Kawasaki

ZXR400R

'89 Racing Kit Manual

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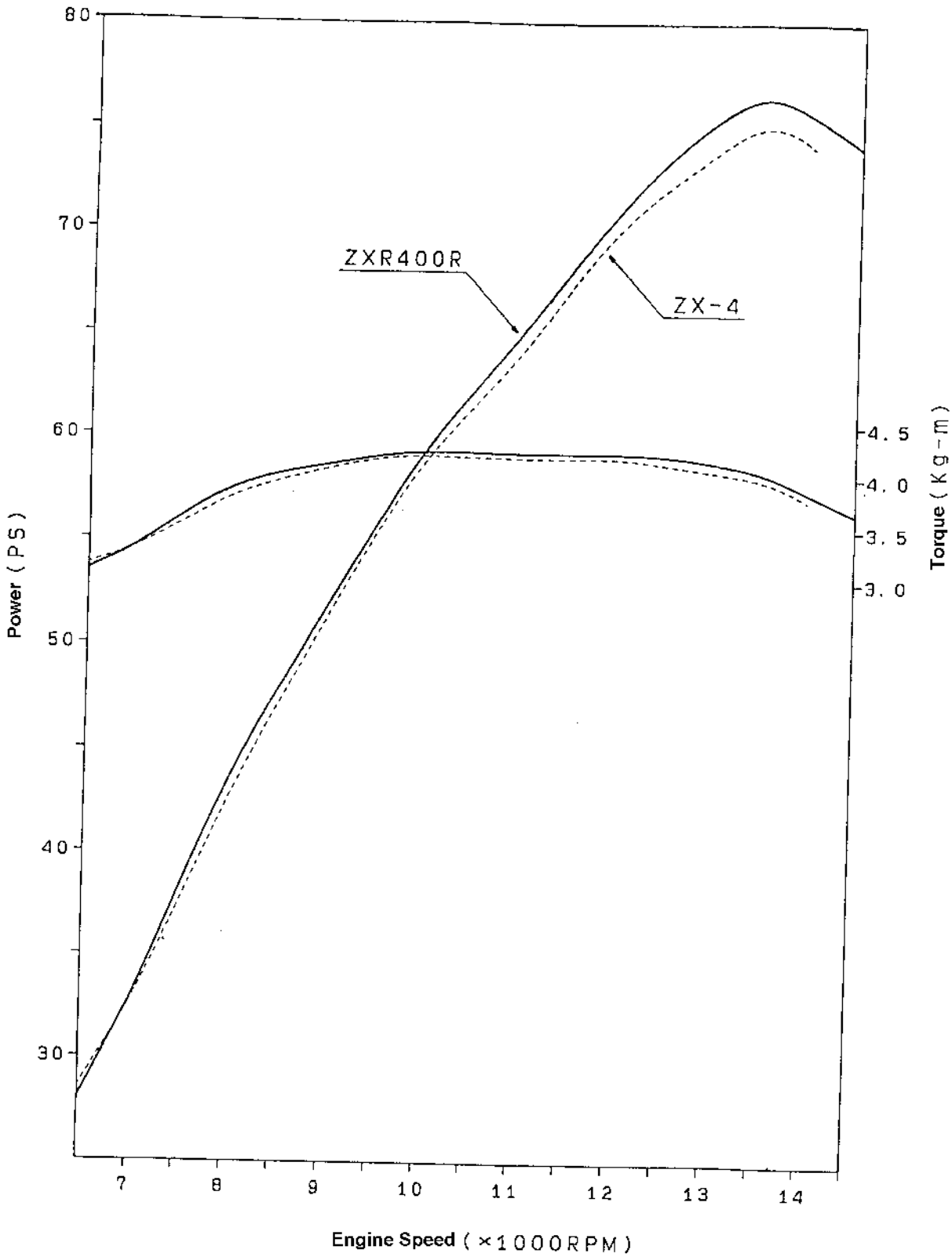
General Specifications

Items		ZXR400R
Engine		
Compression Ratio	(F3)	13.0
Power	(F3)	75 PS/13,500 rpm
Torque	(F3)	4.2kg-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)
Drive Train		
Reduction Ratio	(F3、SP)	2.412 (41/17) ~ 2.933 (44/15)
Overall Drive Ratio (6th gear)	(F3、SP)	6.564 ~ 7.984
Chassis		
Steering Damper Rate	(F3、SP) :	8±3kg 0.15m/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
Ignition		
Spark Plug	(F3)	NGK R0045-10

General Specifications

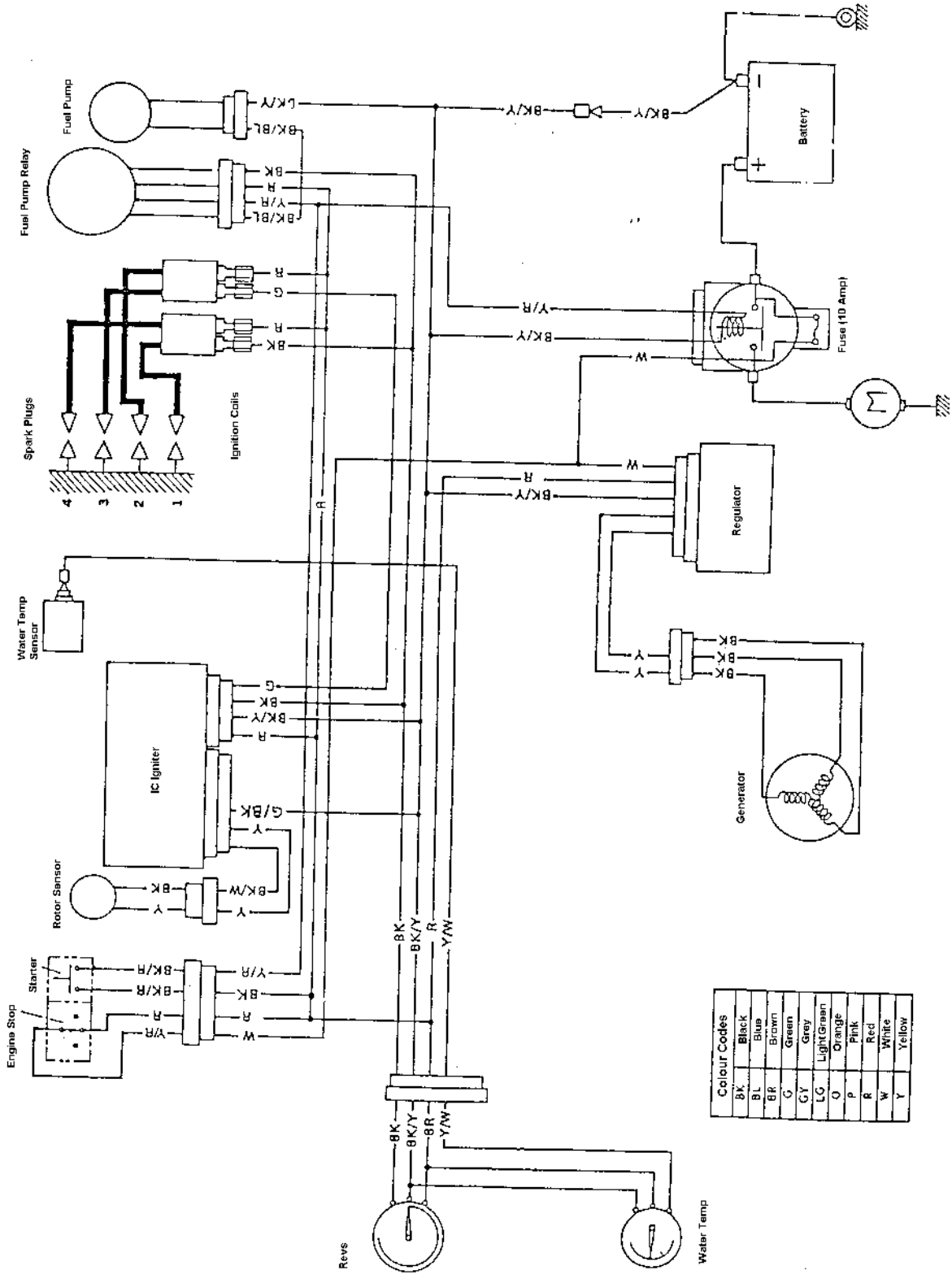
Item			ZXR400R
Carburetor Specifications	(F3、SP)		
Idle Speed			1,500～2,000 rpm
Main Jet	:	F3	#165
		SP	#140
Jet Needle Mark			N70A (SP N78B)
Needle Height			Position 3
Needle Washers			φ0.7×2×4
Pilot Screw			1/2～1
Optional Main Jets	:	F3	#150、155、160、165、170、175、180
		SP	#132、135、138、140、142、145、148
Main Air Jet			#150 (SP #90、110)
Pilot Jet			#38
Camshaft	(F3)		
Camshaft Lobe Height			31.803～31.983 mm
Valves	(F3)		
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
Cylinder, Piston	(F3)		
Piston Diameter			S.T.D.
Ignition			
Spark Plugs	(F3)		NGK R0045-10
	Optional (F3、SP)		NGK R0045-9 NGK R0045-11
IC Igniter	(F3)		
Increased Rev Limit			15200 rpm (S.T.D.14800 rpm)

Power Output (F 3)



ZXR400R

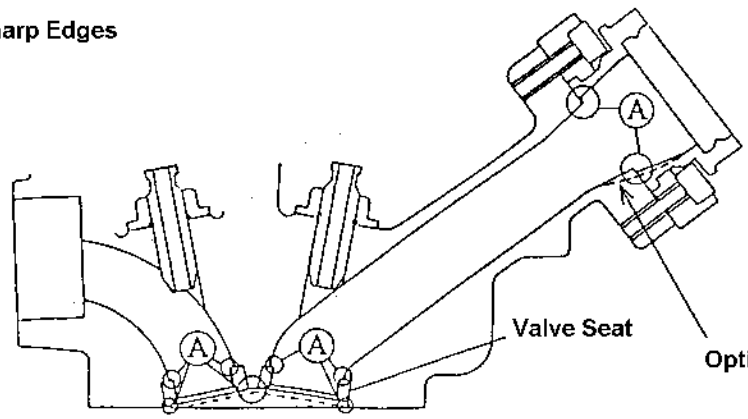
Wiring Diagram (F3、SP).

