

W1012136



Propeller Shaft

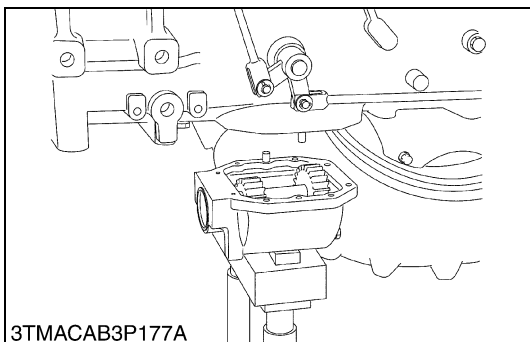
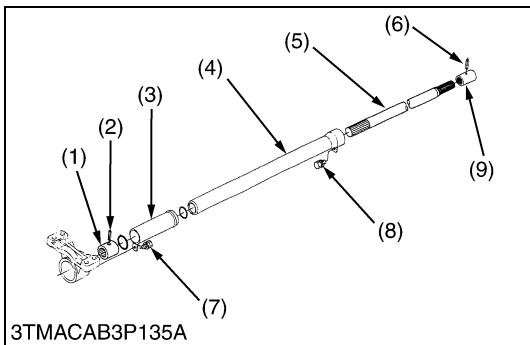
1. Slide the propeller shaft cover (3), (4) after removing the screws (7), (8).
2. Tap out the spring pin (2), (6) and then slide the coupling (1), (9) to the front and rear.

(When reassembling)

- Apply grease to the splines of the propeller shaft (5) and pinion shaft.

- (1) Coupling
- (2) Spring Pin
- (3) Propeller Shaft Cover
- (4) Propeller Shaft Cover
- (5) Propeller Shaft
- (6) Spring Pin
- (7) Screw
- (8) Screw
- (9) Coupling

W1012314



Gear Case

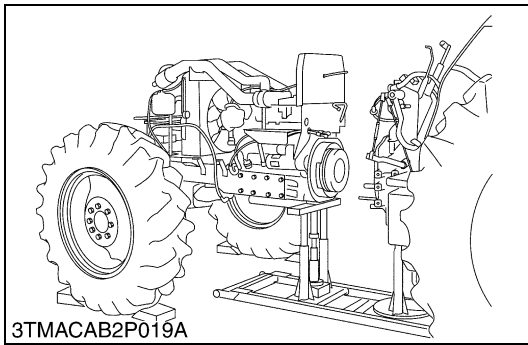
1. Remove the gear case mounting screw.
2. Remove the gear case assembly.

(When reassembling)

- Apply liquid gasket (Three Bond 1216 or equivalent) to joint face of the clutch housing and gear case.

| | | |
|-------------------|--------------------------|---|
| Tightening torque | Gear case mounting screw | 48.1 to 55.9 N-m 4.9 to 5.7 kgf-m 35.4 to 41.2 ft-lbs |
|-------------------|--------------------------|---|

W1012458



Separating Engine from Clutch Housing

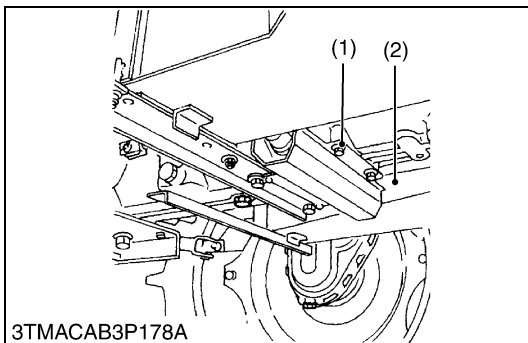
1. Check the engine and clutch housing case are securely mounted on the disassembling stands.
2. Remove the engine mounting screws and nuts, and separate the engine from the clutch housing.

(When reassembling)

- Apply molybdenum disulfide (Three Bond 1901 or equivalent) to the splines of clutch disc bass.
- Apply liquid gasket (Three Bond 1141, 1211 or equivalent) to joint face of the engine and clutch housing.

| | | |
|-------------------|---|---|
| Tightening torque | Engine and clutch housing mounting screw, nut | 77.5 to 90.2 N·m 7.9 to 9.2 kgf·m 57.1 to 66.5 ft-lbs |
| | Engine and clutch housing mounting stud bolt | 38.2 to 45.1 N·m 3.9 to 4.6 kgf·m 28.2 to 33.3 ft-lbs |

W1012575



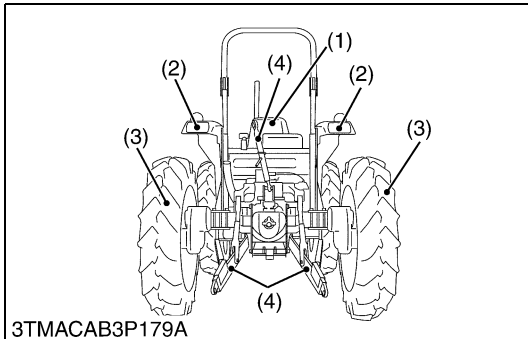
Fuel Tank Connection Hose

1. Remove the fuel hose cover (2).
2. Remove the connection hose (1).

(1) Connection Hose

(2) Fuel Hose Cover

W1012784



Rear Wheel and Fenders

1. Place disassembling stand under the transmission case.
2. Remove the three point linkage (4).
3. Remove the rear wheel (3).
4. Disconnect the **6P** connector for hazard and tail light.
5. Disconnect the jumper leads for PTO safety switch.
6. Remove the fenders (2).
7. Remove the seat (1).

(When reassembling)

■ IMPORTANT

- **Be sure to assemble the seat switch 2P connector to the harness connector with Red / Green and Orange / White color wire. (If equipped OPC system.) (Refer to 9. ELECTRICAL SYSTEM.)**

| | | |
|-------------------|-------------------------|---|
| Tightening torque | Rear wheel mounting nut | 260 to 304 N·m 26.5 to 31.0 kgf·m 192 to 224 ft-lbs |
|-------------------|-------------------------|---|

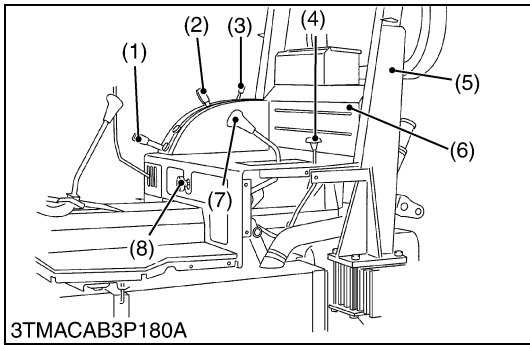
(1) Seat

(3) Rear Wheel

(2) Fender

(4) Three Point Linkage

W1012928



Center Frame and ROPS

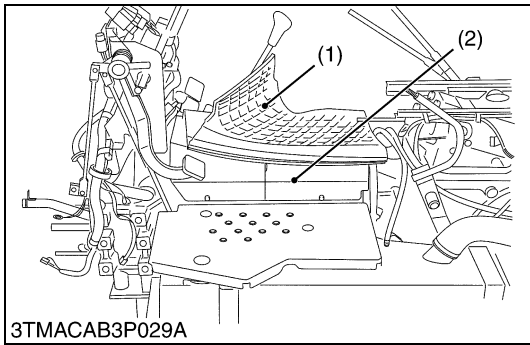
1. Remove the remote valve wire.
2. Remove the draft and position control lever grips (1), (2).
3. Remove the auxiliary speed change lever grip (7).
4. Remove the DT shift lever grip (4).
5. Remove the three point hitch lowering speed control grip (8) and PTO lever (3).
6. Remove the center frame (6).
7. Remove the ROPS (5).

