

WSM

WORKSHOP MANUAL
**TRACTOR, MOWER,
FRONT LOADER**

**BX1870, BX2370, BX2670,
RCK48-18BX, RCK54-23BX,
RCK60B-23BX,
RCK48P-18BX, RCK54P-23BX,
LA203A, LA243A**

Kubota

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(1) Part No. K2581-6554-1

	WARNING
	<p>TO AVOID PERSONAL INJURY:</p> <ol style="list-style-type: none"> 1. Keep PTO shield in place at all times. 2. Do not operate the PTO at speeds faster than the speed recommended by the implement manufacturer. 3. For trailing PTO-driven implements, set hitch at towing position. (see operator's manual)

1AGA JAXAP044E

(2) Part No. K2581-6555-1

CAUTION	
TO AVOID PERSONAL INJURY FROM SEPARATION:	
	GROOVE →
← GROOVE	
DO NOT EXTEND LIFT ROD BEYOND THE GROOVE ON THE THREADED ROD.	

1AGA JAXAP043E

(3) Part No. K2581-6556-1

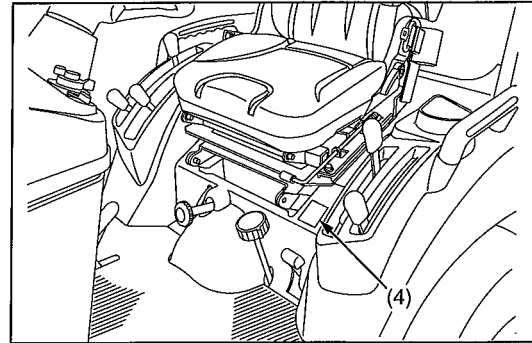
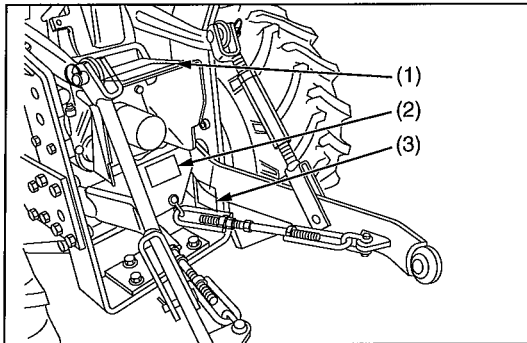
WARNING
<p>TO AVOID PERSONAL INJURY:</p> <ol style="list-style-type: none"> 1. Attach pulled or towed loads to the hitch only. 2. Use the 3-point hitch only with equipment designed for 3-point hitch usage.

1AGA JAXAP046E

(4) Part No. K2651-6568-1

WARNING
<p>Operation of this equipment may create sparks that can start fires around dry vegetation. A spark arrester may be required. The operator should contact local fire agencies for laws or regulations relating to fire prevention requirements.</p>

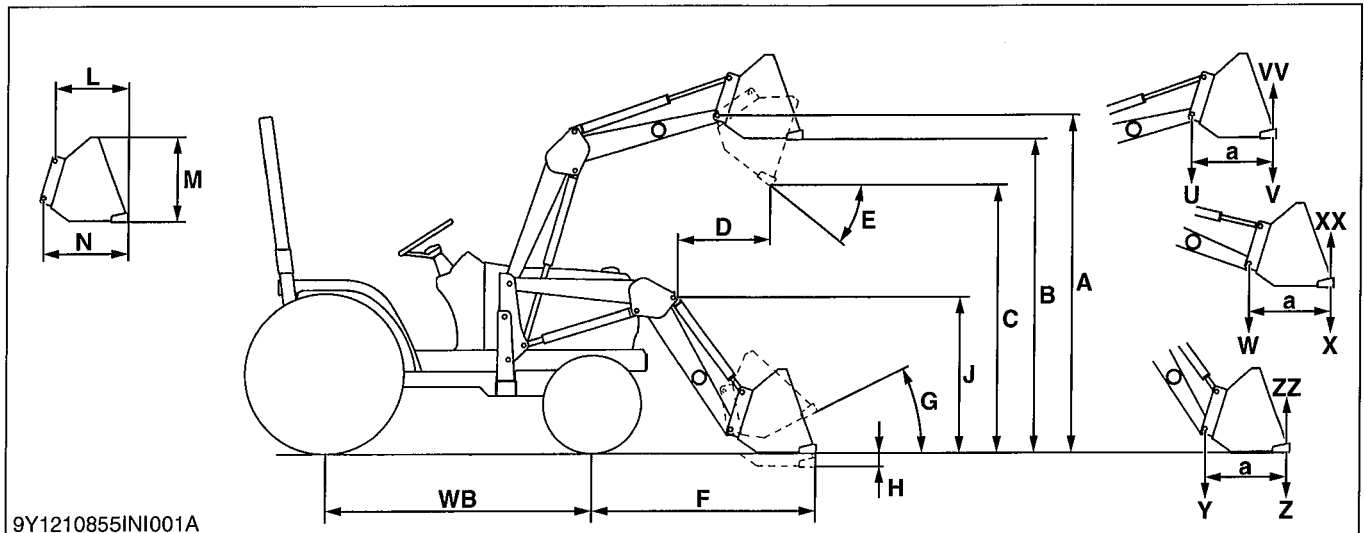
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[3] FRONT LOADER



Loader Specifications

Loader Model	LA203A	LA243A
Tractor Model	BX1870D (BX1860)	BX2370D and BX2670D (BX2360 and BX2660)
Wheel Base (WB)	1340 mm (52.8 in.)	1400 mm (55.1 in.)
Front Tires	16 × 7.5-8	18 × 8.5-10
Rear Tires	24 × 12-12	26 × 12-12
Boom Cylinder	Bore	40 mm (1.57 in.)
	Stroke	281 mm (11.1 in.)
Bucket Cylinder	Bore	65 mm (2.56 in.)
	Stroke	204 mm (8.03 in.)
Control Valve	One detente float position, two stage bucket dump, power beyond circuit	
Rated Flow	14 L/min. (3.7 U.S.gals/min., 3.1 Imp.gals/min.)	
Maximum Pressure	12.3 MPa (125 kgf/cm ² , 1778 psi)	
Net Weight (Approximate)	157 kg (346 lbs)	170 kg (375 lbs)

Bucket Specifications

Loader Model	LA203A	LA243A
Model	SQUARE 48"	
Type	Rigid	
Width	1219 mm (48.0 in.)	
Depth L	455 mm (17.9 in.)	495 mm (19.5 in.)
Height M	445 mm (17.5 in.)	465 mm (18.3 in.)
Length N	498 mm (19.6 in.)	538 mm (21.2 in.)
Capacity	Struck	0.12 m ³ (4.2 cu.ft.)
	Heaped	0.14 m ³ (4.9 cu.ft.)
Weight	56 kg (123 lbs)	60 kg (132 lbs)

