






**145cc SE-PRO BIG BORE KIT / VERSION UP KIT** No.1 / 4

CODE	215-1413811
APPLICATION	APE100 (HC07) / XR100 MOTARD (HD13) / CRF100 / NSF100
DISPLACEMENT	145cc : Φ57 x (STROKE) 56.5mm

- Thank you for purchasing Kitaco product. Read and understand the instruction before installing.
- Special tools are required to install.
- After installation, please use this sheet as setting manual.
- ※ Instruction sheet is not included to repair parts. Please keep this instruction safe.

**ATTENTION (MUST READ)**

- This product is for racing use. It is out of warranty. Unable to ride on public road with installed vehicle. We are not responsible for violation of law or damages and accidents caused by assembling mistake and improper setting.
- By installing this product, changing plug, gear, carburetor, etc and setting, machining crankcase are required. If riding with stock setting, it unables to power up, cause of burning and break. Please set up to match the engine.
- 145cc kit is specified for Kitaco stroke up crank installed vehicle. Do not use stock crank shaft.
- Please follow this instruction sheet. Do not modify the way which is not listed or it will cause burning, damage and trouble.
- Please ask authorized mechanic for assembling and setting. Ask a specialist at specialty shop if you do not understand the role of the surrounding parts.
- Change engine oil after break in (around 100km).
- Refer to the manufacturer service manual when installation.
- Bolts and nuts may get loosen by engine vibration. Make sure not to loosen any bolts and nuts before driving.
- Oil the parts with engine oil when assembling. Make sure oil line is not choked up by using air duster, etc.
- Do not use engine brake, etc burden the mission. When starting engine with kick, check the gear is engaged before kick. Recommend to push start more than 2nd gear.
- Recommend to use DENSO heat value more than 24 (No.8).
- Refer to the manufacturer service manual.

	This instruction sheet is for the person who has basic knowledge for maintenance. Do not operate if you do not have any skill and knowledge.		<b>FLAMMABLES</b> Inflammable high gasoline is used during operation. Using products causing fire or smoke is strictly prohibited.
	Toxic, high-volatile gasoline is used during operation. Be sure to ventilate the room. Please start engine under well-ventilated place.		Do not spark the plug outside the cylinder for spark check. It might cause of fire and explosion.
	Do not touch cylinder, crank case, exhaust, etc during or right after engine operation. It is high temperature.		

**ATTENTION**

- By installing this big bore kit, the option parts need to change together. (Refer to the option parts list)
- Kitaco stroke up crank shaft is not include centrifugal type filter. Therefore please install oil filter to protect engine. (Refer to the option parts list)
- When maintenance this parts, general and other special tools are required.
- TAPPET ADJUST WRENCH (CODE : 674-0900200 / 674-0900220)
- SPECIFIED TOOL GEAR HOLDER (HONDA CODE : 07724-0010100) ○ THICKNESS GAUGE

OPTION PARTS LIST (specified for each models : APE100 / XR100 MOTARD / NSF100)	
CARBURATER	MIKUNI VM26 (specified for each models)
CDI	REV CONTROLLER (CODE : 764-1123100 / 764-1417100 [for XR100 MOTARD]) *Recommend position 1/2 POWER REV 2 CDI (CODE : 766-1123300) / POWER REV RW CDI (766-1122700) *Recommend position : 1
OIL PUMP	OIL PUMP PLATE SET (Machining orifice is required) (331-1413900)

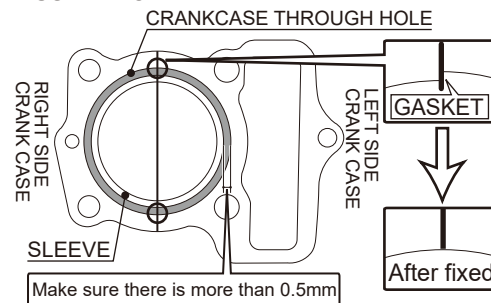
**★ATTENTION WHEN INSTALLING**

**R.L FIXING CRANKCASE CONTACT**

**SURFACE MISALIGNMENT**

1. Make a gap (more than 0.3~0.5mm) between sleeve and crankcase to cylinder sleeve inserting misalignment part or sleeve touches the case. Depending on the model and year, this operation is not required.
2. Fill the cloth not the shaved powder go into crankcase. Shave the misalignment, sleeve contacting place.
3. Remove cloth not the shaved powder go into the case.
4. After removed cloth, please fill other clean cloth to the case hole not the unknown material go into there when assembling.
5. After assembling and break in, change engine oil to new one.

