KOSO Feel The Speed

INsTRUCTION

Thanks for purchasing our MSX 61mm ceramic coated cylinder with Forged Piston. In order to install this kit properly, please read carefully these instruction sheets and retain them for future reference.

⚠ Precautions

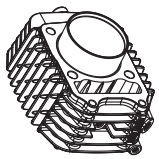
1.This product should be installed by professional mecanics only. To avoid damages to the engine, follow carefully the instruction bellow. Wrong Installation and damages to the engine shall be inputed to the user.
2.Always use the proper tools to take appart and assemble the engine.
3.Do not attempt to take appart or assemble the engine using any other method than the one describe in these instruction sheets.
4.The internal inspection or the maintenance of this kit should be performed by professional mecanics only.

Description of symbols

	Engine oil must be used during installation.
	Torque value required for fastening the screws.
⚠	*Certain procedures must be followed in order to insure the proper installation ot the components.*
⚠ **WARNING**	*Certain procedures must be followed to avoid injuries to the user or others.*
⚠ **CAUTION!**	*Certain procedures must be followed to avoid damages to the vehicle.*

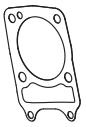
1 Accessories

1 Ceramic Coated Cylinder x 1



2 Cylinder Upper Gasket x 1

3 Cylinder Lower Gasket x 1



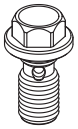
4 Piston x 1

5 Piston Ring x 1 set

6 Piston Pin x 1

7 C-Ring x 2

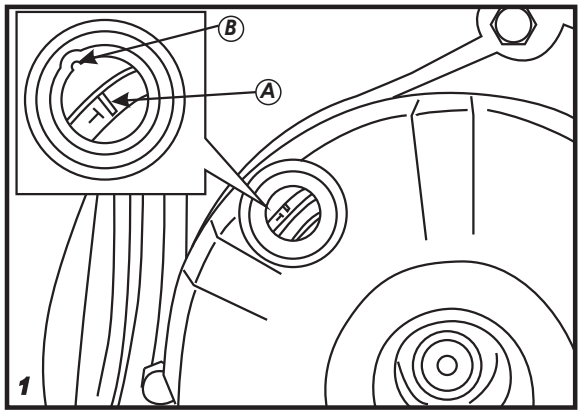
8 M10 x 1.25mm x 20mm Oil Banjo boilt x 2

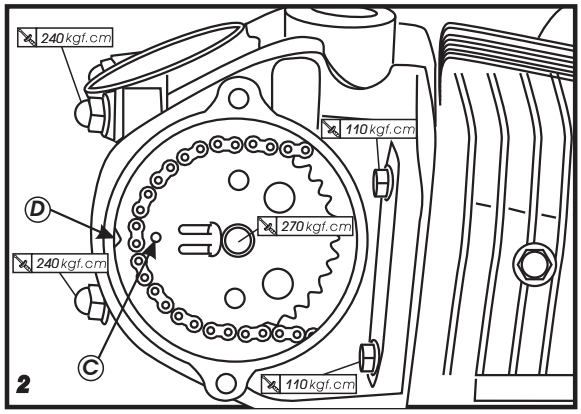


9 Washer x 2

NOTE *Please contact your local distributor if the items received are not the same as the one listed above.*

2-1 Gear Timing Adjustment





1. *Remove the ignition timing cap. Using the proper tool, rotate the flywheel until the TDC mark Ⓐ is properly aligned with the timing mark Ⓑ on the crank cover.*
2. *Confirm the engine timing is corrrect by checking if the mark on the camshaft Ⓒ is correctly aligned with the mark on the cylinder head Ⓓ.*

