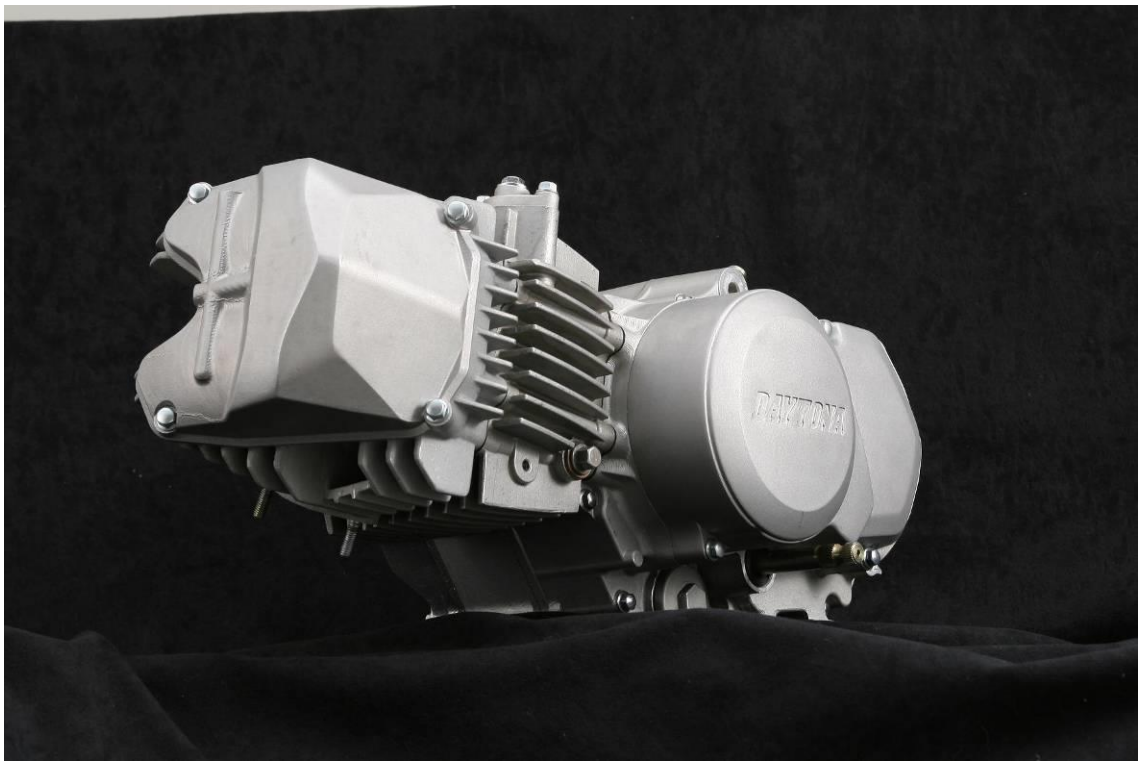
DAYTONA

ANIMA 190SZ(SGL) ENGINE

Owner's Manual

ENGINE No. ANIMA190SZ: 3338577727-



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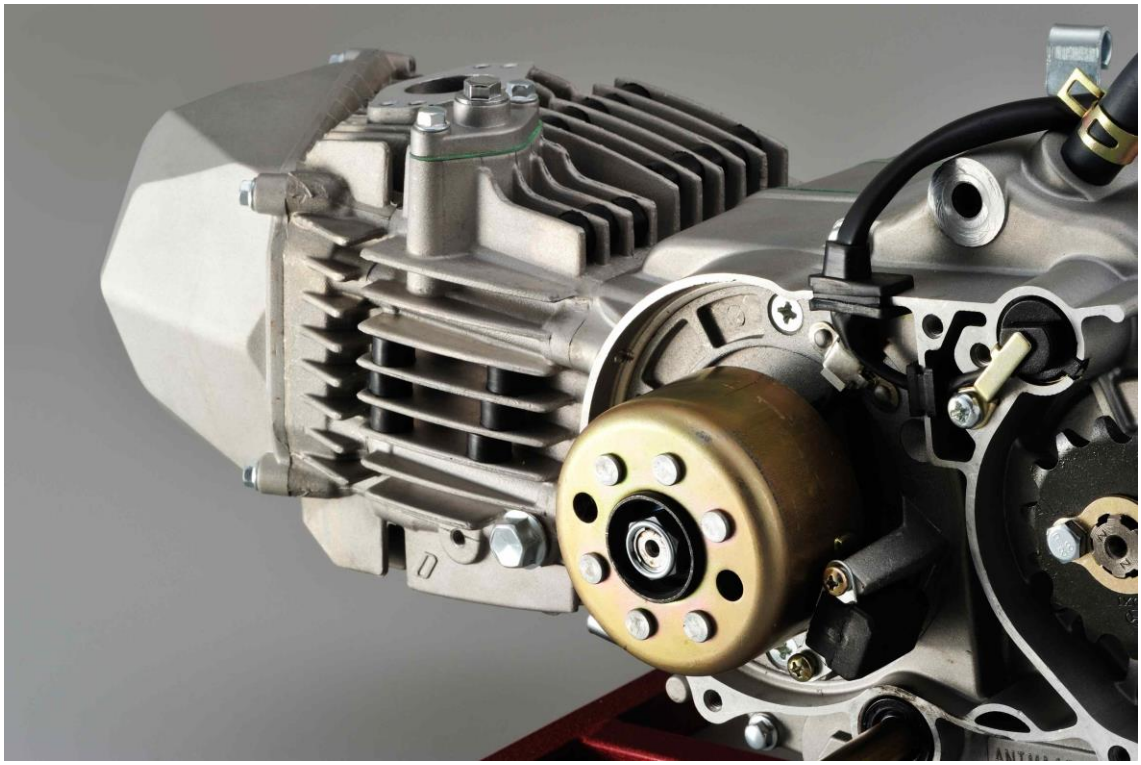


INTRODUCTION

Thank you for purchasing of a ANIMA Engine.

This manual explains operation, inspection, basic maintenance of the engine.

If you have any questions, please contact the dealer you purchased the engine/bike from.

Please read this manual very carefully before use.

WARNING

1. ANIMA ENGINE is designed strictly FOR COMPETITION USE, ONLY ON A CLOSED COURSE. It is illegal to use this engine on any public road or highway. Off-road use on public space is also illegal.
   Please check local regulation before use.
2. This engine is to be used by EXPERIENCED RIDERS ONLY.
   Fatal accident may be caused unless it is used by experienced riders or maintained by professional and experienced mechanics.
3. This engine is to be maintained by professional and experienced mechanics.
   Serious damage may occur, otherwise.
4. This manual explains ONLY THE BASIC operation, inspection and maintenance, but it is customer's responsibility to maintain the engine to the best possible performance, depending on the circumstances of the time.

CUSTOMER'S RESPONSIBILITY & CUSTOMER SERVICE

GENERAL EXCLUSIONS

Any failures caused by the following reasons are NOT considered as the defects of Products.

(1) Overheating due to improper engine oil temp. control

⚠ WARNING

ENGINE OIL TEMPERATURE MUST BE CONTROLLED AT 90 DEGREES CELSIUS (194 DEGREES FAHRENHEIT) OR LOWER.

Serious damage will occur in the engine if engine oil temperature exceeds 90 degrees Celsius or 194 degrees Fahrenheit.

It is solely customer's responsibility to control the engine oil temperature.

(2) Installation of parts or accessories that is not originally equipped on Products.
(3) Abnormal strain, neglect, or abuse
(4) Accident or collision damage
(5) Modification to original parts
(6) Lack of proper maintenance
(7) Damage due to improper transportation or use

THE CUSTOMER'S RESPONSIBILITY

THE CUSTOMER'S RESPONSIBILITY shall be :

(1) Operate and maintain Products as specified in the appropriate Owner's Manual
(2) Prohibit the modification of the product