**TOP ILLUSTRATION**

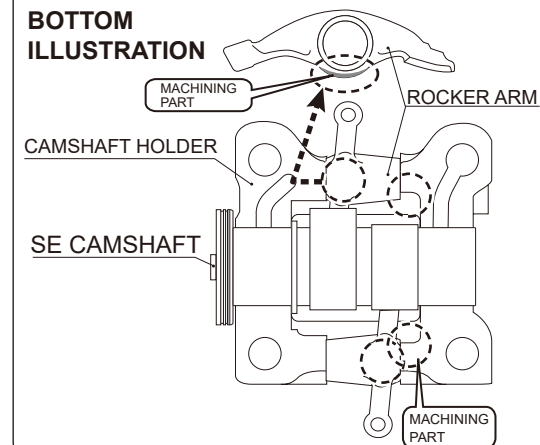


**INTERRUPTING SE CAMSHAFT**

As following illustration below, please check with assemble camshaft holder, rocker arm and high camshaft temporarily. If high camshaft interrupts to camshaft holder and rocker arm, please shave holder and rocker arm (o mark part) by grinder.

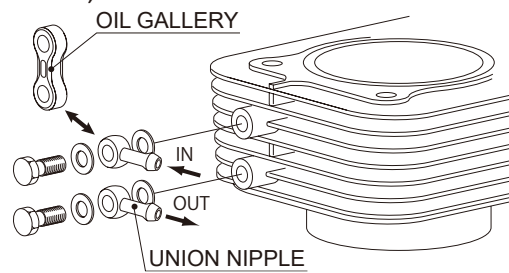
(Make more than around 0.5mm clearance)

**BOTTOM ILLUSTRATION**



**CYLINDER OIL LINE**

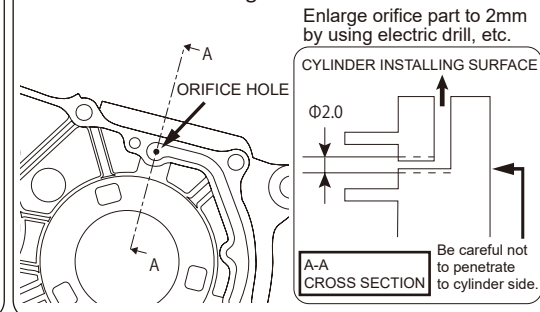
This big bore kit includes bypass type oil line on right side. Remove oil gallery and install union nipple to be oil line for oil cooler, etc.



**ORIFICE MACHINING WHEN CHANGE TO**

**INCREASED AMOUNT TYPE OIL PUMP**

If changing oil pump to increased amount type, right side crankcase orifice machining is required. Refer to the illustration to enlarge orifice hole.



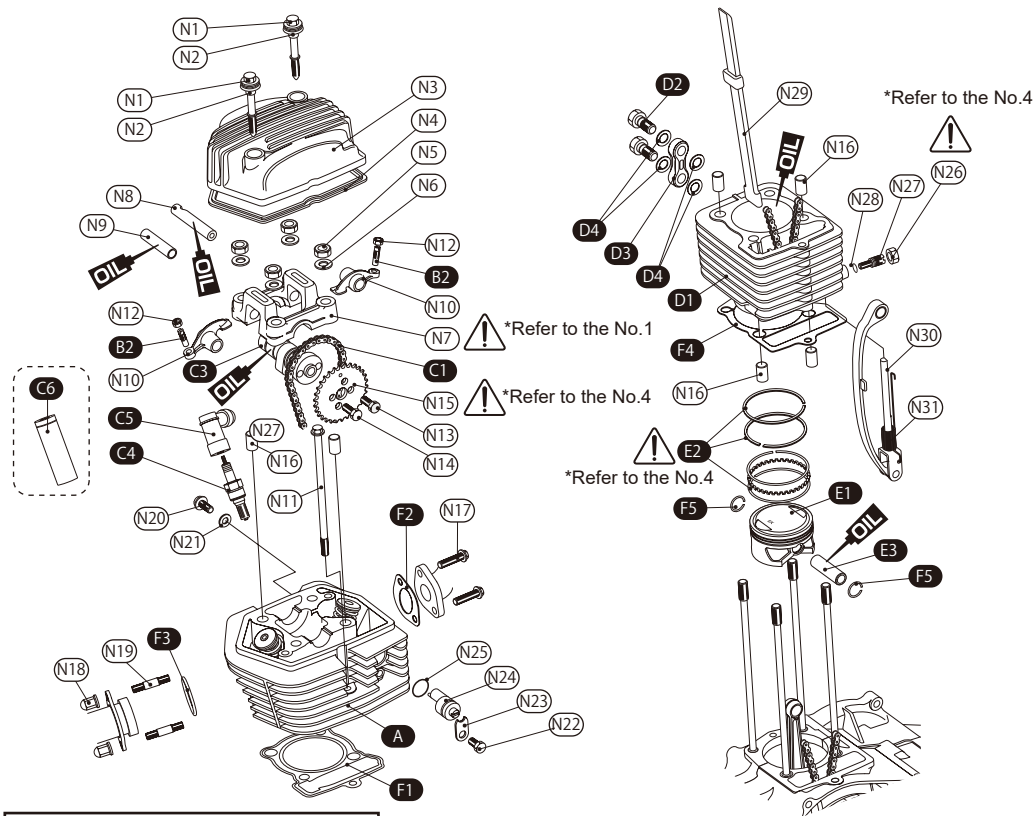
**145cc SE-PRO BIG BORE KIT / VERSION UP KIT** No.2 /4