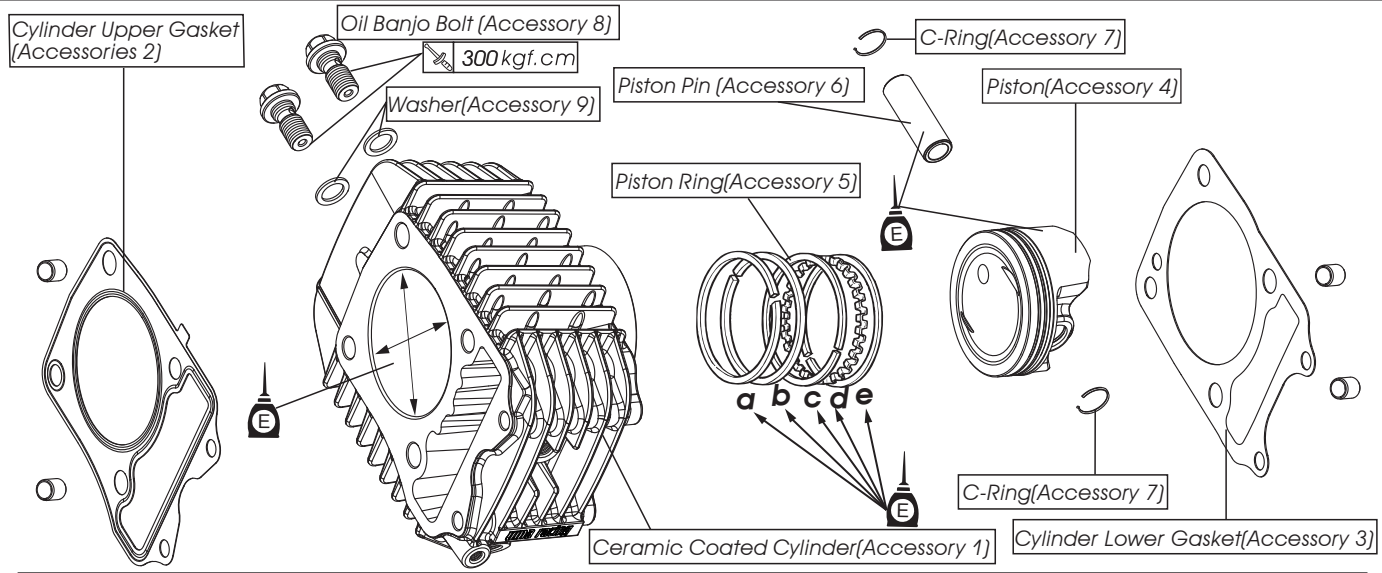
NOTE *When installing the camshaft, make sure the chain is always tense.*

⚠ **CAUTION!** *When taking apart the engine, make sure to adjust the timing gear properly before proceeding with the dismantling operation.*

⚠ **CAUTION!** *To avoid changing the value or causing timing error of the valves, do not attempt to turn the crank while working on the engine.*

⚠ **WARNING** *Following the installation of the timing gear and chain, check if the timing marks are still aligned correctly. Before starting the engine, perform with a cold test by turning manualy the crank to prevent any damages that could be cause to the engine.*

2-2 Cylinder and Piston Disassembly



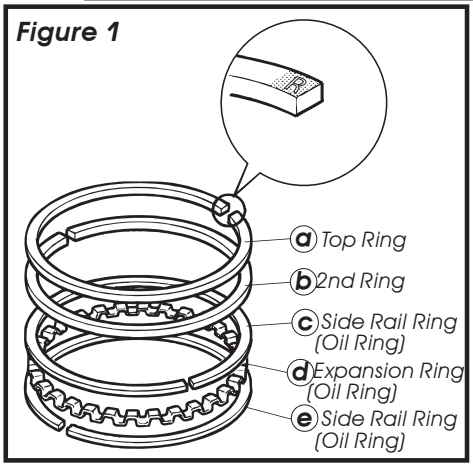
⚠ *Remove the entire top end of the engine in order to facilitate the replacement of the cylinder.*

⚠ *Before installing the cylinder, apply lubricant oil on the cylinder sleeve to avoid scratching or damaging the cylinder or piston.*

NOTE *Disassemble the engine according to the steps above. The installation of the cylinder and piston should be performed in reverse sequence.*