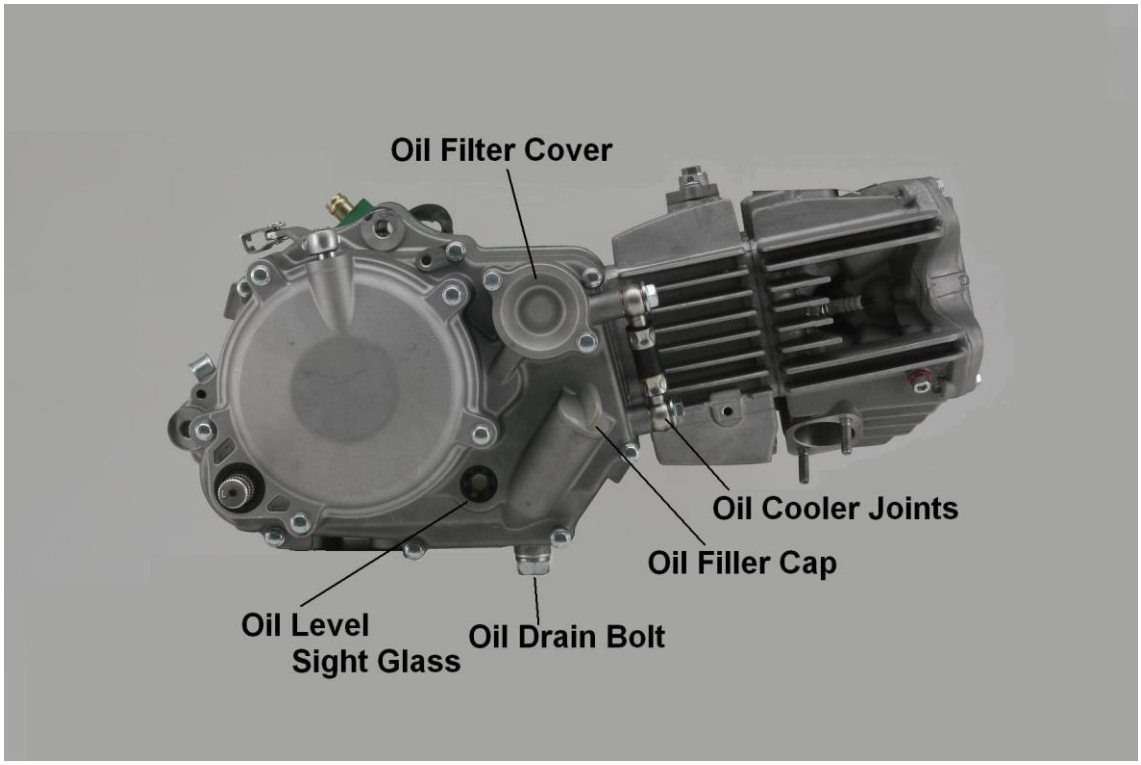
CUSTOMER SERVICE

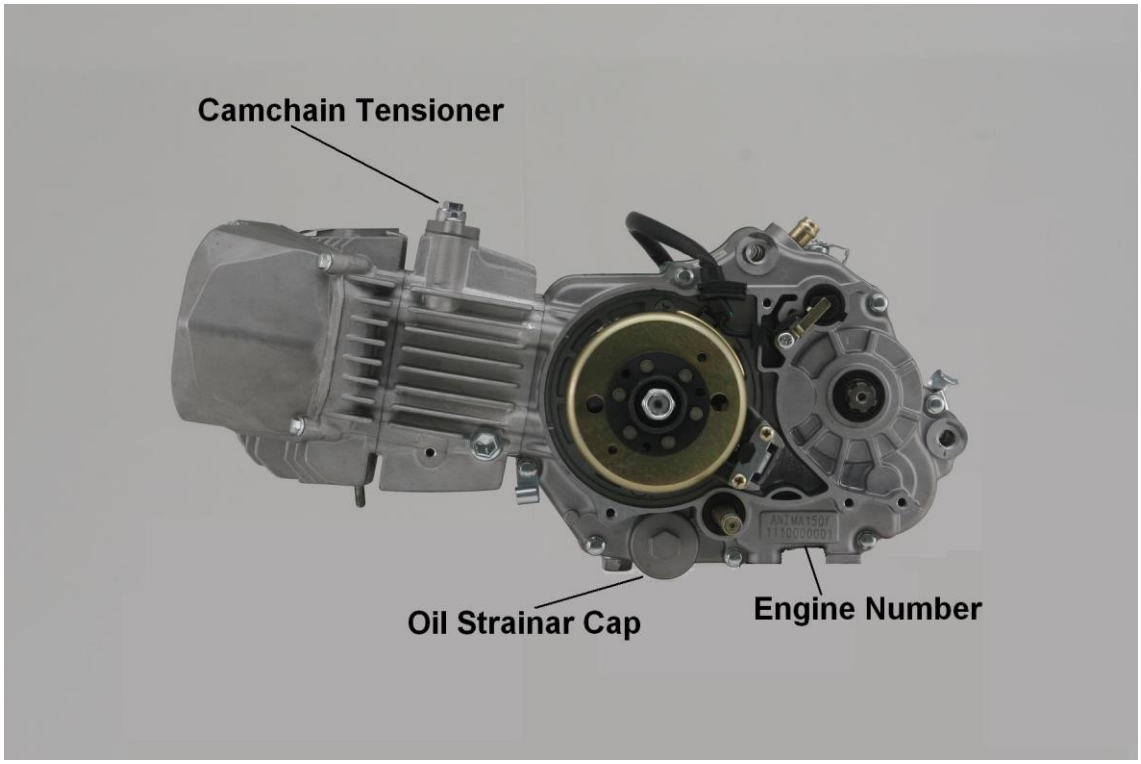
If Products require services, you must take it to the authorized dealer, who is appointed by authorized local distributors of DAYTONA.