CODE 215-1413811

APPLICATION APE100 (HC07) / XR100 MOTARD (HD13) / CRF100 / NSF100

■CYLINDER PARTS Refer to the illustration to install. (Please use when maintenance.)

\*Cylinder head valve surrounding parts are assembled. Please use valve spring compressor to removing / installing.



⚠ Refer to the installation flow / adjust / remark

🛢 Apply engine oil

▼ Crankcase developed illustration is on (No.3).

\*() is 1set QTY.

FIGURE	CODE	NAME	QTY
A ↓	313-1418700	SE PRO CYLINDER HEAD ASSY	× 1
A1	313-1418701	SE PRO CYLINDER HEAD COMP	(× 1)
A2	302-1122700	ULTRA-SE VALVE SET	(× 1SET)
-	302-1122701	IN VALVE • ULTRA-SE	(× 1)
-	302-1122702	EX VALVE • ULTRA-SE	(× 1)
A3	303-1083502	ULTRA VALVE COTTER	(× 4)
A4	303-1083500	VALVE SPRING TITANUM RETAINER	(× 1SET)
A5	303-1123200	VALVE SPRING SET	(× 1SET)
A6	303-1083507	VALVE STEM SEAL	(× 2)
A7	303-1123504	VALVE SPRING OUTER SEAT	(× 2)

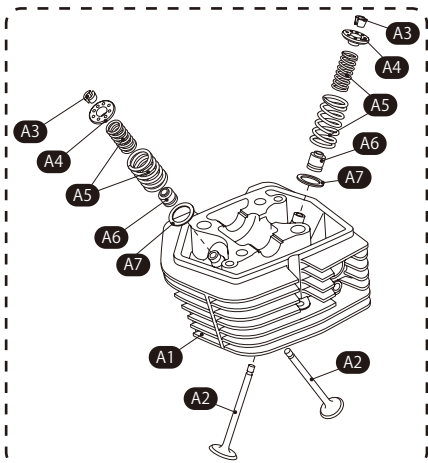


FIGURE	CODE	NAME	QTY	TORQUE
A	313-1418700	SE PRO CYLINDER HEAD ASSY	× 1	
B2	303-1013701	ROCKER ARM ADJUST SCREW	× 2	
C1	299-0225090	CAM CHAIN EK25HS-90L	× 1	
C3	300-1122100	SPL HIGH CAMSHAFT	× 1	
C4	025-015-0240000	IRIDIUM PLUG (IY24)	× 1	
C5	751-0500110	PLUG CAP (70-B)	× 1	
C6	674-0400900	PLUG WRENCH	× 1	
D ↓	311-1413700	CHROME CYLINDER ASSY (Φ57)	× 1	
D1	311-1413701	CHROME CYLINDER COMP (Φ57)	(× 1)	
D2	771-0900900	ALUMINUM BANJO BOLT M10xP1.25	(× 2)	15N·m (1.5kgf·m)
D3	771-0901800	OIL GALLERY (SILVER)	(× 1)	
D4	771-0500999	ALUMINUM SEALING WASHER 10mm	(× 4)	
E1	351-1413340	Φ57 PISTON (145cc) 3R (0.8-0.8-1.5)	× 1	
E2	352-0006570	Φ57 PISTON RING (145cc) 3R (0.8-0.8-1.5)	× 1SET	
E3	353-0001440	PISTON PIN 14x40	× 1SET	
F ↓	960-1413300	RUBBER SEAL SET-Ape100cc	× 1	
F1	961-1413300	HEAD GASKET (Φ57)	(× 1)	
F2	950-1122011	MANIFOLD GASKET (VM26)	(× 1)	
F3	70-963-11010	EX GASKET (H-10)	(× 1)	
F4	962-1413300	CYLINDER GASKET	(× 1)	
F5	354-0000140	PISTON PIN CLIP 14mm	(× 2)	

▲ Basically, reuse genuine parts if it is unattached.