(When reassembling)

| | | |
|-------------------|--|---|
| Tightening torque | ROPS mounting screw M16 grade 9 screw | 260 to 304 N-m 26.5 to 31.0 kgf-m 192 to 224 ft-lbs |
|-------------------|--|---|

- | | |
|---------------------------------|---|
| (1) Position Control Lever Grip | (6) Center Frame |
| (2) Draft Control Lever Grip | (7) Auxiliary Speed Change Lever Grip |
| (3) PTO Lever | (8) Three Point Hitch Lowering Speed Control Grip |
| (4) DT Shift Lever Grip | |
| (5) ROPS | |

W1013193

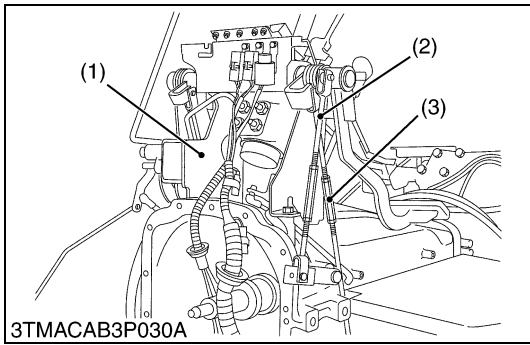


Floor Mat and Housing Cover

1. Remove the floor mat (1).
2. Remove the housing cover (2).

- | | |
|---------------|-------------------|
| (1) Floor Mat | (2) Housing Cover |
|---------------|-------------------|

W1013600



Pedal Frame

1. Disconnect the brake rods (3) (Right and Left).
2. Disconnect the clutch rod (2).
3. Disconnect the shuttle rod (5).
4. Remove the delivery pipe (4) for PTO clutch.
5. Remove the pedal frame (1) with wire harness.

■ IMPORTANT

- After reassembling the pedal frame, be sure to adjust the brake pedal travel and clutch pedal free travel.

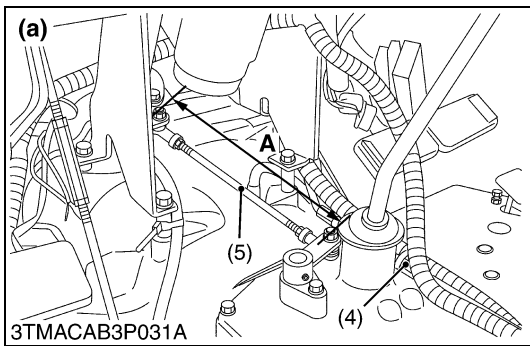
(When reassembling)

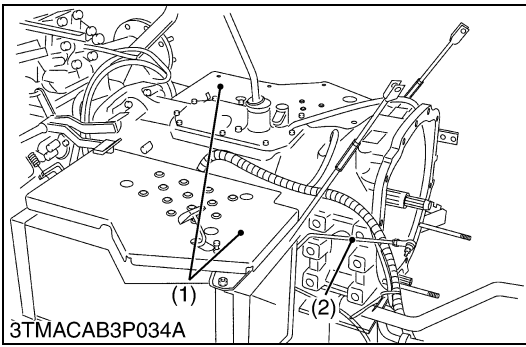
| | | |
|-------------------|----------------------------|---|
| Tightening torque | Pedal frame mounting screw | 77.5 to 90.2 N-m 7.9 to 9.2 kgf-m 57.1 to 66.5 ft-lbs |
|-------------------|----------------------------|---|

| | | |
|----------------------|---------------|---------------------|
| Shuttle rod length A | Factory spec. | 268 mm 10.55 in. |
|----------------------|---------------|---------------------|

- | | |
|-----------------|-------------------|
| (1) Pedal Frame | (4) Delivery Pipe |
| (2) Clutch Rod | (5) Shuttle Rod |
| (3) Brake Rod | |

W1013695



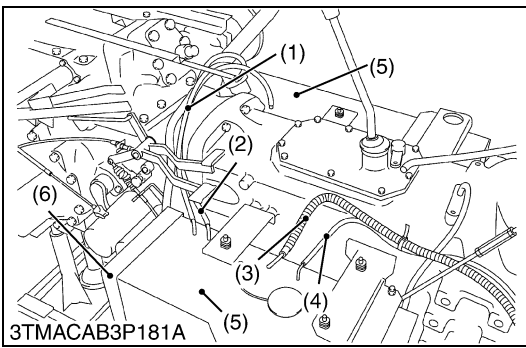


Steps

1. Disconnect the foot accelerator rod (2).
2. Remove the steps (1).

- (1) Steps (2) Foot Accelerator Rod

W1014294

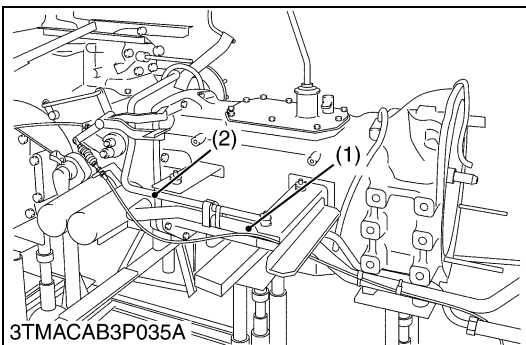


Fuel Tanks

1. Remove the fuel hose (1), (2), (3), (4).
2. Remove the tank bands (6).
3. Remove the fuel tanks (5).

- (1) Fuel Hose 1 (4) Fuel Hose 4
 (2) Fuel Hose 2 (5) Fuel Tank
 (3) Fuel Hose 3 (6) Tank Band

W1014446

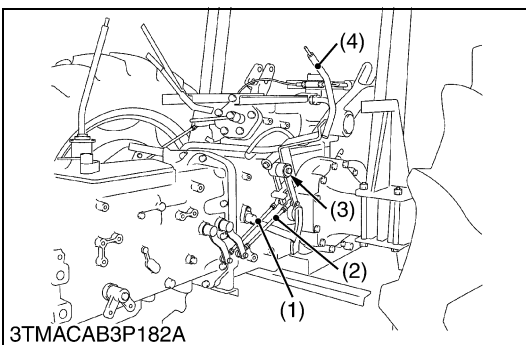


Hydraulic Pipes and Brake Rod

1. Remove the suction pipe (1).
2. Remove the delivery pipe (2) for three point hydraulic system.
3. Remove the brake rods.

