



**Kawasaki**

**ZXR400R**

**'89 Racing Kit  
Manual**

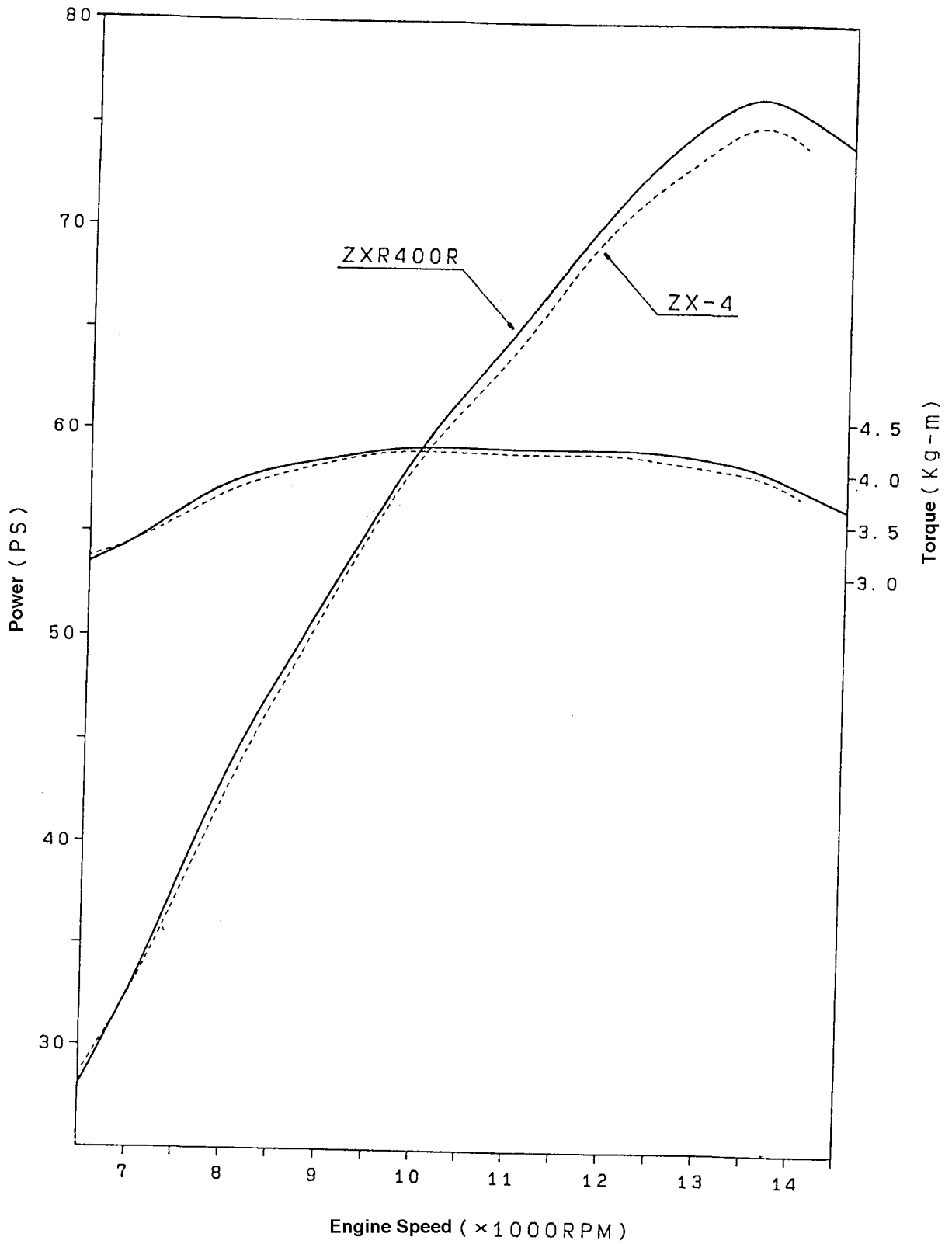
## General Specifications

Items	ZXR400R
<b>Engine</b>	
Compression Ratio (F3)	13.0
Power (F3)	75 PS/13,500 rpm
Torque (F3)	4.2 kg-m/10,000 rpm
Valve Timing (F3) :	
Inlet	Open 35° (BTDC)
Inlet	Close 65° (ABDC)
Duration	280°
Exhaust	Open 65° (BTDC)
Exhaust	Close 35° (ABDC)
Duration	280°
Fuel (RON)	(98~100)
<b>Drive Train</b>	
Reduction Ratio (F3, SP)	2.412 (41/17) ~ 2.933 (44/15)
Overall Drive Ratio (6th gear) (F3, SP)	6.564 ~ 7.984
<b>Chassis</b>	
Steering Damper Rate (F3, SP) :	8 ± 3 kg 0.15 m/s
Turn Angle (F3, SP)	22° (Standard 30°)
Front Tyre (F3) : Type	Racing Slick
: Size	125/595-17
Rear Tyre (F3) : Type	
: Size	160/615 R17
Brake Fluid (F3, SP)	D. O. T. 4
<b>Ignition</b>	
Spark Plug (F3)	NGK R0045-10

## General Specifications

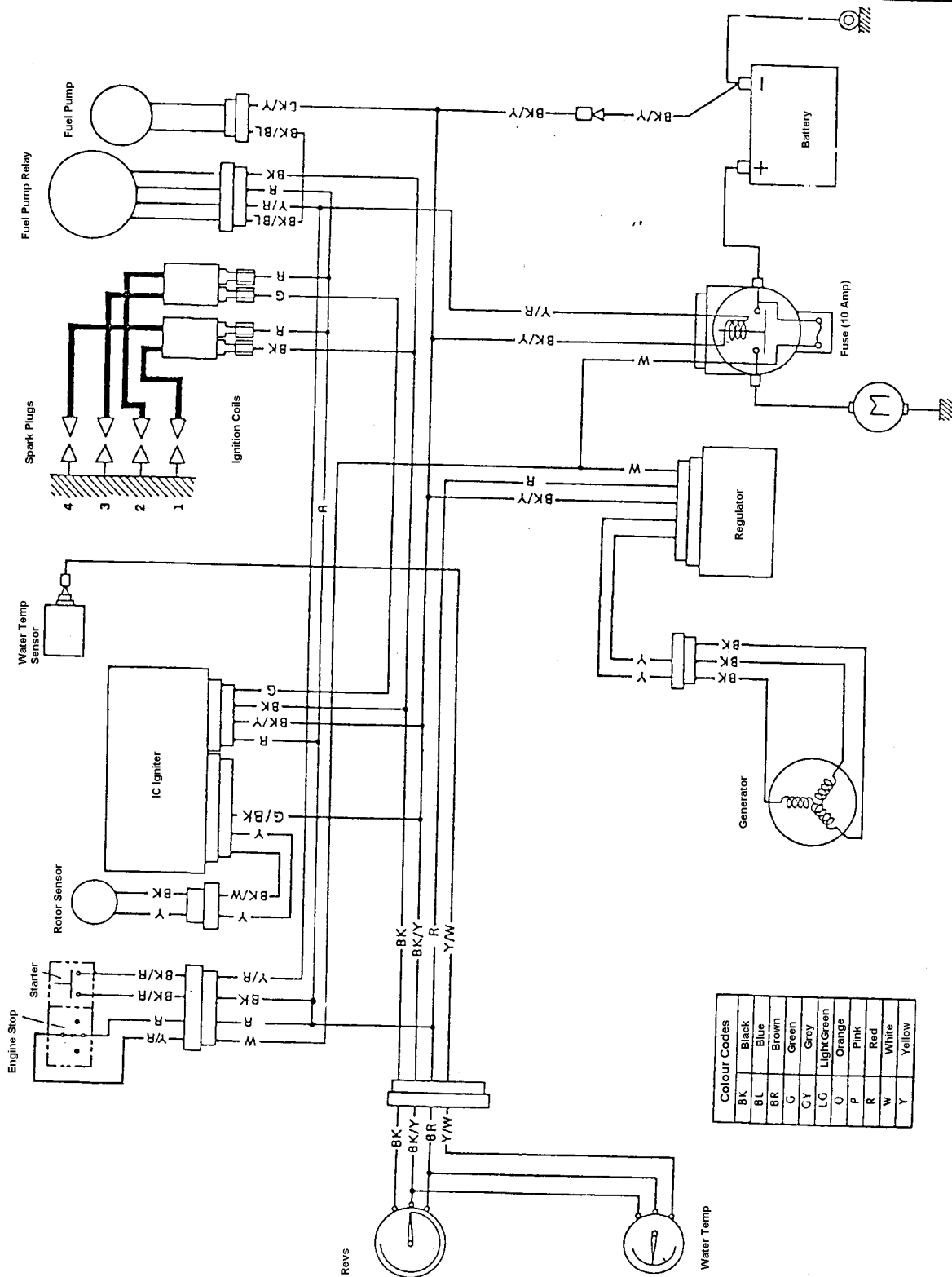
Item	ZXR400R
<b>Carburetor Specifications ( F 3 、 S P )</b>	
Idle Speed	1,500~2,000 rpm
Main Jet : F 3	#165
SP	#140
Jet Needle Mark	N70A (SP N78B)
Needle Height	Position 3
Needle Washers	$\phi 0.7 \times 2 \times 4$
Pilot Screw	1/2 ~ 1
Optional Main Jets : F 3	#150、155、160、165、 170、175、180
SP	#132、135、138、140、 142、145、148
Main Air Jet	#150 (SP #90、110)
Pilot Jet	#38
<b>Camshaft ( F 3 )</b>	
Camshaft Lobe Height	31.803~31.983 mm
<b>Valves ( F 3 )</b>	
Valve Clearance	Inlet 0.20~0.25 mm
	Exhaust 0.25~0.28 mm
Piston to Head Gasket Clearance	0.6~0.7 mm
Piston to Valve Clearance	
	Inlet 0.6 mm (ATDC 12°)
	Exhaust 1.1 mm (BTDC 12°)
Camshaft Lift Centre :	Inlet 105±1.5° ATDC
	Exhaust 105±1.5° BTDC
<b>Cylinder, Piston (F3)</b>	
Piston Diameter	S.T.D.
<b>Ignition</b>	
Spark Plugs ( F 3 )	NGK R0045 - 10
Optional ( F 3 、 S P )	NGK R0045 - 9
	NGK R0045 - 11
IC Igniter ( F 3 )	
Increased Rev Limit	15200 rpm (S.T.D.14800 rpm)

Power Output ( F 3 )



# ZXR400R

## Wiring Diagram (F3, SP).

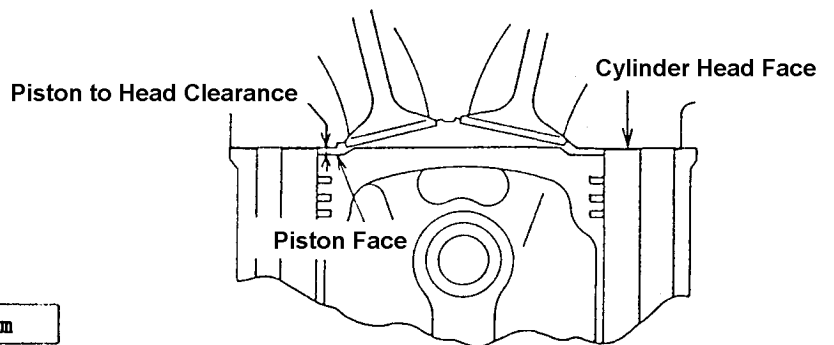
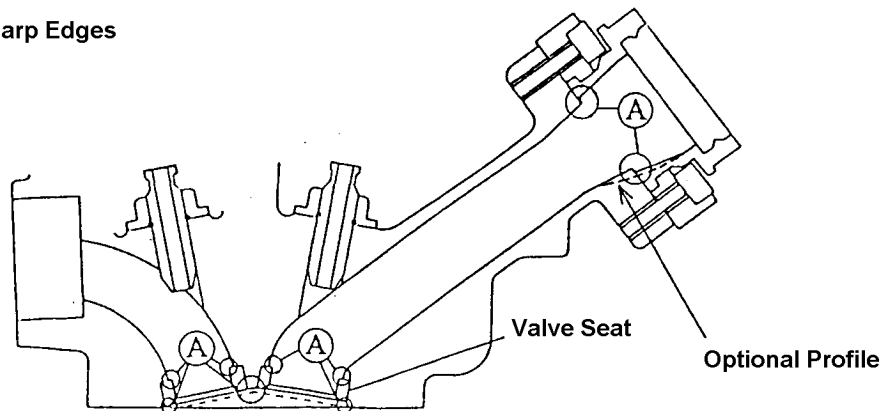


Colour Codes	
BK	Black
BL	Blue
BR	Brown
G	Green
G/Y	Grey
LC	Light Green
O	Orange
P	Pink
R	Red
W	White
Y	Yellow

## Cylinder Head ( F 3 )

- Remove sharp edges at points marked A. Use a flapper wheel and start with 120 grade aluminium oxide paper. Finish with 200 and then 300 grade paper.
- Take care not to damage the valve seats.
- The optional profile will give more power at full throttle but will cause poor running at part throttle.