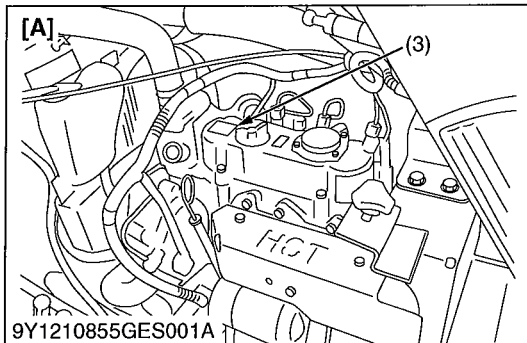
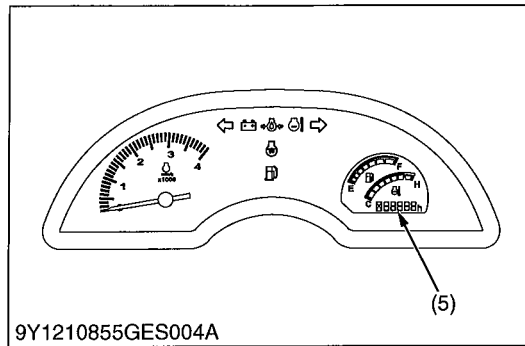
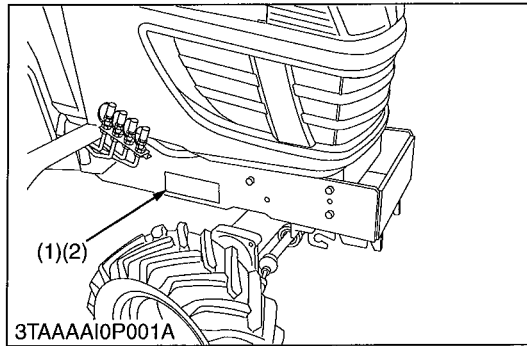
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1. IDENTIFICATION

[1] TRACTOR IDENTIFICATION

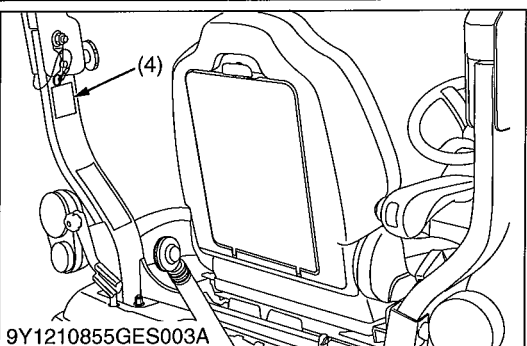
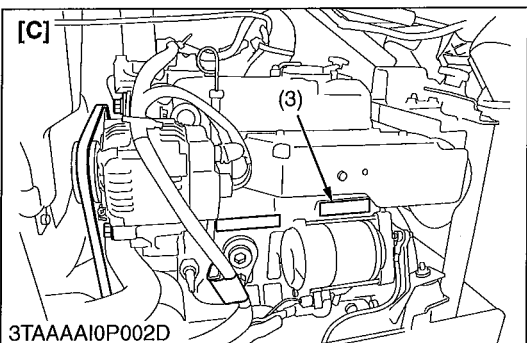
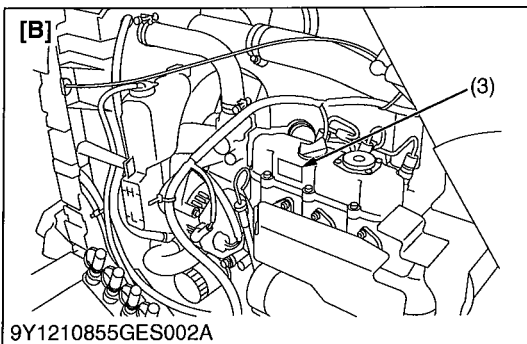
(1) Serial Number and Hour Meter

When contacting your local KUBOTA distributor, always specify engine serial number, tractor serial number and hour meter reading.



- (1) Tractor Identification Plate
 - (2) Tractor Serial Number
 - (3) Engine Serial Number
 - (4) ROPS Serial Number
 - (5) Hour Meter
- [A] BX1870D
 - [B] BX2370D
 - [C] BX2670D

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[B] For Other Than North American Market

■ **NOTE**

Engine Oil

- Oil used in the engine should have an American Petroleum Institute (API) service classification and Proper SAE Engine Oil according to the ambient temperatures as shown above:
- With the emission control now in effect, the CF-4 and CG-4 lubricating oils have been developed for use of a low sulfur fuel on on-road vehicle engines. When an off-road vehicle engine runs on a high-sulfur fuel, it is advisable to employ the "CF or better" lubricating oil with a high Total Base Number (TBN of 10 minimum).
- Refer to the following table for the suitable API classification engine oil according to the engine type (with internal EGR, external EGR or non-EGR) and the fuel (low-sulfur or high-sulfur fuel).

Fuel used	Engine oil classification (API classification)	
	Oil class of engines except external EGR	Oil class of engines with external EGR
High Sulfur Fuel [≥ 0.05 % (500 ppm)]	CF (If the "CF-4, CG-4, CH-4 or CI-4" lubricating oil is used with a high-sulfur fuel, change the lubricating oil at shorter intervals. (approximately half))	–
Low Sulfur Fuel [< 0.05 % (500 ppm)] or Ultra Low Sulfur Fuel [< 0.0015 % (15 ppm)]	CF, CF-4, CG-4, CH-4 or CI-4	CF or CI-4 (Class CF-4, CG-4 and CH-4 engine oils cannot be used on EGR type engines)

EGR: Exhaust Gas Re-circulation

- The CJ-4 engine oil is intended for DPF (Diesel Particulate Filter) type engines, and cannot be used on this tractor.

	except external EGR	with external EGR
Models	–	–

Fuel

- Cetane number of 45 is minimum. Cetane number greater than 50 is preferred, especially for temperatures below –20 °C (–4 °F) or elevations above 1500 m.
- If diesel fuel with sulfur content greater than 0.5 % (5000 ppm) sulfur content is used, reduce the service interval for engine oil and filter by 50 %.
- NEVER use diesel fuel with sulfur content greater than 0.05 % (500 ppm) for EXTERNAL EGR type engine.
- DO NOT use diesel fuel with sulfur content greater than 1.0 % (10000 ppm).
- Diesel fuels specified to EN 590 or ASTM D975 are recommended.
- No.2-D is a distillate fuel of lower volatility for engines in industrial and heavy mobile service. (SAE J313 JUN87)