NOTE *Apply engine oil on the original factory dowel pin*

Figure 1



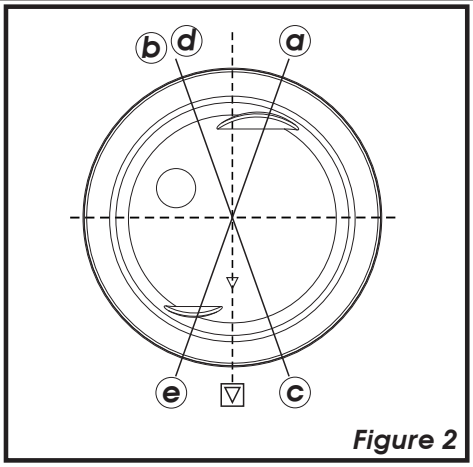


Figure 2

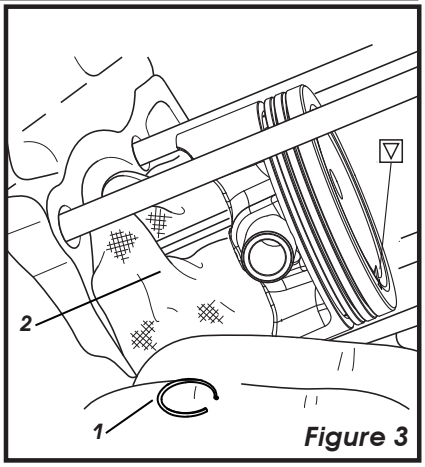


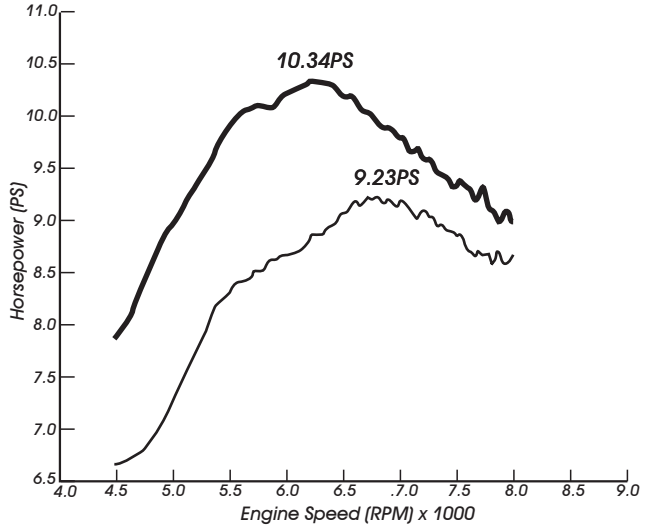
Figure 3

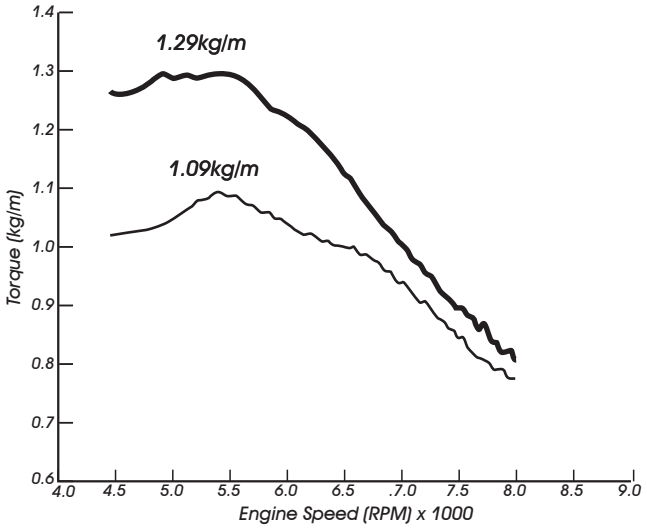
⚠ *The marking on the piston ring should face upward (Fig. 1) and the gap on the Piston Ring should NOT be aligned when installed with each other when installed on the piston.*

NOTE *During the installation, confirm that the triangle marking ▽ on the piston is facing toward the exhaust side of the cylinder (Fig. 2).*

⚠ CAUTION! *During the installation of the piston, make sure to cover the opening of the crankcase in order to prevent anything from falling inside the engine base (Fig. 3).*

3 Test Diagram





NOTE *61mm Ceramic Cylinder unit results are based on the original factory's setting (3-speed test).*

NOTE *The test result may vary due to the respective test environment and weather. This test diagram is provided for reference only.*

KOSO Feel The Speed

INSTRUCTION

● Thank you for purchasing the 4 Valve Cylinder Head for Honda Grom. Please read the instruction carefully and retain them for future reference.