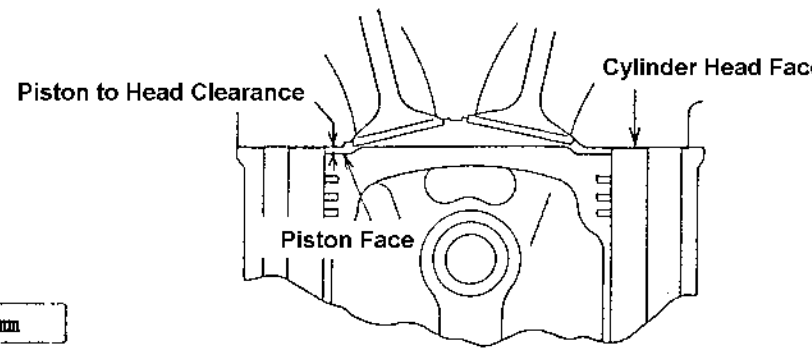


Cylinder Head (F 3)

- 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





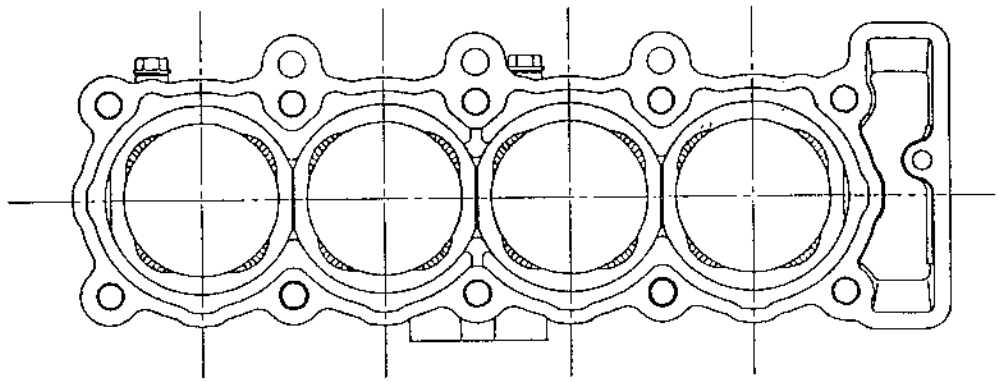
Clearance : 0.6 ~ 0.7 mm

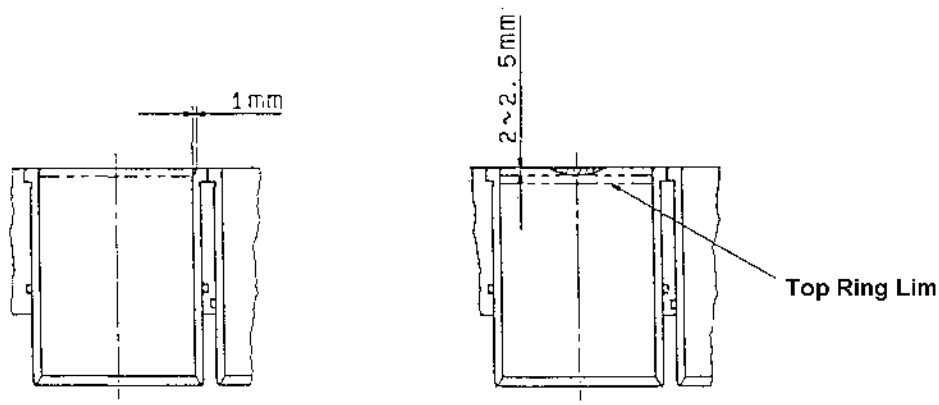
- Ensure cylinder head to piston clearance is within limits.
  If necessary replace standard base gasket (0.2 mm) with kit gasket (0.1 mm).

- Ensure cylinder head is flat to within 0.05mm

Barrels (F 3)

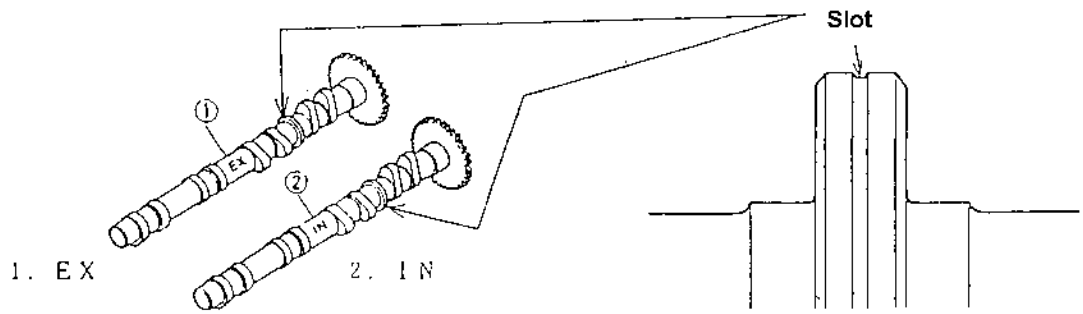
- Use the kit head gasket (PN:11004-1202)
  Profile the bores as shown in the diagram, this will improve gas flow and give an increase of 0.5 ~ 1.0 ps





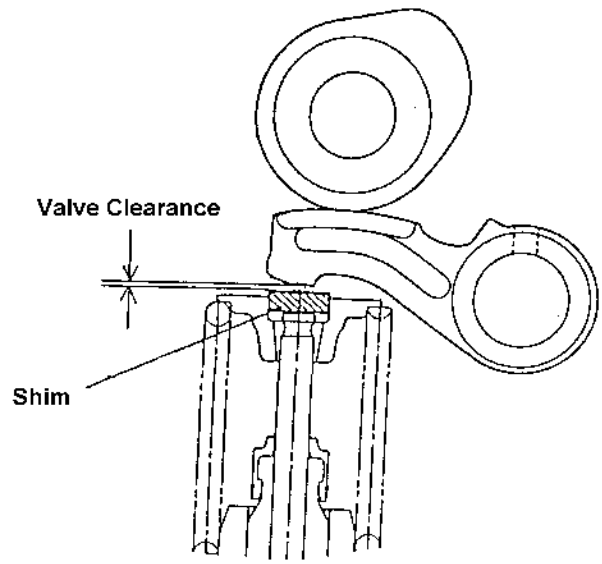
Camshafts (F 3)

- Slot the camshaft journals to improve lubrication

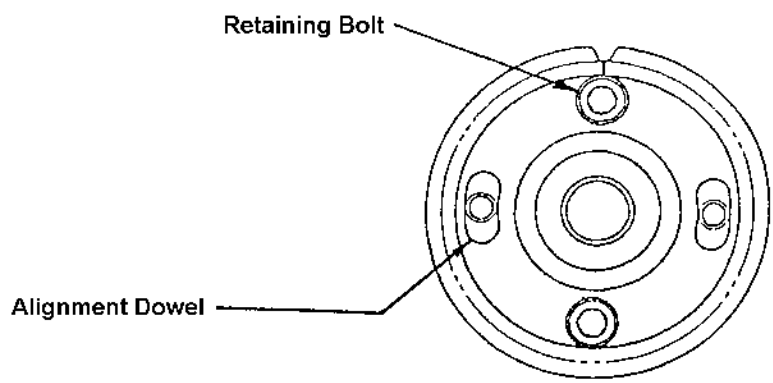


- Set clearances to allow for expansion due to heat at racing speeds.

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



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



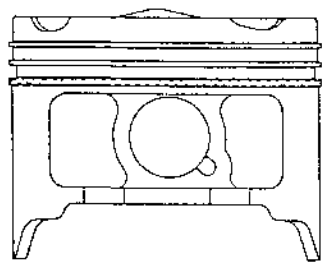
- Adjust camshaft so the valve to piston clearance is as in the table.

	Valve to Piston Clearance
Inlet	0.6 mm
Exhaust	1.1 mm

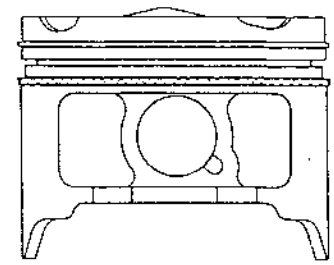
- The Inlet measurement is made at 12° ATDC and the Exhaust measurement at 12° BTDC

Pistons (F 3)

- Use of the kit pistons will increase the compression ratio from 12.1 to 13.0



3 Rings Utilised



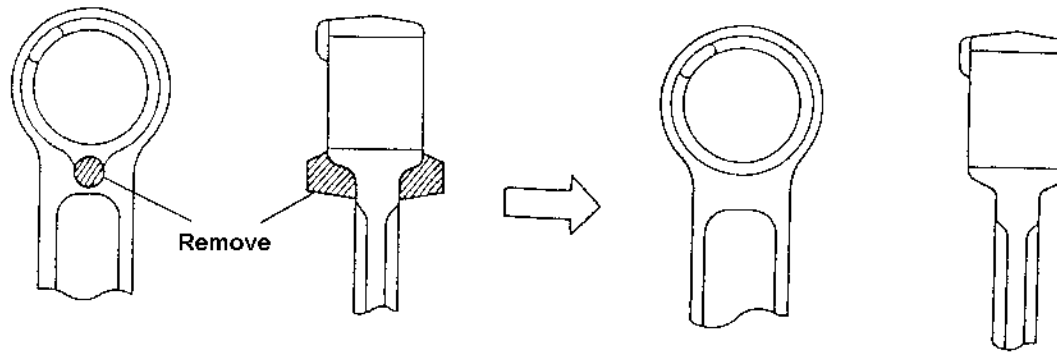
2 Rings Utilised

- Remove No 2 compression ring to reduce friction.

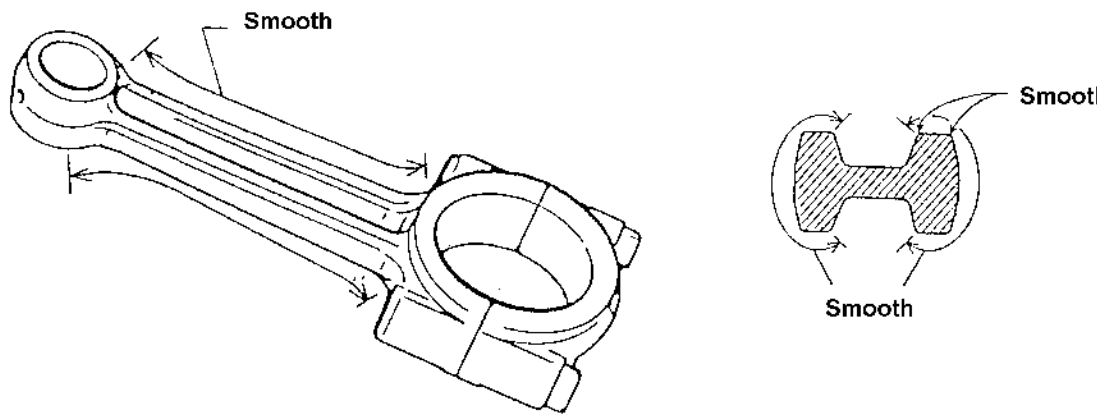
- Increased oil consumption whilst using only one compression ring is normal.

Connecting Rods (F 3)

- Grind away casting boss from the small ends of the connecting rods.
- Ensure each small end weighs within ±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 ±2g of each other.
- Polish connecting rod beams with 200 and then 300 grade aluminium oxide paper.
- Tighten connecting rod bolts to 2.4 ~ 2.8kg-m

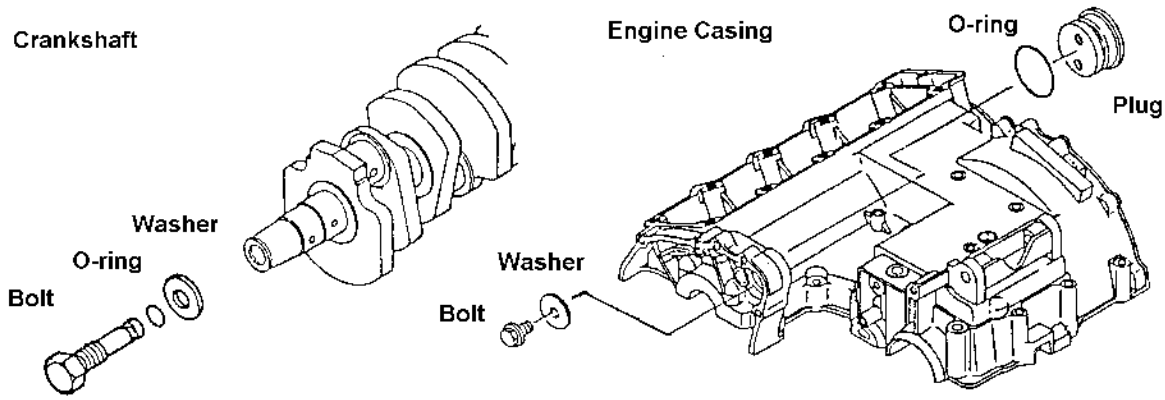
Transmission

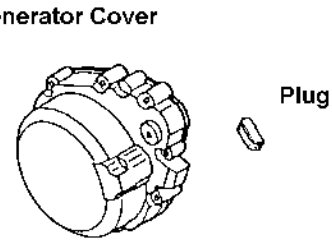
The standard transmission of the ＺＸＲ４００Ｒ（ＺＸ４００Ｊ）is retained