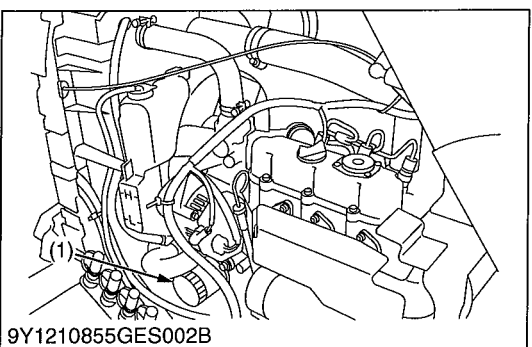
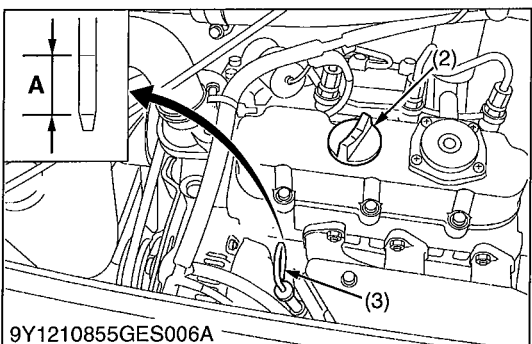
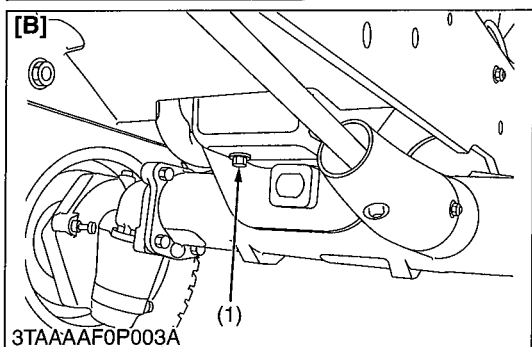
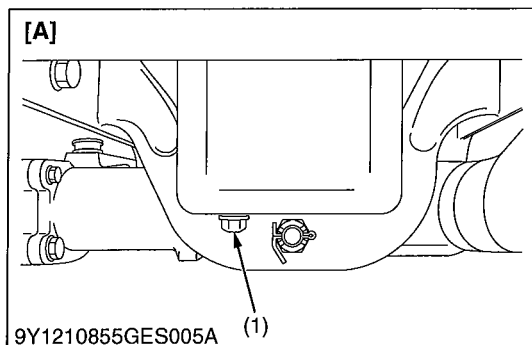
Transmission oil

- The oil used to lubricate the transmission is also used as hydraulic fluid. To ensure proper operation of the hydraulic system and to complete lubrication of the transmission, it is important that a multi-grade transmission fluid is used in this system. We recommend the use of **KUBOTA UDT** or **SUPER UDT fluid** for optimum protection and performance. (Consult your local KUBOTA Distributor for further detail.) Do not mix different brands together.

■ **Indicated capacities of water and oil are manufacturer's estimate.**

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(2) Check Points of Initial 50 Hours



Changing Engine Oil

⚠ CAUTION

To avoid personal injury:

- Be sure to stop the engine and remove the key before changing the oil.
 - Allow engine to cool down sufficiently, oil can be hot and can burn.
1. To drain the used oil, remove the drain plug at the bottom of the engine and drain the oil completely into the oil pan. All the used oil can be drained out easily when the engine is still warm.
 2. After draining reinstall the drain plug.
 3. Fill with the new oil up to the upper notch on the dipstick.
 4. Properly dispose of used oil.

Engine oil	Capacity	BX1870D	2.9 L 3.1 U.S.qts 2.6 Imp.qts
		BX2370D	3.1 L 3.3 U.S.qts 2.7 Imp.qts
		BX2670D	3.5 L 3.7 U.S.qts 3.1 Imp.qts

- (1) Drain Plug
- (2) Oil Inlet
- (3) Dipstick

A: Oil level is acceptable within this range.

- [A] BX1870D
- [B] BX2370D and BX2670D

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Replacing Engine Oil Filter

⚠ CAUTION

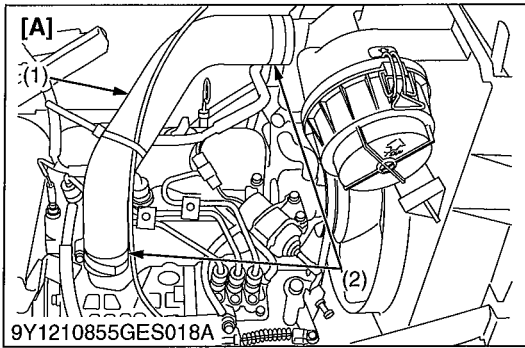
- Be sure to stop the engine before changing oil filter cartridge.
 - Allow engine to cool down sufficiently, oil can be hot and can burn.
1. Remove the oil filter.
 2. Put a film of clean engine oil on the rubber seal of the new filter.
 3. Tighten the filter quickly until it contacts the mounting surface. Tighten filter by hand an additional 1/2 turn only.
 4. After the new filter has been replaced, the engine oil normally decrease a little. Make sure that the engine oil does not leak through the seal and be sure to check the oil level on the dipstick. Then, fill the engine oil up to the specified level.
 5. Properly dispose of used oil.

■ IMPORTANT

- To prevent serious damage to the engine, use only a KUBOTA genuine filter.

- (1) Engine Oil Filter Cartridge

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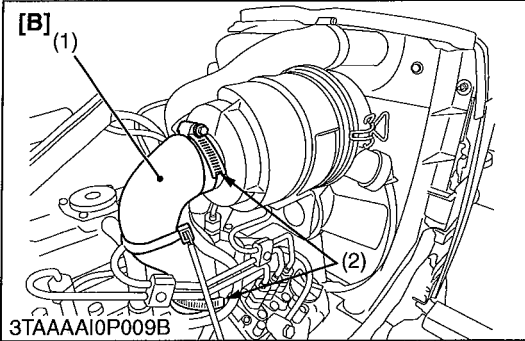
Checking Intake Air Line

1. Check to see that hose and hose clamps are tight and not damaged.
2. If hose and clamps are found to be worn or damaged, replace or repair them at once.

- (1) Hose
- (2) Clamp

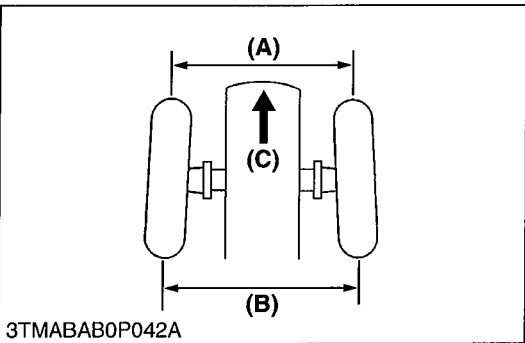
- [A] BX1870D and BX2370D
- [B] BX2670D

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Adjusting Toe-in

1. Park tractor on a firm, flat and level place.
2. Turn steering wheel so front wheels are in the straight ahead position.
3. Lower the implement to the ground, lock the parking brake, stop the engine and remove the key.
4. Measure distance between tire beads at front of tire at hub height.
5. Measure distance between tire beads at rear of tire at hub height.
6. Front distance should be 0 to 5.0 mm (0 to 0.2 in.) less that rear distance. If not, adjust tie rod length.