A : Remove Sharp Edges

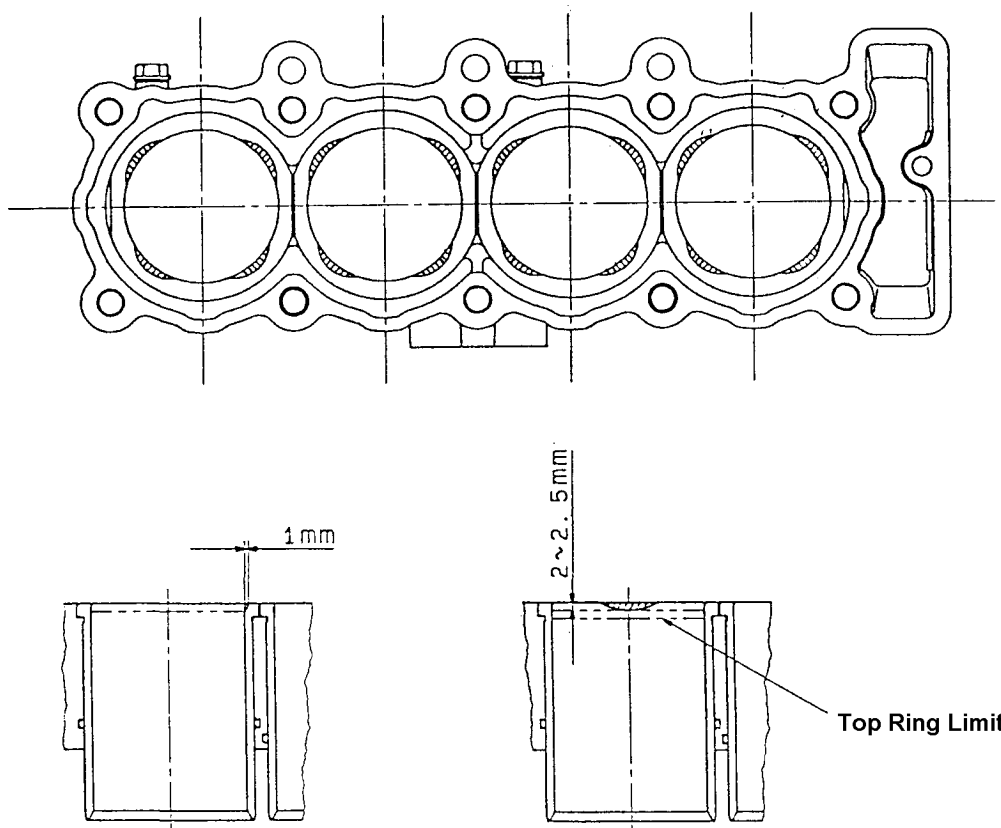


Clearance : 0.6 ~ 0.7 mm

- Ensure cylinder head to piston clearance is within limits.  
If necessary replace standard base gasket (0.2 mm) with kit gasket (0.1 mm).
- Ensure cylinder head is flat to within 0.05 mm

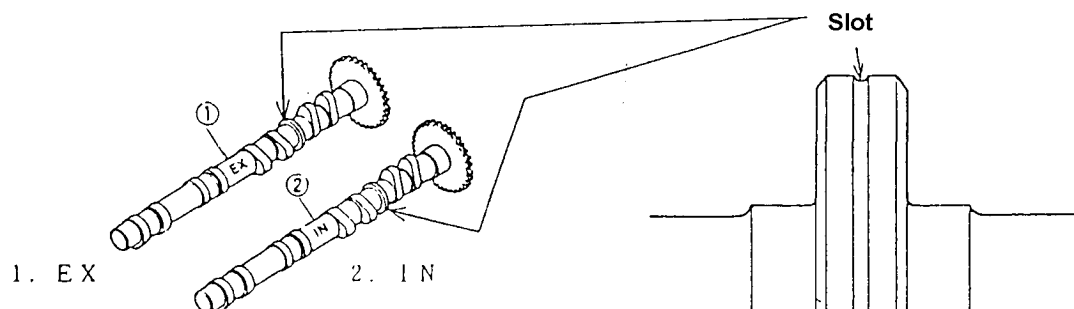
## Barrels ( F 3 )

- Use the kit head gasket (PN: 11004-1202)  
Profile the bores as shown in the diagram, this will improve gas flow and give an increase of 0.5 ~ 1.0 ps



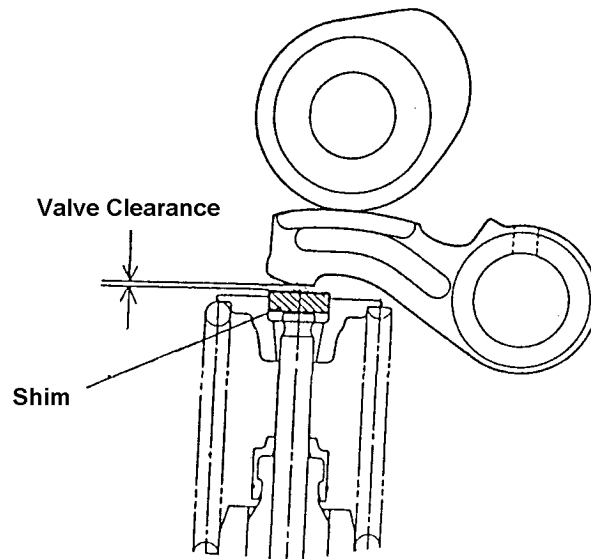
## Camshafts ( F 3 )

- Slot the camshaft journals to improve lubrication

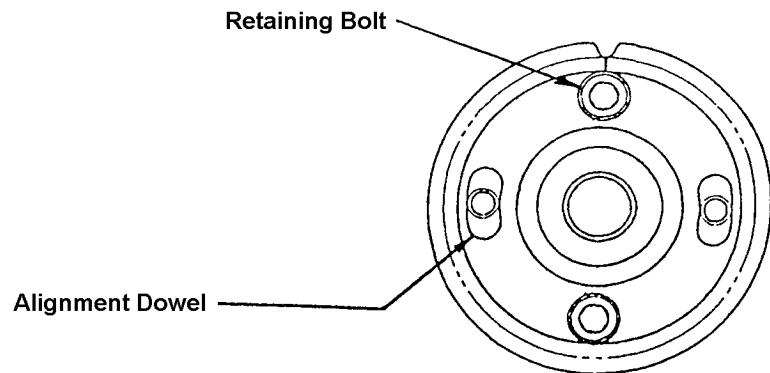


- Set clearances to allow for expansion due to heat at racing speeds.

Valve Clearance	Inlet	: 0.20~0.25 mm
	Exhaust	: 0.25~0.28 mm



- Set camshaft timing by slackening retaining bolt and rotating camshaft.





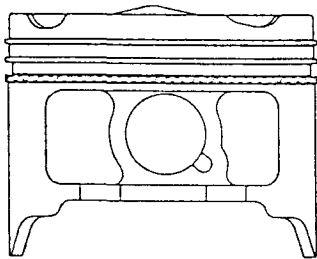
- Adjust camshaft so the valve to piston clearance is as in the table.

	Valve to Piston Clearance
Inlet	0 . 6 mm
Exhaust	1 . 1 mm

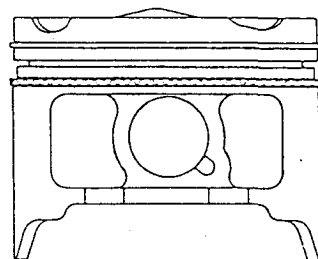
- The Inlet measurement is made at 12° ATDC and the Exhaust measurement at 12° BTDC

### Pistons ( F 3 )

- Use of the kit pistons will increase the compression ratio from 12 . 1 to 13 . 0



3 Rings Utilised

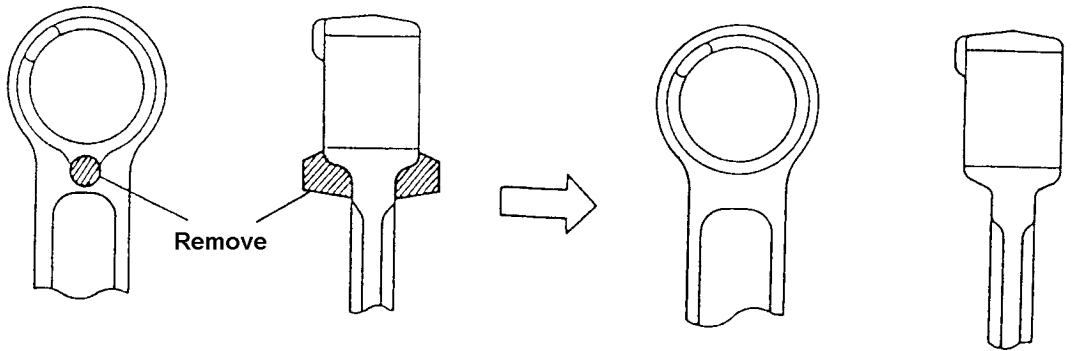


2 Rings Utilised

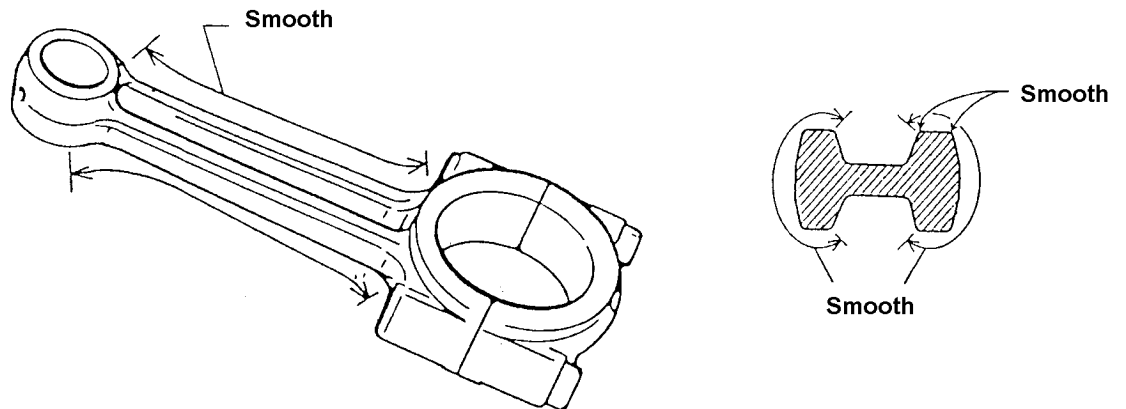
- Remove No 2 compression ring to reduce friction.
- Increased oil consumption whilst using only one compression ring is normal.