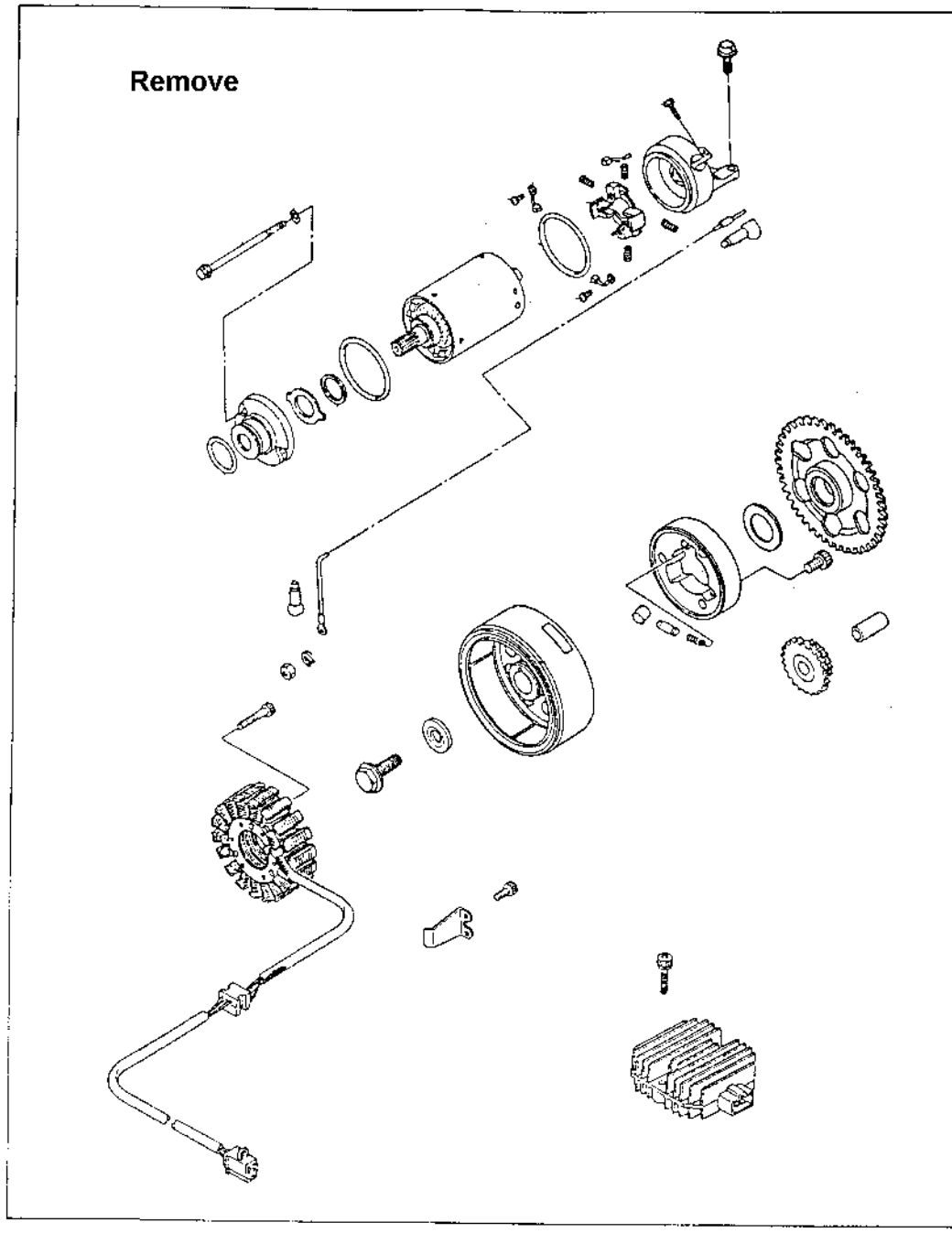
Optional（Ｆ３、ＳＰ）

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)

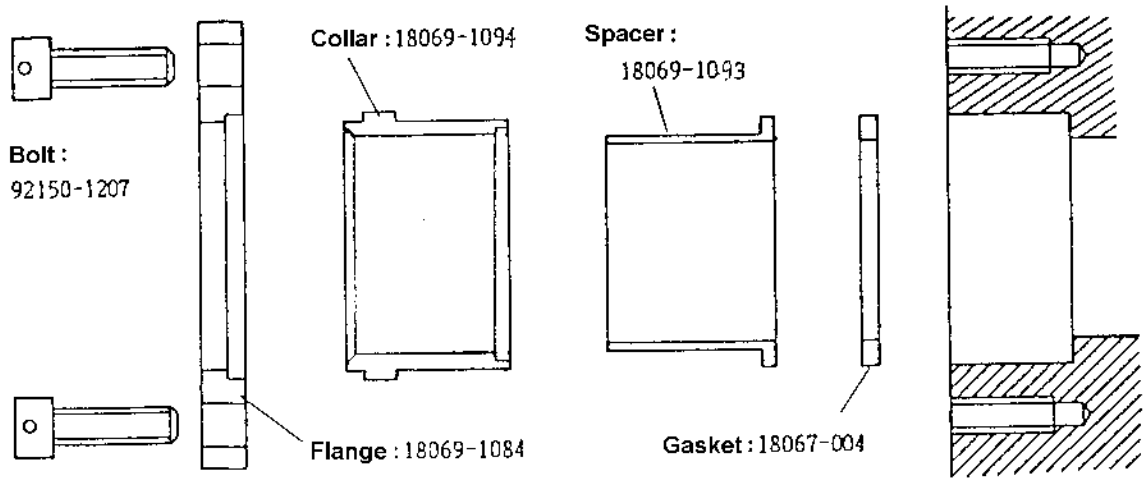


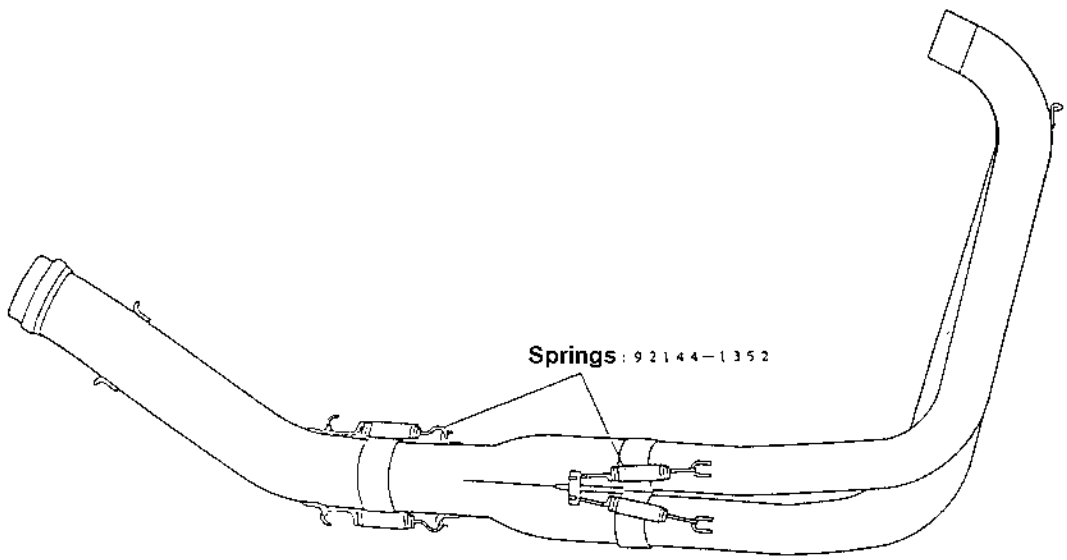


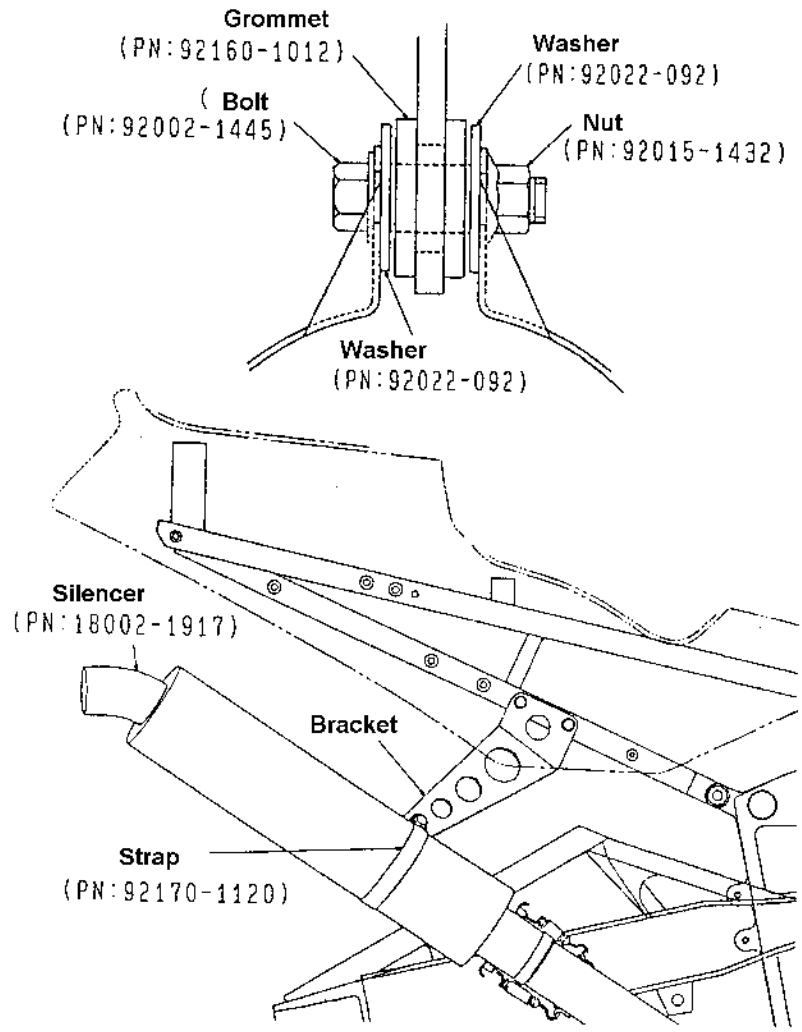

Remove

Exhaust（F３、ＳＰ）

- Remove standard exhaust and replace with kit parts.





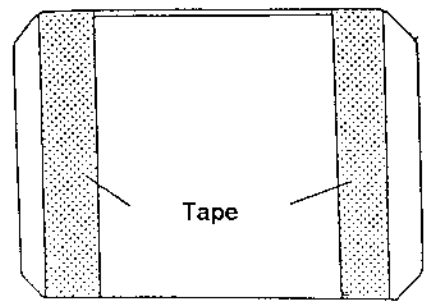

Grommet
(PN:92160-1012)
Washer
(PN:92022-092)
Bolt
(PN:92002-1445)
Nut
(PN:92015-1432)
Washer
(PN:92022-092)
Silencer
(PN:18002-1917)
Bracket
Strap
(PN:92170-1120)