⚠ NOTICE

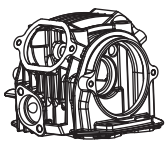
●Follow the steps as described in the instructions for proper installation.
● Correct tools must be used for proper installation.
● Do not modify any parts during installation.
● Maintenance and repairs should be performed by our professionals only.
****IT IS MANDATORY THAT THE INSTALLATION OF THIS KIT BE PERFORMED BY A PROFESSIONAL MECHANIC ONLY.**

◎**SYMBOL EXPLINATION**

	Apply engine oil before installation.
	Apply molybdenum disulfide oil before installation.
	Apply screw glue before installation.
	Apply grease before installation.
INSTALLATION CAUTION!	Make sure all screws are tightened to OEM torque specifications before starting the engine.
READ CAREFULLY	If any information dealt with in the manual remains unclear seek professional assistance.

1-1 ACCESSORIES

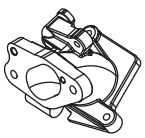
1 Cylinder head X1



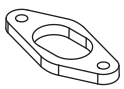
2 Camshaft X1

NOTE 1

3 Intake manifold X1



4 Manifold thermal insulation gasket X1



5 Manifold gasket X2

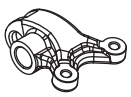
6 Piston X1

7 Piston Ring X1

8 C-Ring X2

9 Piston Pin X1

10 Intake Rocker Arm X1



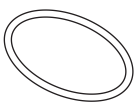
NOTE 1

11 Exhaust rocker arm X1

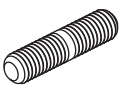
NOTE 1

12 Cover X1

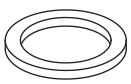
13 O-Ring X2



14 M8 x 46 Stud X2



15 Exhaust pipe gasket X1



16 M8 screw X4

17 D20xd12.5xt2 mm Gasket X4

18 M6x10 mm screw X1

NOTE 1

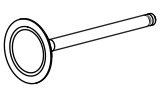
19 Spark plug adapter cover X1

20 Intake manifold sealing O-ring X1

22 Plate Stopper X1

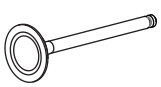
NOTE 1

23 IN Valve (D24) X2



NOTE 1

23 EX Valve (D21) X2



NOTE 1

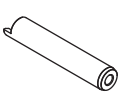
24 Valve spring X4

NOTE 1

25 Valve spring lower gasket X4

NOTE 1

26 Rocker arm shaft x2



NOTE 1

27 Valve latch X8

NOTE 1

28 Bearing X1

NOTE 1

29 Valve guide X4

NOTE 1

30 Valve oil seal X4

NOTE 1

31 Valve spring washer X4

NOTE 1

32 Screw,Tappet bolt X4

NOTE 1

33 Tappet Nut rX4

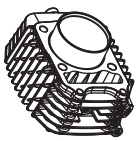
NOTE 1

NOTE 1 Some parts are installed in the cylinder head prior to purchase.

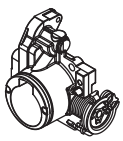
NOTE 2 If the items you received are not the same as shown here, contact your local districutor.

1-2 OPTIONAL ACCESSORIES

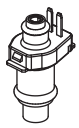
1 Ceramic coated cylinder (61mm)



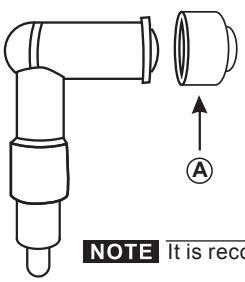
2 Throttle body (34mm)



3 Injector (160 c.c.)



2-1 SPARK PLUG SPECIFICATIONS



NOTE It is recommended to use NGK ER9EH, however, some spark plugs may require an adaptor cover (Accessory 19).

