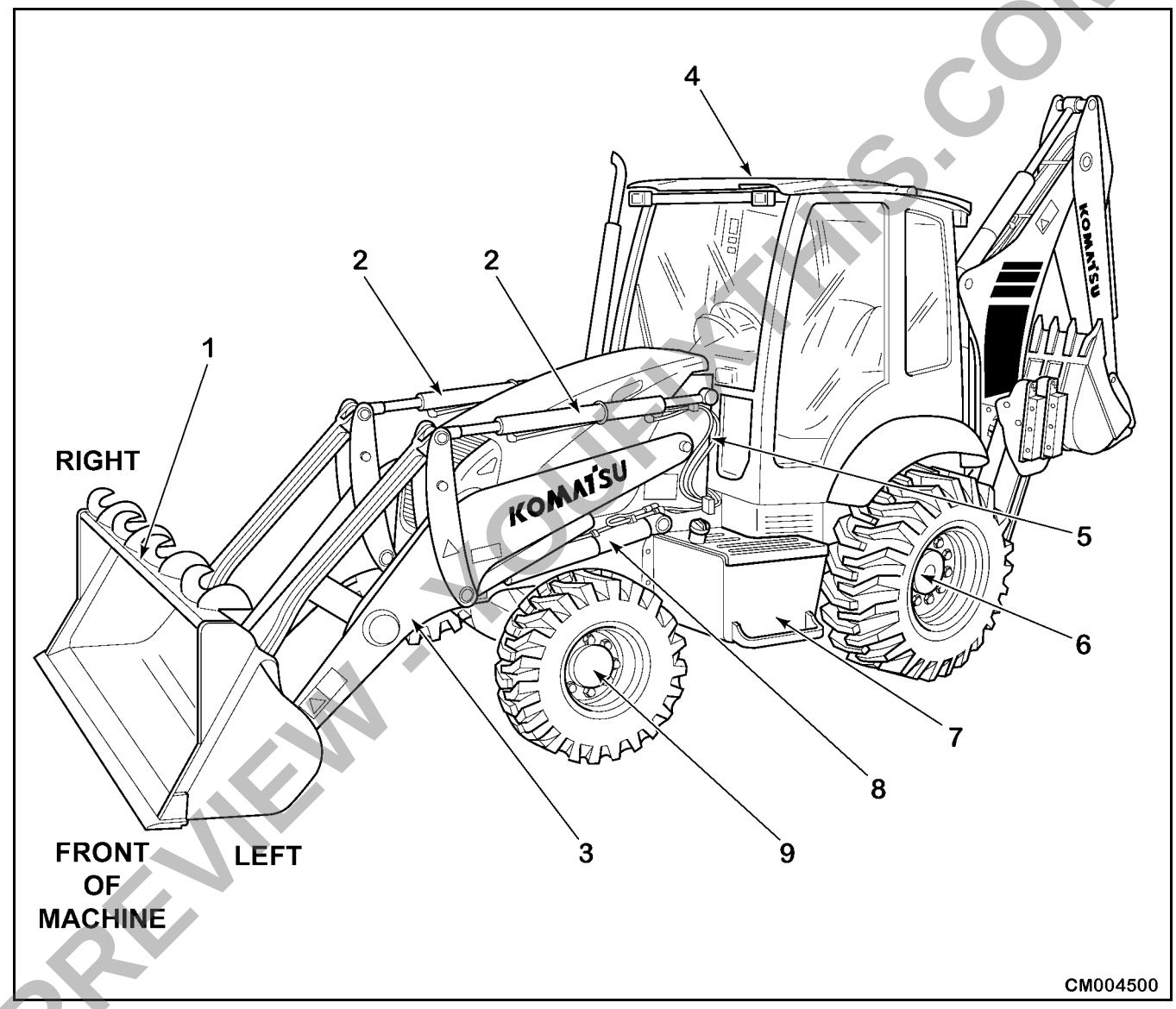
GENERAL VIEW OF MACHINE

The views are taken from the operator's seat facing forward and backward. The front view is when the operator is facing the front of the machine using the front end loader or traveling with the machine. The rear view is when the operator is facing the rear of the machine using the backhoe unit. References to right and left are always in relationship to the machine, not the operator's position.