DAYTONA Corp. JAPAN is NOT in the position to take care of services of any kind with the customers or authorized dealers due to the contract with authorized local distributors.

CONTENTS

PART NAMES

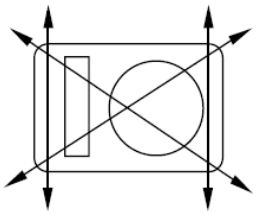
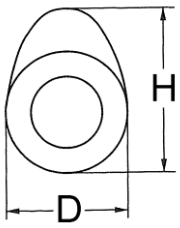

Oil Filter Cover
Oil Cooler Joints
Oil Filler Cap
Oil Level
Sight Glass
Oil Drain Bolt


Camchain Tensioner
Oil Strainar Cap
Engine Number

GENERAL SPECIFICATIONS

ENGINE	
Engine Weight (Dry)	22.0 kg
Engine type	Air Cooled 4-stroke SOHC
Cylinder arrangement	Single cylinder, Horizontally mounted
Displacement	189.9 cm3
Bore × stroke	66. 0× 55.5mm
Compression ratio	12.0 : 1
Starting system	Kick (Kick pedal is NOT included in the Engine Kit)
	With Decompression System
Lubrication system	Wet sump
Recommended Engine Oil	SAE 10W - 40 or higher grade
	API “SG” or higher grade
Engine oil capacity	
Periodic oil change	0.65 L
With oil filter replacement	0.70 L
Total amount	0.75 L
	* Need more amount of oil when oil cooler is in use
Spark plug	
Type/manufacturer	ER9EH / NGK (resistance type)
Gap	0.6 ~ 0.7 mm (0.024 ~ 0.028 in)
Clutch type	Wet, Multi-plate 6-disc
Transmission	
Primary reduction system	Gear
Primary reduction ratio	67/18 (3.722)
Transmission type	5-Speed
Gear ratio	(Counter / Main)
1st	34/14 (2.4285)
2nd	26/15 (1.7333)
3rd	24/18 (1.3333)
4th	24/22 (1.0909)
5th	22/24 (0.9166)
GEAR SHIFT PATTERN	1-N-2-3-4-5
Electrical	
Ignition system	AC-CDI
Generator system	AC magneto

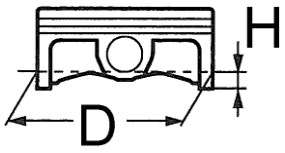
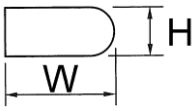
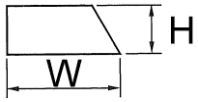
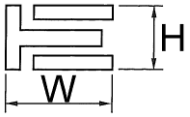
MAINTENANCE SPECIFICATIONS

Item	Standard	Limit
Cylinder head Warp limit 	 ----	0.05 mm (0.002 in)
Cylinder: Bore size Out of round limit	 66.00 - 66.015mm (2.5984 – 2.599) ----	 ---- 0.05 mm (0.002 in)
Camshaft: Drive method Cam dimensions 	Chain drive (Left)	----
Intake “H” “D”	29.65 ~ 29.55 mm (1.1673 ~ 1.1634 in) ---- ----	29.20 mm (1.1496 in) ---- ----
Exhaust “H” “D”	29.68 ~ 29.58 mm (1.1685 ~ 1.1646 in) ---- ----	29.23 mm (1.1508 in) ---- ----