- (1) Suction Pipe (2) Delivery Pipe

W1014576



Auxiliary Shift Lever

1. Disconnect the shift rod L1 (1) and L2 (2).
2. Remove the external circlip (3).
3. Take out the shift lever assembly.

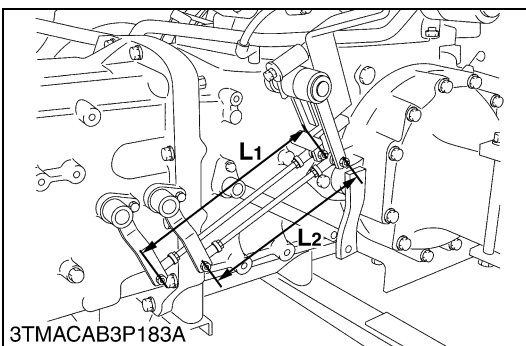
(When reassembling)

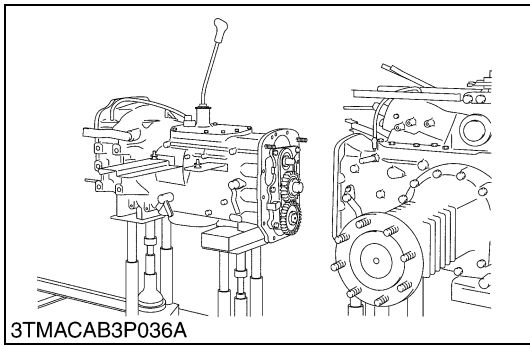
- Be sure to adjust the shift rod length.

| | | |
|---------------------|---------------|-----------------------------|
| Shift rod length L1 | Factory spec. | Approx. 318 mm 12.52 in. |
| Shift rod length L2 | Factory spec. | Approx. 250 mm 9.84 in. |

- (1) Shift Rod (3) External Circlip
 (2) Shift Rod (4) Shift Lever

W1014666





Separating Transmission Case

1. Check the clutch housing case and transmission case are securely mounted on the disassembling stands.
2. Remove the transmission case mounting screws and nuts.
3. Separate the transmission case from the clutch housing.

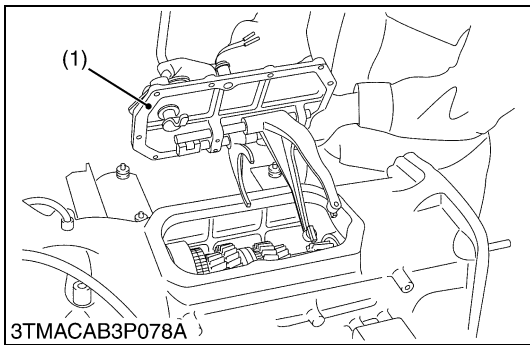
(When reassembling)

- Apply liquid gasket (Three Bond 1216 or equivalent) to joint face of transmission case and clutch housing case.

| | | |
|-------------------|---|---|
| Tightening torque | Transmission case and clutch housing mounting screw | 77.5 to 90.2 N·m 7.9 to 9.2 kgf·m 57.1 to 66.5 ft·lbs |
| | Transmission case and clutch housing mounting nut | 103.0 to 117.7 N·m 10.5 to 12.0 kgf·m 76.0 to 86.8 ft·lbs |

W1014796

(B) Disassembling Clutch Housing Case



Speed Change Cover

1. Remove the speed change cover (1).

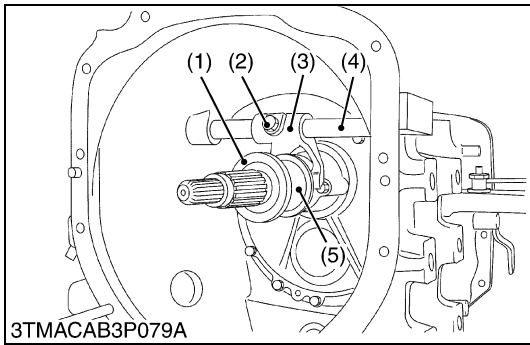
(When reassembling)

- When reassembling the speed change cover (1), set the shifter and fork in neutral position.
- Apply liquid gasket (Three Bond 1216 or equivalent) to seam of speed change cover and clutch housing.

| | | |
|-------------------|-----------------------------------|---|
| Tightening torque | Speed change cover mounting screw | 23.5 to 27.5 N·m 2.4 to 2.8 kgf·m 17.4 to 20.3 ft·lbs |
|-------------------|-----------------------------------|---|

(1) Speed Change Cover

W1014944



Clutch Release Bearing and Bearing Case

1. Draw out the release bearing (1) and the release hub (5) together.
2. Remove the release fork setting screw (2).
3. Draw out the control shaft (4) to take out the release fork (3).

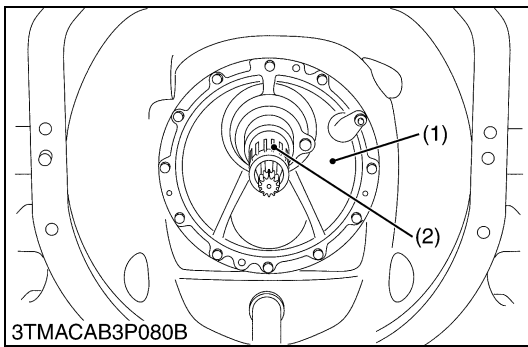
(When reassembling)

- After tightening the release fork setting screw to the specified torque, insert a wire through the holes of the setting screw head and release fork.
- Apply grease to the sliding surface of the clutch release hub.
- Apply grease to the bushing of control shaft.

| | | |
|-------------------|----------------------------|---|
| Tightening torque | Release fork setting screw | 166.7 to 186.3 N·m 17.0 to 19.0 kgf·m 122.9 to 137.4 ft·lbs |
|-------------------|----------------------------|---|

- (1) Release Bearing
- (2) Release Fork Setting Screw
- (3) Release Fork
- (4) Control Shaft
- (5) Release Hub

W1015074



Bearing Holder

1. Remove the bearing holder 1 (1) with the shaft (2) by screwing M8 × Pitch 1.25 mm screws into holes **A** and **B**.

(When reassembling)

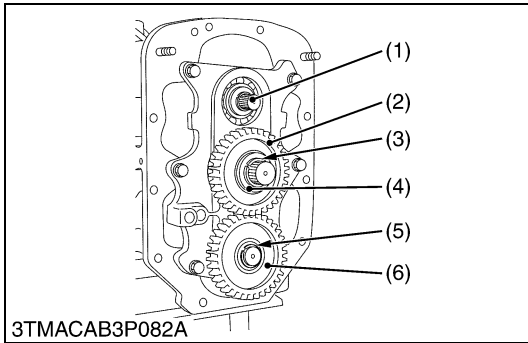
- Apply grease or transmission fluid to the O-ring.

| | | |
|-------------------|---|---|
| Tightening torque | Bearing holder 1 mounting screw and nut | 23.5 to 27.5 N·m 2.4 to 2.8 kgf·m 17.4 to 20.3 ft·lbs |
|-------------------|---|---|

(1) Bearing Holder 1

(2) Shaft

W1015255



Front Wheel Drive Gear

1. Remove the external snap ring (3) and 33T gear (2) with collar (4).
2. Remove the external snap ring (5) and 36T gear (6).
3. Draw out the PTO propeller shaft (1).