Front View of Machine



1. Front bucket
2. Bucket cylinder
3. Bucket arms
4. Cab
5. Hydraulic oil tank (in engine compartment)
6. Rear axle
7. Fuel tank
8. Lift cylinder
9. Front axle

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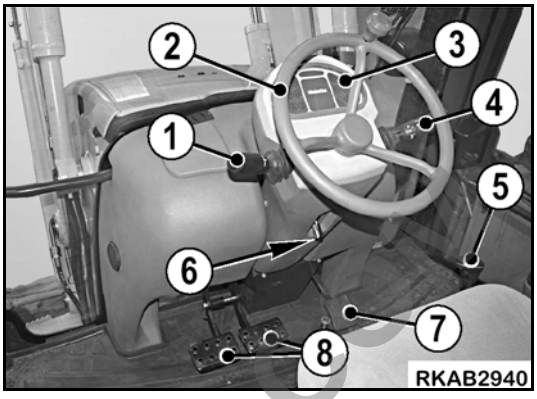
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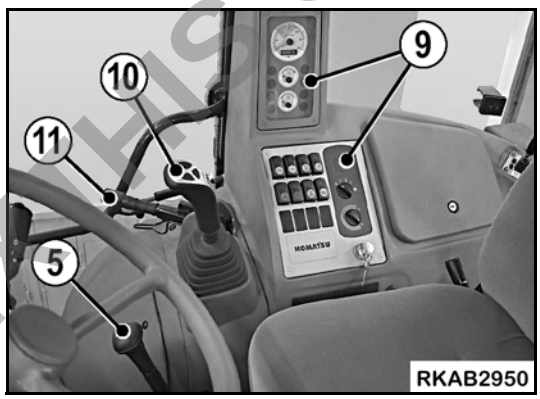
OPERATION CONTROLS

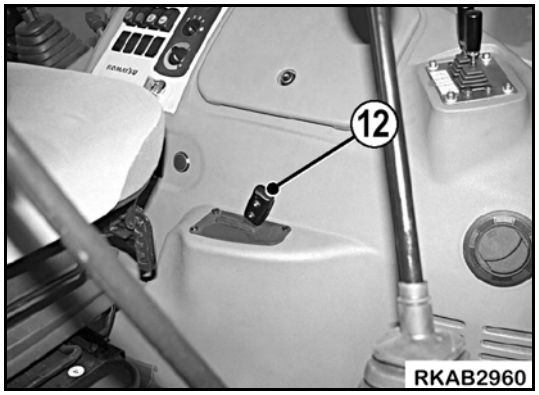
Before operating the machine, it is important to understand all the control functions provided with your machine. Operating the machine without knowledge of all the controls may damage the machine, property or possibly cause injury to the operator.

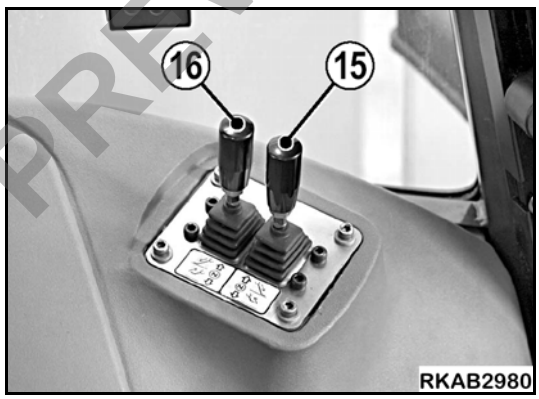
In the Cab (Joystick Controls)

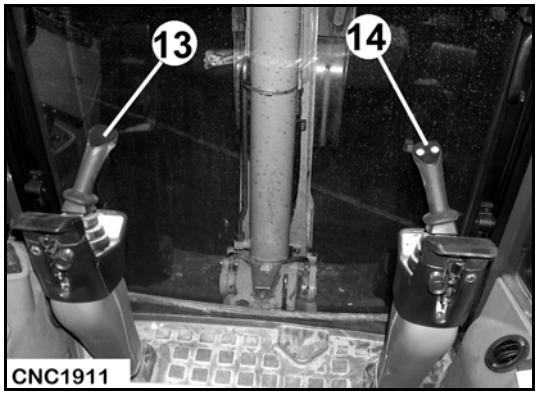
1. Direction control lever
2. Steering wheel
3. Front dash bezel
4. Multifunctional switch
5. Gear shift lever (Power shuttle only)
6. Steering wheel adjustment lock
7. Accelerator pedal
8. Brake pedals
9. Side dash
10. Front loader control lever
11. Parking brake
12. Hand throttle lever
13. Left backhoe joystick
14. Right backhoe joystick
15. Right outrigger control
16. Left outrigger control