2-2 GEAR TIMING ADJUSTMENTS

Figure 1

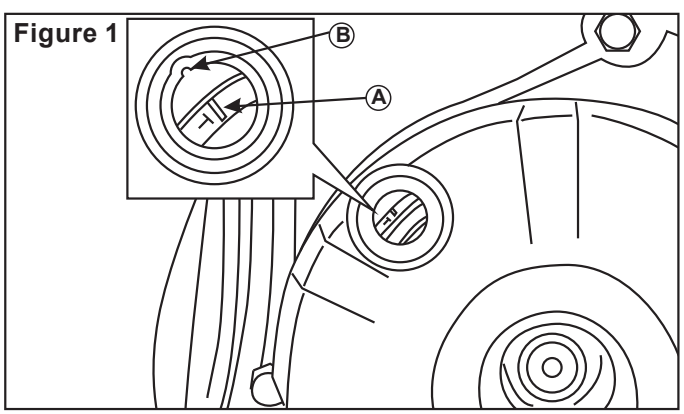
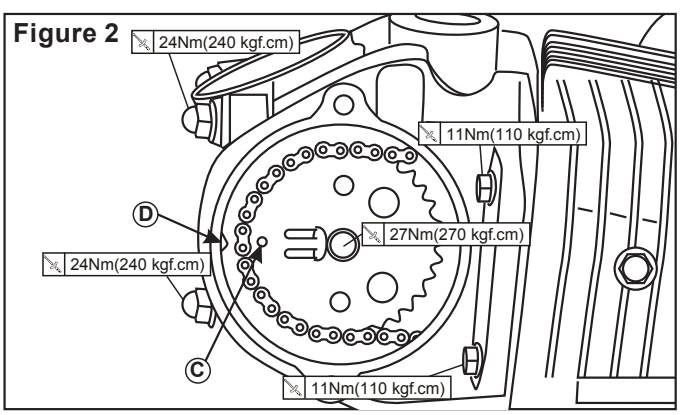


Figure 2



1. Remove the ignition timing cap. Using the proper tool, rotate the flywheel until the TDC mark Ⓐ is properly aligned with the timing mark Ⓑ on the crank cover.
2. To verify if the engine timing is corrrect, check if the mark on the camshaft Ⓒ is correctly aligned with the mark on the cylinder head Ⓓ

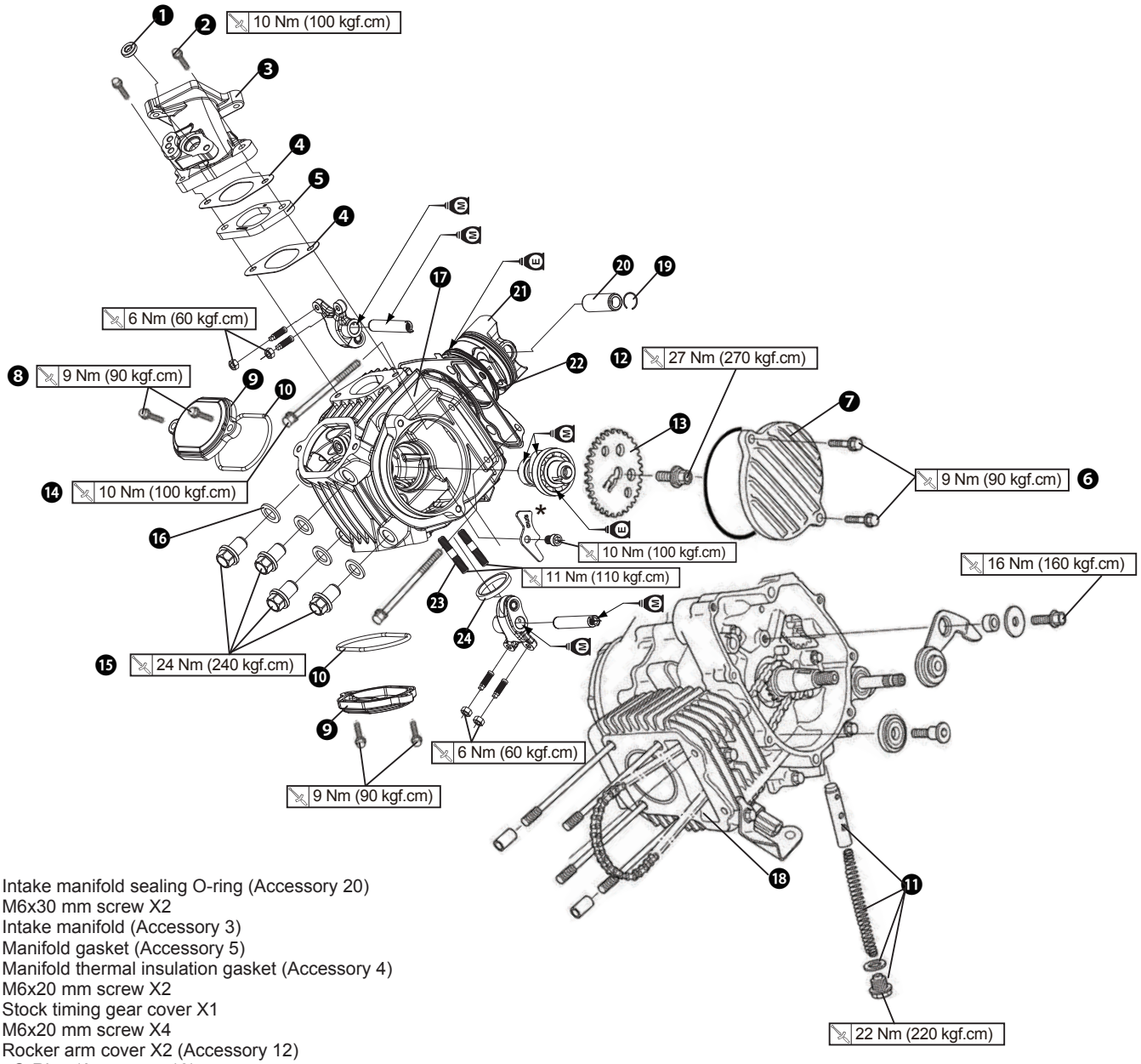
NOTE When installing the camshaft, make sure the chain is always tense.