## Connecting Rods ( F 3 )

- Grind away casting boss from the small ends of the connecting rods.
- Ensure each small end weighs within  $\pm 2g$  of each other.



- Smooth the beam of the connecting rod with 120 grade aluminium oxide paper.



- Ensure that the total weight of the connecting rods are within  $\pm 2g$  of each other.
- Polish connecting rod beams with 200 and then 300 grade aluminium oxide paper.
- Tighten connecting rod bolts to  $2.4 \sim 2.8kg-m$

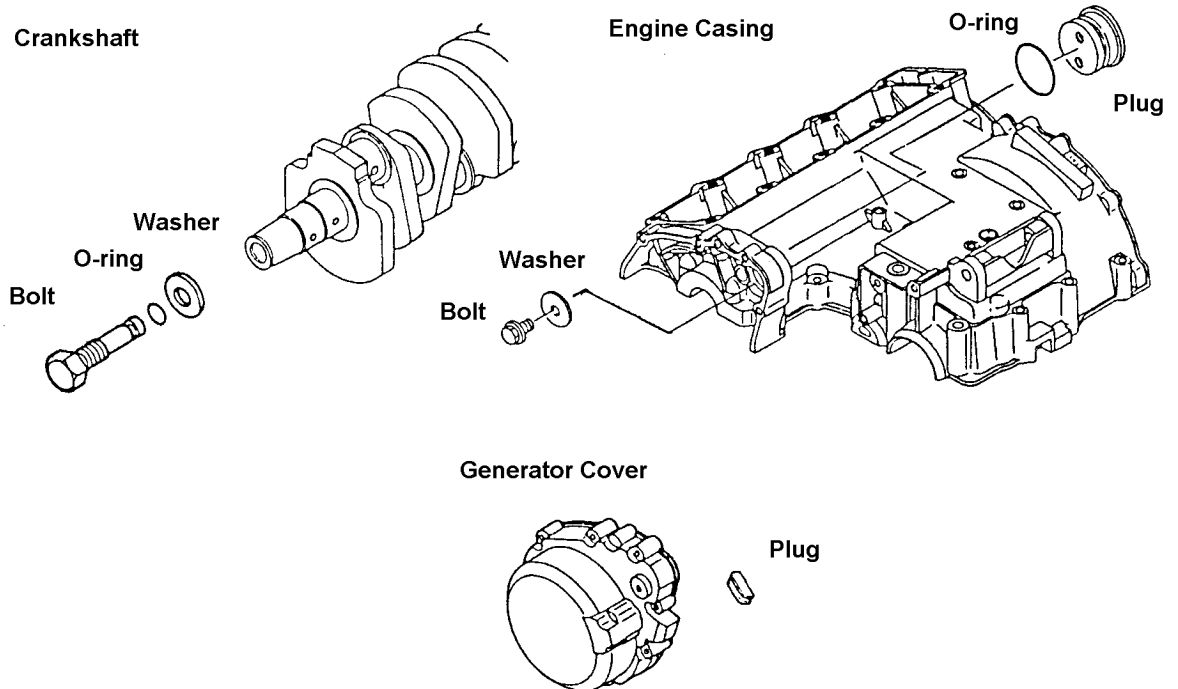
## Transmission

The standard transmission of the ZXR400R (ZX400J) is retained

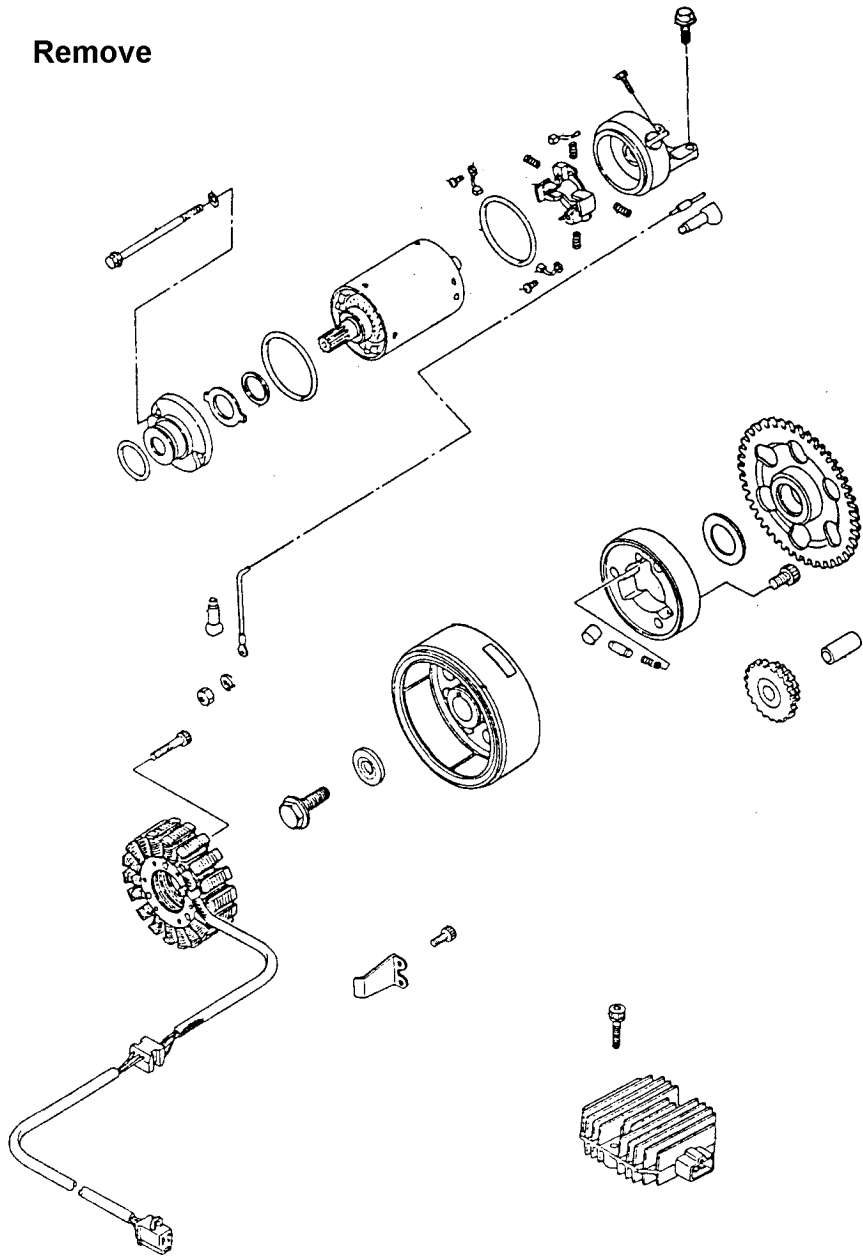
### Optional ( F 3 、 S P )

#### Removal of Generator and Starter Motor

- Replace generator and starter gear with bolt (PN: 92150-1206) o-ring (PN: 670B1505) and washer (PN: 92022-1820)
- Replace starter motor with plug (PN: 92066-1330) o-ring (PN: 92055-1262) bolt (PN: 130C0610) and washer (PN: 92022-125)
- Plug wiring hole in generator cover with (PN: 92071-1172)

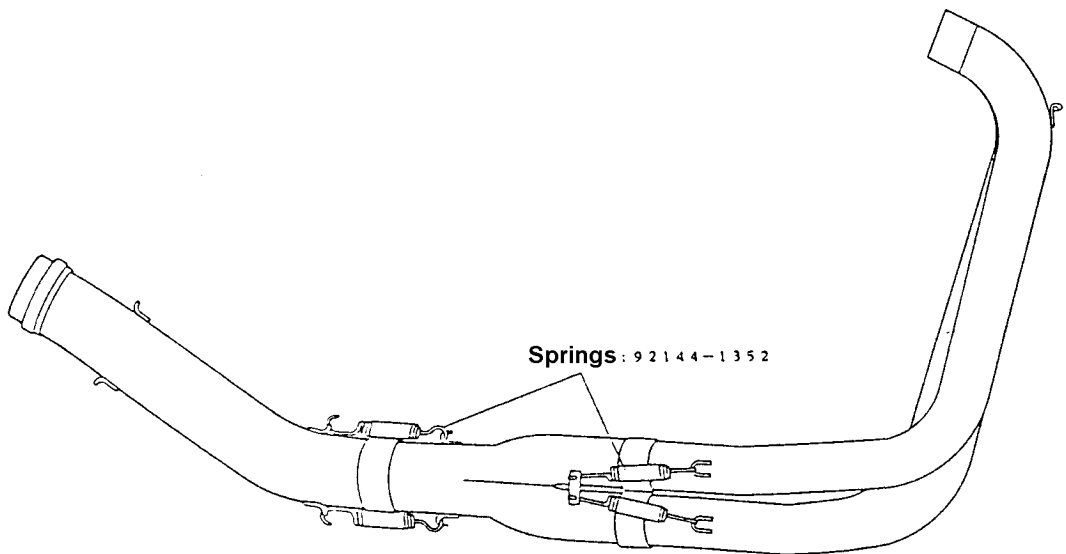
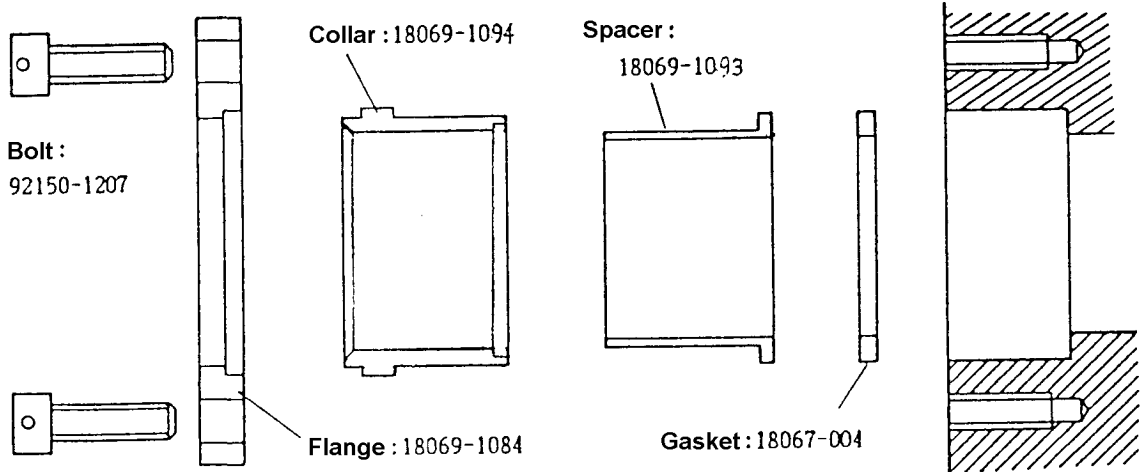


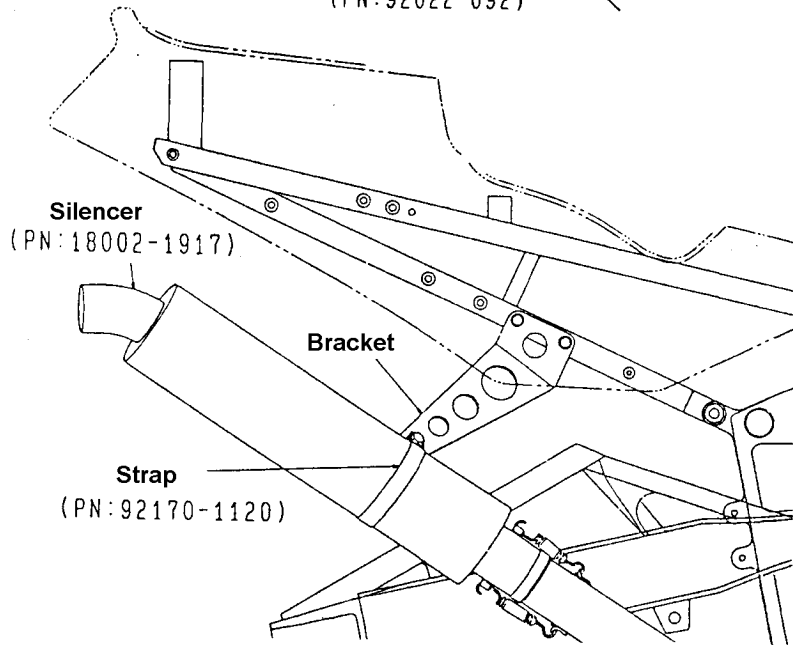
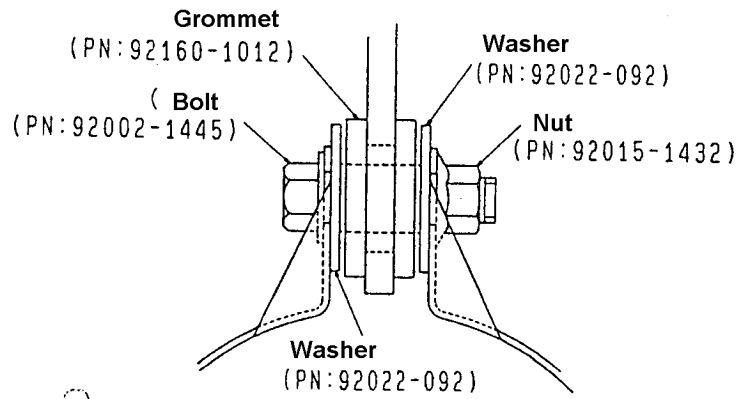
Remove



### Exhaust ( F 3、SP )

- Remove standard exhaust and replace with kit parts.