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MAINTENANCE INFORMATION

- Before opening the engine hood, engage safety locks of both the front loader and backhoe.
- If it is necessary to check the hydraulic oil level in the reservoir, arrange the machine in the transport position. See “SAFETY LOCK USAGE” on page 2-67.
- Only perform operations with the machine on firm and level ground, after applying the parking brake.
- Use Komatsu genuine oils and greases. Choose oils suitable for the ambient temperature.
- Use clean oils and greases. Keep the oil and grease containers clean. Keep any foreign matter away from oils and greases.
- Always keep the machine clean. This makes it easier to locate any part causing problems. Keep the grease fittings, the breathers and the areas near the openings for the fluid level checks clean and prevent any impurities from getting into or on them.
- Draining hot oil or coolant immediately after stopping the engine is hazardous. Wait for the engine to cool down to at least 40-50°C (104-122° F) before draining the liquids.
- After changing the oil or the filters, check if metal particles are present. If you find large quantities of metal particles, contact your Komatsu distributor.
- Check and change the oil while parked in a clean location to prevent any impurities from getting into the tank or container.
- Before carrying out any maintenance operation, hang the warning plates on the ignition switch, control levers, and cab doors, to prevent anyone from starting the engine by mistake.
- When performing maintenance operations, always adhere to the precautions indicated on safety plates applied on the machine.
- Instructions for welding.
  - Turn ignition key to the “OFF” position, wait at least one minute, then turn off the battery disconnect switch.
  - Disconnect the battery (first negative cable and then positive cable).
  - Disconnect the alternator.
  - Do not apply more than 200V continuously.
  - Connect the welder’s ground cable within 1 m (3 ft) from the point on which welding will take place.
  - Avoid putting gaskets and bearings between the welding area and ground cable. Gaskets and bearings are poor grounding surfaces and it is possible that arcing could weld bearings together.
  - Shield areas around the welding area with weld blankets or something similar to avoid damage from spatter.
- Do not use flammable fluids to clean machine parts. Keep exposed flames and lit cigarettes away from these fluids.
- When O-rings and gaskets are removed, thoroughly clean sealing surfaces and replace all O-rings and gaskets with new ones. Fit the O-rings and gaskets correctly when reassembling.
- Avoid keeping loose objects or tools in your pockets. They may fall out and drop into the machine, especially when you open covers and work on the machine while bending over it.
- When washing the machine, do not direct a high-pressure water jet onto the radiator and heat exchanger.
- When washing the machine, protect electric system connectors and avoid getting the starting switch wet.
- Before starting work in mud, in rain, on seashores, or river banks, perform general lubrication. Wash the machine immediately after work to protect components from rust. Lubricate equipment joints more frequently than usual.
- When working at dusty work sites, proceed as follows:
  - Check the air cleaner for any clogging and clean it more frequently than usual.
  - Clean the radiator and the heat exchanger frequently, to avoid any clogging of the fins.
  - Change the diesel oil filter more frequently than usual.
  - Clean the electrical components, especially the starter and the alternator, to avoid any accumulation of dust.
- Never mix oils of different brands.
- Do not top off with oil different from the oil presently in the machine. If necessary, drain all the oil and fill the tank with new of a different brand.

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TORQUE SPECIFICATIONS

Torque List

⚠ WARNING

If nuts, bolts, or other parts are not tightened to the specified torque, it will cause looseness or damage to the tightened parts. This will cause failure of the machine or problems with operation.
Always pay careful attention when tightening parts.

Unless otherwise specified, tighten the metric nuts and bolts to the torque shown in the table below.
If it is necessary to replace any nut or bolt, always use a Komatsu genuine part of the same size as the part that was replaced.