Cooling（F３、SP）

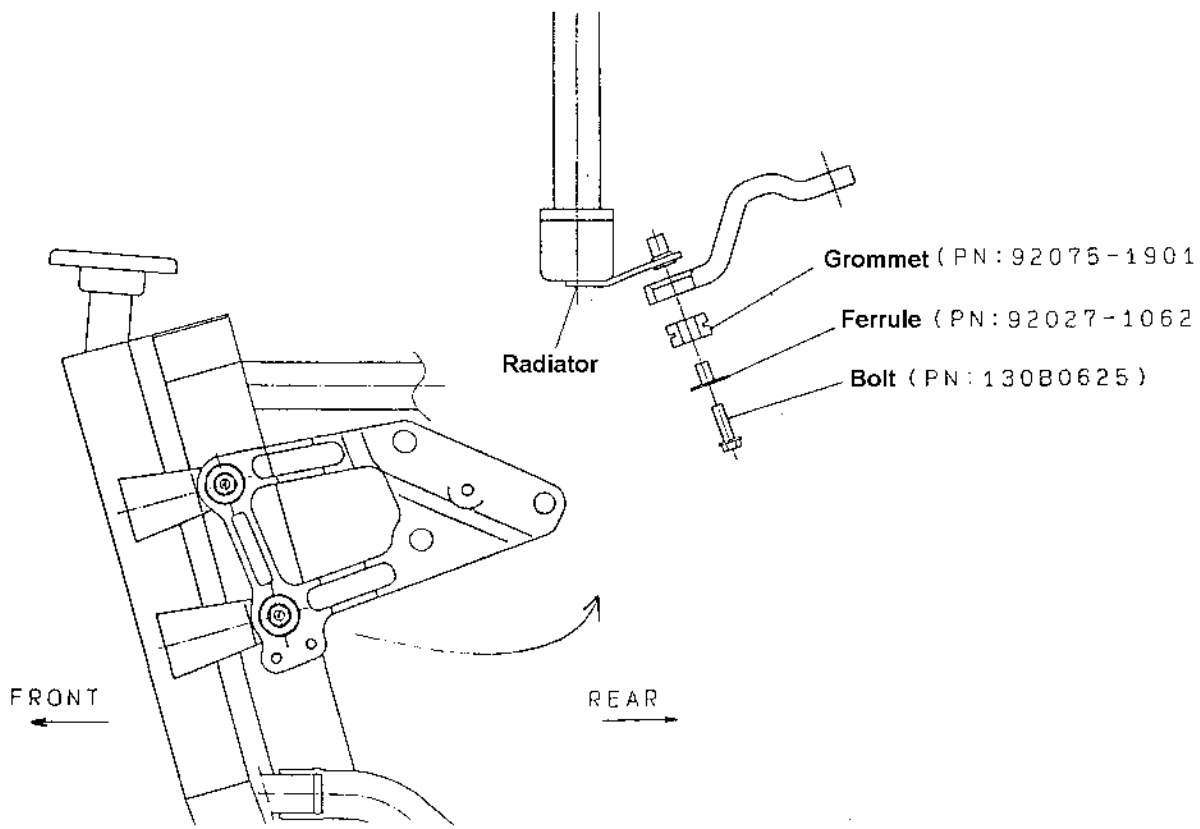
- Remove standard hose and fit:

  Hose : (PN:39062-1355)
  Hose : (PN:39062-1356)

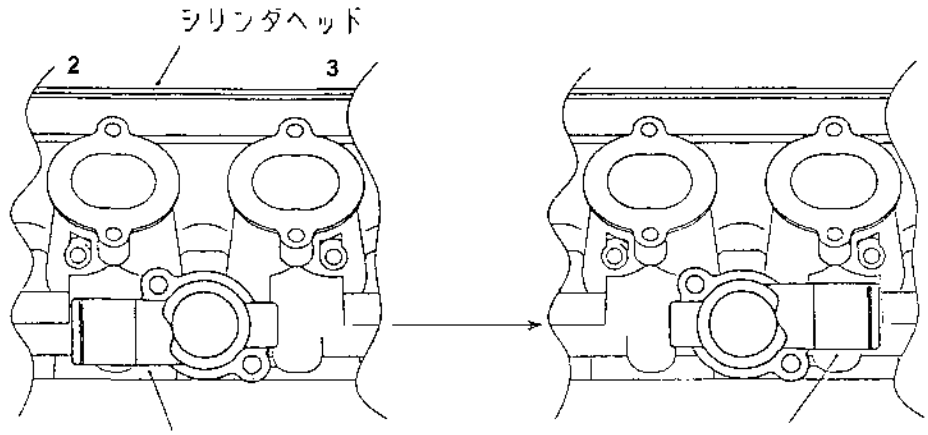
- Apply tape to radiator to maintain temperature of 70℃



- Mount kit radiator with kit fixings.



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

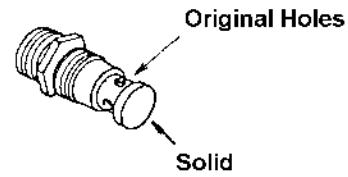


Standard Orientation

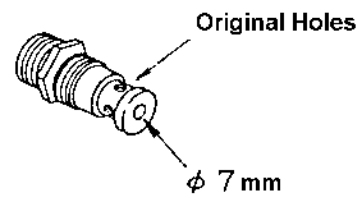
Kit Orientation

Oil Cooler (F 3)

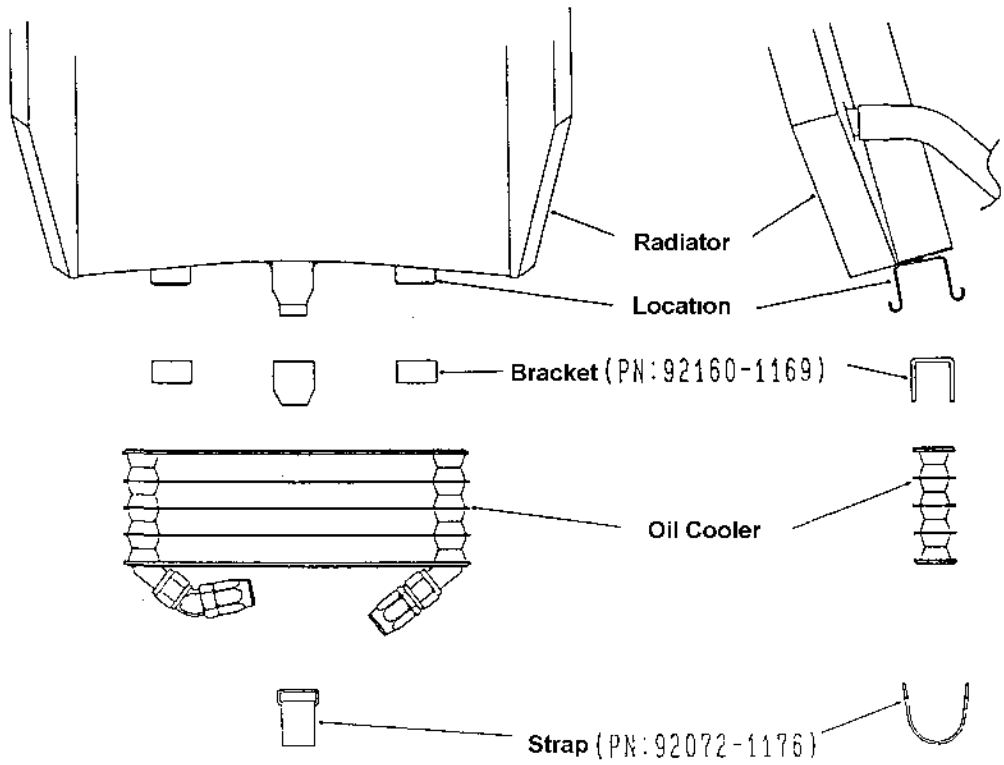
Use oil filter bolt kit part (PN: 92150 1205) **although this part will need adapting**

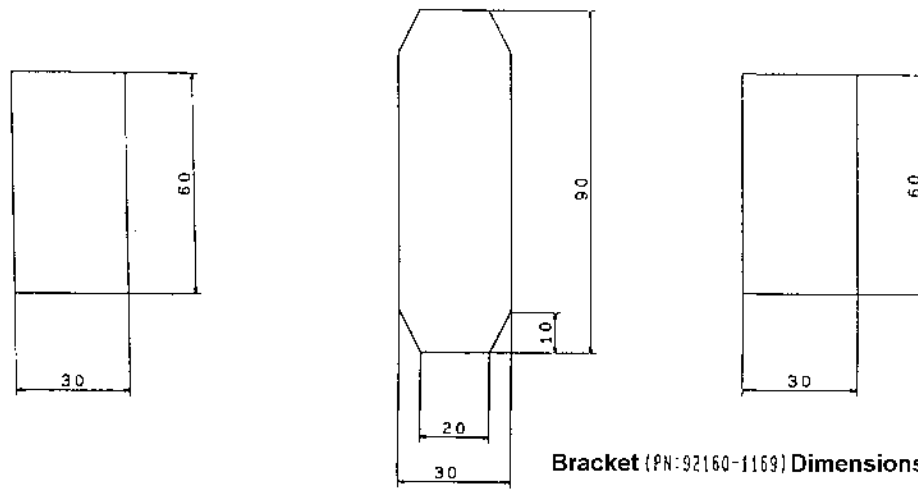


Modify oil filter bolt by drilling a 7mm hole in the end



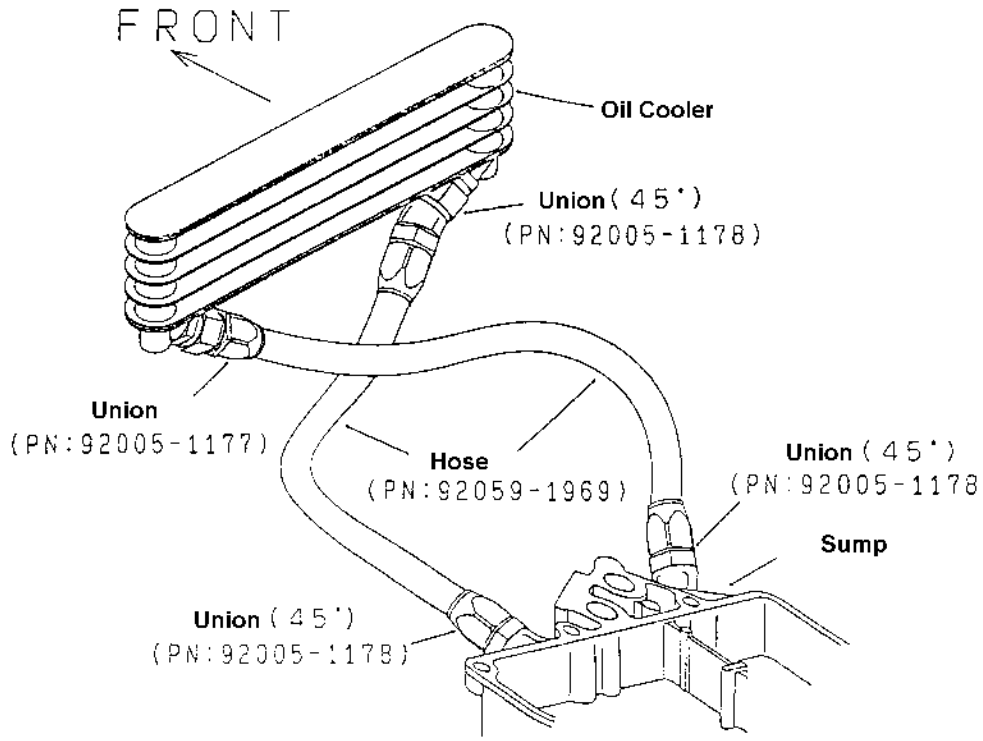
- Weld brackets (PN:92160-1169) to underside of radiator, and secure oil cooler with strap (PN:92072-1176)