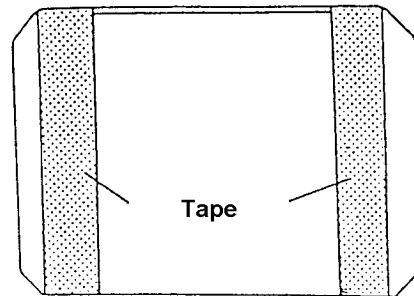
## Cooling ( F 3 , S P )

- Remove standard hose and fit:

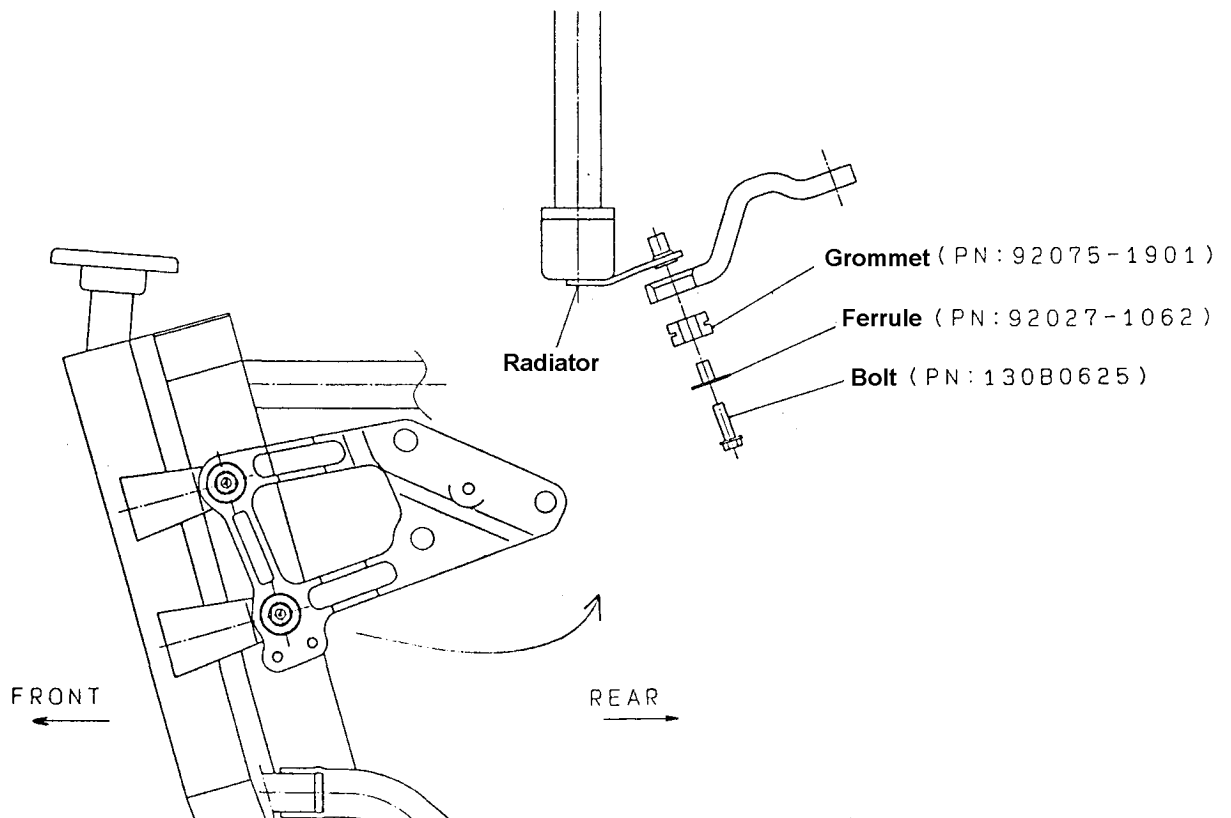
Hose : (PN:39062-1355)

Hose : (PN:39062-1356)

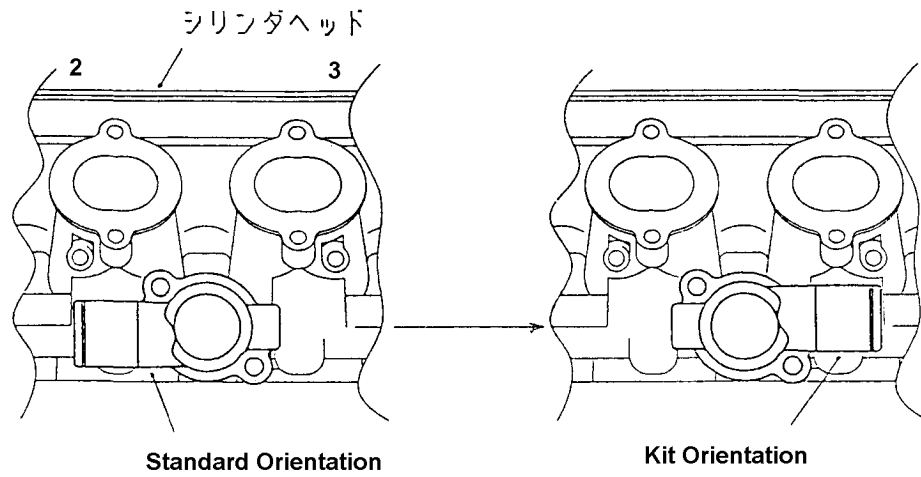
- Apply tape to radiator to maintain temperature of 7 0 °C



- Mount kit radiator with kit fixings.



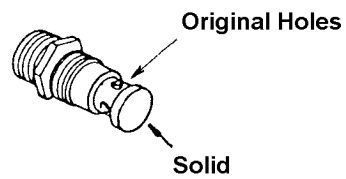
- Use of the kit radiator will necessitate the repositioning of the thermostat cover.



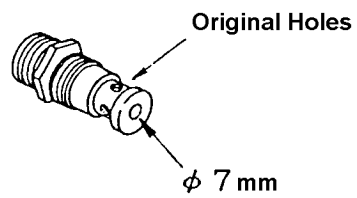


## Oil Cooler ( F 3 )

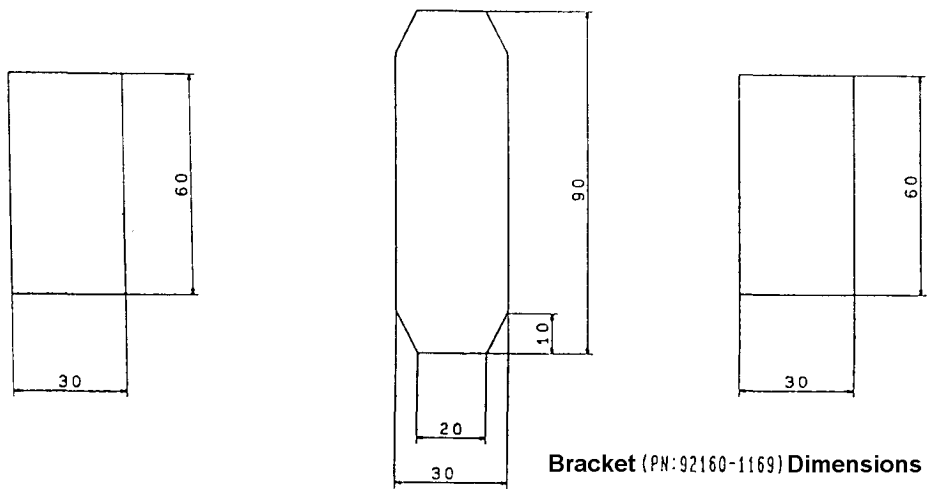
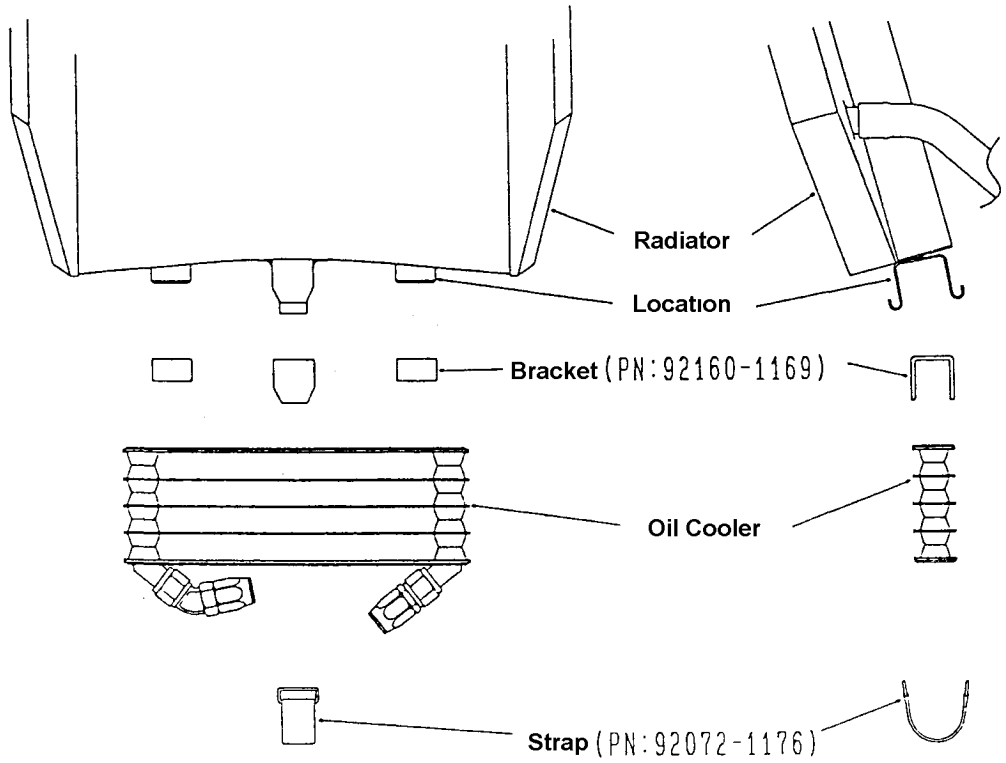
Use oil filter bolt kit part ( PN: 92150 1205) although this part will need adapting