Torque of Bolts

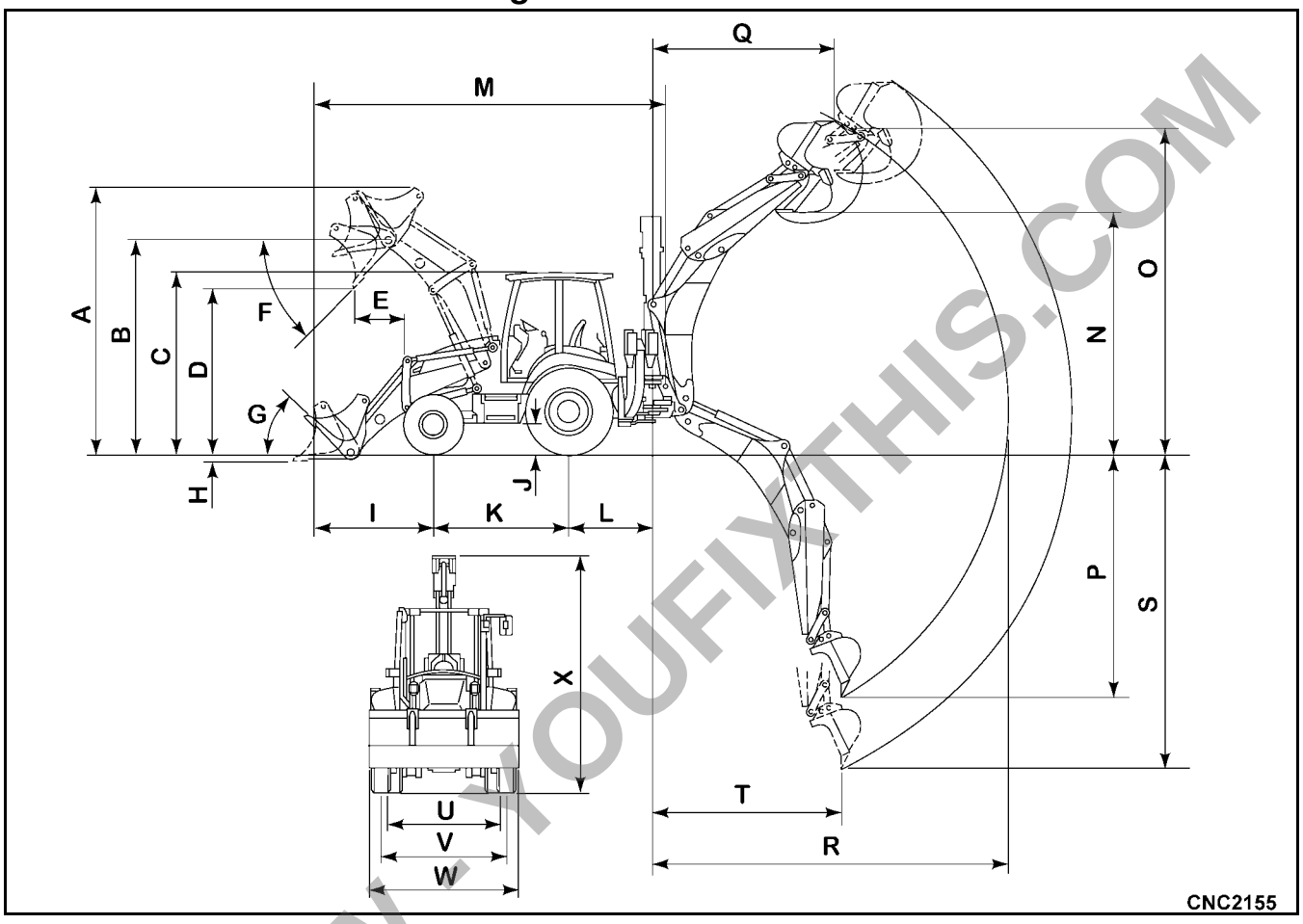
Thread Diameter of Bolt	Width across Flat		
mm	mm	N•m	lbf ft
6	10	11.8 - 14.7	8.70 - 10.84
8	13	27 - 34	19.91 - 25.07
10	17	59 - 74	43.51 - 54.57
12	19	98 - 123	72.28 - 90.72
14	22	153 - 190	112.84 - 140.13
16	24	235 - 285	173.32 - 210.20
18	27	320 - 400	236.02 - 295.02
20	30	455 - 565	335.59 - 416.72
22	32	610 - 765	449.91 - 564.23
24	36	785 - 980	578.98 - 722.81
27	41	1150 - 1440	848.19 - 1062.09
30	46	1520 - 1910	1121.09 - 1408.74
33	50	1960 - 2450	1445.62 - 1807.02
36	55	2450 - 3040	1807.02 - 2242.19
39	60	2890 - 3630	2131.55 - 2677.35