⚠ ***CAUTION!*** It is important to adjust the timing gear properly before dismantling.

⚠ ***CAUTION!*** To avoid changing the setting or causing timing error of the valves, do not attempt to turn the crank while working on the engine.

⚠ ***WARNING*** Following the installation of the timing gear and chain, check if the timing marks are still aligned correctly. Before starting the engine, perform a cold test by manualy turning the crank to prevent any damages that could occur to the engine.

2-3 ENGINE EXPLODED VIEW

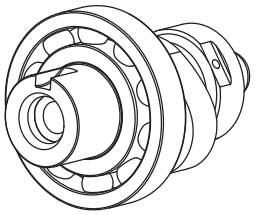


1. Intake manifold sealing O-ring (Accessory 20)
2. M6x30 mm screw X2
3. Intake manifold (Accessory 3)
4. Manifold gasket (Accessory 5)
5. Manifold thermal insulation gasket (Accessory 4)
6. M6x20 mm screw X2
7. Stock timing gear cover X1
8. M6x20 mm screw X4
9. Rocker arm cover X2 (Accessory 12)
10. O-Ring (Accessory 13)
11. M14x10 mm screw X1 + Tensioner guide set
12. M8x16 mm screw X1
13. Stock timing gear X1
14. M6x90 mm screw X2
15. M8 mm screw X4 (Accessory 16)
16. D20xd12.5xt2 mm gasket X4 (Accessory 17)
17. Cylinder head (Accessory 1)
18. Genuine ceramic coated cylinder
19. C-Ring (Accessory 8)
20. Piston Pin (Accessory 9)
21. Piston (Accessory 6)
22. Piston ring (Accessory 7)
23. M8x46 Stud (Accessory 14)
24. Exhaust pipe gasket (Accessory 15)

NOTE * Symbol on camshaft plate stopper must be facing the outside.

NOTE Refer to the image for disassembly. Install according to the reverse order of disassembly. Please refer to the provided tightening torque value of screws.