If there is a hard degradation like a blem, fatigue and wear etc on the reuse parts, please change to new ones.

FIGURE	NAME	QTY	TORQUE	FIGURE	NAME	QTY	TORQUE
N1	M6 x 45.5 BOLT	× 2	1.2kgf · m	N17	M6 x 20 FLANGE BOLT	× 2	1.2kgf · m
N2	6mm MOUNT RUBBER	× 2		N18	M6 CAP NUT	× 2	1.0kgf · m
N3	CYLINDER HEAD COVER	× 1		N19	M6 x 32 STUD BOLT	× 2	1.0kgf · m
N4	CYLINDER HEAD COVER RUBBER SEAL	× 1		N20	M6 x 16 BOLT	× 1	1.2kgf · m
N5	M8 NUT	× 4	2.0kgf · m	N21	6mm SEALING WASHER	× 1	
N6	8mm FLAT WASHER	× 4		N22	M6 x 16 BOLT	× 1	1.2kgf · m
N7	CAMSHAFT HOLDER	× 1		N23	TENSIONER ADJUST PLATE	× 1	
N8	LOCKER ARM SHAFT (LONG)	× 1		N24	TENSIONER ADJUST CAM	× 1	
N9	LOCKER ARM SHAFT (SHORT)	× 1		N25	O RING 11 x 2.0	× 1	
N10	VALVE LOCKER ARM	× 2		N26	M8 NUT	× 1	1.0kgf · m
N11	M6 x 110 HEXAGON FLANGE BOLT	× 1	1.2kgf · m	N27	TENSIONER ADJUST SCREW	× 1	
N12	TAPPET ADJUST NUT	× 2	1.0kgf · m	N28	O RING 5.5 x 1.5	× 1	
N13	M6 x 10 DOWEL BOLT (BLACK)	× 1	1.2kgf · m	N29	CAM CHAIN GUIDE	× 1	
N14	M6 x 10 BOLT	× 1	1.2kgf · m	N30	CAM CHAIN TENSIONER COMP	× 1	
N15	CAM SPROCKET	× 1		N31	CAM CHAIN TENSIONER SPRING	× 1	
N16	DOWEL PIN 10 x 16	× 6					

SERVICE GUIDE (CYLINDER HEAD)	BASIC VALUE	USAGE	VALVE / VALVE GUIDE / VALVE SPRING
A IN VALVE STEM DIAMETER	φ 3.975 ~ φ 3.990	~ φ 3.970	
EX VALVE STEM DIAMETER	φ 3.965 ~ φ 3.980	~ φ 3.950	
B IN VALVE GUIDE I.D.	φ 4.000 ~ φ 4.012	φ 4.056 ~	
EX VALVE GUIDE I.D.	φ 4.000 ~ φ 4.012	φ 4.065 ~	
C IN VALVE SEAT CONTACT WIDTH	0.7mm	1.0mm ~	
EX VALVE SEAT CONTACT WIDTH	0.85mm	1.2mm ~	
D OUTER VALVE SPRING	30mm ± 1	~28mm	
INNER VALVE SPRING	25mm ± 1	~24mm	

■CRANK CASE PARTS

Refer to the illustration to install.