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SPECIFICATIONS

Machine Dimensions and Weights



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AUTHORIZED OPTIONAL EQUIPMENT

⚠ WARNING

- **Komatsu machines can be provided with optional equipment in addition to the standard equipment. If optional equipment is installed and used, carefully read the relevant operation manual and respect the instructions given therein.**
- **Use only optional or special equipment recommended and approved by Komatsu and in compliance with the requirements indicated in the table.**
- **Komatsu cannot be held liable for any injury, accident or product failure resulting from the installation and use of unauthorized equipment.**

Precautions Regarding Safety

The installation of optional accessories and equipment other than those authorized by Komatsu, shortens the life of the machine and may also cause safety problems.

It is advisable to contact a Komatsu distributor before installing any accessory that is not mentioned in this operation and maintenance manual.

In case of failure to comply with these instructions, Komatsu declines any responsibility for accidents or damage.

⚠ WARNING

- **When removing or installing any equipment, take the following precautions and be careful to ensure that operations are carried out in total safety.**
  - **Carry out installation and removal on a firm and flat surface.**
  - **When the operations are carried out by two or more operators, decide the communication signals in advance and respect them during work.**
  - **Use a crane to handle objects weighing more than 25 kg (55 lb).**
  - **Always support any heavy part before removing it. When lifting heavy parts, be mindful of the object's center of gravity.**
  - **It is dangerous to carry out any operation with suspended loads. Always position the load on a suitable support and make sure that it is stable.**
  - **When installing or removing any equipment, make sure that it is stable and cannot fall down.**
  - **Never stand under loads being lifted by a crane.**
    Choose a safe position, where you do not run any risk in case the load should fall.
  - **When using optional equipment be sure all non-authorized personnel are at least 12 m (40 ft) away from your work location.**