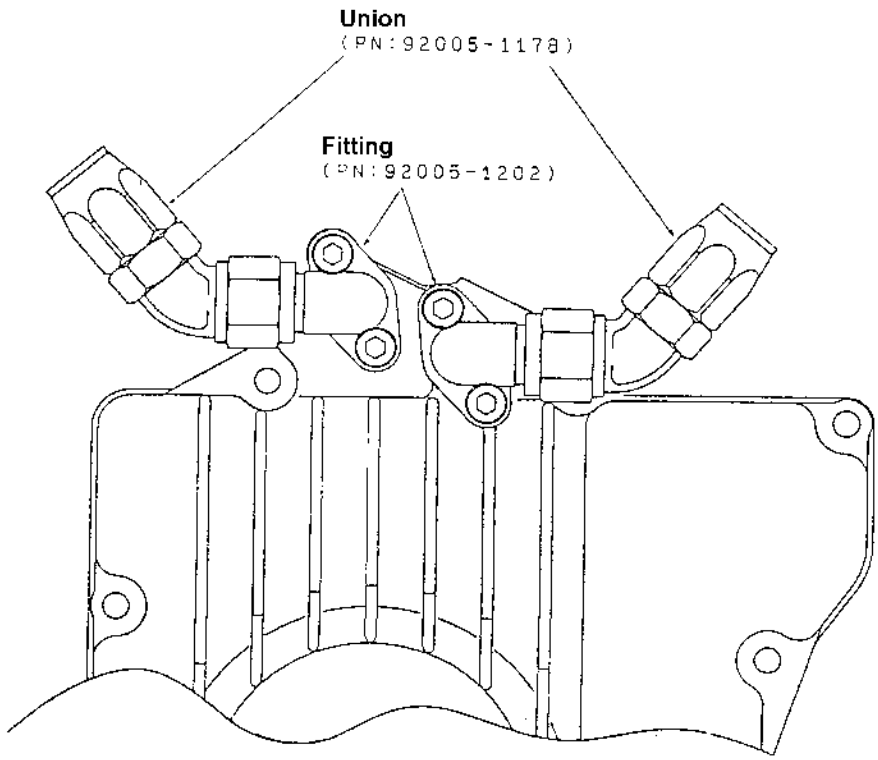




Bracket (PN:92160-1169) Dimensions

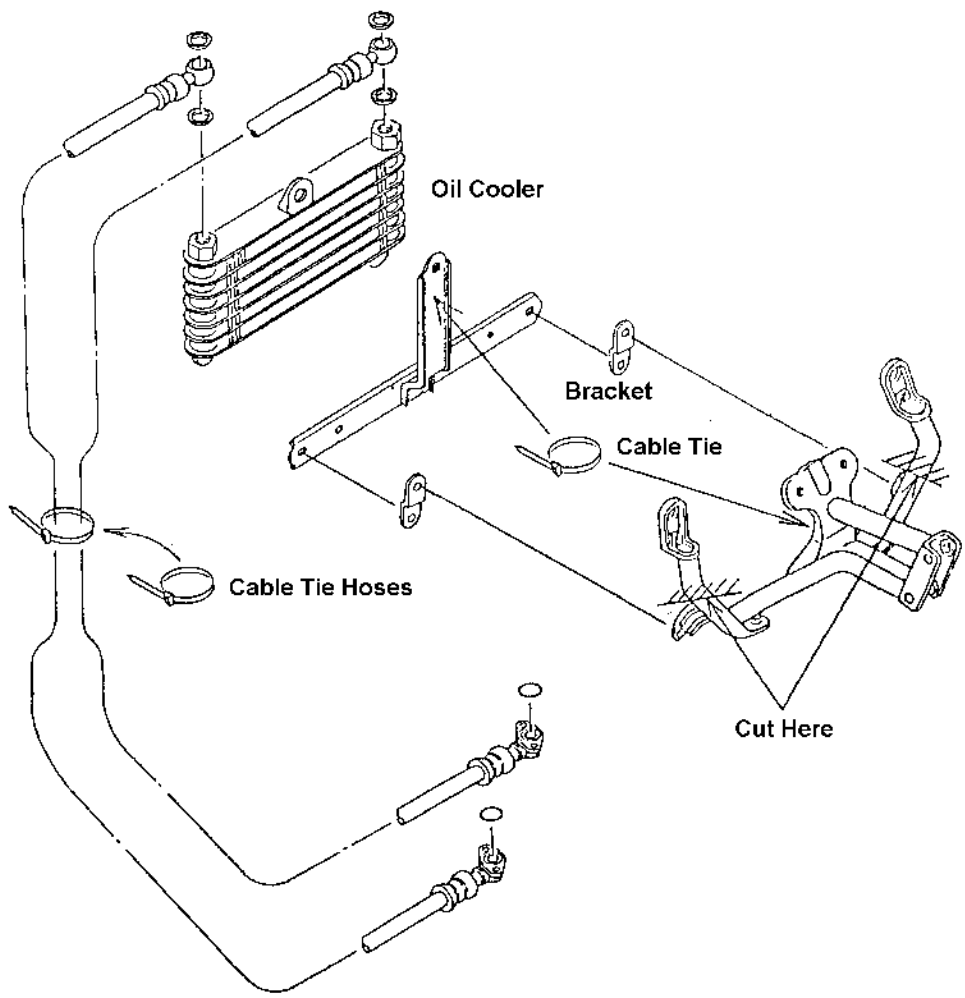
- Install the oil cooler using unions and fittings (PN:92005-1177、92005-1178、92005-1202) and hoses (PN:92059-1969)



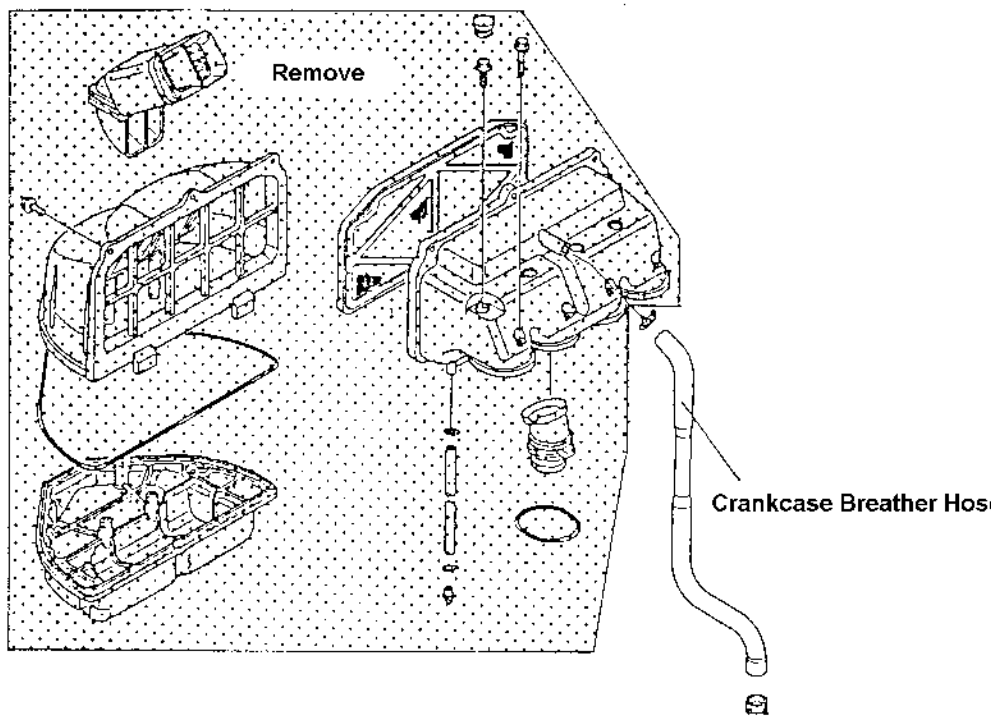


Oil Cooler (S P)

- Reposition the oil cooler as shown below.

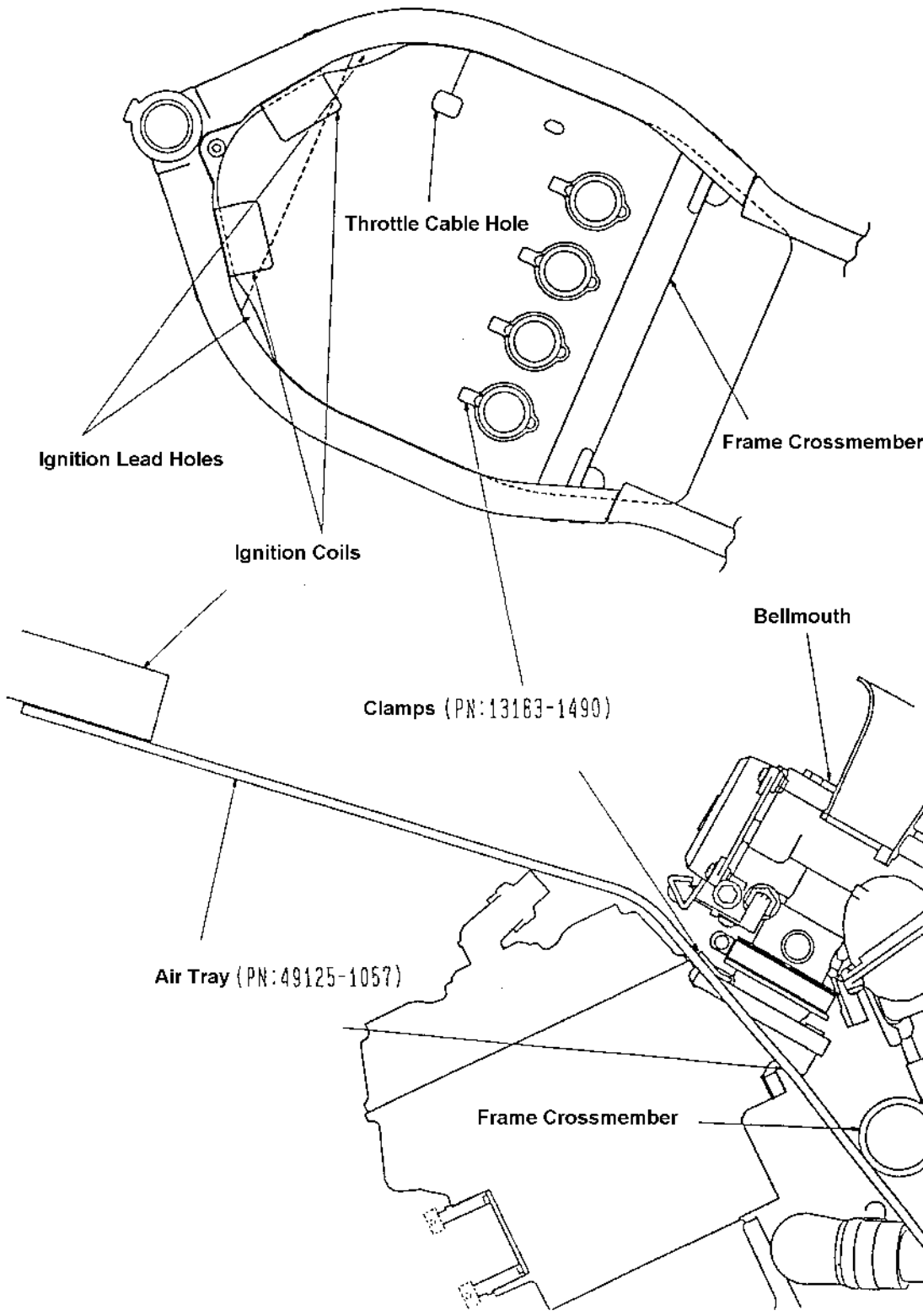


Airbox（F3、SP）



- Remove standard airbox assembly and replace with kit airtray（PN：49125-1057）

- Secure airtray using four clamps（PN：13183-1490）


Throttle Cable Hole
Ignition Lead Holes
Frame Crossmember
Ignition Coils
Bellmouth
Clamps (PN:13183-1490)
Air Tray (PN:49125-1057)
Frame Crossmember

Carburettors (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	:	φ 0 . 7 × 2 × 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

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

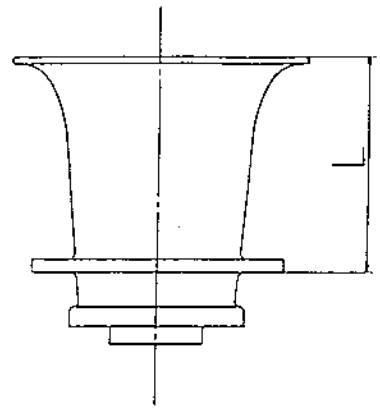
- Run the engine in keeping to the maximum speeds as outlined below.