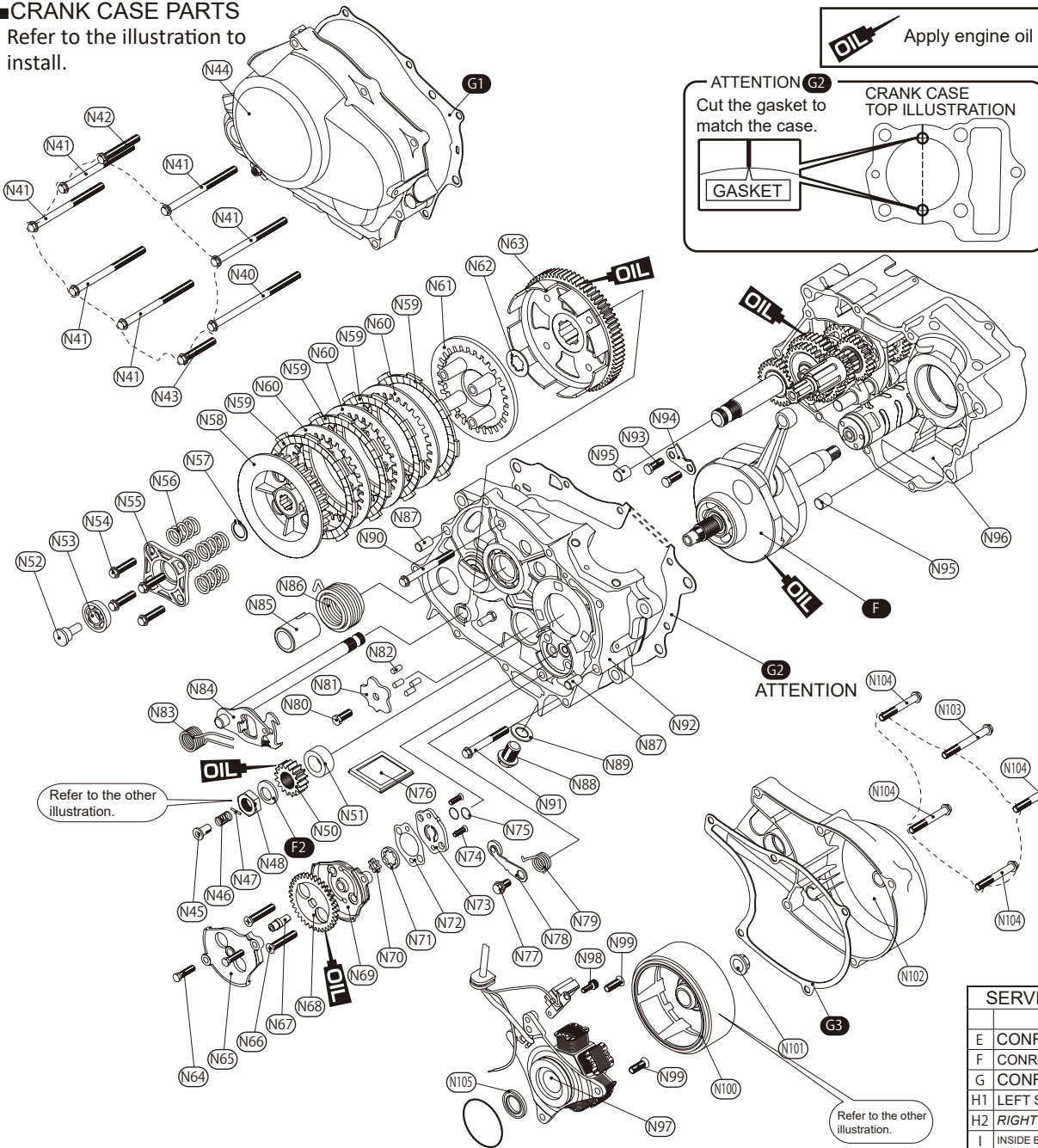
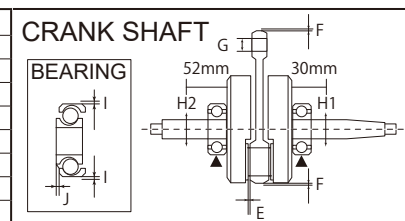


FIGURE	CODE	NAME	QTY
F1	309-1413110	LONG STROKE CRANK SHAFT ASSY (56.5mm / 100-145cc)	× 1
F2	307-1013030	CLUTCH LOCK WASHER (TAPERED)	× 1
G1	966-1122000	R CRANK CASE COVER GASKET	× 1
G2	966-1122002	CRANK CASE GASKET	× 1
G3	966-1122001	L CRANK CASE COVER GASKET	× 1
G4	966-1413090	OIL SEAL 19 x 36 x 7	× 1

▲ Basically, reuse genuine parts if it is unattached.  
If there is a hard degradation like a blem, fatigue and wear etc on the reuse parts, please change to new ones.