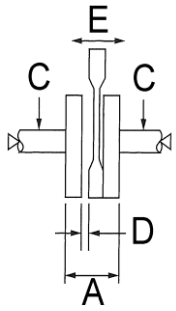
MAINTENANCE SPECIFICATIONS

Item	Standard	Limit
Timing chain:		
Timing chain No. of links	94 link	----
Timing chain adjustment method	Automatic	----
Valve, valve seat, valve guide:		
Valve clearance (cold) IN	0.05 ~ 0.07 mm (0.0020~ 0.0028 in)	----
EX	0.05 ~ 0.07 mm (0.0020~ 0.0028 in)	----
Valve dimensions: 		
“A” head diameter IN	24.4 ~ 24.6 mm (0.9606 ~ 0.9685 in)	----
EX	20.9 ~ 21.1 mm (0.8228 ~ 0.8307 in)	----
“B” face width IN	---	----
EX	---	----
“C” seat width IN	0.8 ~ 1.0 mm (0.0314 ~ 0.03937 in)	1.6 mm (0.0630 in)
EX	0.8 ~ 1.0 mm (0.0314 ~ 0.03937 in)	1.6 mm (0.0630 in)
“D” margin thickness IN	----	----
EX	----	----
Stem outside diameter IN	4.470 ~ 4.485 mm(0.17598 ~ 0.1766 in)	4.42 mm (0.1740 in)
EX	4.470 ~ 4.485 mm(0.17598 ~ 0.1766 in)	4.42 mm (0.1740 in)
Guide inside diameter IN	4.500 ~ 4.512 mm(0.17716 ~ 0.1776 in)	4.55 mm(0.1791 in)
EX	4.500 ~ 4.512 mm(0.17716 ~ 0.1776 in)	4.55 mm(0.1791 in)
Stem-to-guide clearance IN	0.015 ~ 0.042 mm(0.0005 ~ 0.0016 in)	0.08 mm(0.003 in)
EX	0.03 ~ 0.057 mm(0.0011 ~ 0.0022 in)	0.10 mm(0.004 in)
Valve spring:		
Free length		
IN (ϕ 16.2)	42.59 mm(1.6767 in)	40.38 mm(1.5897 in)
EX (ϕ 16.2)	42.59 mm(1.6767 in)	40.38 mm(1.5897 in)

MAINTENANCE SPECIFICATIONS

Item	Standard	Limit
Piston:		
Piston to cylinder clearance	0.01 ~ 0.04 mm (0.00039 ~ 0.00157in)	0.1mm(0.004 in)
Piston size “D”	65.975 ~ 65.99 mm (2.5974 ~ 2.598 in)	----
		
Measuring point “H”	8 mm (0.31 in)	----
Piston off-set	----	----
Piston pin bore inside diameter	14.002 ~ 14.013 mm (0.5513 ~ 0.5517 in)	14.06 mm (0.5535 in)
Piston pin outside diameter	13.995 ~ 13.998 mm (0.5510 ~ 0.5511 in)	13.97 mm (0.55 in)
Piston rings:		
Top ring: 		
Dimensions (H × W)	0.8 × 2.25 mm (0.06 × 0.09 in)	
End gap (installed)	0.05 ~ 0.20 mm (0.006 ~ 0.010 in)	0.4 mm (0.020 in)
Side clearance (installed)	0.015 ~ 0.045 mm(0.0012 ~ 0.0026in)	0.10 mm (0.005 in)
2nd ring: 		
Dimensions (H × W)	0.8 × 2.25 mm (0.06 × 0.09 in)	
End gap (installed)	0.05 ~ 0.20 mm (0.006 ~ 0.010 in)	0.4 mm (0.031 in)
Side clearance	0.015 ~ 0.045 mm(0.0012 ~ 0.0026in)	0.10 mm (0.005 in)
Oil ring: 		
Dimensions (H × W)	1.50 × 2.25 mm (0.06 × 0.09 in)	----
End gap (installed)	0.2 ~ 0.7 mm (0.004 ~ 0.016 in)	0.9 mm (0.005 in)

MAINTENANCE SPECIFICATIONS

Item	Standard	Limit
Crankshaft:		
Crank width “A”	42.2 mm (1.66142 in)	----
Runout limit “C”	0.03 (one-side)	0.1 mm (0.0039 in)
Big end side clearance “D”	0.1 ~ 0.35 mm (0.0039 ~ 0.0137 in)	0.6 mm (0.0236 in)
Small end free play “E”	----	
		
Clutch:		
Friction plate thickness	2.9 ~ 3.1 mm (0.114 ~ 0.122 in)	2.7 mm (0.106 in)
Quantity	6	----
Clutch plate thickness	1.4 ~ 1.5 mm (0.055 ~ 0.059 in)	1.2 mm (0.0472 in)
Quantity	5	----
Warp limit	----	0.2 mm (0.0787 in)
Clutch spring free length	----	----
Quantity	4	----