(1) PTO Propeller Shaft

(4) Collar

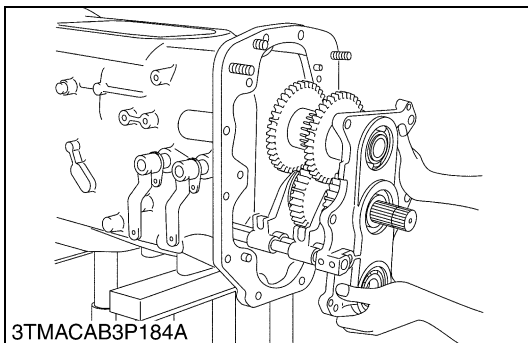
(2) 33T Gear

(5) External Snap Ring

(3) External Snap Ring

(6) 36T Gear

W1015496



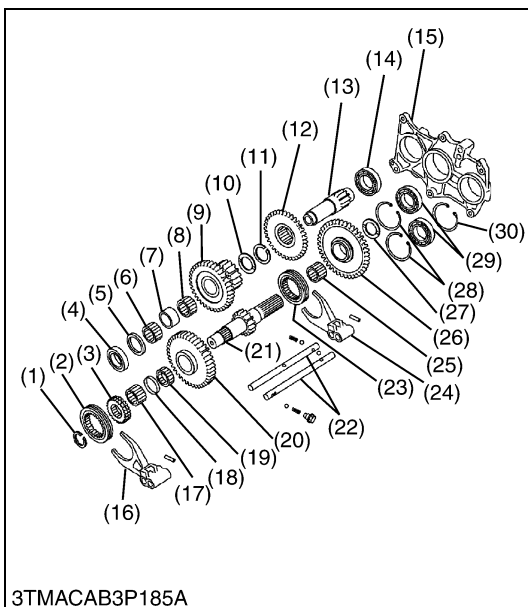
Disassembling Auxiliary Shift Section

1. Take out the PTO propeller shaft.
2. Remove the bearing holder 2 (15) mounting screws.
3. Remove the auxiliary shift section assembly.

(When reassembling)

- Direct the grooved side of the thrust collar (5) to the gear side.

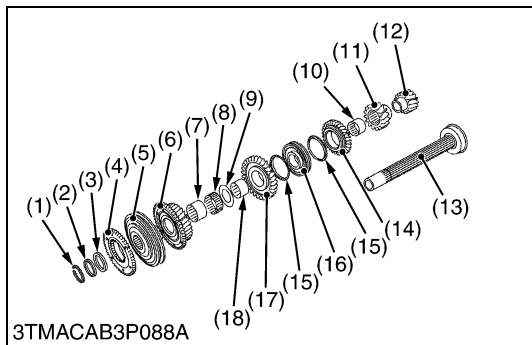
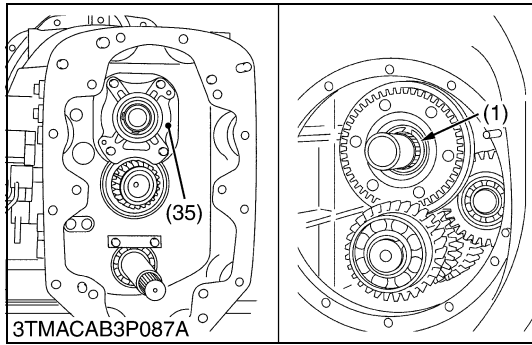
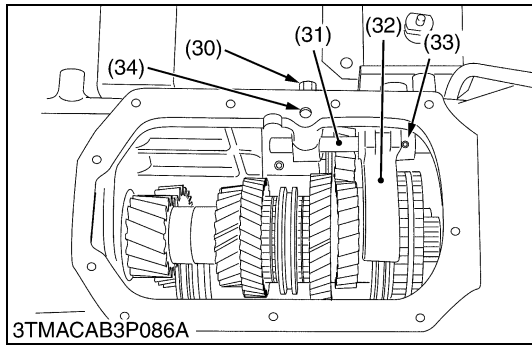
| | | |
|-------------------|---------------------------------|---|
| Tightening torque | Bearing holder 2 mounting screw | 77.5 to 90.2 N·m 7.9 to 9.2 kgf·m 57.2 to 66.5 ft·lbs |
|-------------------|---------------------------------|---|



- (1) External Snap Ring
- (2) Shifter
- (3) Hub
- (4) Bearing
- (5) Thrust Collar
- (6) Needle Bearing
- (7) Collar
- (8) Needle Bearing
- (9) 38T-19T Gear
- (10) Thrust Collar
- (11) External Snap Ring
- (12) 47T Gear
- (13) 15T Gear Shaft
- (14) Bearing
- (15) Bearing Holder 2

- (16) Shift Fork
- (17) Needle Bearing
- (18) Collar
- (19) Needle Bearing
- (20) 37T Gear
- (21) Shaft
- (22) Rod
- (23) Shifter
- (24) Shifter Fork
- (25) Needle Bearing
- (26) 51T Gear
- (27) Thrust collar
- (28) Internal Snap Ring
- (29) Bearing
- (30) Internal Snap Ring

W1015618

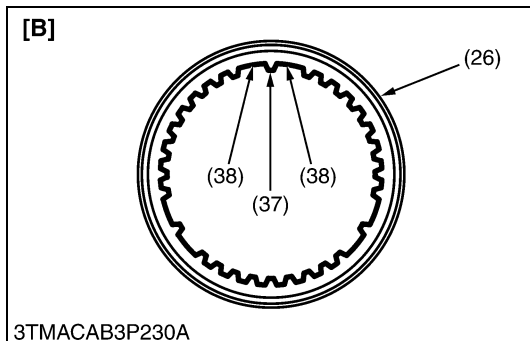
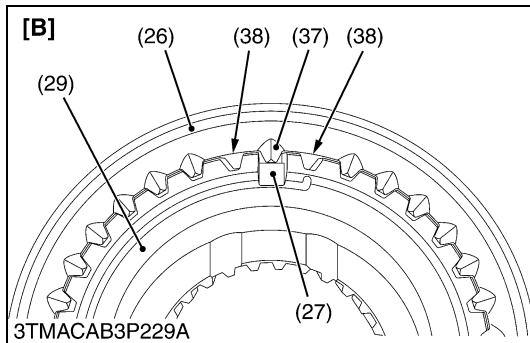
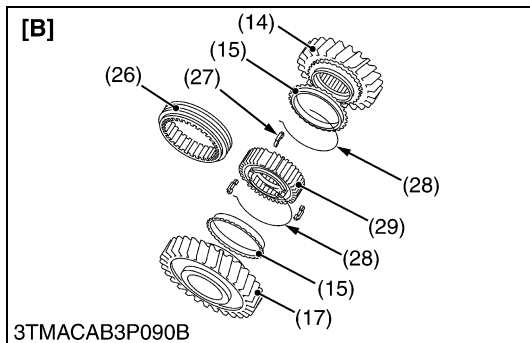
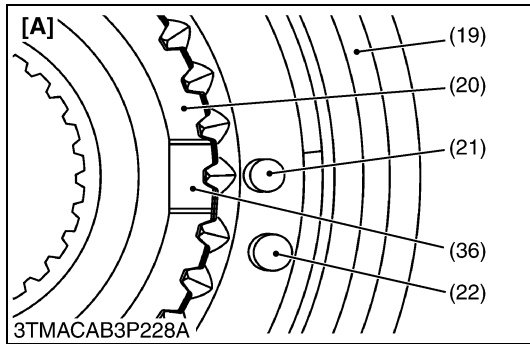
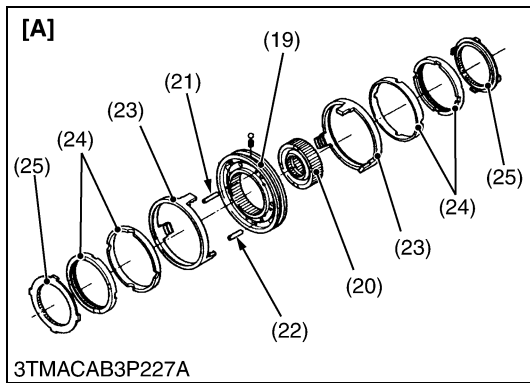


1st Shaft

1. Tap out the spring pin (33) from shift fork (32).
2. Remove the bolt (30), and take out the ball and spring.
3. Take out the pin (34) and ball from hole.
4. Draw out the shift rod (31) and take out the shift fork (32).
5. Remove the bearing holder 3 (35).
6. Remove the external snap ring (1).
7. Tap out the 1st shaft (13) to the rear.
8. Take out the gears.