Remark

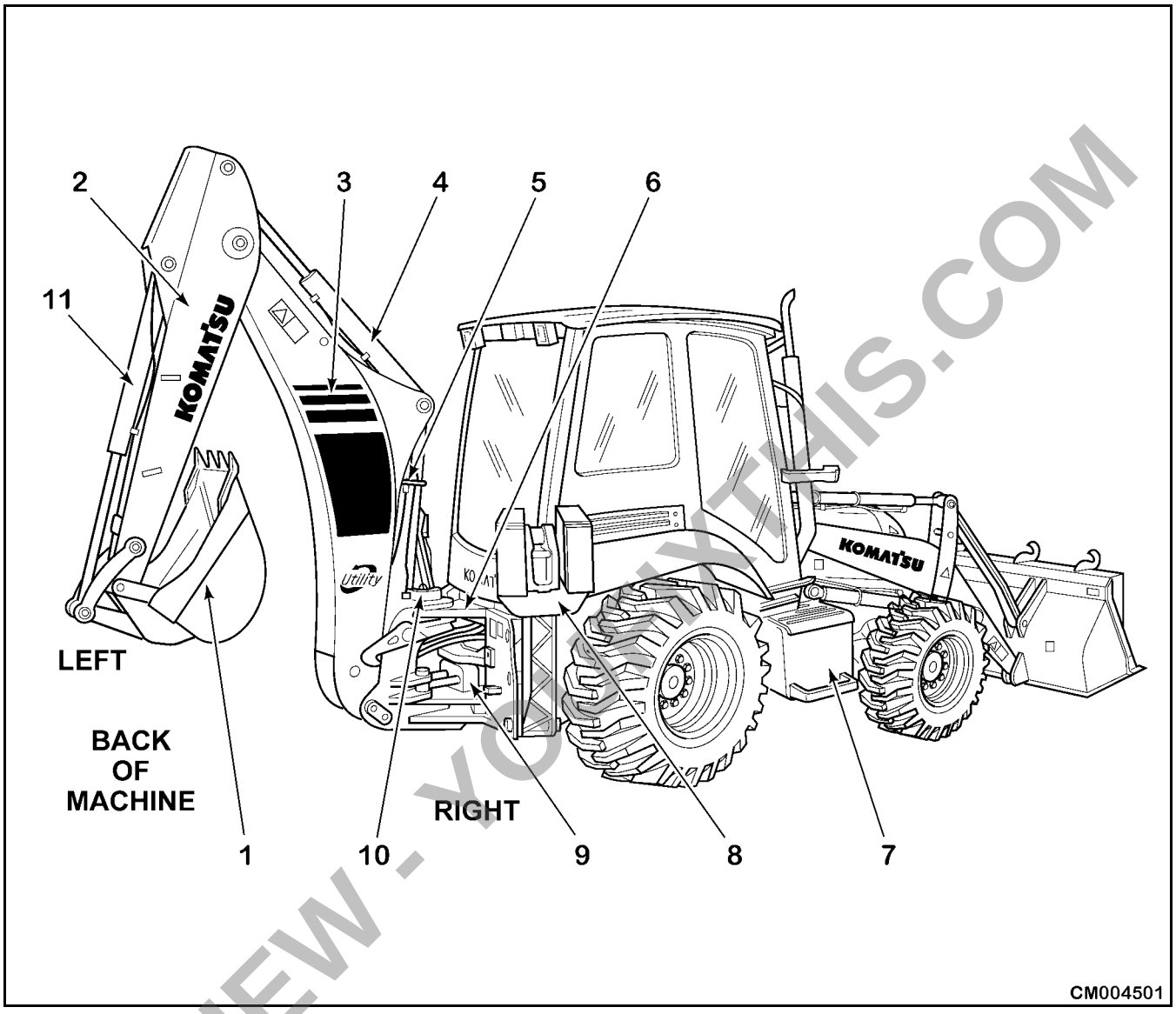
Specialized personnel are required to operate cranes. Do not allow unskilled personnel to use cranes.

For further details regarding installation and removal operations contact your Komatsu distributor.

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Rear View of Machine



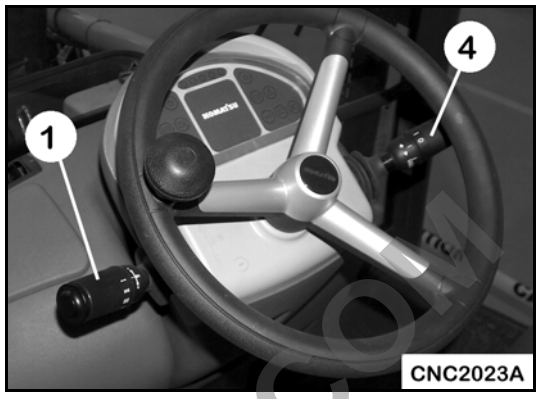
1. Bucket
2. Arm
3. Boom
4. Arm cylinder
5. Boom cylinder
6. Boom support
7. Battery, hydraulic filter and tool box
8. Outriggers
9. Backhoe swing cylinders
10. Backhoe lock cylinder
11. Bucket cylinder

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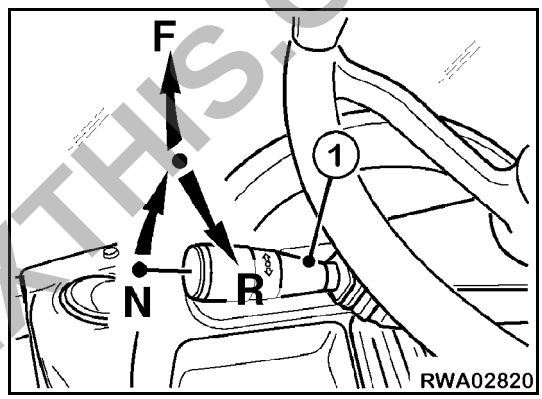
Steering Column Switches

The switches on the steering column control several functions.



Directional Control Switch (Standard)

The direction of the machine can be selected by moving switch (1) toward the forward or reverse position.