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)



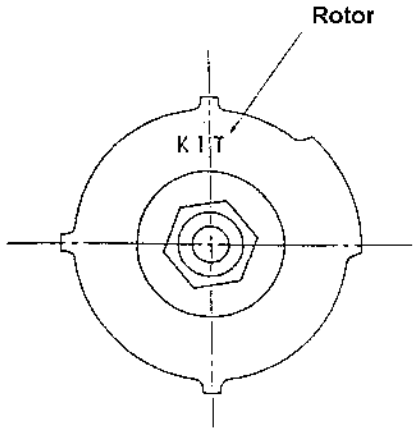
Ignition （F3）

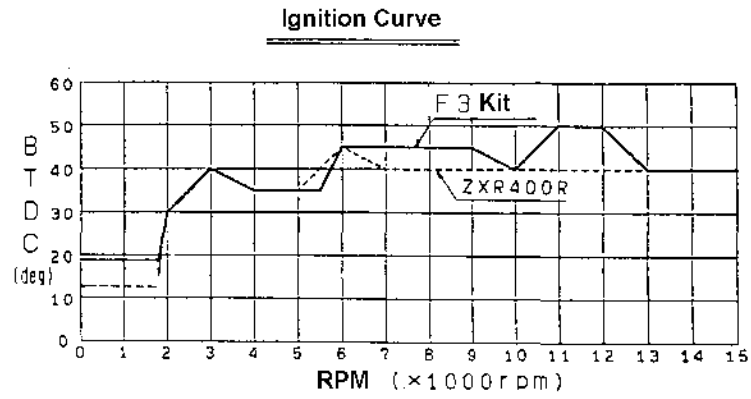
- **Sparkplugs**
  NGK R0045-9（Option）、10（Standard）、11（Option）
  NGK R0116-9（Option）、10（Standard）、11（Option）

IC Igniter （F3）

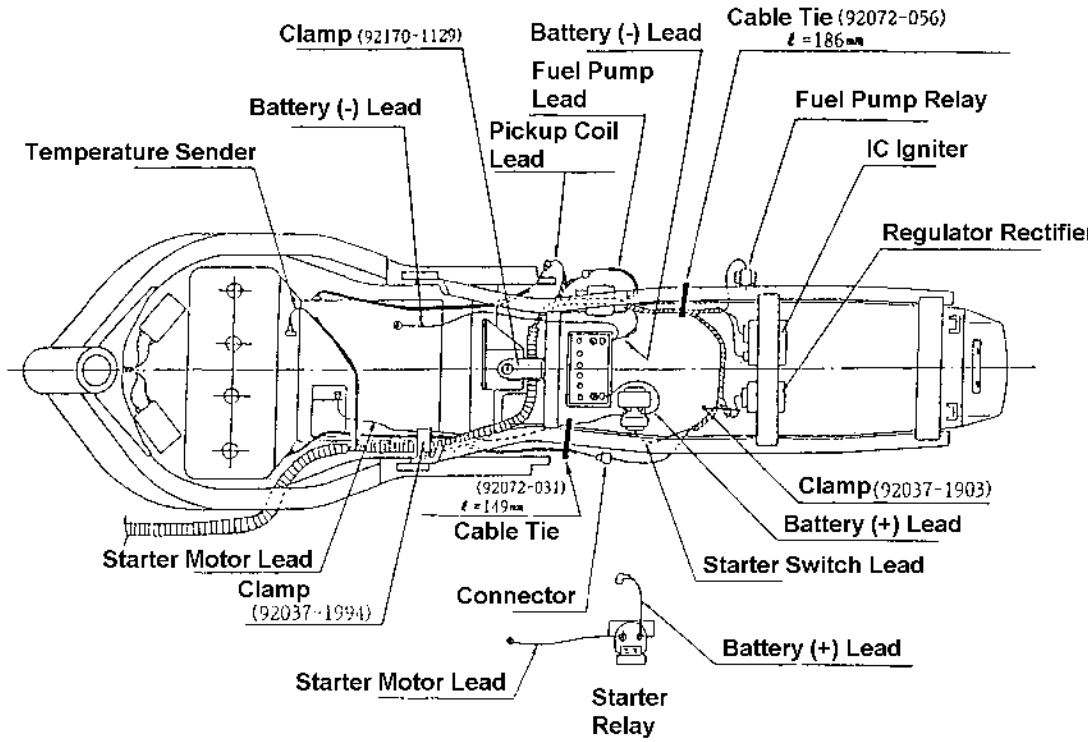
- **The kit rotor increases the static advance by 6° over standard.**

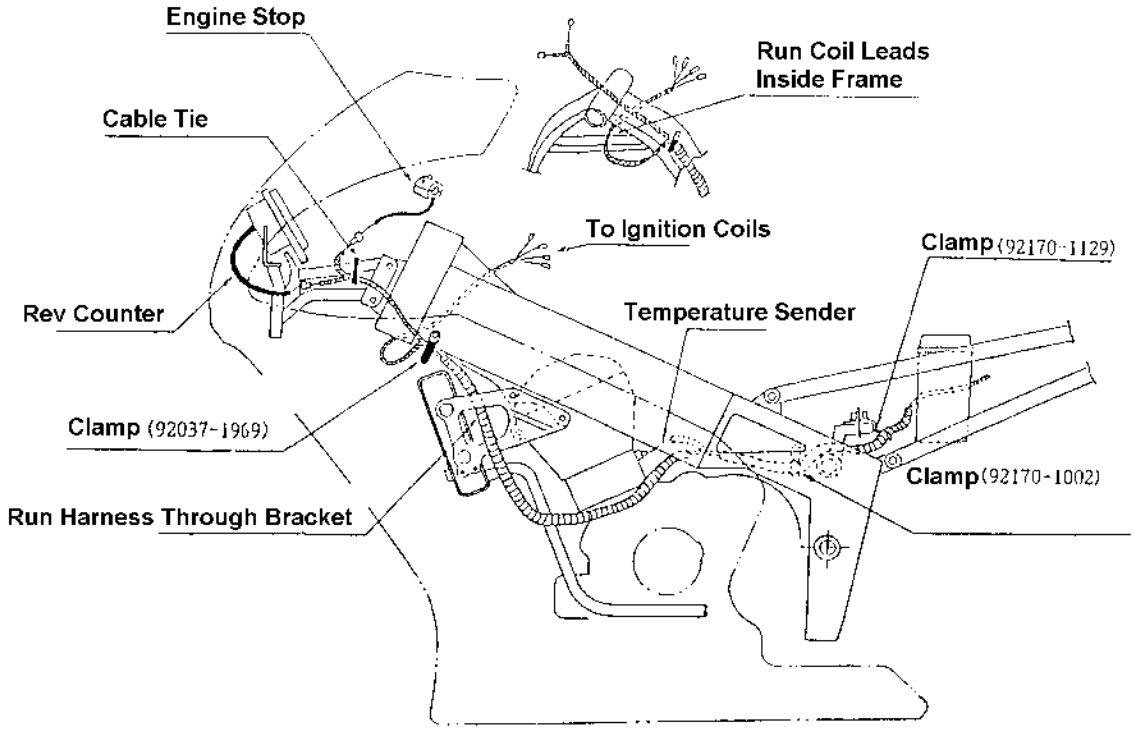
- **The kit IC igniter increases the maximum engine speed from 14,800 rpm to 15,200 rpm**





• Cable Routing





Gearing (F3、SP)

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

Optional Final Drive Ratios

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

- Overall Reduction (6Th Gear)

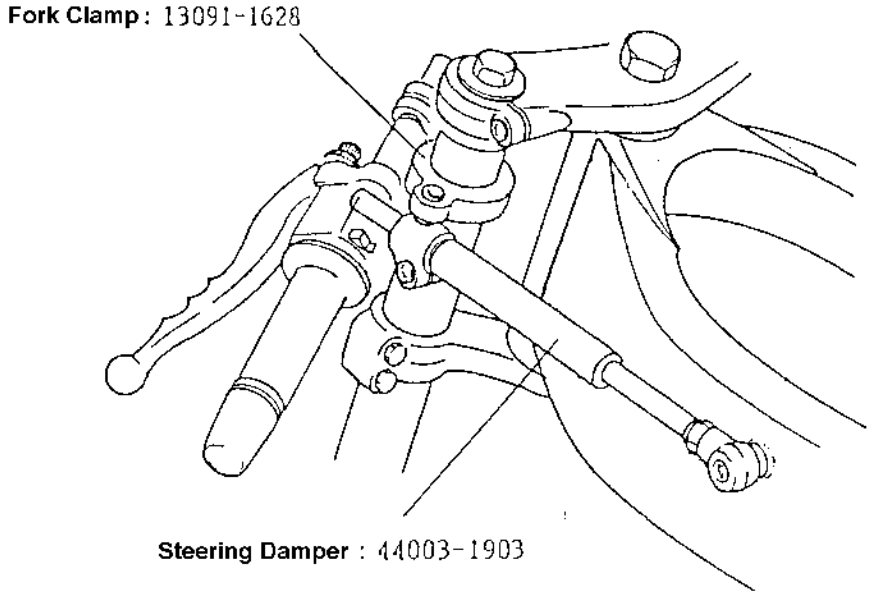
Front \ Rear	41T	42T	43T	44T
15T (Kit)	7.439	7.621	7.802	7.984
16T (Std)	6.974	7.145	7.315	7.485
17T (Kit)	6.564	6.724	6.884	7.045

- When utilising the optional ratios a different chain may be required.

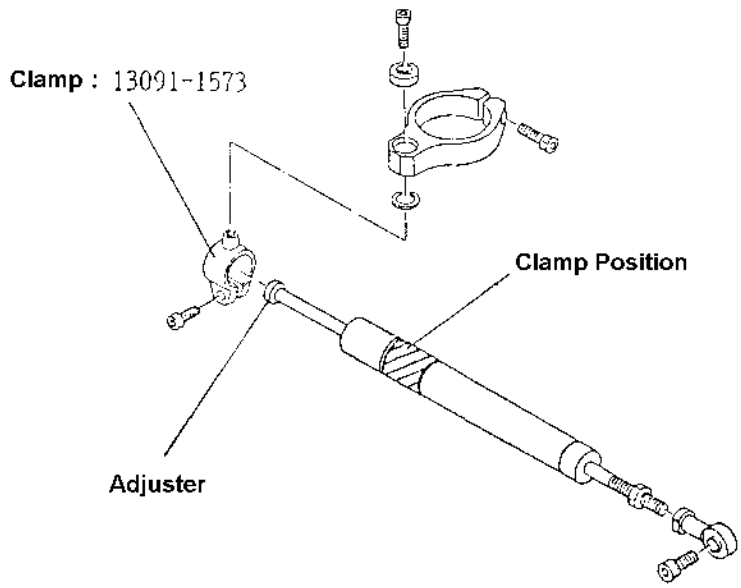
- Ensure vertical chain slack at mid way between sprockets is between 20~35mm

Steering Damper (F3、SP)

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



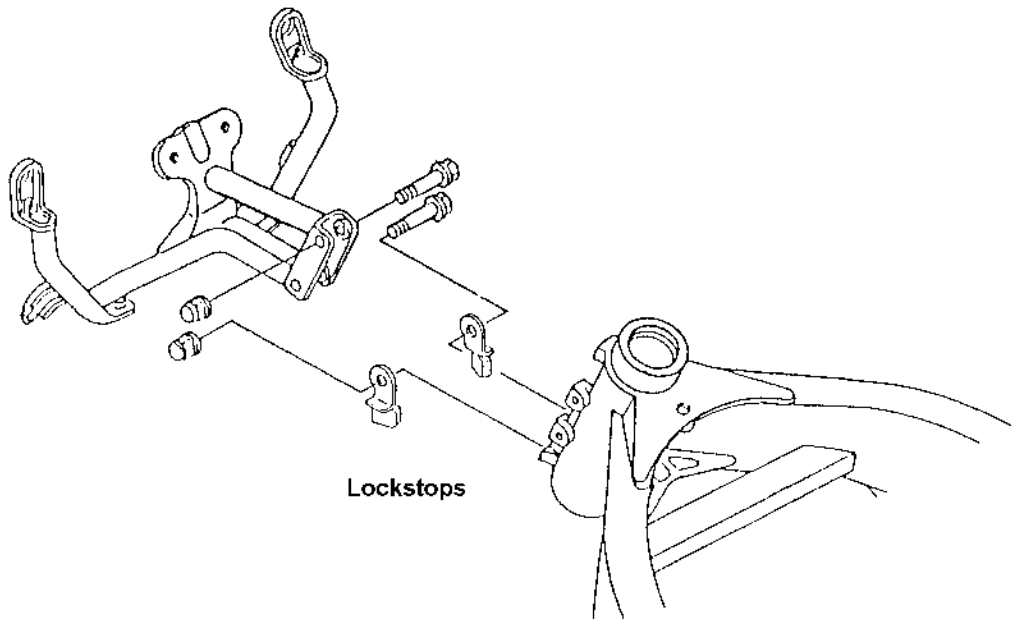
- Use clamp (PN: 13091-1573) to attatch damper to fork clamp.