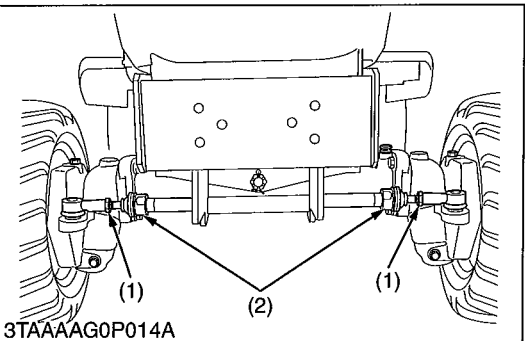
Toe-in ((B) – (A))	Factory specification	0 to 5.0 mm 0 to 0.2 in.
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Adjusting

1. Loosen the lock nuts and turn the tie-rod to adjust the rod length until the proper toe-in measurement is obtained.
2. Retighten the lock nuts.

- (1) Lock Nut
- (2) Tie-rod

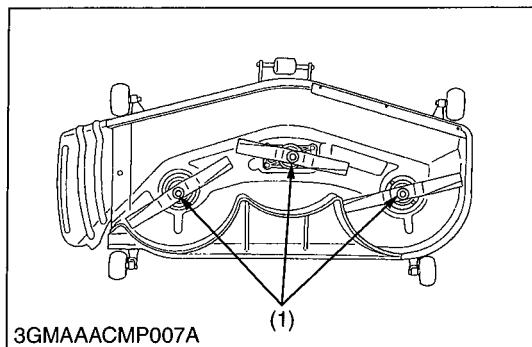
- (A) Wheel to Wheel Distance at Front
- (B) Wheel to Wheel Distance at Rear
- (C) Front



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[2] MOWER

(1) Check Points of Daily or Each Use



Retightening Mower Blade Screw

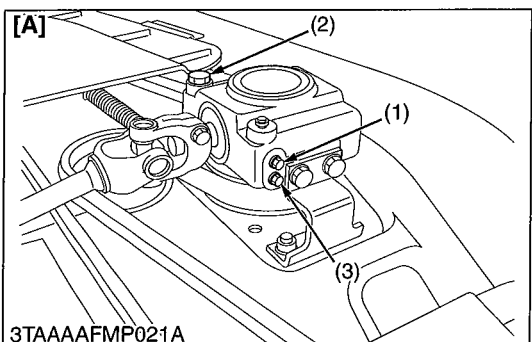
⚠ CAUTION

- To avoid injury, always handle the mower blade with care.
1. Dismount the mower and turn it over to expose the mower blades.
 2. Wedge a block of wood securely between the mower blade and mower deck.
 3. Retighten the mower blade screw to the specified torque.
 4. If the mower blade screw is worn or broken, replace it.

Tightening torque	Mower blade screw	98.1 to 117 N·m 10.0 to 12.0 kgf·m 72.4 to 86.7 lbf·ft
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(1) Mower Blade Screw

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Checking Gear Box Oil Level

1. Place the mower on level ground.
2. Loosen the check plug (1), and check to see if oil seems from the opening.
3. If the oil level is low, remove the oil filler plug (2) and add new gear oil.

■ IMPORTANT

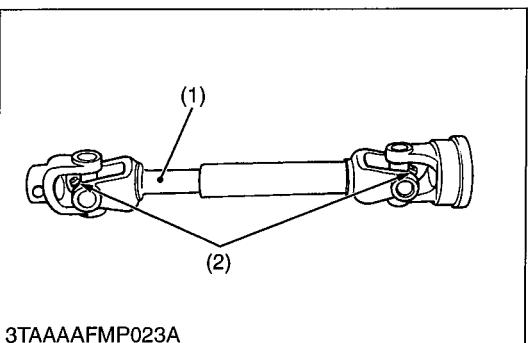
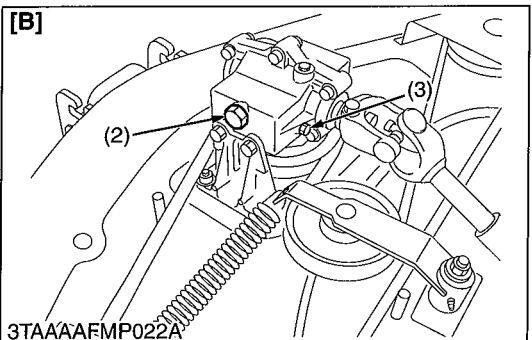
- Use the specified gear oil.
Refer to "[2] MOWER" on page G-12.

- (1) Check Plug
(2) Oil Filler Plug
(3) Drain Plug

[A] RCK60B-23BX, RCK54-23BX and RCK48-18BX

[B] RCK48P-18BX and RCK54P-23BX

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Greasing Universal Joint

1. Grease the internal splines (1) and grease fittings (2) of the universal joint if the amount of grease is insufficient.

- (1) Spline (2) Grease Fitting

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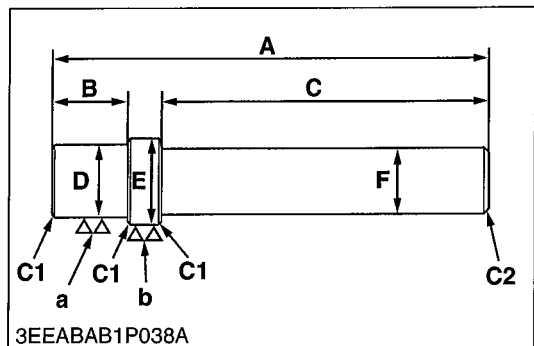
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Bushing Replacing Tool [For BX2670D (D1005-E4)]

Application

- Use to press out and press fit the valve guide.

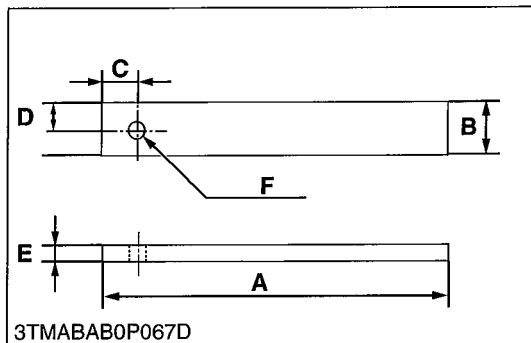
[For small end bushing]

A	157 mm (6.18 in.)
B	24 mm (0.94 in.)
C	120 mm (4.72 in.)
D	21.8 to 21.9 mm dia. (0.859 to 0.862 in. dia.)
E	24.8 to 24.9 mm dia. (0.977 to 0.980 in. dia.)
F	20 mm dia. (0.79 in. dia.)
a	6.3 μm (250 μin.)
b	6.3 μm (250 μin.)
C1	Chamfer 1.0 mm (0.039 in.)
C2	Chamfer 2.0 mm (0.0079 in.)