FIGURE	NAME	QTY	TORQUE	FIGURE	NAME	QTY	TORQUE
N40	M6 x 100 BOLT	× 1	1.2kgf · m	N73	OIL PUMP PLATE	× 1	
N41	M6 x 80 BOLT	× 6	1.2kgf · m	N74	M4 x 12 PAN HEAD SCREW	× 2	0.33kgf · m
N42	M6 x 40 BOLT	× 1	1.2kgf · m	N75	9.4mm O RING	× 2	
N43	M6 x 35 BOLT	× 1	1.2kgf · m	N76	OIL STRAINER	× 1	
N44	RIGHT SIDE CRANKCASE COVER ASSY	× 1		N77	STOPPER ARM PIVOT BOLT	× 1	1.3kgf · m
N45	OIL THROUGH	× 1		N78	SHIFT DRUM STOPPER ARM	× 1	
N46	OIL THROUGH SPRING	× 1		N79	STOPPER ARM SPRING	× 1	
N47	OIL THROUGH PIN	× 1		N80	M6 x 22 BOLT	× 1	1.0kgf · m
N48	M14 NUT	× 1	4.0kgf · m	N81	SHIFT DRUM STOPPER PLATE	× 1	
				N82	SHIFT DRUM PIN	× 4	
N50	PRIMARY DRIVE GEAR	× 1		N83	SHIFT RETURN SPRING	× 1	
N51	COLLAR	× 1		N84	SHIFT SPINDLE ASSY	× 1	
N52	CLUTCH LIFTER GUIDE PIN	× 1		N85	SPRING COLLAR	× 1	
N53	BEARING	× 1		N86	KICK RETURN SPRING	× 1	
N54	M6 x 22 BOLT	× 4	1.0kgf · m	N87	DOWEL PIN 8 x 14mm	× 2	
N55	CLUTCH LIFTER PLATE	× 1		N88	OIL DRAIN BOLT	× 1	
N56	CLUTCH SPRING	× 4		N89	12mm SEALING WASHER	× 1	
N57	17mm CIRCLIP	× 1		N90	M6 x 55 BOLT	× 1	1.2kgf · m
N58	CLUTCH CENTER	× 1		N91	M6 x 45 BOLT	× 1	1.2kgf · m
N59	FRICITION DISK	× 4		N92	RIGHT SIDE CRANKCASE	× 1	
N60	CLUTCH PLATE	× 3		N93	M6 x 16 BOLT	× 2	1.0kgf · m
N61	CLUTCH PRESSURE PLATE	× 1		N94	RATCHET GUIDE PLATE	× 1	
N62	17mm SPLINE WASHER	× 1		N95	DOWEL PIN 12 x 20mm	× 2	
N63	CLUTCH OUTER	× 1		N96	LEFT SIDE CRANKCASE ASSY	× 1	
N64	M5 x 18 BOLT	× 2	0.5kgf · m	N97	STARTER COIL ASSY	× 1	
N65	DRIVE GEAR COVER	× 1		N98	M5 x 10 SOCKET BOLT	× 1	0.6kgf · m
N66	M6 x 30 PAN HEAD SCREW	× 2	0.9kgf · m	N99	M6 x 16 PAN HEAD SCREW	× 3	0.9kgf · m
N67	OIL PUMP DRIVE SHAFT	× 1		N100	FLYWHEEL	× 1	
N68	OIL PUMP DRIVE GEAR	× 1		N101	M12 NUT	× 1	6.5kgf · m
N69	OIL PUMP MAIN UNIT	× 1		N102	LEFT SIDE CRANKCASE COVER	× 1	
N70	OIL PUMP INNER ROTOR	× 1		N103	M6 x 50 BOLT	× 1	1.2kgf · m
N71	OIL PUMP OUTER ROTOR	× 1		N104	M6 x 35 BOLT	× 4	1.2kgf · m
N72	OIL PUMP GASKET	× 1		N105	OIL SEAL	× 1	

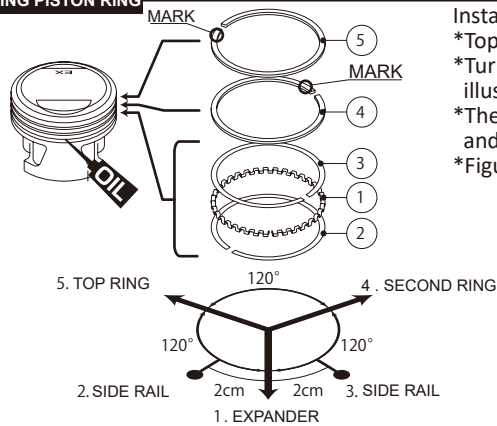
	BASIC VALUE	USAGE
E	CONROD BIG END SIDE GAP	0.10 ~ 0.35 / 0.55mm ~
F	CONROD BIG END VERTICAL GAP	0 ~ 0.012 / 0.050mm ~
G	CONROD SMALL END I.D.	14.012 ~ 14.030 / 14.050mm ~
H1	LEFT SIDE CRANK SHAFT RUNOUT	0.020 / 0.070mm ~
H2	RIGHT SIDE CRANK SHAFT RUNOUT	0.035 / 0.085mm ~
I	INSIDE BEARING, OUTER RING VERTICAL GAP	0.05 ~ 0.09 / 0.10mm ~
J	INSIDE BEARING, OUTER RING SIDE GAP	0.005 ~ 0.040 / 0.050mm ~