MAINTENANCE INTERVALS

Item	After break-in (50km)	Every race	Every third (or 500 km)	Every fifth (or 1,000 km)	As required	Remarks
ENGINE OIL						
Replace	●	●				
Inspect					●	
ENGINE VALVES						The engine must be cold.
Check the valve clearances	●		●			Check the valve seats and valve stems for wear.
Inspect			●			
Replace					●	
VALVE SPRINGS						Check the free length and the tilt.
Inspect			●			
Replace					●	
CAMSHAFTS						Inspect the camshaft surface.
Inspect			●			
Replace					●	
TIMING CHAIN SPROCKETS, TIMING CHAIN						Check for wear on the teeth and for damage.
Inspect			●			
Replace					●	
PISTON						Inspect crack Inspect carbon deposits and eliminate them.
Inspect			●		●	
Clean					●	
Replace					●	

MAINTENANCE INTERVALS

Item	After break-in (50km)	Every race	Every third (or 500 km)	Every fifth (or 1,000 km)	As requir e-ed	Remarks
PISTON RING						Check ring end gap
Inspect			●			
Replace			●		●	
PISTON PIN						
Inspect			●			
Replace					●	
CYLINDER HEAD						Inspect carbon deposits and eliminate them. Change gasket
Inspect and clean			●			
Replace					●	
CYLINDER						Inspect score marks Inspect wear
Inspect and clean			●			
Replace					●	
CLUTCH						Inspect housing, friction plate, clutch plate and spring
Inspect and adjust	●	●				
Replace					●	
TRANSMISSION						Inspect wear of gear and bearings
Inspect				●		
Replace					●	
SHIFT FORK, SHIFT CAM, GUIDE BAR						Inspect wear
Inspect				●		
Replace					●	
ROTOR NUT						
Retighten	●			●		
CRANK						
Inspect and align				●	●	
CARBURETOR						
Inspect, adjust, clean	●	●				

MAINTENANCE INTERVALS

Item	After break-in (50km)	Every race	Every third (or 500 km)	Every fifth (or 1,000 km)	As requir e-ed	Remarks
SPARK PLUG						
Inspect and clean	●		●			
Replace					●	
OIL COOLING SYSTEM(Option)						
Check hoses & leakage	●	●				
Replace hoses and gaskets					●	
AIR FILTER (Option)						Use foam air-filter oil or equivalent oil
Clean and lubricate	●	●				
Replace					●	
OIL FILTER						
Replace	●	●				
OIL STRAINER						
Clean				●		

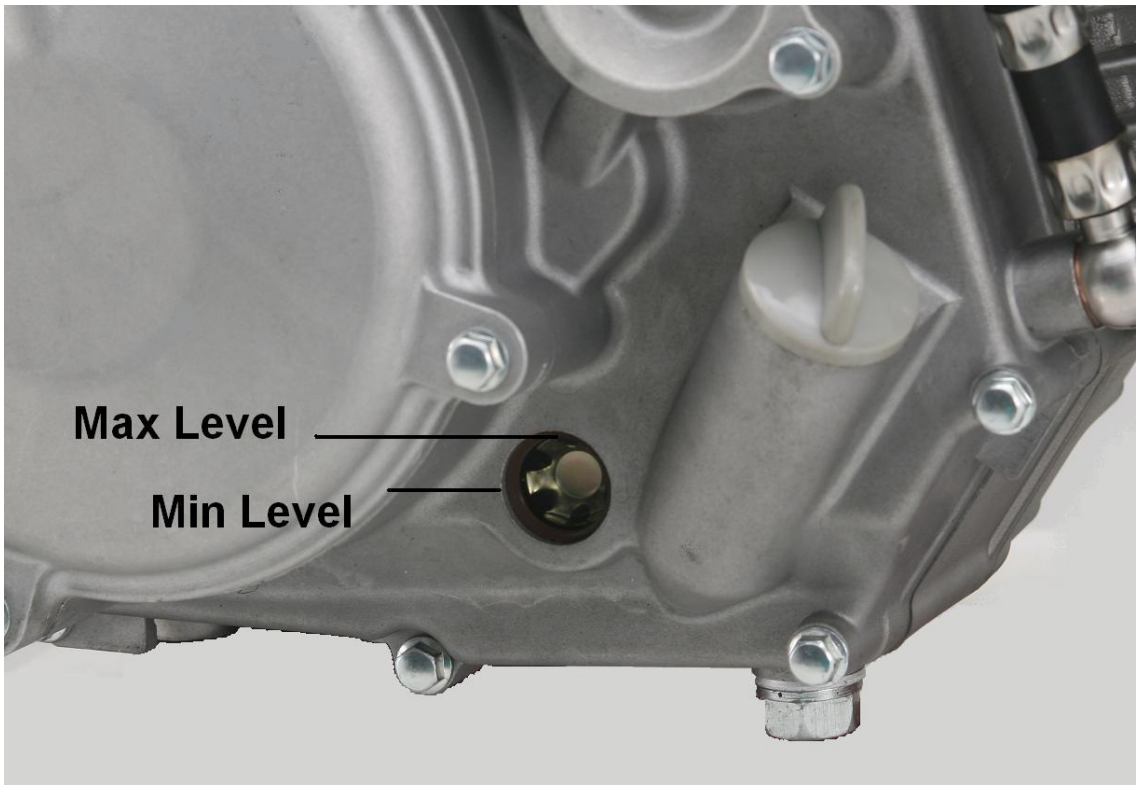
PRE-OPERATION INSPECTION AND MAINTENANCE