- | | |
|------------------------|-------------------------|
| (1) External Snap Ring | (19) Shifter |
| (2) Collar | (20) Hub |
| (3) Bearing | (21) Synchronizer Pin 1 |
| (4) Synchro Holder | (22) Synchronizer Pin 2 |
| (5) Synchronizer Unit | (23) Synchronizer Ring |
| (6) 26T Gear | (24) Inner Core |
| (7) Inner Race | (25) Retainer |
| (8) Needle Bearing | (26) Shifter |
| (9) Thrust Collar | (27) Key |
| (10) Inner Race | (28) Spring |
| (11) 20T Gear | (29) Hub |
| (12) 15T Gear | (30) Bolt |
| (13) 1st Shaft | (31) Shift Rod |
| (14) 26T Gear | (32) Shift Fork |
| (15) Synchronizer Ring | (33) Spring Pin |
| (16) Shifter Assembly | (34) Pin |
| (17) 30T Gear | (35) Bearing Holder 3 |
| (18) Inner Race | |

W1016921



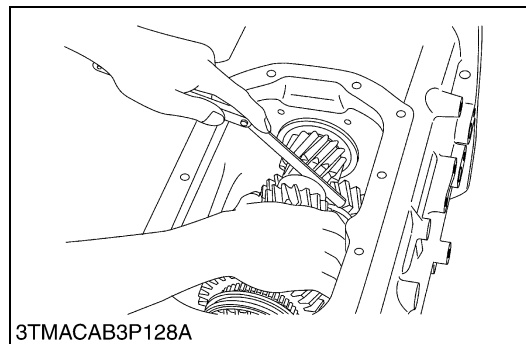
1st Shaft (Continued)
(When reassembling)

- Apply molybdenum disulfide (Three Bond 1901 or equivalent) to inner surface of 26T gear (14) and 30T gear (17).
- Be sure to assembling the F-R synchronizer unit, align the oil groove (36) on the hub (20) and synchronizer pin 1 (21) as shown in the figure.
- Be sure to assemble the 3rd-4th synchronizer unit, set the spline teeth (37) on the shifter (26) to the key (27) as shown in the figure.
- Adjust the clearance of the gears on the 1st shaft by the collar (2).

| | | |
|---|---------------------------------|---|
| Tightening torque | Bearing holder 3 mounting screw | 23.5 to 27.5 N·m 2.4 to 2.8 kgf·m 17.4 to 20.3 ft-lbs |
| Side clearance of the gear on the 1st shaft | Factory spec. | Less than 0.3 mm 0.0118 in. |

(Reference)

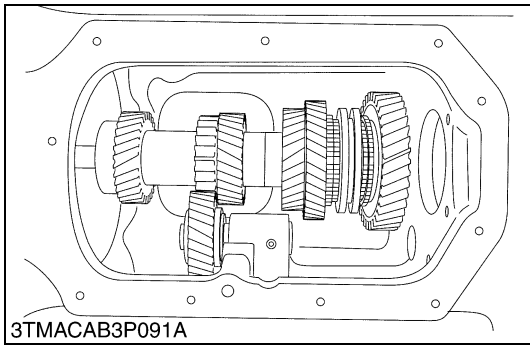
- Thickness of the collar (2) :
5.8 mm (0.228 in.), 6.0 mm (0.236 in.), 6.2 mm (0.244 in.)



- | | |
|-------------------------|---------------------------|
| (1) External Snap Ring | (22) Synchronizer Pin 2 |
| (2) Collar | (23) Synchronizer Ring |
| (3) Bearing | (24) Inner Core |
| (4) Synchro Holder | (25) Retainer |
| (5) Synchronizer Unit | (26) Shifter |
| (6) 26T Gear | (27) Key |
| (7) Inner Race | (28) Spring |
| (8) Needle Bearing | (29) Hub |
| (9) Thrust Collar | (30) Bolt |
| (10) Inner Race | (31) Shift Rod |
| (11) 20T Gear | (32) Shift Fork |
| (12) 15T Gear | (33) Spring Pin |
| (13) 1st Shaft | (34) Pin |
| (14) 26T Gear | (35) Bearing Holder 3 |
| (15) Synchronizer Ring | (36) Oil Groove |
| (16) Shifter Assembly | (37) Spline Teeth |
| (17) 30T Gear | (38) Without Spline Teeth |
| (18) Inner Race | |
| (19) Shifter | |
| (20) Hub | |
| (21) Synchronizer Pin 1 | |

[A] F-R Synchronizer Unit
[B] 3rd-4th Synchronizer Unit

W1234674

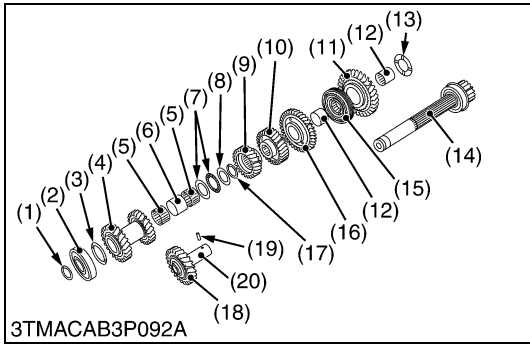


18T Gear Shaft and 25T Idle Gear

1. Remove the external snap ring (1) and ball bearing (2).
2. Take out the 25T-23T gear (4).
3. Remove the external snap ring (17).
4. Tap out the 18T gear shaft (14) to the rear side.
5. Tap out the spring pin (19).
6. Tap out the 25T idle gear shaft (20) with gear (18).

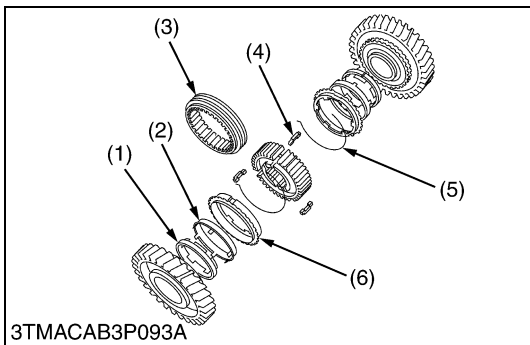
(When reassembling)

- Apply molybdenum disulfide (Three Bond 1901 or equivalent) to inner surface of 32T gear (16) and 37T gear (11).
- Direct the grooved side of thrust collar (13) to the gear side.