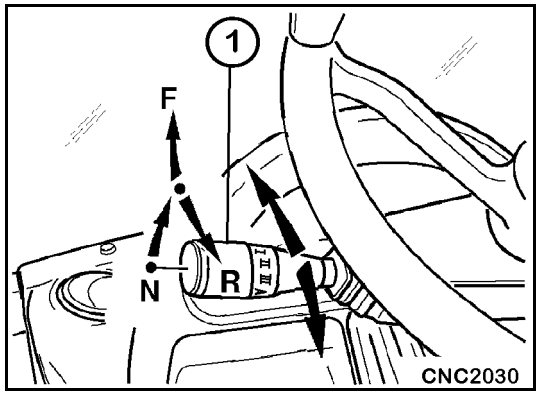
Speed Selector Switch (PS Model Only)

This switch (1) controls four speed ranges. Select the speed ranges by rotating the knob clockwise or counterclockwise. It is also used to select forward or reverse direction of the machine.

I: Speed “Low range”
II: Speed “Mid range”
III: Speed “High range”
A: Automatic speed range

Remark

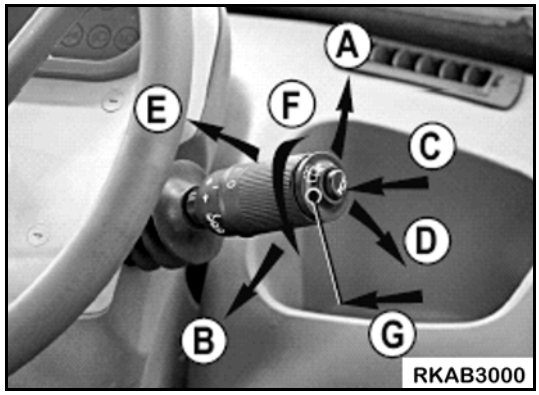
When the speed range is set in “A” the transmission shifts through the ranges automatically.



Multifunctional Switch

This switch (4) controls several functions:

A. Turn left
B. Turn right
C. Horn
D. High/Low beam control
E. Flasher
F. Windshield wiper
G. Windshield washer



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⚠ WARNING

- **Oils, filters, coolant, and the battery are considered special waste and must be collected and disposed of according to the regulations in force.**
- **If it burns, combustible material of some components may become extremely dangerous. For this reason, avoid any contact of burnt material with your skin or eyes and do not inhale the fumes.**

Maintenance Notes

• Use only Komatsu genuine replacement parts.
• Do not mix different types of oil.
• Unless specified otherwise, oils and coolant used by Komatsu before delivery of the machine are listed in the table.

Item	Specifications
• Engine oil	SAE 10W-30 API classification CI-4
• Hydraulic system oil	SAE 10W-30 API classification CI-4
• Biodegradable hydraulic system oil (Only for machines in which the synthetic biodegradable oil type HEES (not of plant origin) is used).	PAKELO GEOLUBE HYDRAULIC EP-46
• Hydraulic transmission oil	GM DEXRON® II D
• Axle oil (front and rear)	SHELL: DONAX TD CALTEX: RPM TRACTOR HYDRAULIC FLUID CHEVRON: TRACTOR HYDRAULIC FLUID TEXACO: TEXTRAN TDH OIL MOBILE MOBILFLUID 422 or 424
• Brake system oil	GM DEXRON® II D
• Fuel	Ambient temperature above -10° C (14° F): ASTM D975 no. 2 diesel oil
	Ambient temperature below -10° C (14° F): ASTM D975 no. 1 diesel oil
• Radiator coolant	Permanent, ethylene glycol-based antifreeze, with corrosion inhibitor for protection down to -36° C (-33° F)

GM DEXRON II® D (GM DEXRON® is a registered trademark of General Motors Corporation)

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Thread Diameter of Bolt	Width across Flat	7	
mm	mm	N•m	lbf ft
6	10	5.9 - 9.8	4.35 - 7.22
8	13	13.7 - 23.5	10.10 - 17.33
10	14	34.3 - 46.1	25.29 - 34.00
12	27	74.5 - 90.2	54.94 - 66.52

Torque of Hose Nuts

Use these torques for hose nuts.