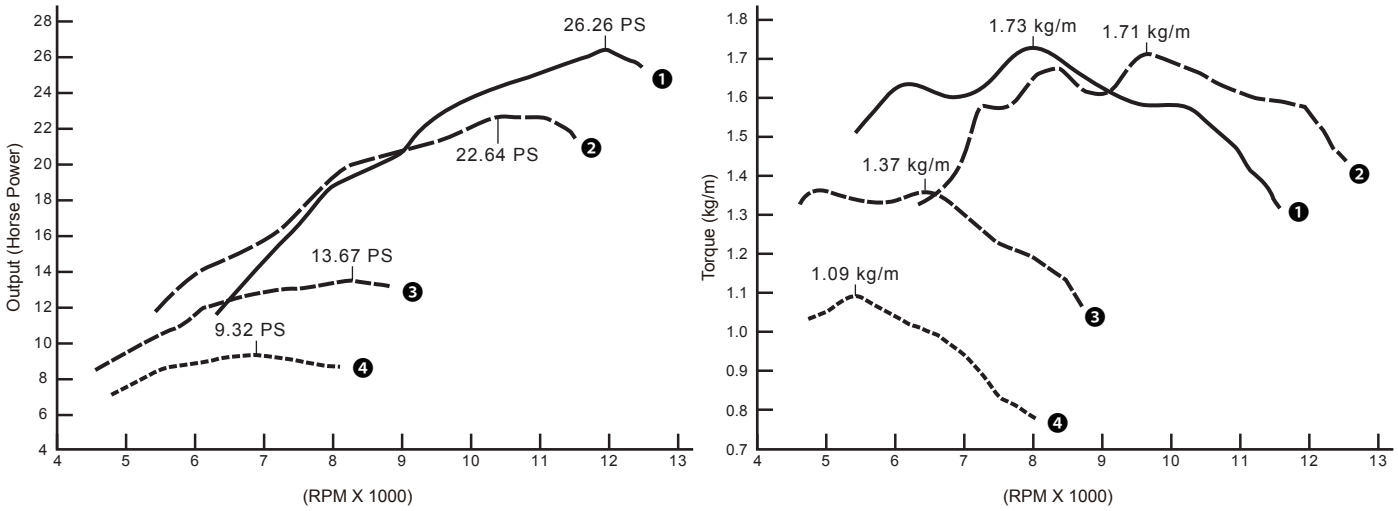
3 CAMSHAFT SPECIFICATIONS



● New rocker arm design to reduce the friction loss and improve the engine response.

DURATION AT1.0mm	*VALVE LIFT*	*INTAKE OPEN/CLOSE*	*EXHAUST OPEN/CLOSE*	*LOBE CENTER*	*RUNNING CLEARANCE*
IN-260/ **EX**-265	**IN**-8.5mm **EX**-8.5mm	**INO BTDC**-55° / **INC ABDC**-25°	**EXO BBDC**-27.5° / **EXC ATDC**-57.5°	**IN**-105 / **EX**-105	**IN**-0.10mm **EX**-0.17mm

4 POWER CURVE DIAGRAM



NOTE ❶ KOSO MSX 4V Cylinder head (M)+KOSO MSX 4V Ceramic coated cylinder (61mm)+KOSO MSX 4V Camshaft+ECU+KOSO MSX Throttle body (34 mm)+KOSO Injector (160 c.c.)+KOSO Intake+After Market Exhaust+Factory standard setting.

NOTE ❷ KOSO MSX 4V Cylinder head (M)+KOSO MSX 4V Ceramic coated cylinder (61mm)+KOSO MSX 4V Camshaft+ECU+KOSO MSX Throttle body (34 mm)+KOSO Injector (160 c.c.)+KOSO Hurricane multi air filter (Hi-density sponge)+After Market Exhaust+Factory standard setting.

NOTE ❸ Genuine Cylinder head+KOSO MSX 4V Ceramic coated cylinder (61mm)+KOSO MSX 2V Camshaft+KOSO MSX Throttle body (34 mm)+ KOSO Hurricane multi air filter (Low-density)+Factory standard setting.

NOTE ❹ Stock Engine

NOTE Test results vary with testing environment and weather. This test chart is for reference only.

!!! WARNING !!!

This is an aftermarket part built for racing purposes only.

Koso is not responsible for any damages caused to the parts, vehicle, or to yourself and others.

Engine parts are not under warranty nor is collateral damage or cost of labor, in cases of malfunction.

KOSO NORTH AMERICA