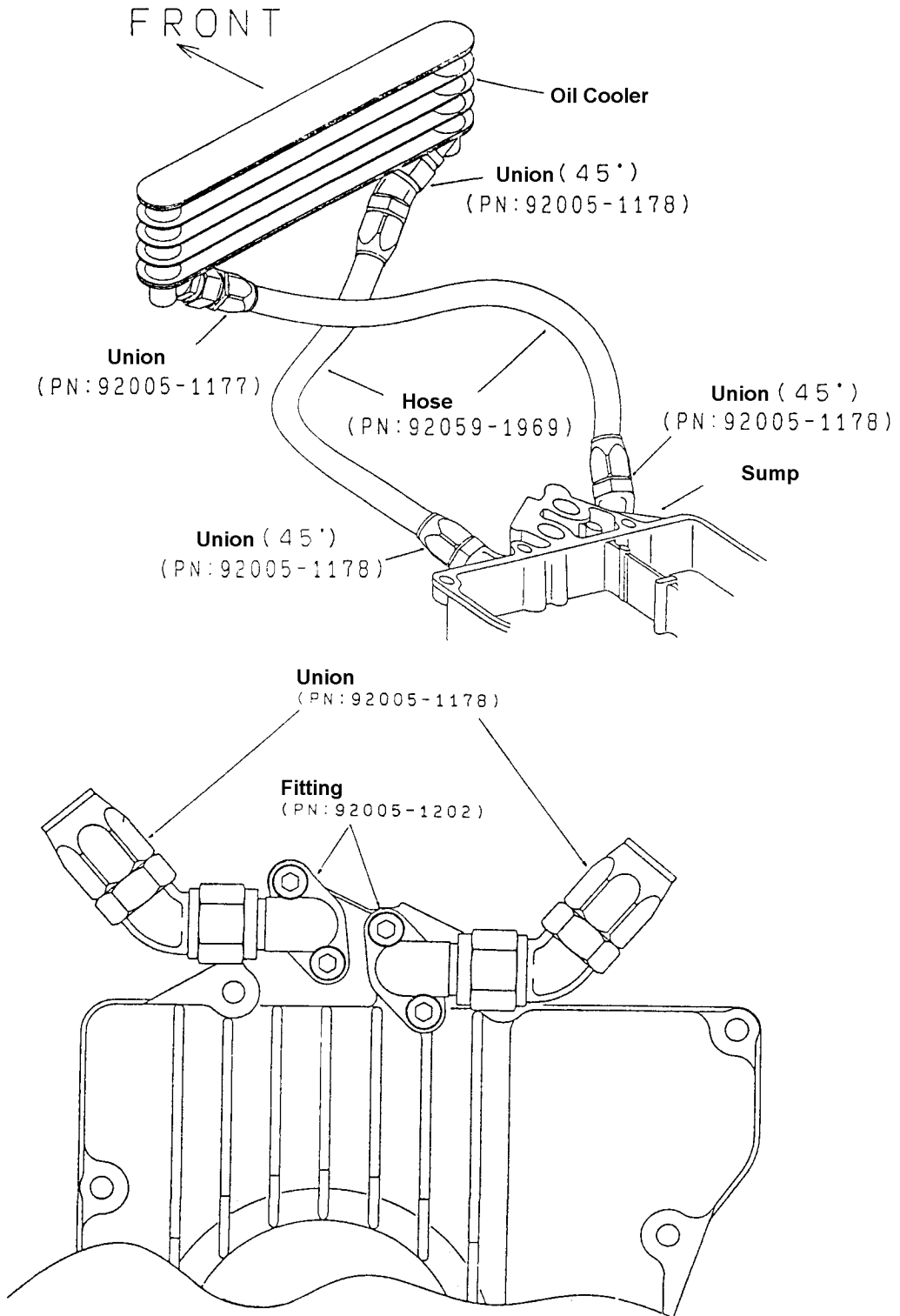
Modify oil filter bolt by drilling a 7mm hole in the end



- Weld brackets (PN: 92160-1169) to underside of radiator, and secure oil cooler with strap (PN: 92072-1176)

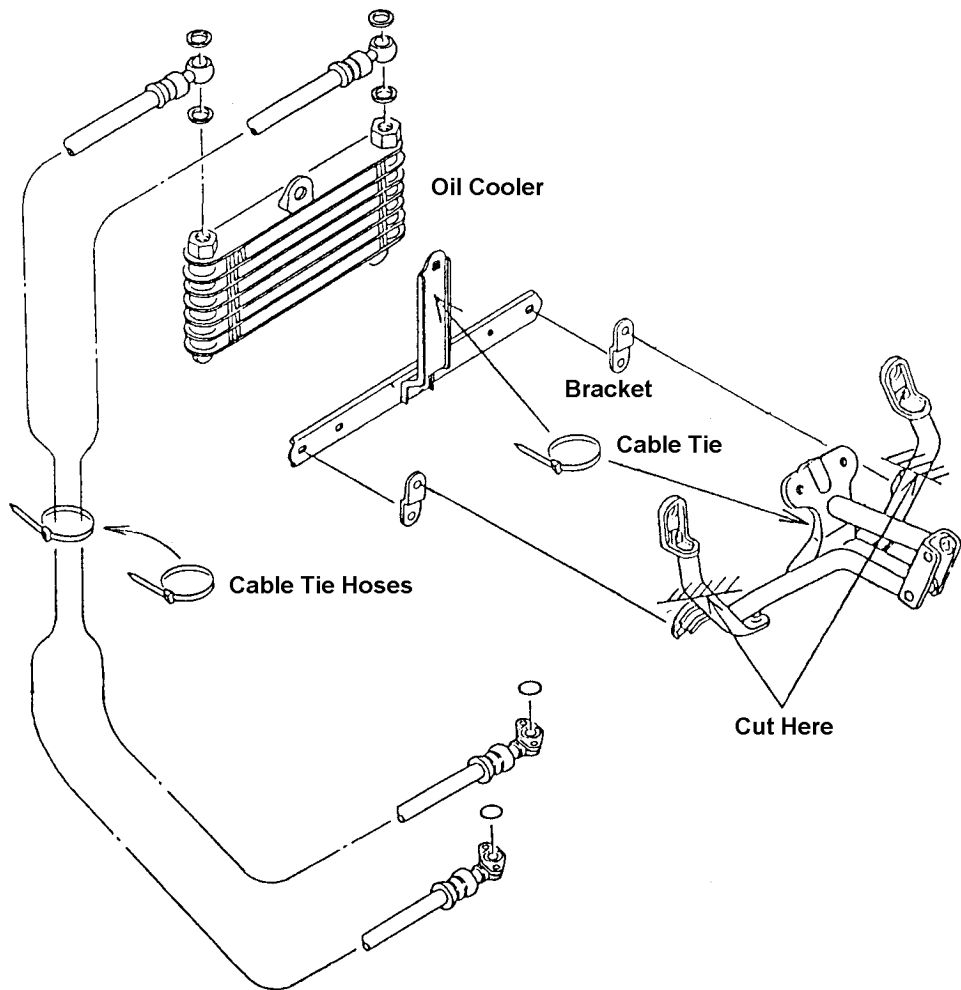


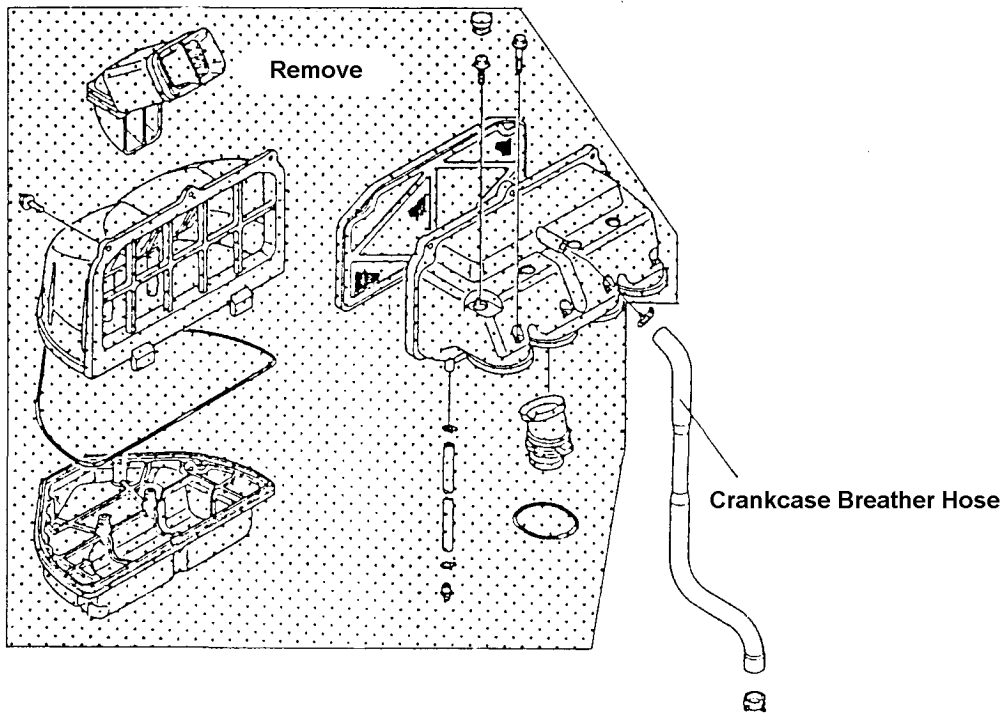
- Install the oil cooler using unions and fittings (PN: 92005-1177, 92005-1178, 92005-1202) and hoses (PN: 92059-1969)



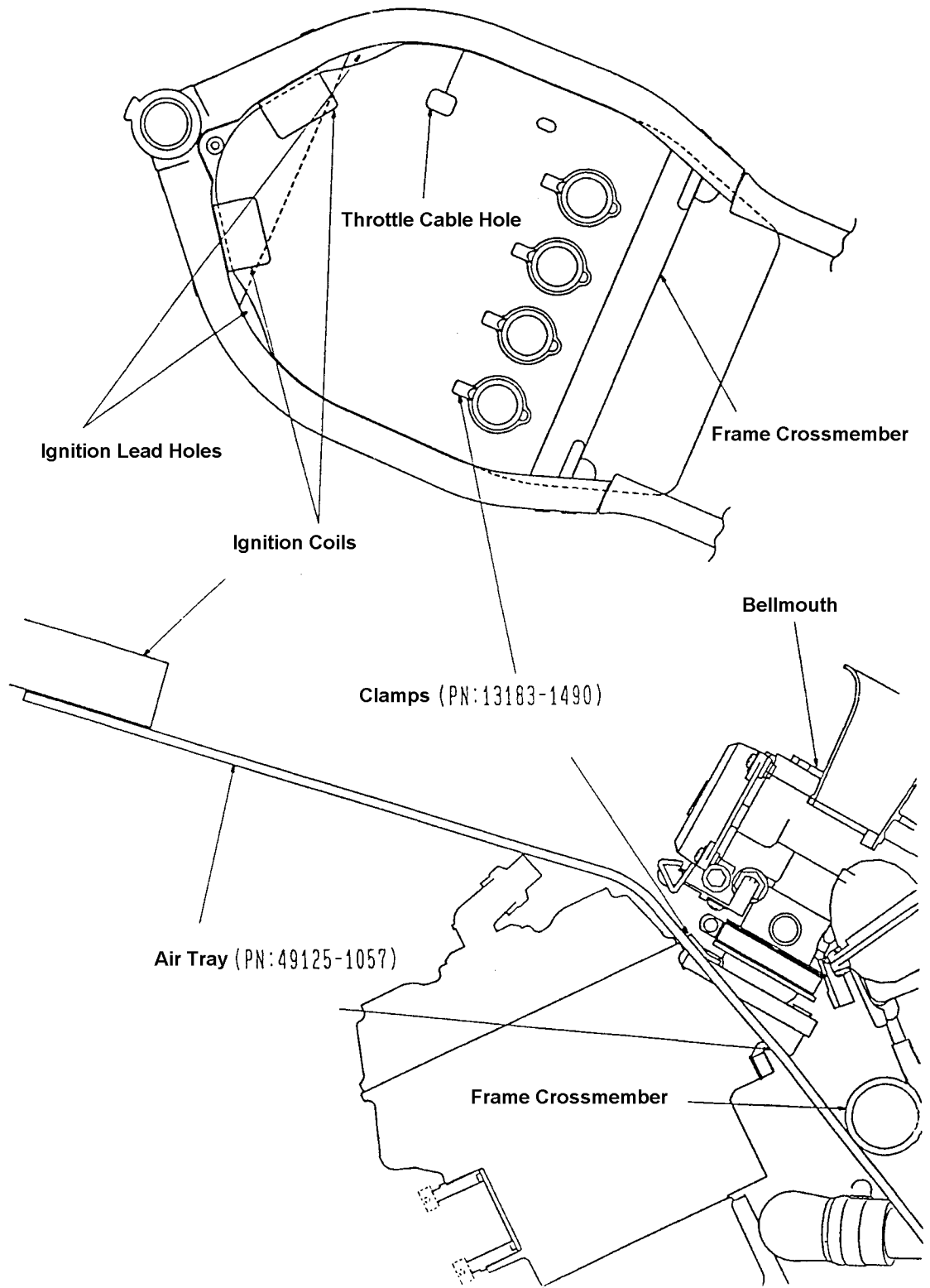
### Oil Cooler ( S P )

- Reposition the oil cooler as shown below.