- | | |
|---------------------------|--------------------------|
| (1) External Snap Ring | (11) 37T Gear |
| (2) Bearing | (12) Inner Race |
| (3) Collar | (13) Thrust Collar |
| (4) 25T-23T Gear | (14) 18T Gear Shaft |
| (5) Needle Bearing | (15) Synchronizer Unit |
| (6) Collar | (16) 32T Gear |
| (7) Thrust Needle Bearing | (17) External Snap Ring |
| (8) Thrust Collar | (18) 25T Idle Gear |
| (9) 23T Gear | (19) Spring Pin |
| (10) 27T Gear | (20) 25T Idle Gear Shaft |

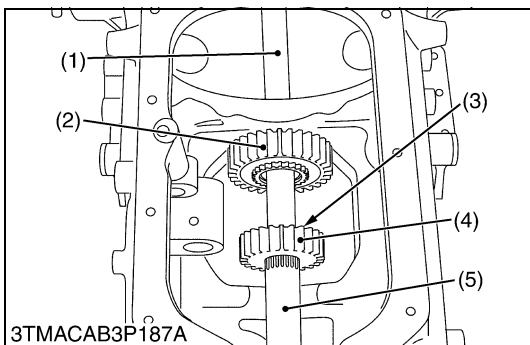
W1017018



Synchronizer Unit

- | | |
|-----------------------------|-----------------------------|
| (1) Inner Synchronizer Ring | (4) Synchronizer Key |
| (2) Center Ring | (5) Synchronizer Key Spring |
| (3) Shifter | (6) Outer Synchronizer Ring |

W1017609

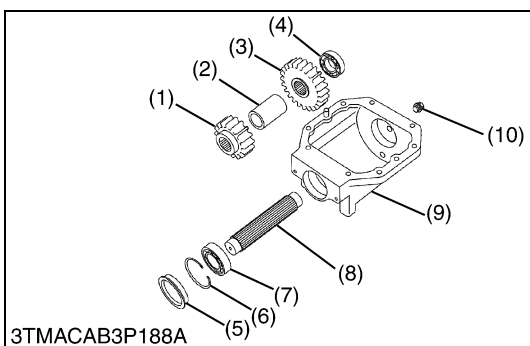


DT Propeller Shaft

1. Remove the external snap ring (3).
2. Pull out the propeller shaft 1 (5) to the rear side.
3. Remove the propeller shaft 2 (1) with 28T gear (2) to the transmission case upper side.

- | | |
|------------------------|-----------------------|
| (1) Propeller Shaft 2 | (4) 24T Gear |
| (2) 28T Gear | (5) Propeller Shaft 1 |
| (3) External Snap Ring | |

W1017690



Gear Case

1. Remove the plug (5) and internal snap ring (6).
2. Remove the screw (10).
3. Tap out the shaft (8) to the front side.
4. Take out the 20T gear (1) and 31T gear (3).

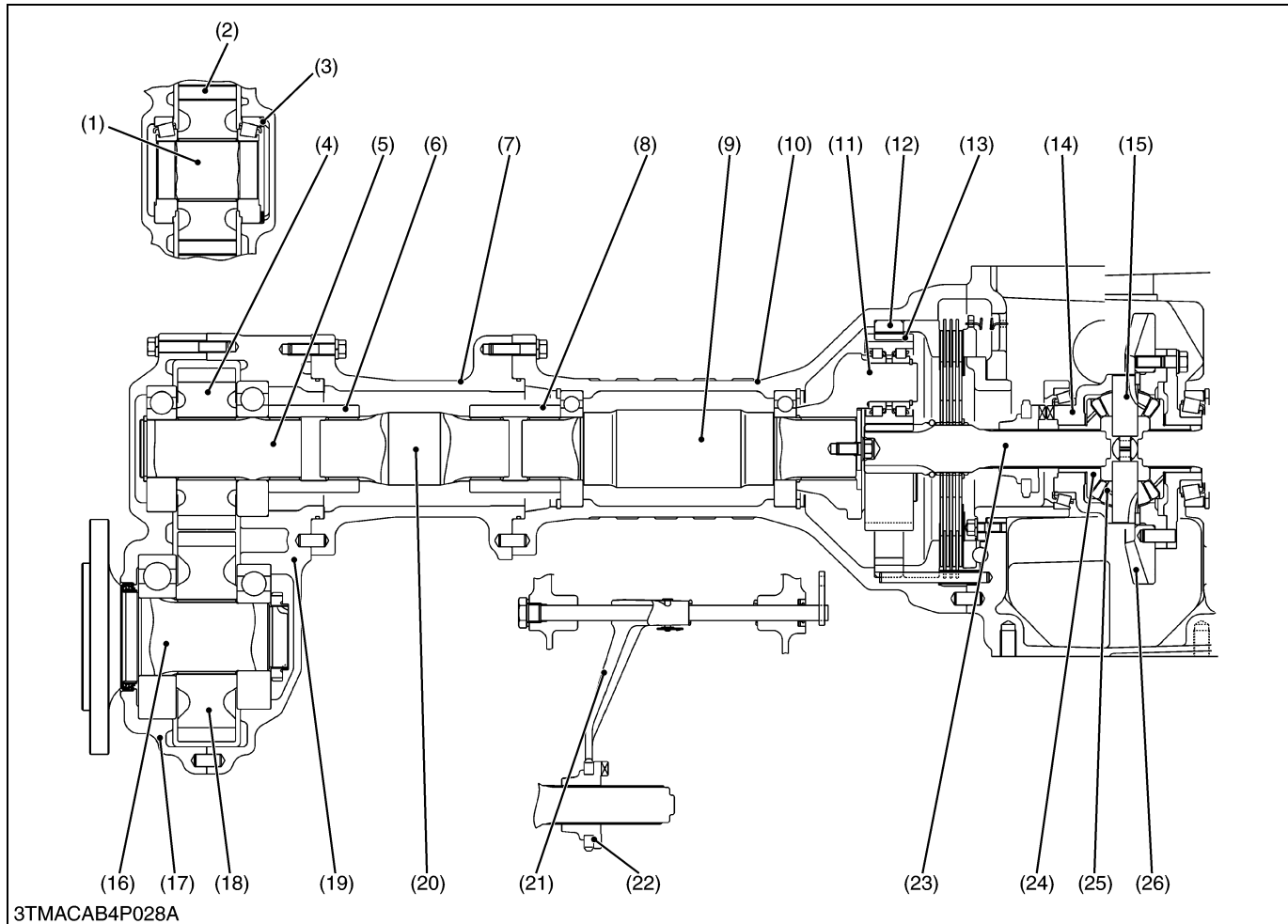
- | | |
|--------------|------------------------|
| (1) 20T Gear | (6) Internal Snap Ring |
| (2) Collar | (7) Bearing |
| (3) 31T Gear | (8) Shaft |
| (4) Bearing | (9) Gear Case |
| (5) Plug | (10) Screw |

W1017798

4. REAR AXLE

[1] MECHANISM

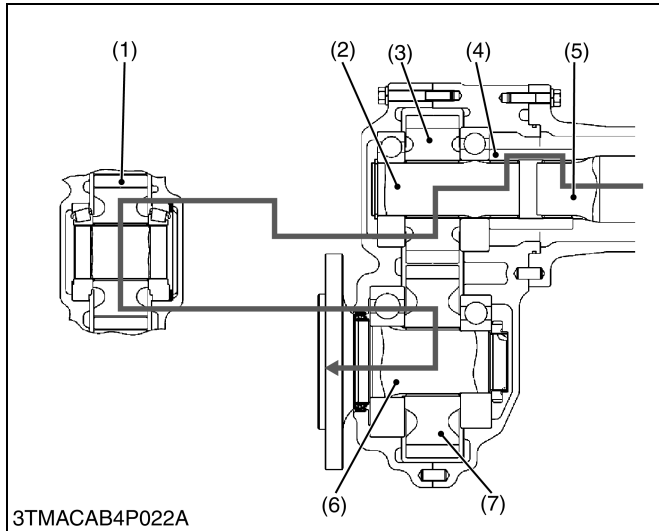
(1) Features



- | | | | |
|-------------------------------|-----------------------------|--------------------------------|-----------------------------------|
| (1) Shaft 1 | (8) Coupling (Option) | (15) Differential Pinion Shaft | (21) Differential Lock Shift Fork |
| (2) 24T Gear | (9) Shaft 3 | (16) Rear Axle | (22) Differential Lock |
| (3) Belleville (Three Pieces) | (10) Rear Axle Case | (17) Drop Axle Case 1 | (23) Brake Shaft (12T Gear) |
| (4) 23T Gear | (11) Planetary Gear Support | (18) 31T Gear | (24) Differential Side Gear |
| (5) Shaft 2 | (12) 66T Internal Gear | (19) Drop Axle Case 2 | (25) Differential Pinion Gear |
| (6) Coupling | (13) 26T Planetary Gear | (20) Shaft 4 | (26) 35T Bevel Gear |
| (7) Spacer (Option) | (14) Differential Case | | |