[For idle gear bushing]

A	196 mm (7.72 in.)
B	26 mm (1.0 in.)
C	150 mm (5.91 in.)
D	25.80 to 25.90 mm dia. (1.016 to 1.019 in. dia.)
E	28.80 to 28.90 mm dia. (1.134 to 1.137 in. dia.)
F	20 mm dia. (0.79 in. dia.)
a	6.3 μm (250 μin.)
b	6.3 μm (250 μin.)
C1	Chamfer 1.0 mm (0.039 in.)
C2	Chamfer 2.0 mm (0.0079 in.)

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Flywheel Stopper

Application

- Use to loosen and tighten the flywheel screw.

A	200 mm (7.87 in.)
B	30 mm (1.18 in.)
C	20 mm (0.79 in.)
D	15 mm (0.59 in.)
E	8 mm (0.31 in.)
F	10 mm dia. (0.39 in. dia.)

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[2] WHEEL TREAD

⚠ CAUTION

To avoid personal injury:

- Support tractor securely on stands before removing a wheel.
- Never operate tractor with a loose rim, wheel or axle.

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(1) Front Wheels

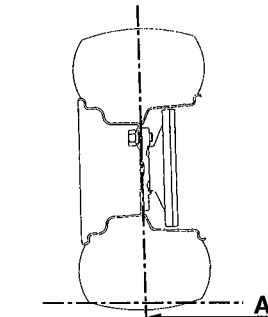
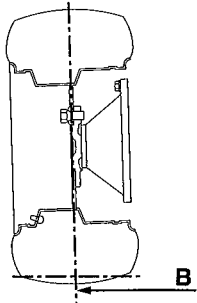
Front tread can not be adjusted.

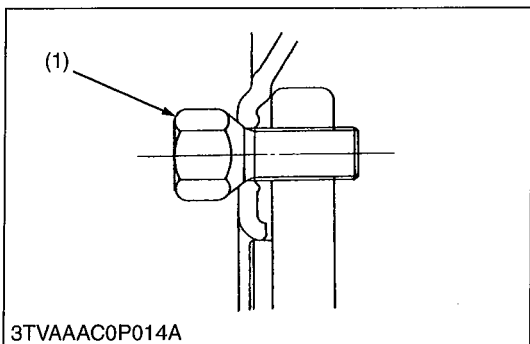
■ IMPORTANT

- Do not turn discs to obtain wider tread.

■ NOTE

- Use the tapered bolts for wheels with beveled or tapered holes.

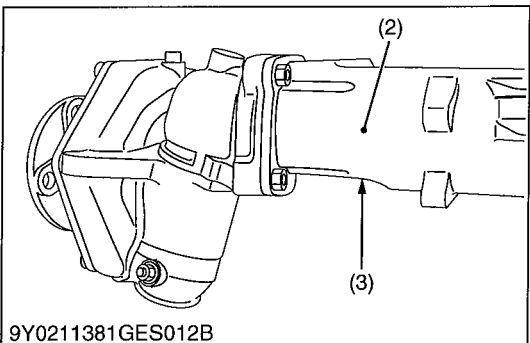
Models	BX1870D	BX2370D and BX2670D
Tire	16 × 7.50 – 8 Turf, 16 × 7.50 – 8 Bar	18 × 8.50 – 10 Turf, 18 × 8.50 – 10 Bar, 18 × 8.50 – 10 Ind.
Tread	 <p>3TAAAAF0P015A</p>	 <p>3TAAAAG0P025B</p>



⚠ CAUTION

- Before jacking up the tractor, park it on a firm and level ground and chock the rear wheels.
- Fix the front axle to keep it from swinging.
- Select jacks that with stand the machine weight and set them up at jack point (3).

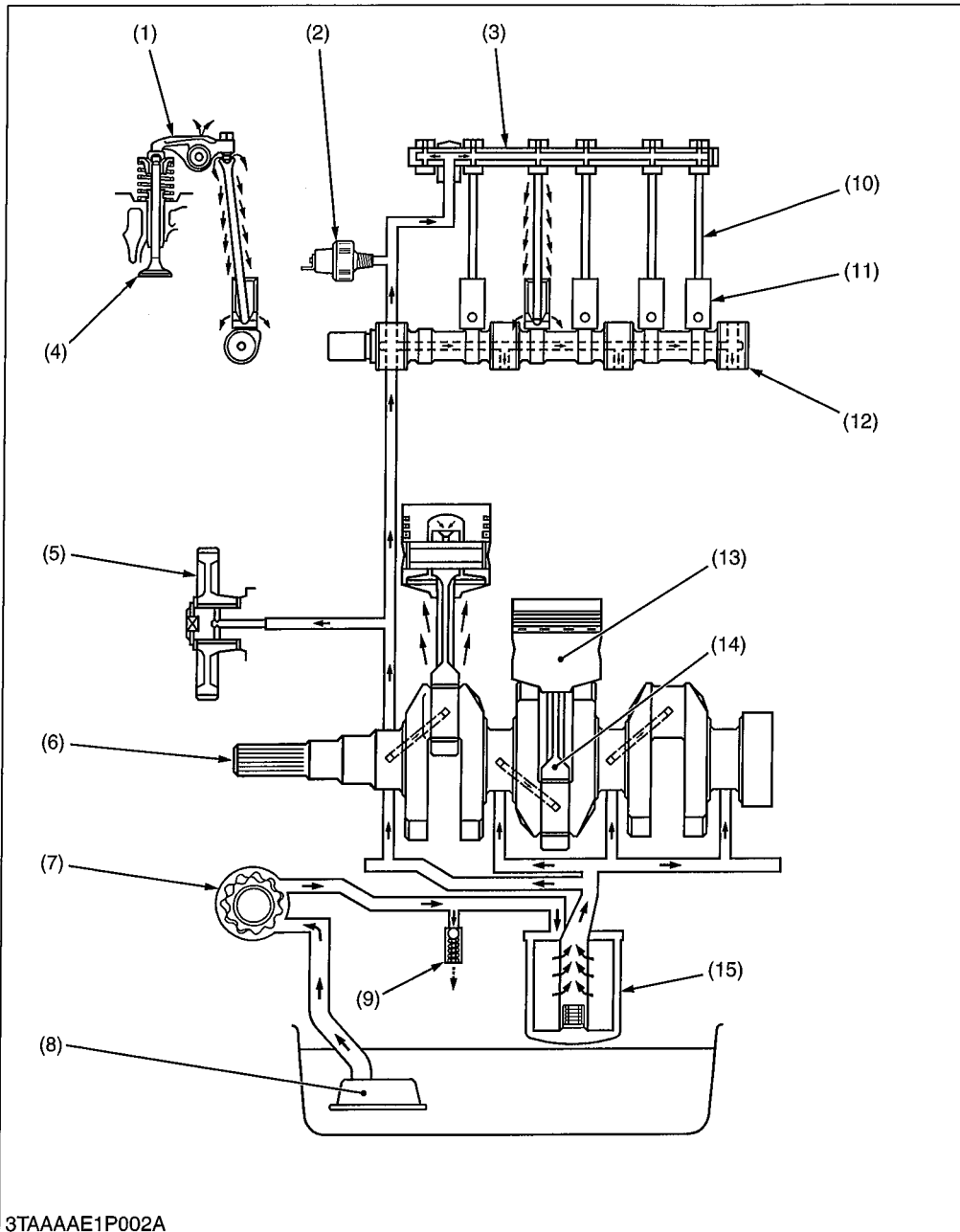
Tightening torque	Front wheel	149.2 to 179.0 N·m 15.2 to 18.3 kgf·m 110 to 132 lbf·ft
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- (1) Wheel Mounting Screw **A: 880 mm (34.6 in.)**
- (2) Front Axle Case **B: 910 mm (35.8 in.)**
- (3) Jack Point