**Airbox ( F 3 , S P )**

- Remove standard airbox assembly and replace with kit airtray (PN: 49125-1057)
- Secure airtray using four clamps (PN: 13183-1490)



## Carburetors ( F 3 、 S P )

### ● Settings ( F 3 )

Main Jet	:	# 1 6 5 (Option # 1 7 5)
Needle	:	N 7 0 A、 (Slot 3)
Needle Washers	:	$\phi 0.7 \times 2 \times 4$
Pilot Screw	:	1/2~1 Turns Out
Idle Speed	:	1, 5 0 0~2, 0 0 0 rpm

### ● Settings ( S P )

Main Jet	:	# 1 4 0 (Option # 1 4 8)
Needle	:	N 7 8 B、
Pilot Screw	:	1/2~1 Turns Out
Idle Speed	:	1, 5 0 0~2, 0 0 0 rpm

- Attach intake trumpets (PN: 14073 1399 F3, 14073 1405 SP) using bolts (PN: 130B0512)

- Run the engine in keeping to the maximum speeds as outlined below.

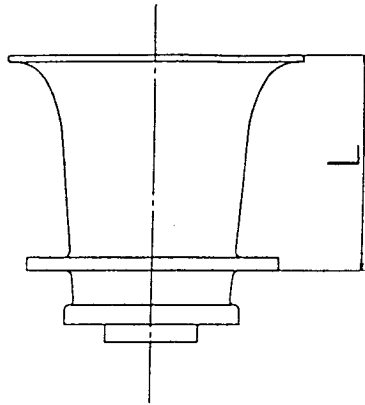
3, 0 0 0 rpm	→	6 0 km
4, 0 0 0 rpm	→	3 0 km
5, 0 0 0 rpm	→	3 0 km
6, 0 0 0 rpm	→	3 0 km
7, 0 0 0 rpm	→	3 0 km

- An engine that is correctly run in will produce 1 ~ 2 ps more than one that is not.

### Intake Trumpet ( F 3 , S P )

	Speed	Engine	Intake Trumpet
S P	Std	Std	S P Kit ( L = 3 0 )
	Low	Std	F 3 Kit ( L = 5 0 )
F 3	Std	F 3 Kit	F 3 Kit ( L = 5 0 )
	Low	Std	F 3 Kit ( L = 5 0 )
		Std	S P Kit ( L = 3 0 )
	High	F 3 Kit	S P Kit ( L = 3 0 )





**Ignition ( F 3 )**

• **Sparkplugs**

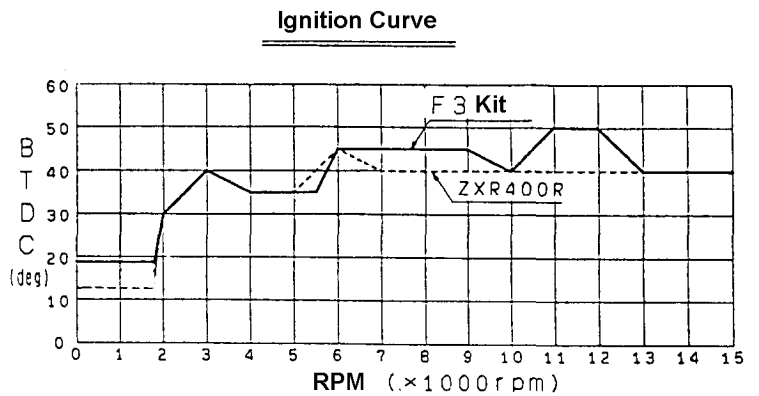
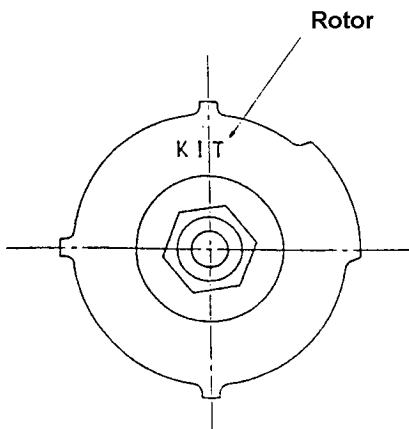
NGK R0045 - 9 ( Option ), 10 ( Standard ), 11 ( Option )

NGK R016 - 9 ( Option ), 10 ( Standard ), 11 ( Option )

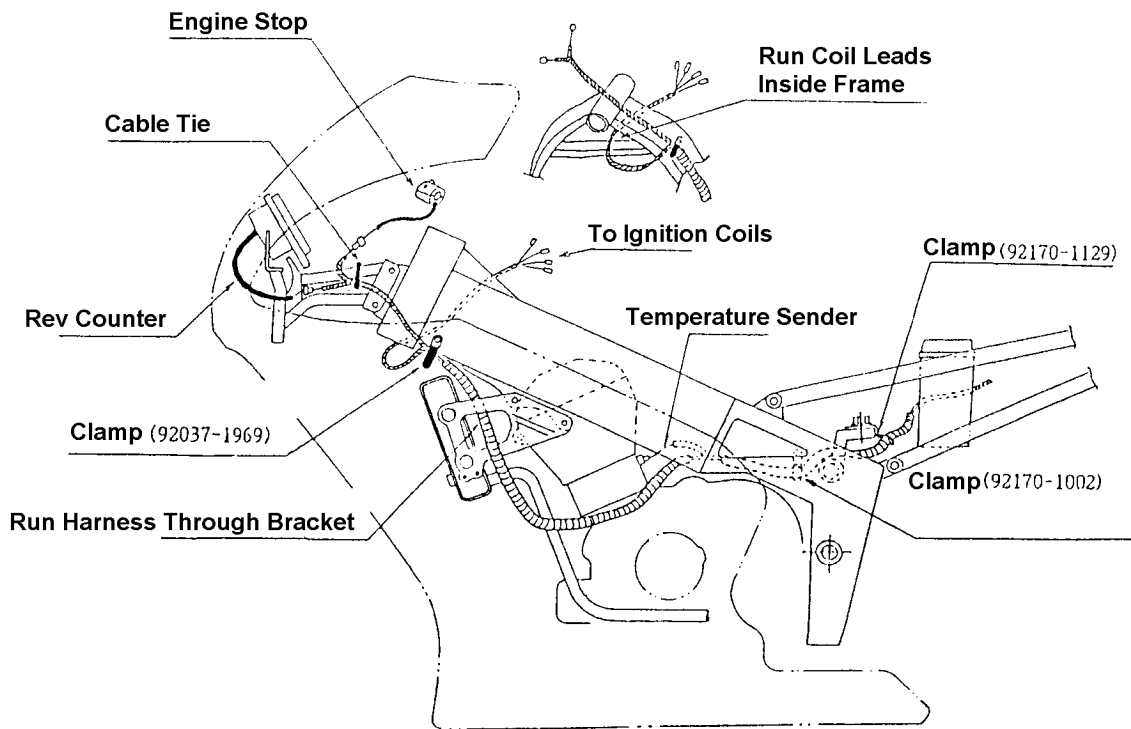
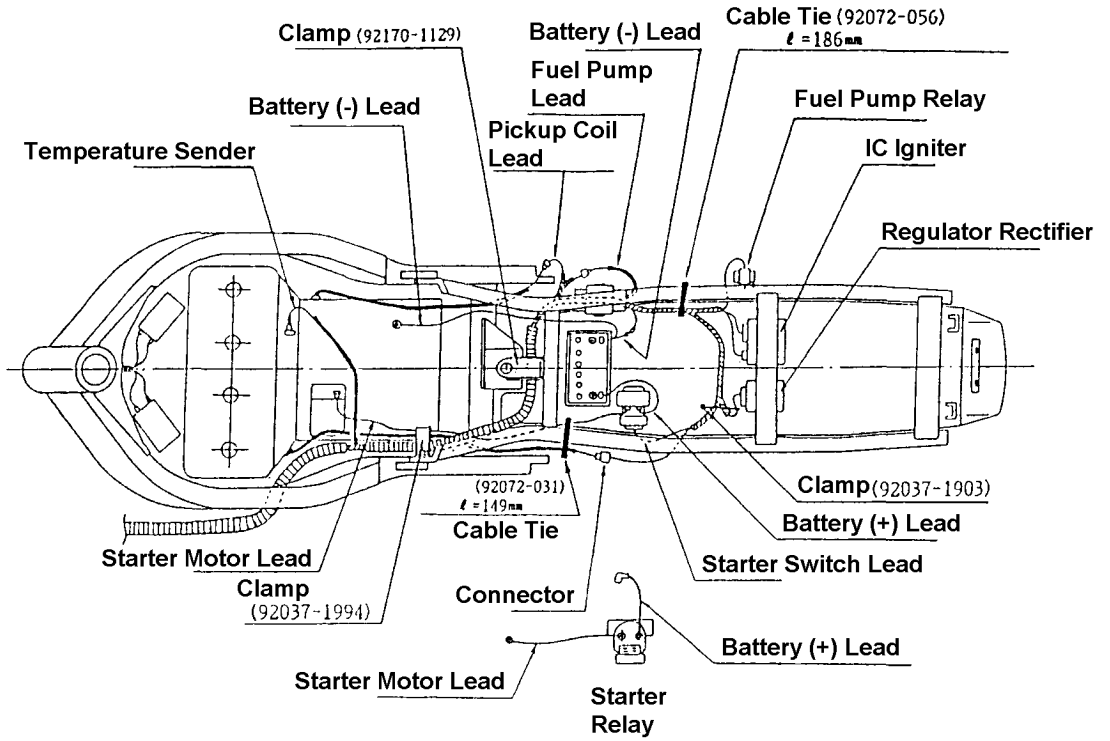
**IC Igniter ( F 3 )**

• The kit rotor increases the static advance by 6° over standard.