The rear axles are the final mechanism which transmit power from the transmission to the rear wheels. Direction of power transmitted is changed at a right angle by the differential gear and, at the same time, speed is reduced. It is further reduced by the planetary gear to drive the rear axles. The rear axles are semi-floating type with the ball bearing between the rear axle and rear axle case, which support the rear wheel load as well as transmitting power to the rear wheel. They withstand all the forces caused by tire rotation and side skidding.

(2) Final Reduction System



The final reduction of M9000DT-M tractor is shown in figure.

■ Final Reduction Section

Shaft 1 (5) → Coupling (4) → Shaft 2 (2) → 23T Gear (3) → 24T Gear (1) → 31T Gear (7) → Rear Axle Shaft (6).

(1) 24T Gear
 (2) Shaft 2
 (3) 23T Gear
 (4) Coupling

(5) Shaft 1
 (6) Rear Axle Shaft
 (7) 31T Gear

W1013611

[2] SERVICING

(1) Tightening Toques

Tightening torques of screws, bolts and nuts on the table below are especially specified.
(For general use screws, bolts and nuts : See page G-13.)

| Item | N-m | kgf-m | ft-lbs |
|---------------------------------------|-------------------------------|--------------|----------------|
| Rear wheel mounting nut | 259.9 to 304.0 | 26.5 to 31.0 | 191.7 to 224.2 |
| Drop axle case mounting screw and nut | 77.5 to 90.2 | 7.9 to 9.2 | 57.1 to 66.5 |
| Drop axle case mounting nut | M12 grade 9 103.0 to 117.7 | 10.5 to 12.0 | 76.0 to 86.8 |
| Rear axle nut | 441.3 to 539.4 | 45.0 to 55.0 | 325.5 to 397.8 |

W1012736

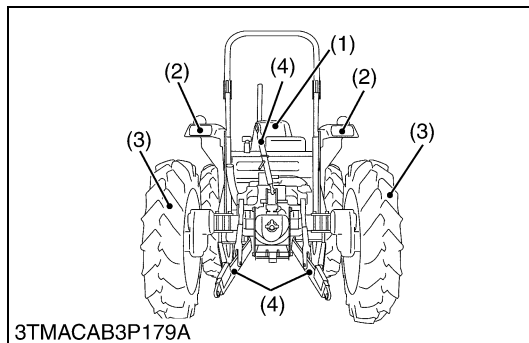
(2) Checking, Disassembling and Servicing

(A) Separating Drop Axle Case from Rear Axle Case

Draining Transmission Fluid

- See page MG-4.

W1010728



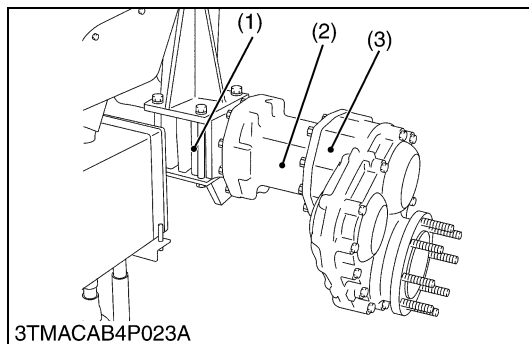
Rear Wheel

1. Place disassembling stand under the transmission case.
2. Remove the three point linkage (2).
3. Remove the rear wheel (1).

(When reassembling)

| Tightening torque | Rear wheel mounting nut | 259.9 to 304.0 N-m 26.5 to 31.0 kgf-m 191.7 to 224.2 ft-lbs |
|-------------------|-------------------------|---|
| (1) Rear Wheel | (2) Three Point Linkage | |

W1010773

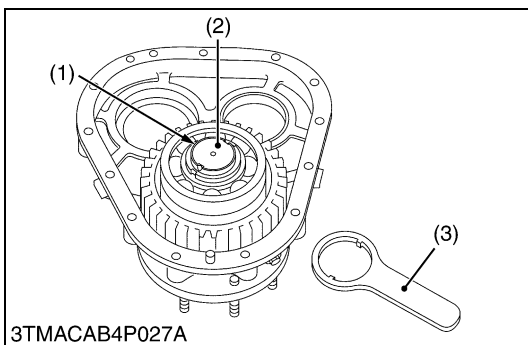
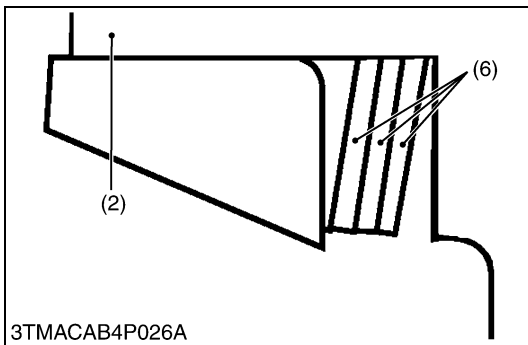
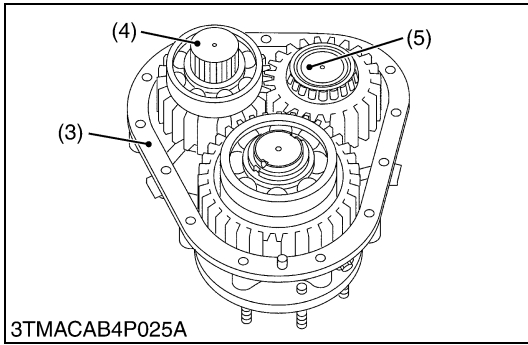
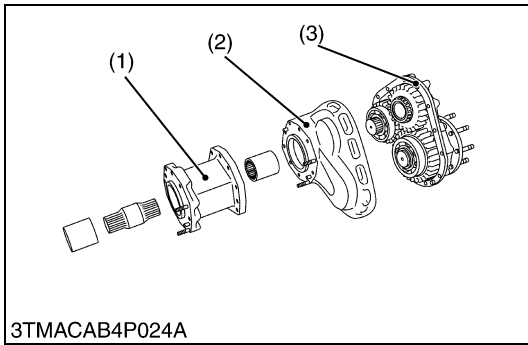


Drop Axle Case Assembly

1. Remove the drop axle case mounting screws.
2. Support the drop axle case (3) with nylon lift strap and hoist.
3. Separate the drop axle case (3) from rear axle case (1).

| Tightening torque | Drop axle case mounting screw and nut | 77.5 to 90.2 N-m 7.9 to 9.2 kgf-m 57.1 to 66.5 ft-lbs |
|---|---------------------------------------|---|
| (1) Rear Axle Case | (3) Drop Axle Case | |
| (2) With 80 in. Wide Axle Spacer (Option) | | |

W1010912



Drop Axle Case

1. Remove the drop axle case (2), (3) mounting screw and nut.
2. Separating the drop axle case 1 (2) from drop axle case 2 (3).
3. Remove the 23T gear assembly (4) and 24T gear assembly (5).