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1. LUBRICATING SYSTEM



- (1) Rocker Arm
- (2) Oil Pressure Switch
- (3) Rocker Arm Shaft
- (4) Valve
- (5) Idle Gear
- (6) Crankshaft
- (7) Oil Pump
- (8) Oil Strainer
- (9) Relief Valve
- (10) Push Rod
- (11) Tappet
- (12) Camshaft
- (13) Piston
- (14) Connecting Rod
- (15) Oil Filter Cartridge

3TAAAE1P002A

This engine's lubricating system consists of oil strainer (8), oil pump (7), relief valve (9), oil filter cartridge (15) and oil pressure switch (2).

The oil pump sucks lubricating oil from the oil pan through the oil strainer and the oil flows down to the filter cartridge, where it is further filtered. Then the oil is forced to crankshaft (6), connecting rods (14), idle gear (5), camshaft (12) and rocker arm shaft (3) to lubricate each part.

Some part of oil, splashed by the crankshaft or leaking and dropping from gaps of each part, lubricates these parts: piston (13), cylinders, small ends or connecting rods, tappets (11), push rods (10), inlet and exhaust valves (4) and timing gears.

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Item		Factory Specification	Allowable Limit
Rocker Arm Shaft to Rocker Arm • Rocker Arm Shaft • Rocker Arm	Clearance	0.016 to 0.045 mm 0.00063 to 0.0017 in.	0.15 mm 0.0059 in.
	O.D.	10.473 to 10.484 mm 0.41233 to 0.41275 in.	–
	I.D.	10.500 to 10.518 mm 0.41339 to 0.41409 in.	–
Push Rod	Alignment	–	0.25 mm 0.0098 in.
Tappet to Tappet Guide • Tappet • Tappet Guide	Clearance	0.016 to 0.052 mm 0.00063 to 0.0020 in.	0.10 mm 0.0039 in.
	O.D.	17.966 to 17.984 mm 0.70733 to 0.70803 in.	–
	I.D.	18.000 to 18.018 mm 0.70867 to 0.70937 in.	–
Timing Gear • Crank Gear to Idle Gear • Idle Gear 1 to Cam Gear • Idle Gear 1 to Injection Pump Gear • Crank Gear to Oil Pump Drive Gear	Backlash	0.0430 to 0.124 mm 0.00170 to 0.00488 in.	0.15 mm 0.0059 in.
	Backlash	0.0470 to 0.123 mm 0.00185 to 0.00484 in.	0.15 mm 0.0059 in.
	Backlash	0.0460 to 0.124 mm 0.00182 to 0.00488 in.	0.15 mm 0.0059 in.
	Backlash	0.0410 to 0.123 mm 0.00162 to 0.00484 in.	0.15 mm 0.0059 in.
Idle Gear Shaft to Gear Bushing • Idle Gear 1 • Idle Gear Bushing • Idle Gear Shaft 1	Clearance	0.020 to 0.084 mm 0.00079 to 0.0033 in.	0.10 mm 0.0039 in.
	I.D.	20.000 to 20.051 mm 0.78741 to 0.78940 in.	–
	O.D.	19.967 to 19.980 mm 0.78611 to 0.78661 in.	–
Idle Gear • Idle Gear 1	Side Clearance	0.20 to 0.51 mm 0.0079 to 0.020 in.	0.80 mm 0.031 in.
	Camshaft	Side Clearance	0.15 to 0.31 mm 0.0059 to 0.012 in.
Alignment		–	0.01 mm 0.0004 in.
Cam Height	Intake	26.88 mm 1.058 in.	26.83 mm 1.056 in.
	Exhaust	26.88 mm 1.058 in.	26.83 mm 1.056 in.

3. TIGHTENING TORQUES

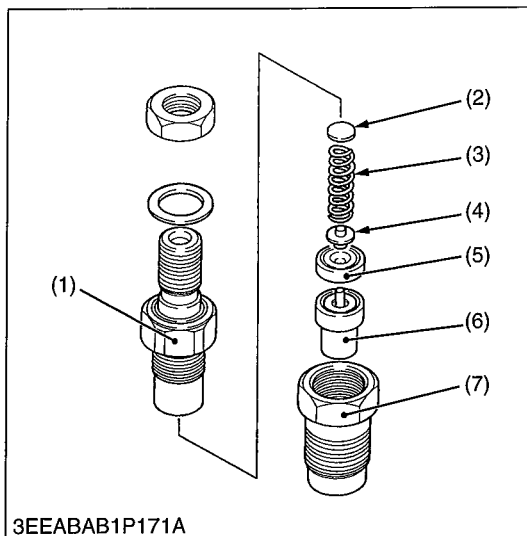
Tightening torques of screws, bolts and nuts on the table below are especially specified.
(Tractor section for general use screws, bolts and nuts: Refer to "5. TIGHTENING TORQUES" on page G-13.)