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

Steering （F3、SP）

- Fit lockstops to reduce steering angle to 22 degrees



Wheels （F3）

- Standard wheel sizes are used

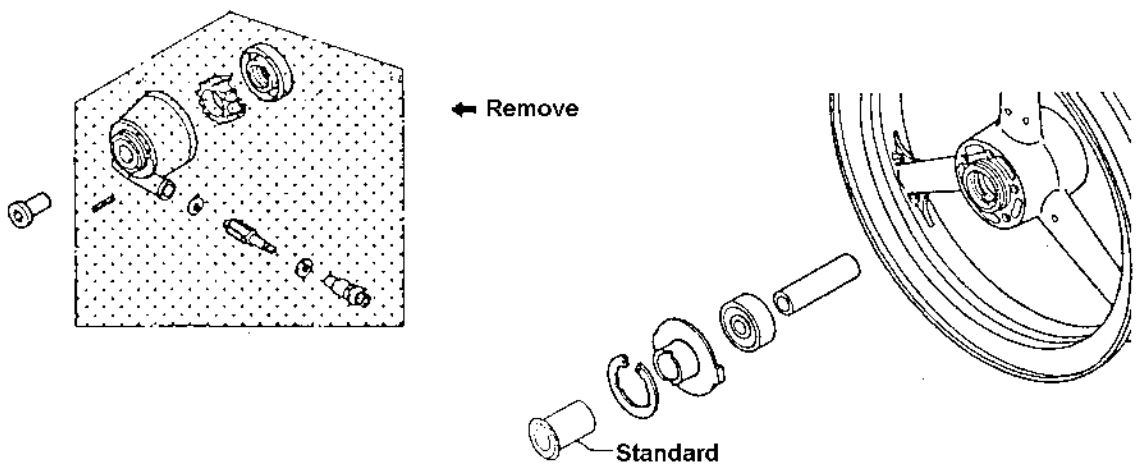
〔Wheels〕

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 （F3、SP）

- Replace speedo mechanism with PN:92143 13391



Front Brakes (F 3)

- Replace front brake pads with PN : 43050 1182

Front Suspension (F 3)

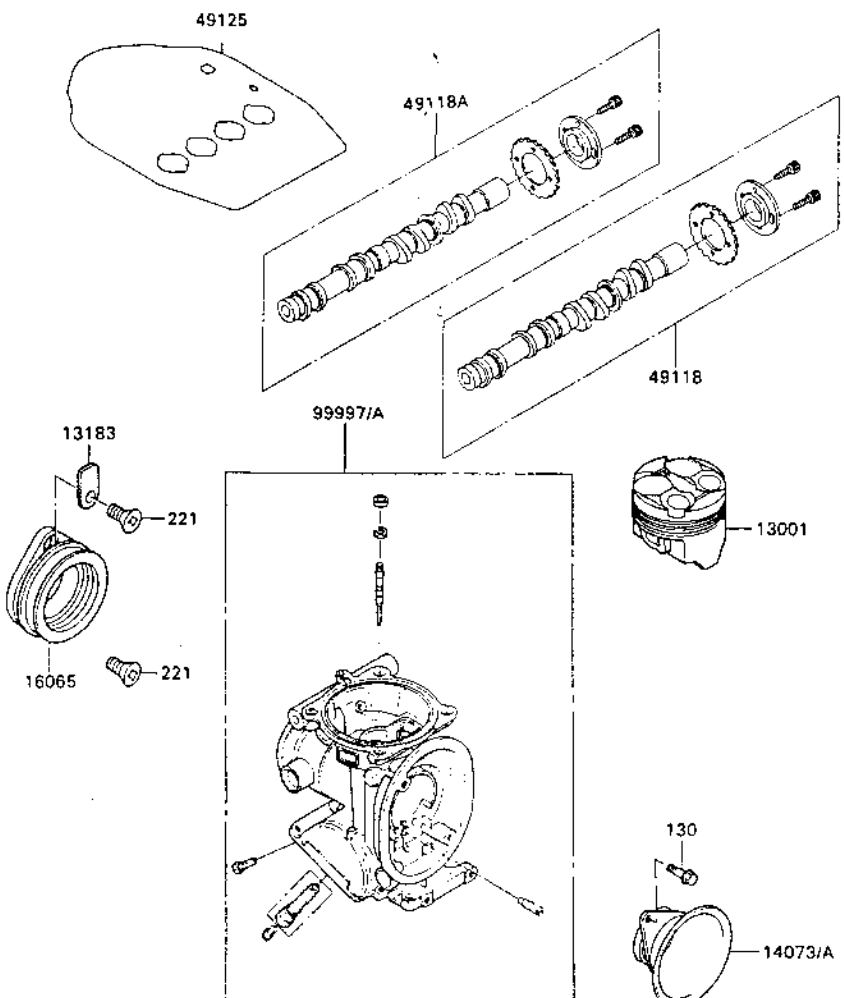
- The standard front suspension is retained.

Rear Suspension (F 3)

- Replace rear shock absorber spring with PN : 92144 1433

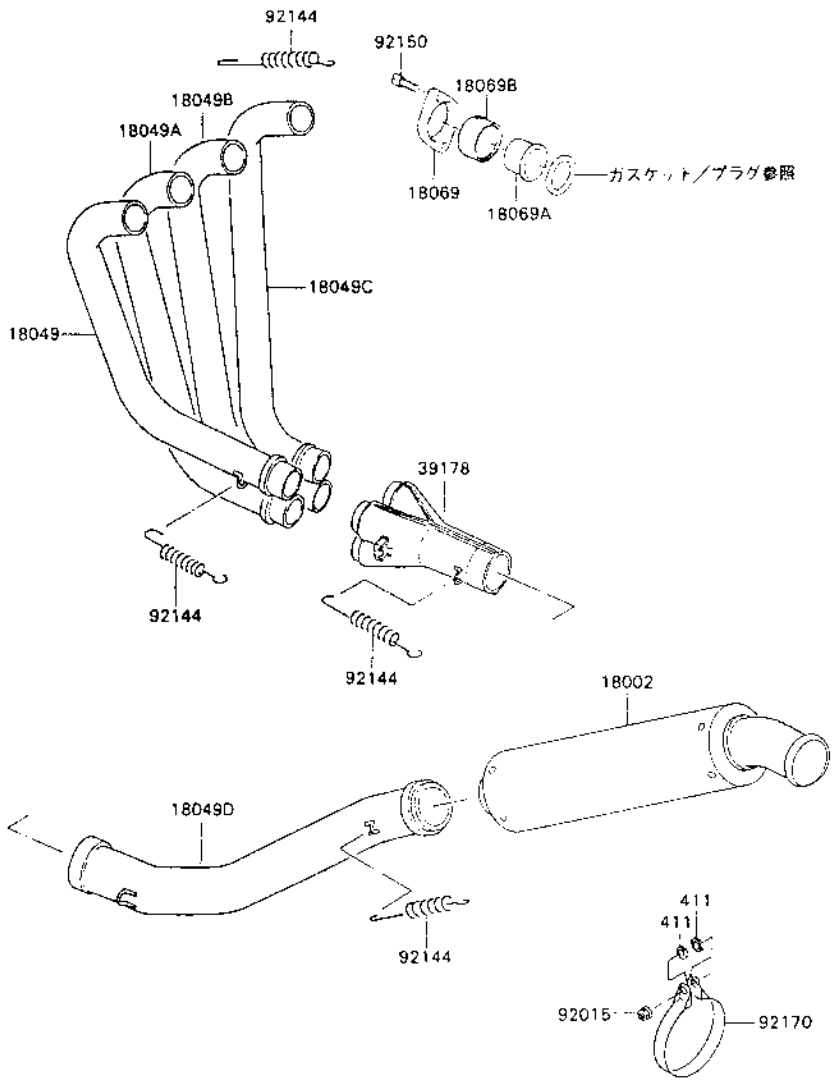
Spring Rate	:	Kit	7 . 7 5 kg/mm
		Std	8 kg/mm

1. ヒストン,カムシャフト/キャブレターパーツ

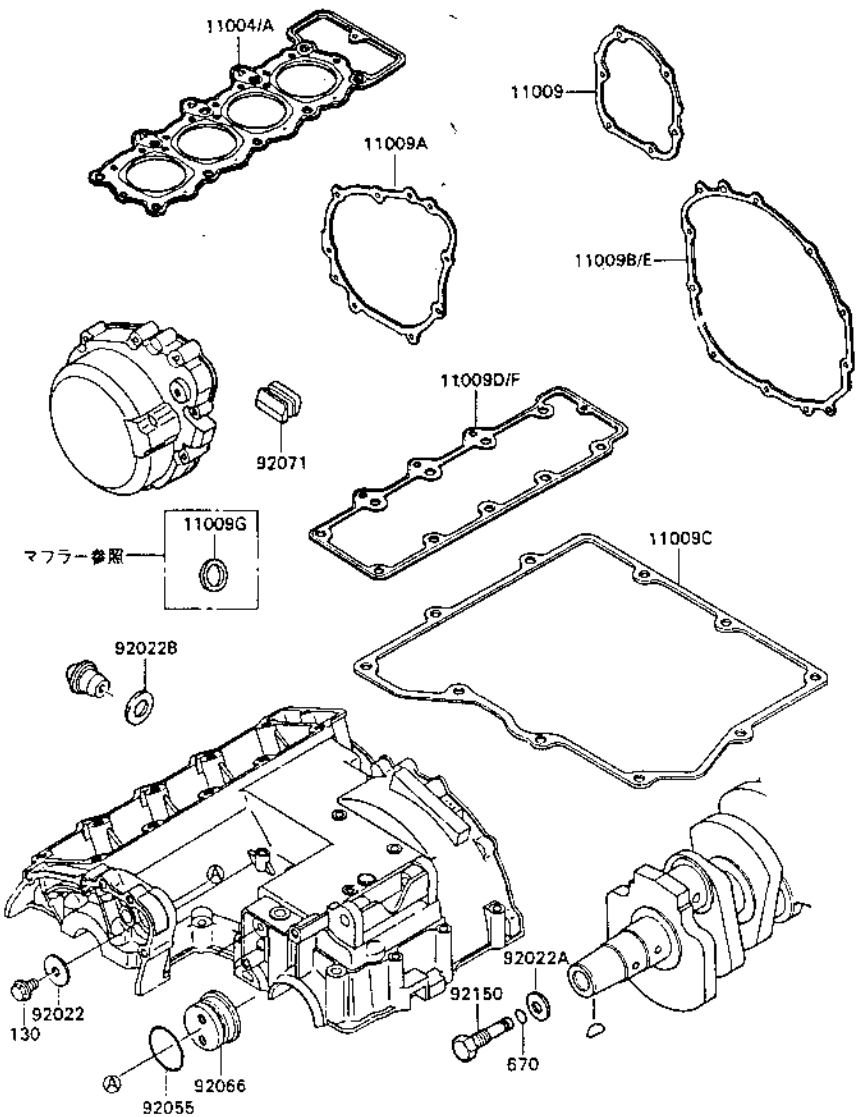


見出番号	部品番号	部品名	個数 - ZX400-JR1 '89 F3	'89 SP
13001	13001-1310	ピストン(エンジン)	4	
13183	13183-1490	プレート,シュラウド	4	4
14073	14073-1399	ダクト,エア アッシー(F-3) 3000	4	
14073A	14073-1405	ダクト,エア アッシー(SP) 3000		4
16065	16065-1205	ホルダー(キャブレター)	4	
49118	49118-1074	カムシャフトコンプ,インテーク 31000	1	
49118A	49118-1075	カムシャフトコンプ,エキゾースト 31000	1	
49125	49125-1057	シュラウド 20000	1	1
99997	99997-1056	キット(キャブレター),セッティング パーツ	1	
99997A	99997-1059	キット(キャブレター),セッティング パーツ		1
130	130B0512	ボルト(ツバ付),5X12	8	
221	221B0614	サラコッシ(イシアナ),6X14	8	