(When reassembling)

- Apply liquid gasket (Three Bond 1216 or equivalent) to joint face of the drop axle case 1 (2) and drop axle case 2 (3).

■ IMPORTANT

- Reassembling 24T gear assembly is Belleville (6) position as showing in the figure.

| | | |
|-------------------|---|---|
| Tightening torque | Drop axle case mounting screw | 77.5 to 90.2 N·m 7.9 to 9.2 kgf·m 57.1 to 66.5 ft·lbs |
| | Drop axle case mounting M12 grade 9 nut | 103.0 to 117.7 N·m 10.5 to 12.0 kgf·m 76.0 to 86.8 ft·lbs |

- | | |
|---|-----------------------|
| (1) With 80 in. Wide Axle Spacer (Option) | (4) 23T Gear Assembly |
| (2) Drop Axle Case 1 | (5) 24T Gear Assembly |
| (3) Drop Axle Case 2 | (6) Belleville |

W1011030

Rear Axle Nut

1. Fix the rear axle on the repair table or set to the rear wheel.
2. Remove the stake on the rear axle nut (1).
3. Remove the rear axle nut (1) with a rear axle nut wrench 92 (3). (See page MG-6.)
4. Tap out the rear axle (2).

(When reassembling)

- Replace the rear axle nut (1) with a new one, and stake if firmly after tightening.

| | | |
|-------------------|---------------|---|
| Tightening torque | Rear axle nut | 441.3 to 539.4 N·m 45.0 to 55.0 kgf·m 325.5 to 397.8 ft·lbs |
|-------------------|---------------|---|

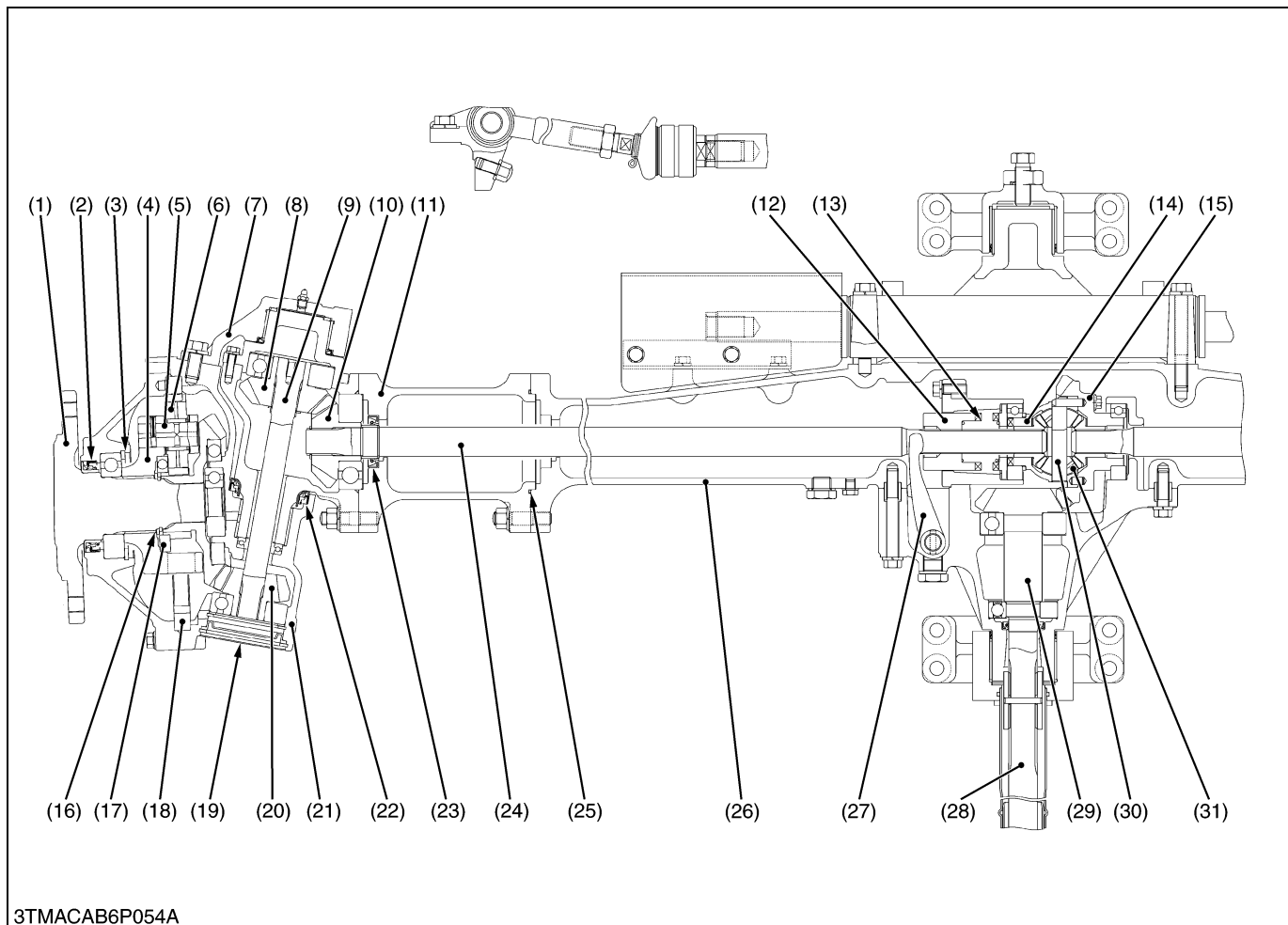
- | | |
|-------------------|-----------------------------|
| (1) Rear Axle Nut | (3) Rear Axle Nut Wrench 92 |
| (2) Rear Axle | |

W1011325

6. FRONT AXLE

[1] MECHANISM

(1) Structure



- | | | | |
|-----------------------------|-------------------------------|------------------------------|-------------------------------|
| (1) Front Axle | (9) Bevel Gear Shaft | (17) External Snap Ring | (25) O-Ring |
| (2) Oil Seal | (10) 18T Bevel Gear | (18) 63T Internal Gear | (26) Front Differential Case |
| (3) Internal Snap Ring | (11) Case 1 (Option) | (19) Plug | (27) Differential Lock Lever |
| (4) Planetary Gear Support | (12) Differential Lock Clutch | (20) 13T Bevel Gear | (28) Propeller Shaft |
| (5) Planetary Gear Pin | (13) Differential Lock Spring | (21) Front Axle Case | (29) 18T Bevel Pinion Shaft |
| (6) 22T Planetary Gear | (14) Differential Case | (22) Oil Seal | (30) Pinion Shaft |
| (7) Front Axle Case Support | (15) 27T Bevel Gear | (23) Oil Seal | (31) Differential Pinion Gear |
| (8) 19T Bevel Gear | (16) Collar | (24) Differential Yoke Shaft | |

The front axle of the Mudder type is constructed as shown above. Power is transmitted from the transmission through the propeller shaft and to the spiral bevel pinion shaft, then to the spiral bevel gear after that to the differential gear. The power through the differential is transmitted to the differential yoke shaft and to the bevel gear shaft in the bevel gear case. The revolution is greatly reduced by the bevel gears, then the power is transmitted to the axle. The differential system allows each wheel to rotate at a different speed to make turning easier.

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