**ADJUST / INSTALL / REMARK EACH PARTS**

**INSTALLING PISTON RING**

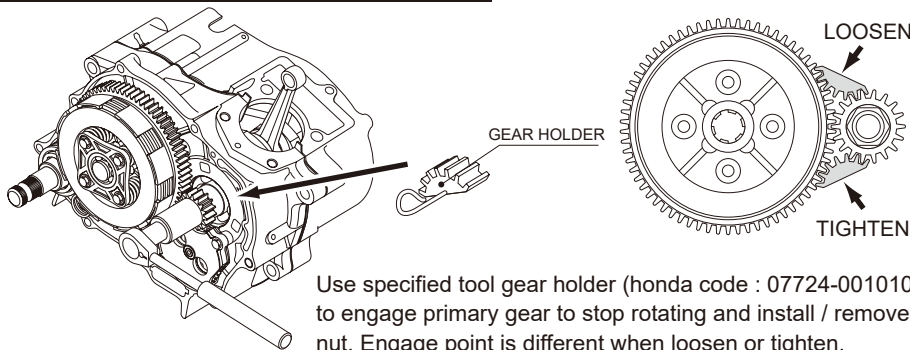


Install piston ring as illustration on left side.  
 \*Top and second ring marked face to upward.  
 \*Turn ring contact part to the direction on illustration.  
 \*There is no specified direction for expander and side rail.  
 \*Figure is installation flow.

PISTON RING		
FIGURE	NAME	QTY
1	EXPANDER	×1
2/3	SIDE RAIL (BOTH SAME)	×2
4	SECOND RING (BLACK)	×1
5	TOP RING (WHITE)	×1

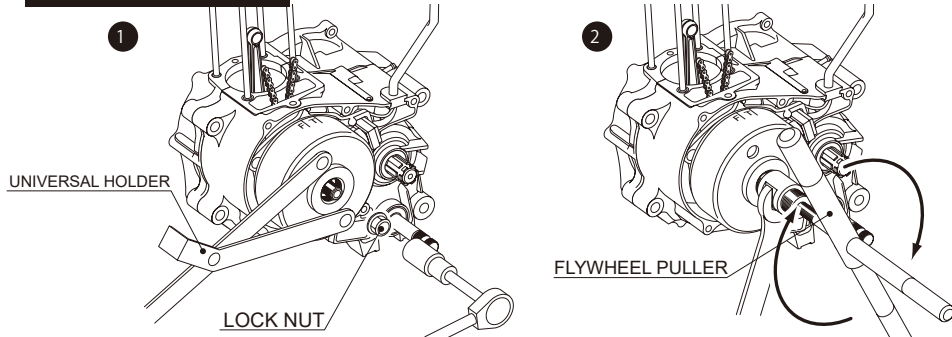
\*Install piston with EX mark to exhaust side.

**INSTALLING / REMOVING PRIMARY GEAR CENTER NUT**



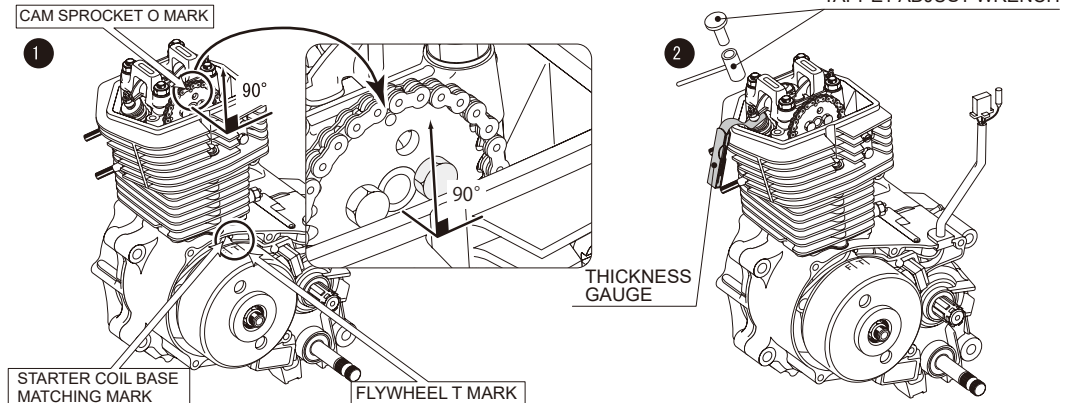
Use specified tool gear holder (honda code : 07724-0010100) to engage primary gear to stop rotating and install / remove nut. Engage point is different when loosen or tighten.