• The kit IC igniter increases the maximum engine speed from 14,800 rpm to 15,200 rpm



• Cable Routing



**Gearing ( F 3、 S P )**

- Front Sprocket 15 T ( Kit ) , 16 T ( Std ) , 17 T ( Kit )
- Rear Sprocket 41 T、 42 T、 43 T、 44 T

**Optional Final Drive Ratios**

Front \ Rear	41 T	42 T	43 T	44 T
15 T ( Kit )	2.733	2.800	2.867	2.933
16 T ( Std )	2.563	2.625	2.688	2.750
17 T ( Kit )	2.412	2.471	2.529	2.588

- Overall Reduction ( 6 Th Gear )

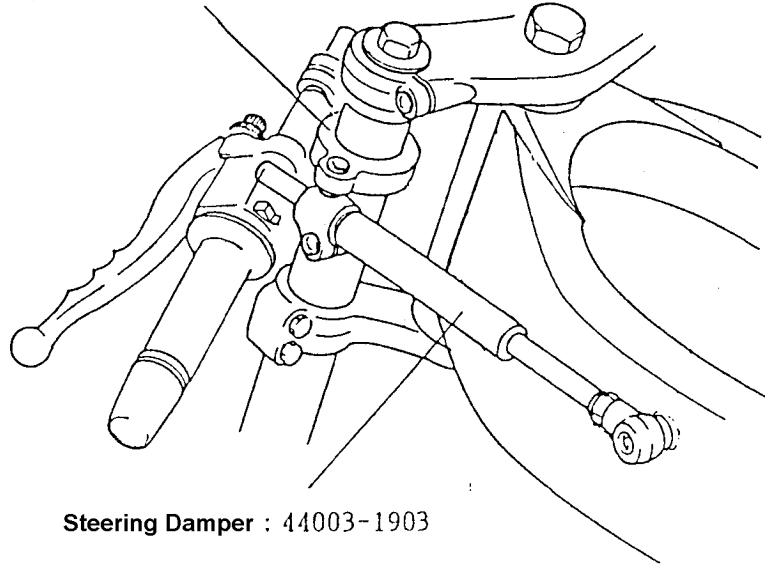
Front \ Rear	41 T	42 T	43 T	44 T
15 T ( Kit )	7.439	7.621	7.802	7.984
16 T ( Std )	6.974	7.145	7.315	7.485
17 T ( Kit )	6.564	6.724	6.884	7.045

- When utilising the optional ratios a different chain may be required.
- Ensure vertical chain slack at mid way between sprockets is between 20~35mm

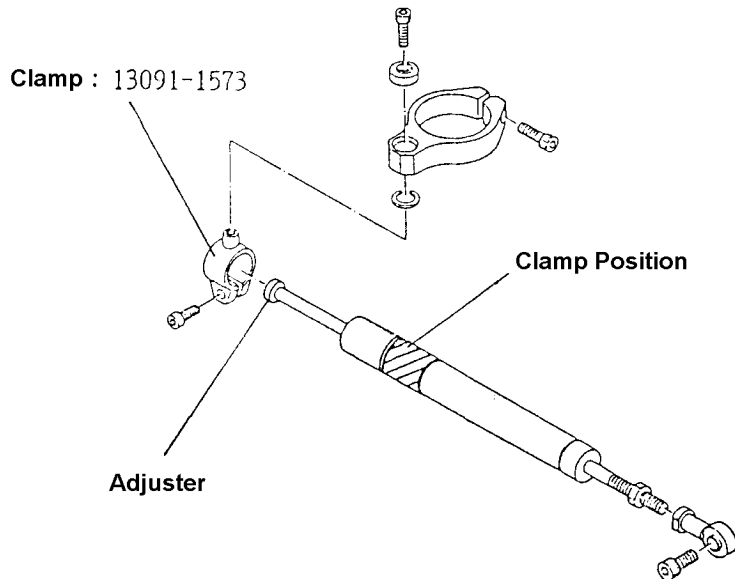
### Steering Damper ( F 3 , S P )

- Fit fork clamp (PN : 13091 - 1628) to left hand fork.
- Fit steering damper (PN : 44003 - 1903) to frame.

Fork Clamp : 13091-1628



- Use clamp (PN : 13091 - 1573) to attach damper to fork clamp.

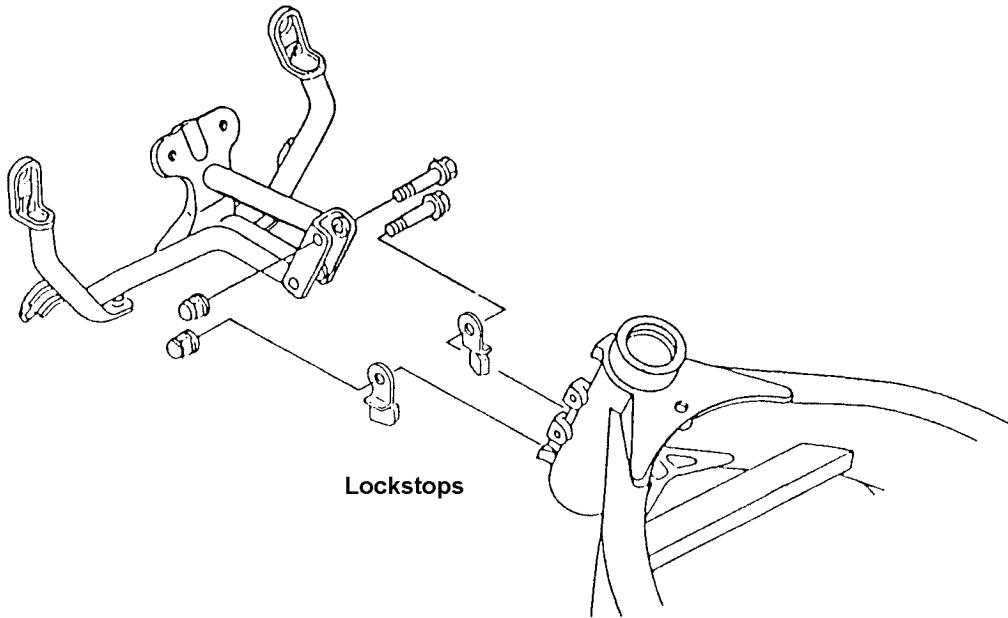


- The damper has 12 settings available, the normal position is 8, +/- 1.

**Steering**

( F 3 , S P )

- Fit lockstops to reduce steering angle to 22 degrees



**Wheels**

( F 3 )

- Standard wheel sizes are used

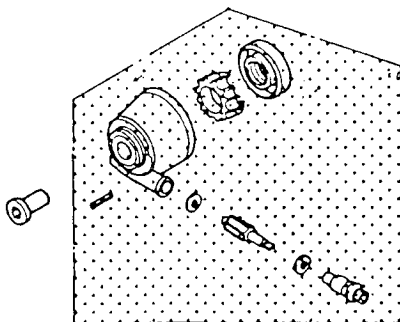
{ Wheels }

Front	:	3.5	MT
Rear	:	4.5	MT

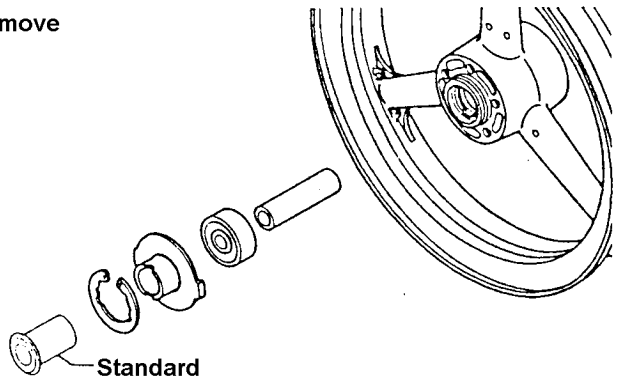
- 雨天時にはレインタイヤに交換する。

**Front Wheel** ( F 3 , S P )

- Replace speedo mechanism with PN:92143 13391



← Remove



**Front Brakes ( F 3 )**

- Replace front brake pads with PN: 43050 1182

**Front Suspension ( F 3 )**

- The standard front suspension is retained.

**Rear Suspension ( F 3 )**

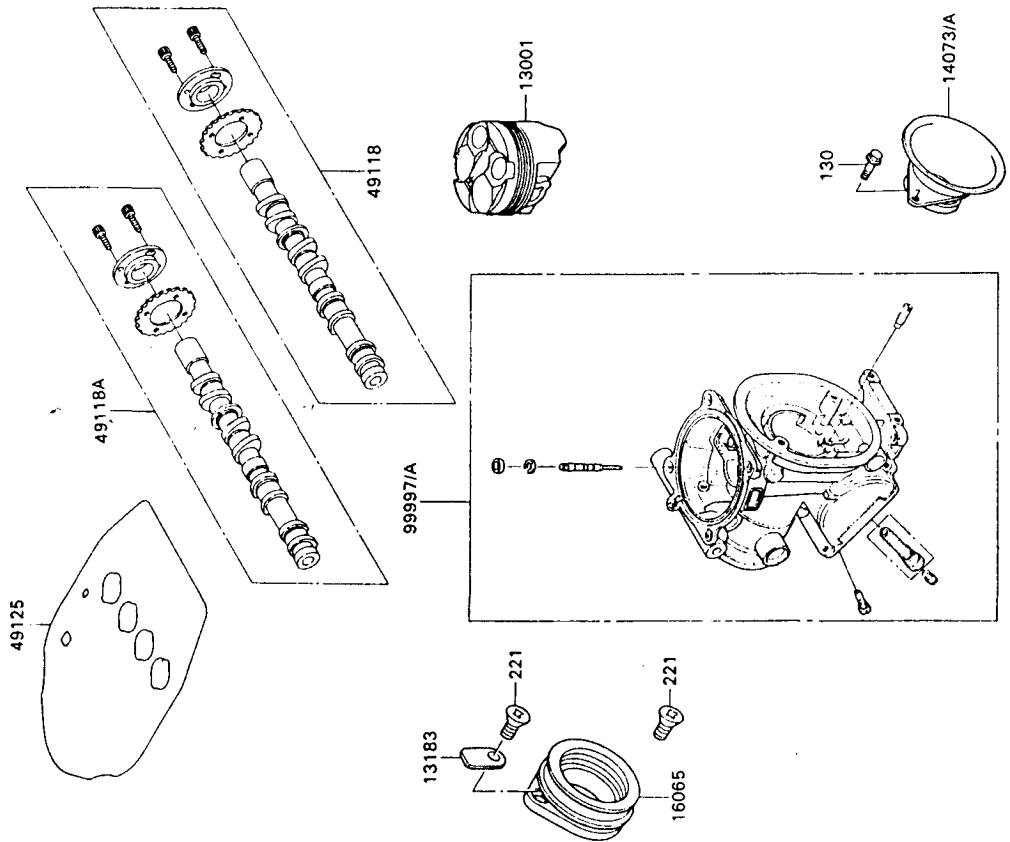
- Replace rear shock absorber spring with PN: 92144 1433