Nominal No.	Thread Diameter	Width across Flat	Tightening Torque	
	mm	mm	N•m	lbf ft
02	14	19	19.6 - 29.4	14.5 - 21.7
03	18	24	29.4 - 68.6	21.7 - 50.6
04	22	27	58.9 - 98.1	44.4 - 72.4
05	24	32	107.9 - 166.7	79.6 - 123.0
06	30	36	147.1 - 205.9	108.5 - 151.9
10	33	41	147.1 - 245.1	108.5 - 180.8
12	36	46	196.2 - 294.2	144.7 - 217.0
14	42	55	245.2 - 343.2	180.9 - 253.1

Torque of Split Flange Bolts

Use these torques for split flange bolts.

Thread Diameter	Width across Flat	Tightening Torque	
mm	mm	N•m	kgm
10	14	59 - 74	43.51 - 54.57
12	17	98 - 123	72.28 - 90.72
16	22	235 - 285	173.32 - 210.20

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A	Maximum height	4230 mm (13 ft 11 in	M	Transport length	5853 mm (19 ft 2 in)
B	Hinge pin height	3367 mm (11 ft 1 in)	N	Dumping height (SAE) -with retracted telescopic arm -with extended telescopic arm	3676 mm (12 ft 1 in) 3658 mm (12 ft 1 in) 4369 mm (14 ft 4 in)
C	Overall height, ROPS Cab	2935 mm (9 ft 8 in)	O	Maximum digging height -with extended telescopic arm	5319 mm (17 ft 5 in) 5885 mm (19 ft 4 in)
D	Maximum dumping height	2622 mm (8 ft 7 in)	P	Digging depth (2 ft level bottom) -with extended telescopic arm	4370 mm (14 ft 4 in) 5479 mm (18 ft)
E	Reach at maximum height and 45° dump angle	750 mm (2 ft 5 in)	Q	Reach at maximum height -with extended telescopic arm	2828 mm (9 ft 3 in) 3877 mm (12 ft 9 in)
F	Dumping angle	45°	R	Maximum reach from swing center -with extended telescopic arm	5742 mm (18 ft 10 in) 6755 mm (22 ft 2 in)
G	Rollback angle	45°	S	Maximum digging depth -with extended telescopic arm	4423 mm (14 ft 6 in) 5533 mm (18 ft 2 in)
H	Digging depth	138 mm (5.4 in)	T	Digging reach	2320 mm (7 ft 7 in)
I	Bucket reach (transport)	2023 mm (6 ft 8 in)	U	Rear tread	1800 mm (5 ft 11 in)
J	Ground clearance	430 mm (1 ft 5 in)	V	Front tread	1874 mm (6 ft 2 in)
K	Wheel base	2175 mm (7 ft 2 in)	W	Overall width (with bucket)	2356 mm (7 ft 9 in)
L	Backhoe swing center distance	1175 mm (3 ft 10 in)	X	Backhoe transport height -with telescopic arm	3676 mm (12 ft 1 in) 3746 mm (12 ft 4 in)

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Precautions Regarding the Installation of Equipment

⚠ WARNING

- **The installation of long work equipment reduces the stability of the machine. If it is necessary to travel up or down a slope, proceed very carefully, since the machine may lose its balance and overturn.**
- **When work equipment with overall dimensions exceeding those of the standard equipment is installed, be particularly careful, since more space is necessary for the movements of the equipment and of the machine.**

Optional Equipment Measurements

★ Specific weight of the material handling = 1.8 tons/cu.m

Front End Loader

Equipment	Max. Weight kg (lb)	Max. Dimensions		Max. SAE Capacity cu. m (cu. yd.)	Max. Operating Pressure bar. (psi)	Max. Flow Rate per Minute
		Width mm (inch)	Height mm (inch)			
Front bucket	450 (992)	2320 (91.4)	940 (37)	1.1 (1.44)	—	—
Multipurpose bucket	750 (1654)	2340 (92.1)	1015 (40)	1.00 (1.30)	200 (2844)	75 liters (19.8 gpm)
Lifting forks on bucket	190 (419)	● ●	● ●	❑ ❑	—	—
Pallet forks	320 (706)	1800 (70.8)	800 (31.5)	❑ ❑	—	—

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