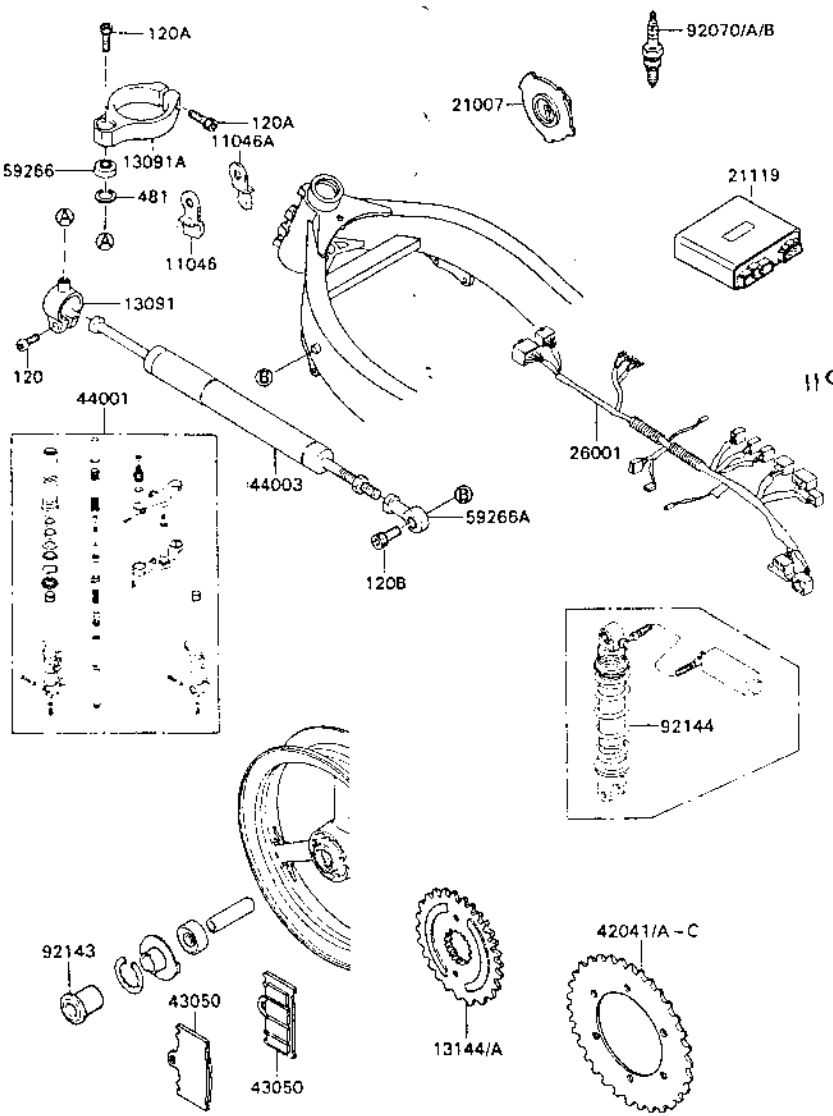
2. マフラー



見出番号	部品番号	部品名	個数・ZX400-JR1 '89 F3	'89 SP
18002	18002-1917	ﾎﾞﾃﾞｰｲﾝｺﾝﾌﾟ(ﾏﾌﾗ)	1	1
18049	18049-1476	ﾊﾟｲﾌﾟ(ｴｷｿﾞｰｽﾄ),#1	1	1
18049A	18049-1477	ﾊﾟｲﾌﾟ(ｴｷｿﾞｰｽﾄ),#2	1	1
18049B	18049-1478	ﾊﾟｲﾌﾟ(ｴｷｿﾞｰｽﾄ),#3	1	1
18049C	18049-1479	ﾊﾟｲﾌﾟ(ｴｷｿﾞｰｽﾄ),#4	1	1
18049D	18049-1480	ﾊﾟｲﾌﾟ(ｴｷｿﾞｰｽﾄ),ｼﾞｮｲﾝﾄ	1	1
18069	18069-1064	ﾎﾙﾀﾞｰ(ｴｷｿﾞｰｽﾄﾊﾟｲﾌﾟ),ｱｳﾀ	4	4
18069A	18069-1093	ﾎﾙﾀﾞｰ(ｴｷｿﾞｰｽﾄﾊﾟｲﾌﾟ),ｲﾝﾅ	4	4
18069B	18069-1094	ﾎﾙﾀﾞｰ(ｴｷｿﾞｰｽﾄﾊﾟｲﾌﾟ),ｱｳﾀ	4	4
39178	39178-1144	ﾏﾆﾎｰﾙﾄﾞｺﾝﾌﾟ(ｴｷｿﾞｰｽﾄ)	1	1
92015	92015-1432	ﾅｯﾄ,8MM	1	1
92144	92144-1352	ｽﾌﾟﾘﾝｸﾞ	12	12
92150	92150-1207	ﾎﾞﾙﾄ,6X20	8	8
92170	92170-1120	ｸﾗﾝﾌﾟ	1	1
411	41150800	ﾋﾗｻﾞｶﾞﾈ(ﾐｶﾞｷﾏﾙ),8MM	2	2



見出番号	部品番号	部品名	個数 - ZX400-JR1 '89 F3	'89 SP
11004	11004-1182	ｶﾞｽｹｯﾄ(ﾍｯﾄﾞ)		3
11004A	11004-1202	ｶﾞｽｹｯﾄ(ﾍｯﾄﾞ)	3	
11009	11009-1728	ｶﾞｽｹｯﾄ,ﾊﾟﾙｽｼﾝｸﾞ ｶﾊﾞｰ	3	3
11009A	11009-1729	ｶﾞｽｹｯﾄ,ｾﾈﾚｰﾀ ｶﾊﾞｰ	3	3
11009B	11009-1730	ｶﾞｽｹｯﾄ,ｸﾗｯﾁ ｶﾊﾞｰ,T=0.5	3	
11009C	11009-1731	ｶﾞｽｹｯﾄ,ｵｲﾙ ﾊﾟﾝ	3	3
11009D	11009-1734	ｶﾞｽｹｯﾄ,ｼﾘﾝﾀﾞ ﾍﾍﾞｽ,T=0.2	3	3
11009E	11009-1820	ｶﾞｽｹｯﾄ,ｸﾗｯﾁ ｶﾊﾞｰ,T=1.0		3
11009F	11009-1821	ｶﾞｽｹｯﾄ,ｼﾘﾝﾀﾞ ﾍﾍﾞｽ,T=0.1	3	
11009G	18067-004	ｶﾞｽｹｯﾄ,ｴｷｿﾞｰｽﾄ ﾊﾟｲﾌﾟ ﾎﾙﾀﾞ	12	12
92022	92022-125	ｳｯｼｬ,6.5X20X1.6	1	1
92022A	92022-1820	ｳｯｼｬ,10.5X19X3.2	1	1
92022B	92022-1983	ｳｯｼｬ,28X34X1	1	1
92055	92055-1262	ﾘﾝｸﾞ(O),24.4MM	1	1
92066	92066-1330	ﾌﾟﾗｸﾞ,ｽﾀｰﾀ ﾎｰﾙ Starter Plug	1	1
92071	92071-1172	ｸﾞﾛﾒｯﾄ	1	1
92150	92150-1206	ﾎﾞﾙﾄ,ｸﾗﾝｸｼｬﾌﾄ(LH)ﾎｰﾙ	1	1
130	130C0610	ﾎﾞﾙﾄ(ｳﾊﾞﾂｷ),6X10	1	1
670	670B1505	O ﾘﾝｸﾞ(ｳﾝﾄﾞｳﾖｳ),5MM	1	1



見出番号	部品番号	部品名	個数 ZX400-JR1 '89 F3	'89 SP
11046	11046-1754	ﾌﾞﾗｹｯﾄ,ﾊﾝﾄﾞﾙ ｽﾄｯﾊﾟ,LH	1	1
11046A	11046-1805	ﾌﾞﾗｹｯﾄ,ﾊﾝﾄﾞﾙ ｽﾄｯﾊﾟ,RH	1	1
13091	13091-1573	ﾎﾙﾀﾞ,ｽﾃｱﾘﾝｸﾞ ﾀﾞﾝﾊﾟ	1	1
13091A	13091-1628	ﾎﾙﾀﾞ,ｽﾃｱﾘﾝｸﾞ ﾀﾞﾝﾊﾟ	1	1
13144	13144-1122	ｽﾌﾟﾛｹｯﾄ(ｱｳﾄﾌﾟｯﾄ),15T	1	1
13144A	13144-1150	ｽﾌﾟﾛｹｯﾄ(ｱｳﾄﾌﾟｯﾄ),17T	1	1
15000 21007	21007-1198	ﾛｰﾀ,ﾊﾟﾙｼﾝｸﾞ ｺｲﾙ	1	
35000 21119	21119-1276	ｲｸﾞﾅｲﾀ	1	
26001	26001-1984	ﾊｰﾈｽ,ﾒｲﾝ	1	1
42041	42041-1313	ｽﾌﾟﾛｹｯﾄ(ﾊﾌﾞ),41T	1	1
42041A	42041-1314	ｽﾌﾟﾛｹｯﾄ(ﾊﾌﾞ),42T	1	1
42041B	42041-1315	ｽﾌﾟﾛｹｯﾄ(ﾊﾌﾞ),43T	1	1
42041C	42041-1339	ｽﾌﾟﾛｹｯﾄ(ﾊﾌﾞ),44T	1	1
43050	43050-1182	ﾊﾟｯﾄﾞ(ﾌﾞﾚｰｷ)	4	
110,000 44001	44001-1739	ﾌｫｰｸ(ﾌﾛﾝﾄ)	1	
	(ｵﾌﾟｼｮﾝ)			
44003	44003-1903	ﾀﾞﾝﾊﾟｱｯｼ,ｽﾃｱﾘﾝｸﾞ	1	1
59266	59266-1078	ｼﾞｮｲﾝﾄ(ﾎﾞｰﾙ)	1	1
59266A	59266-1079	ｼﾞｮｲﾝﾄ(ﾎﾞｰﾙ)	1	1
92070	92070-1174	ﾌﾟﾗｸﾞ(ｽﾊﾟｰｸ),R0045A-9(NGK)	1	1
	(ｵﾌﾟｼｮﾝ)			
92070A	92070-1175	ﾌﾟﾗｸﾞ(ｽﾊﾟｰｸ),R0045A-10(NGK)	4	
92070B	92070-1176	ﾌﾟﾗｸﾞ(ｽﾊﾟｰｸ),R0045A-11(NGK)	1	1
	(ｵﾌﾟｼｮﾝ)			
92143	92143-1339	ｶﾗｰ,ﾌﾛﾝﾄ ｱｸｽﾙ	1	1
92144	92144-1433	ｽﾌﾟﾘﾝｸﾞ,ｼｮｯｸｱﾌﾞｿｰﾊﾞ	1	
120	120S0616	ﾎﾞﾙﾄ(ﾛｯｸｱﾅ),6x16	1	1
120A	120S0620	ﾎﾞﾙﾄ(ﾛｯｸｱﾅ),6x20	2	2
120B	120S0820	ﾎﾞﾙﾄ(ﾛｯｸｱﾅ),8x20	1	1
481	481J1800	ﾄﾒｳ(ｱﾅﾖｳ),18MM	1	1

Rotor 21007-1105

KAWASAKI HEAVY INDUSTRIES, LTD.

Consumer Products & Heavy Machinery Group

Part No. 99929-1048-01