Tractor Section

Item	N·m	kgf·m	lbf·ft
Front coupling mounting bolt	24 to 27	2.4 to 2.8	18 to 20
Engine mounting nut	24 to 27	2.4 to 2.8	18 to 20
Cushion mounting nut	24 to 27	2.4 to 2.8	18 to 20
Engine support mounting screw	48 to 55	4.9 to 5.7	36 to 41

Engine Section

Item	Dimension × Pitch	N·m	kgf·m	lbf·ft
Cylinder head cover screw [BX1870D (D722-E4) and BX2370D (D902-E4)]	M6 × 1.0	9.81 to 11.2	1.00 to 1.15	7.24 to 8.31
Cylinder head cover screw [BX2670D (D1005-E4)]	M6 × 1.0	7 to 8	0.7 to 0.9	5 to 6
Cylinder head screw [BX1870D (D722-E4) and BX2370D (D902-E4)]	M8 × 1.25	38 to 42	3.8 to 4.3	28 to 31
Cylinder head screw [BX2670D (D1005-E4)]	M8 × 1.25	64 to 68	6.5 to 7.0	47 to 50
*Main bearing case screw 1 [BX1870D (D722-E4) and BX2370D (D902-E4)]	M6 × 1.0	13 to 15	1.3 to 1.6	9.4 to 11
*Main bearing case screw 1 [BX2670D (D1005-E4)]	M7 × 1.0	30 to 34	3.0 to 3.5	22 to 25
*Main bearing case screw 2 [BX1870D (D722-E4) and BX2370D (D902-E4)]	M7 × 1.0	27 to 30	2.7 to 3.1	20 to 22
*Main bearing case screw 2 [BX2670D (D1005-E4)]	M8 × 1.25	49 to 53	5.0 to 5.5	37 to 39
*Flywheel screw	M10 × 1.25	54 to 58	5.5 to 6.0	40 to 43
*Connecting rod screw [BX1870D (D722-E4) and BX2370D (D902-E4)]	M7 × 0.75	27 to 30	2.7 to 3.1	20 to 22
*Connecting rod screw [BX2670D (D1005-E4)]	M7 × 0.75	42 to 46	4.2 to 4.7	31 to 33
*Rocker arm bracket screw [BX1870D (D722-E4) and BX2370D (D902-E4)]	M6 × 1.0	9.81 to 11.2	1.00 to 1.15	7.24 to 8.31
*Rocker arm bracket nut [BX2670D (D1005-E4)]	M7 × 1.0	22 to 26	2.2 to 2.7	16 to 19
*Fan drive pulley screw [BX1870D (D722-E4) and BX2370D (D902-E4)]	M12 × 1.5	118 to 127	12.0 to 13.0	86.8 to 94.0
*Fan drive pulley screw [BX2670D (D1005-E4)]	M14 × 1.5	236 to 245	24.0 to 25.0	174 to 180
Bearing case cover mounting screw	M6 × 1.0	9.81 to 11.2	1.00 to 1.15	7.24 to 8.31
Glow plug	M8 × 1.0	7.9 to 14	0.80 to 1.5	5.8 to 10



Nozzle Holder

1. Secure the nozzle retaining nut (7) with a vise.
2. Remove the nozzle holder (1), and remove parts inside.

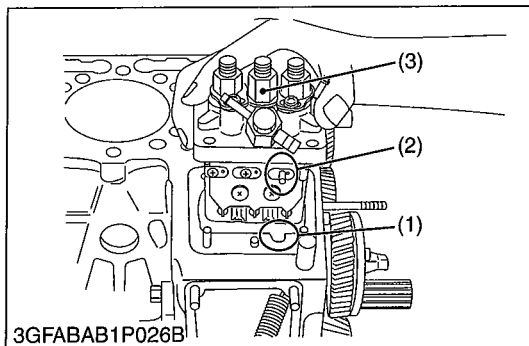
(When reassembling)

- Assemble the nozzle in clean fuel oil.
- Install the push rod (4), noting its direction.
- After assembling the nozzle, be sure to adjust the fuel injection pressure.

Tightening torque	Nozzle holder	35 to 39 N·m 3.5 to 4.0 kgf·m 26 to 28 lbf·ft
	Overflow pipe retaining nut	20 to 24 N·m 2.0 to 2.5 kgf·m 15 to 18 lbf·ft
	Nozzle holder assembly	49 to 68 N·m 5.0 to 7.0 kgf·m 37 to 50 lbf·ft

- | | |
|----------------------|--------------------------|
| (1) Nozzle Holder | (5) Distance Piece |
| (2) Adjusting Washer | (6) Nozzle Piece |
| (3) Nozzle Spring | (7) Nozzle Retaining Nut |
| (4) Push Rod | |

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Injection Pump

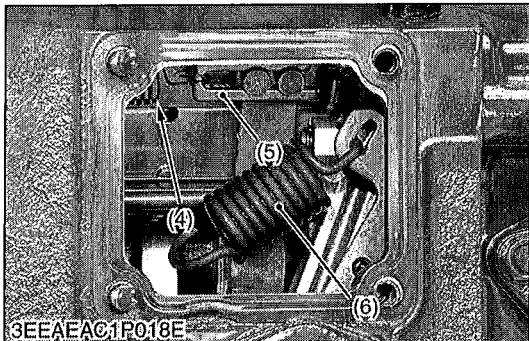
1. Disconnect the start spring (4) on the thrust lever side (5).
2. Align the control rack pin (2) with the notch (1) on the crankcase, and remove the injection pump (3).
3. Remove the injection pump shims.
4. In principle, the injection pump should not be disassembled.

(When reassembling)

- When installing the injection pump, insert the control rack pin (2) firmly into the groove (7) of the thrust lever of fork lever.

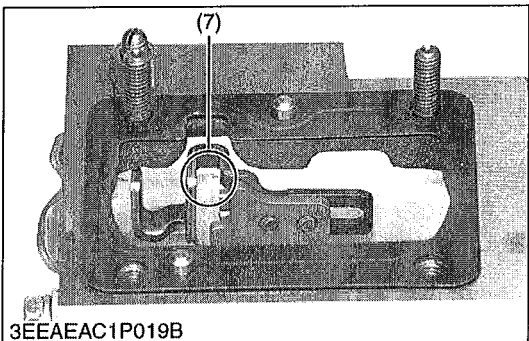
■ **NOTE**

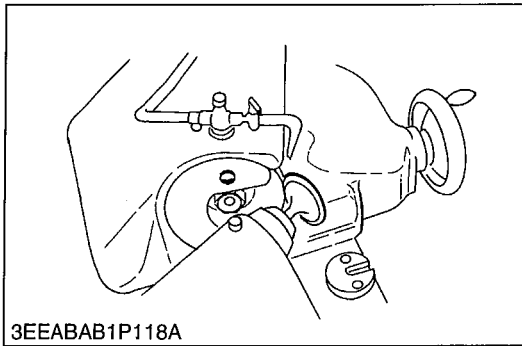
- **Addition or reduction of shim (0.05 mm, 0.002 in.) delays or advances the injection timing by approx. 0.0087 rad (0.50 °).**
- **In disassembling and replacing, be sure to use the same number or new gasket shims with the same thickness.**