**REMOVING / INSTALLING FLYWHEEL**



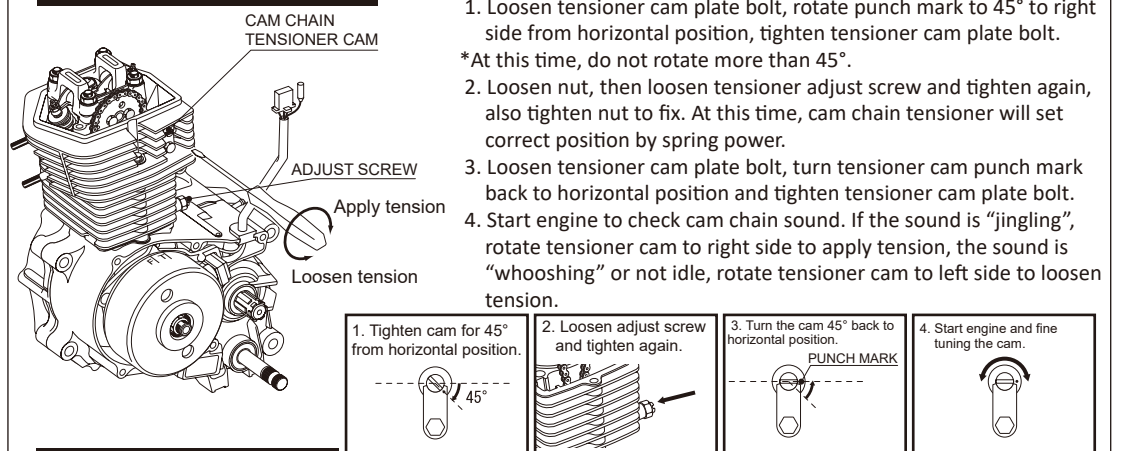
1. Firstly, set to compression top dead center (flywheel T mark and crankcase matching mark are matched). Fix flywheel by specified tool universal holder to remove flywheel center nut.
2. Fix flywheel puller by spanner, etc and rotate flywheel puller handle to pull out flywheel.

**HOW TO MATCH VALVE TIMING AND ADJUST VALVE CLEARANCE**



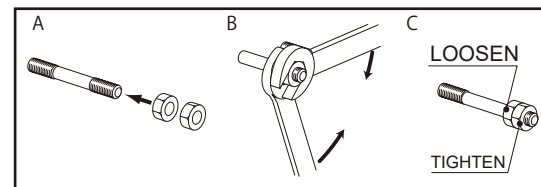
1. For adjusting valve timing (install cam sprocket), put on a chain and install cam sprocket while flywheel side flywheel T mark and stater coil base matching mark are matched, and cam sprocket side cam sprocket O mark is 90° of cylinder head installation surface. The position is compression top dead center.
  2. Insert thickness gauge under the locker arm adjuster to adjust locker arm adjuster to touch thickness gauge while compression top dead center (No1). Tighten lock nut for lastly.
- VALVE CLEARANCE / INTAKE SIDE : 0.05mm EXHAUST SIDE : 0.05mm

**CAM CHAIN TENSIONER ADJUSTMENT**



1. Loosen tensioner cam plate bolt, rotate punch mark to 45° to right side from horizontal position, tighten tensioner cam plate bolt.  
 \*At this time, do not rotate more than 45°.
2. Loosen nut, then loosen tensioner adjust screw and tighten again, also tighten nut to fix. At this time, cam chain tensioner will set correct position by spring power.
3. Loosen tensioner cam plate bolt, turn tensioner cam punch mark back to horizontal position and tighten tensioner cam plate bolt.
4. Start engine to check cam chain sound. If the sound is "jingling", rotate tensioner cam to right side to apply tension, the sound is "whooshing" or not idle, rotate tensioner cam to left side to loosen tension.

**REMOVING / INSTALLING STUD BOLT**



- A. Hang the 2pcs M6 size nut to stud bolt.
- B. Put the spanner, etc on each nut and tighten both to fix.
- C. Put the spanner on back side for loosen, front side for for tighten nut to remove / install.