Spring Rate :	Kit	7 . 7 5 kg/mm
	Std	8 kg/mm

1. C-H-A-N-N-I-L-I-U-M-P-N-O-T-K-A-F-L-E-T-A-R-P-A-R-T-S

見出 番号	部品番号	部 品 名	個数-ZX400-JR1	
			'89/'89	F3/SP

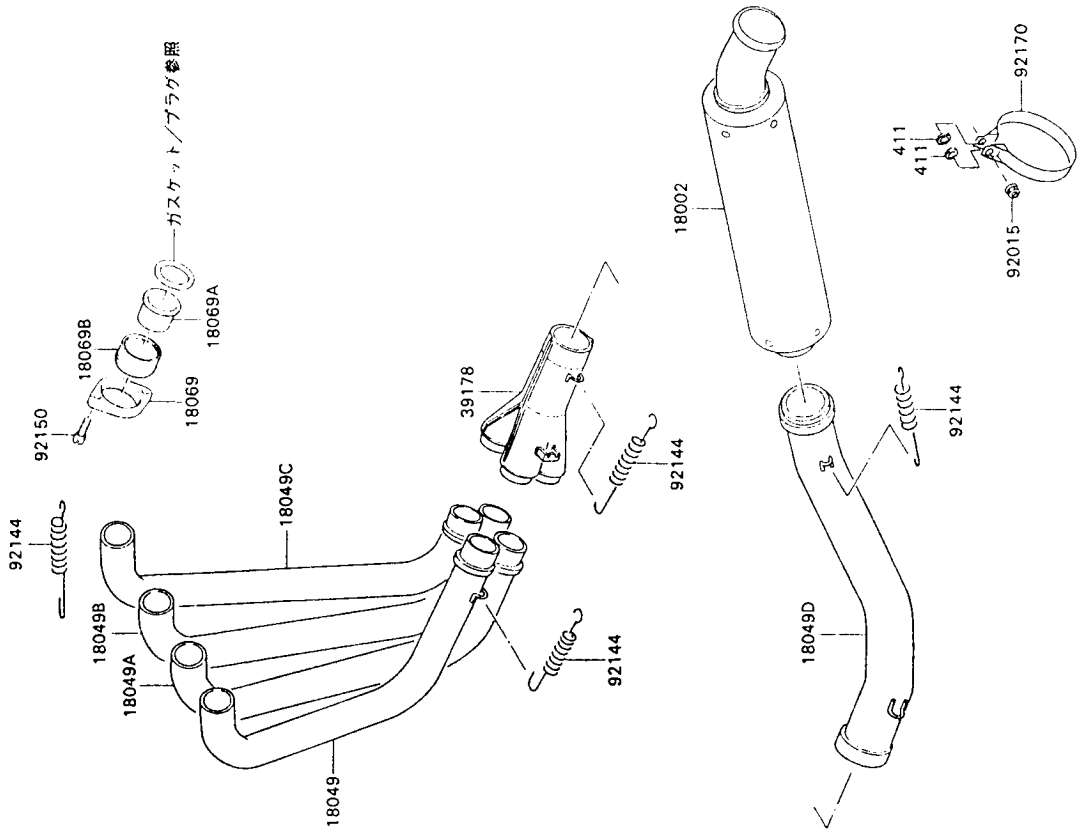
13001	13001-1310	シム(32597)	4	
13183	13183-1490	70-ト, 52597	4	4
14073	14073-1399	92-ト, 17 77221(F-3) 3000	4	4
14073A	14073-1405	92-ト, 17 77221(SP) 3000	4	4
16065	16065-1205	シム(47718)	4	
49118	49118-1074	シム(47718), 17-77221 31000	1	
49118A	49118-1075	シム(47718), 17-77221 31000	1	
49125	49125-1057	シム(47718) 20000	1	1
99997	99997-1056	シム(47718), 17-77221 10-77	1	
99997A	99997-1059	シム(47718), 17-77221 10-77	1	
130	13060512	シム(47718), 5X12	8	
221	22180614	75シム(47718), 6X14	8	



2. マフラー

見出 番号	部品番号	部 品 名	図数・ZX400-JR1	
			89'89	F3/SP

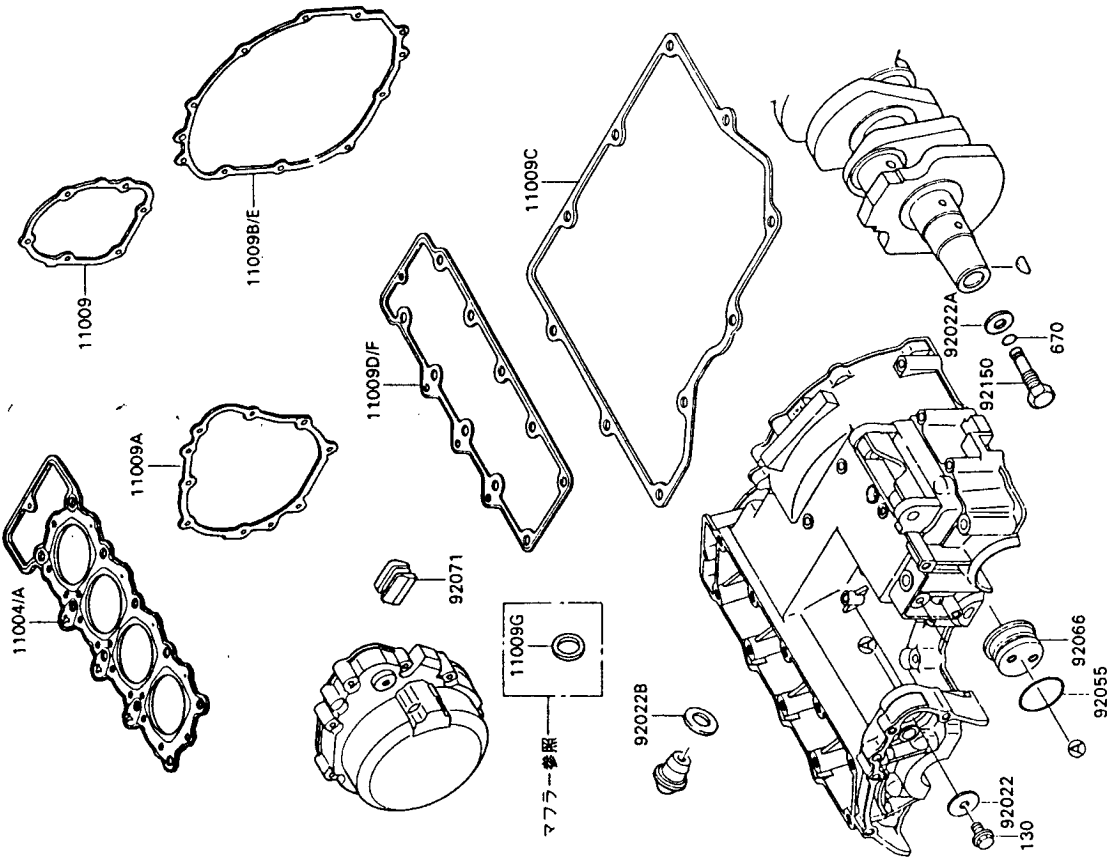
18002	18002-1917	ホッチキスコワ (マフ)	1	1
18049	18049-1476	ホイワ (エキゾースト) #1	1	1
18049A	18049-1477	ホイワ (エキゾースト) #2	1	1
18049B	18049-1478	ホイワ (エキゾースト) #3	1	1
18049C	18049-1479	ホイワ (エキゾースト) #4	1	1
18049D	18049-1480	ホイワ (エキゾースト) ショコイント	1	1
18069	18069-1084	ホウダ (エキゾースト) #1	4	4
18069A	18069-1093	ホウダ (エキゾースト) #2	4	4
18069B	18069-1094	ホウダ (エキゾースト) #3	4	4
39178	39178-1144	マニホールドコワ (エキゾースト)	1	1
92015	92015-1432	ナット 8MM	1	1
92144	92144-1352	スプリング	12	12
92150	92150-1207	ホルト 6X20	8	8
92170	92170-1120	クワ	1	1
411	411S0800	クワ (マニホールド) 8MM	2	2





見出 部品番号 部品名

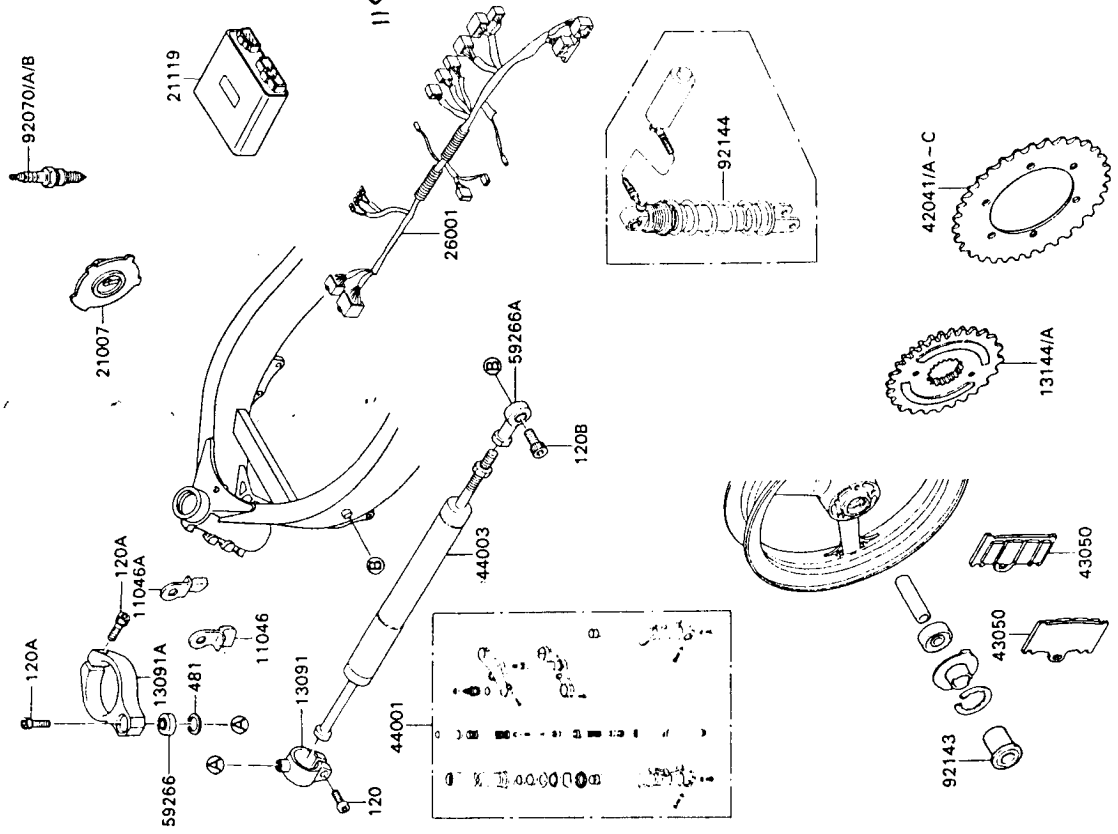
個数 - ZX400-JR1	
'89/'89	F3/SP
11004	3
11004A	3
11009	3
11009A	3
11009B	3
11009C	3
11009D	3
11009E	3
11009F	3
11009G	12
92022	1
92022A	1
92022B	1
92055	1
92066	1
92071	1
92150	1
130	1
670	1



見出 番号	部品番号	部 品 名	個数 - ZX400-JR1	
			'89/89	F3 SP

11046	11046-1754	カマツツノハニツノハニ	1	1
11046A	11046-1805	カマツツノハニツノハニ	1	1
13091	13091-1573	カマツツノハニツノハニ	1	1
13091A	13091-1628	カマツツノハニツノハニ	1	1
13144	13144-1122	カマツツノハニツノハニ	1	1
13144A	13144-1150	カマツツノハニツノハニ	1	1
21007	21007-1198	カマツツノハニツノハニ	1	1
21119	21119-1276	カマツツノハニツノハニ	1	1
26001	26001-1984	カマツツノハニツノハニ	1	1
42041	42041-1313	カマツツノハニツノハニ	1	1
42041A	42041-1314	カマツツノハニツノハニ	1	1
42041B	42041-1315	カマツツノハニツノハニ	1	1
42041C	42041-1339	カマツツノハニツノハニ	1	1
43050	43050-1182	カマツツノハニツノハニ	4	4
44001	44001-1739	カマツツノハニツノハニ	1	1
44003	44003-1903	カマツツノハニツノハニ	1	1
59266	59266-1078	カマツツノハニツノハニ	1	1
59266A	59266-1079	カマツツノハニツノハニ	1	1
92070	92070-1174	カマツツノハニツノハニ	1	1
92070A	92070-1175	カマツツノハニツノハニ	4	4
92070B	92070-1176	カマツツノハニツノハニ	1	1
92143	92143-1339	カマツツノハニツノハニ	1	1
92144	92144-1433	カマツツノハニツノハニ	1	1
120	120S0616	カマツツノハニツノハニ	1	1
120A	120S0620	カマツツノハニツノハニ	2	2
120B	120S0820	カマツツノハニツノハニ	1	1
481	481J1800	カマツツノハニツノハニ	1	1

Router  
21007-1198



**KAWASAKI HEAVY INDUSTRIES, LTD.**

Consumer Products & Heavy Machinery Group

Part No. 99929-1048-01