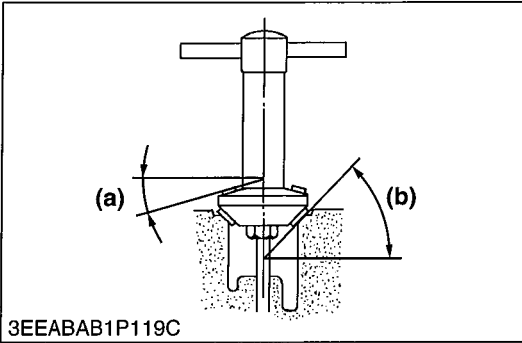
- | | |
|----------------------|---------------------|
| (1) Notch | (5) Thrust Lever |
| (2) Control Rack Pin | (6) Governor Spring |
| (3) Injection Pump | (7) Groove |
| (4) Start Spring | |

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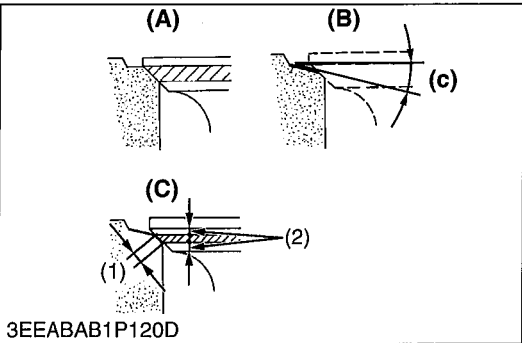




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Correcting Valve and Valve Seat

■ **NOTE**

- Before correcting the valve and seat, check the valve stem and the I.D. of valve guide section, and repair them if necessary.
- After correcting the valve seat, be sure to check the valve recessing.

1) Correcting Valve

1. Correct the valve with a valve refacer.

[BX1870D (D722-E4) and BX2370D (D902-E4)]

Valve face angle	Factory specification	0.79 rad 45 °
------------------	-----------------------	------------------

[BX2670D (D1005-E4)]

Valve face angle	Factory specification	IN.	1.0 rad 60 °
		EX.	0.79 rad 45 °

2) Correcting Valve Seat

1. Slightly correct the seat surface with a 1.0 rad (60 °) (intake valve) or 0.79 rad (45 °) (exhaust valve) valve seat cutter.
2. Resurface the seat surface with a 0.52 rad (30 °) valve seat cutter to intake valve seat and with a 0.26 rad (15 °) valve seat cutter to exhaust valve seat so that the width is close to specified valve seat width (2.12 mm, 0.0835 in.).
3. After resurfacing the seat, inspect for even valve seating, apply a thin film of compound between the valve face and valve seat, and fit them with valve lapping tool.
4. Check the valve seating with prussian blue. The valve seating surface should show good contact all the way around.

[BX1870D (D722-E4) and BX2370D (D902-E4)]

Valve seat angle	Factory specification	0.79 rad 45 °
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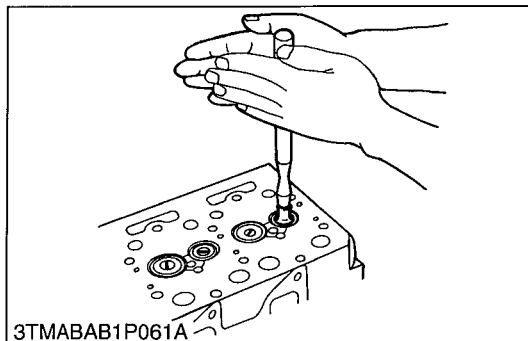
[BX2670D (D1005-E4)]

Valve seat angle	Factory specification	IN.	1.0 rad 60 °
		EX.	0.79 rad 45 °

- (1) Valve Seat Width
- (2) Identical Dimension

- (A) Check Contact
- (B) Correct Seat Width
- (C) Check Contact
- (a) 0.26 rad (15 °) or 0.52 rad (30 °)
- (b) 0.79 rad (45 °) or 1.0 rad (60 °)
- (c) 0.52 rad (30 °) or 0.26 rad (15 °)

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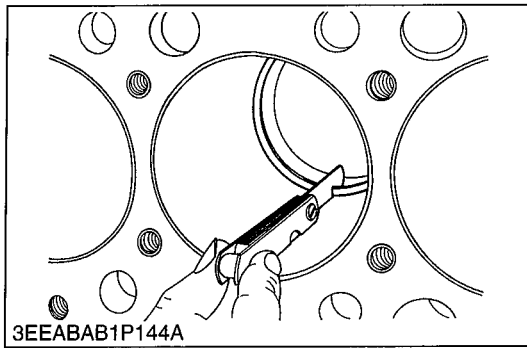
Valve Lapping

1. Apply compound evenly to the valve lapping surface.
2. Insert the valve into the valve guide. Lap the valve onto its seat with a valve flapper or screwdriver.
3. After lapping the valve, wash the compound away and apply oil, then repeat valve lapping with oil.
4. Apply prussian blue to the contact surface to check the seated rate. If it is less than 70 %, repeat valve lapping again.

■ **IMPORTANT**

- When valve lapping is performed, be sure to check the valve recessing and adjust the valve clearance after assembling the valve.

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Piston Ring Gap

1. Insert the piston ring into the lower part of the cylinder (the least worn out part) with a piston.
2. Measure the ring gap with a thickness gauge.
3. If the measurement exceeds the allowable limit, replace the piston ring.

[BX1870D (D722-E4)]

Piston ring gap	Top ring	Factory specification	0.15 to 0.30 mm 0.0059 to 0.011 in.
		Allowable limit	1.20 mm 0.0472 in.
	Second ring	Factory specification	0.30 to 0.45 mm 0.012 to 0.017 in.
		Allowable limit	1.25 mm 0.0492 in.
	Oil ring	Factory specification	0.15 to 0.30 mm 0.0059 to 0.011 in.
		Allowable limit	1.20 mm 0.0472 in.

[BX2370D (D902-E4)]

Piston ring gap	Top ring	Factory specification	0.20 to 0.35 mm 0.0079 to 0.013 in.
		Allowable limit	1.25 mm 0.0492 in.
	Second ring	Factory specification	0.35 to 0.50 mm 0.014 to 0.019 in.
		Allowable limit	1.25 mm 0.0492 in.
	Oil ring	Factory specification	0.20 to 0.35 mm 0.0079 to 0.013 in.
		Allowable limit	1.25 mm 0.0492 in.

[BX2670D (D1005-E4)]

Piston ring gap	Top ring	Factory specification	0.30 to 0.45 mm 0.012 to 0.017 in.
		Allowable limit	1.25 mm 0.0492 in.
	Second ring	Factory specification	0.30 to 0.45 mm 0.012 to 0.017 in.
		Allowable limit	1.25 mm 0.0492 in.
	Oil ring	Factory specification	0.25 to 0.40 mm 0.0099 to 0.015 in.
		Allowable limit	1.25 mm 0.0492 in.

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