Before riding for break-in operation, practice or a race, make sure the engine is in good operating condition.

Before using this engine, check the following points.

ENGINE OIL LEVEL INSPECTION

1. Start the engine, warm it up for several minutes, and then turn off the engine and wait for a few minutes.
2. Place the bike on a level place and hold it up on upright position.
3. Check the oil level through the sight glass.
   Oil level should be between the upper and the central point of the sight glass.



4. Add oil to proper level

WARNING

Add oil as necessary, when install the oil cooler.

PRE-OPERATION INSPECTION AND MAINTENANCE

CARBURETOR SETTING

The carburetor is extremely sensitive to foreign matter (dirt, sand, water, etc.).
During installation, do not allow foreign matter to get into the carburetor.
Always handle the carburetor and its components carefully. Even slight scratches, bends or damage to carburetor parts may prevent the carburetor from functioning correctly.
Carefully perform all servicing with the appropriate tools and without applying excessive force.
After installing the carburetor, check that the throttle operates correctly and opens and closes smoothly.
It is highly recommended that the carburetor setting is performed by an experienced mechanic to obtain the best possible performance.

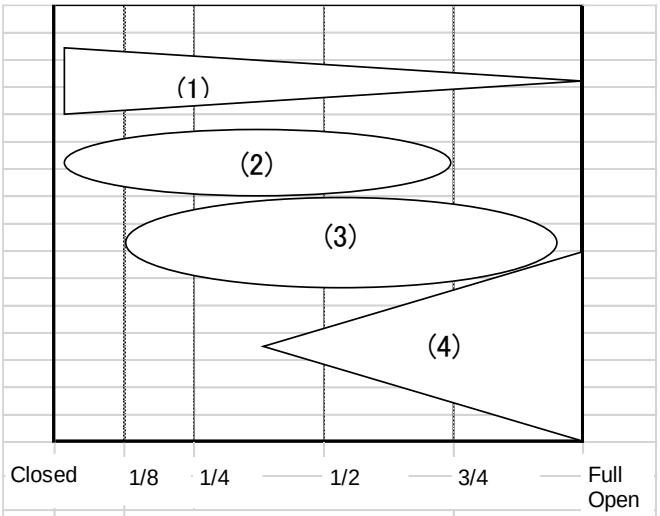
Atmospheric conditions and carburetor settings

Air Temp.	Humidity	Air Pressure (Altitude)	Mixture	Setting
High	High	Low (High)	Richer	Leaner
Low	Low	High (Low)	Leaner	Richer

The air density (i.e., concentration of oxygen in the air) determines the richness or leanness of the air/fuel mixture. Therefore, refer to the above table for mixture settings.
That is:

- Higher temperature expands the air with its resultant reduced density.
- Higher humidity reduces the amount of oxygen in the air by so much of the water vapor in the same air.
- Lower atmospheric pressure (at a high altitude) reduces the density of the air.

Effects of the setting parts on the throttle valve opening



(1)	Slow Jet / Pilot Screw
(2)	Throttle valve cutaway
(3)	Jet Needle / Needle Jet
(4)	Main Jet

Here is the recommended setting information of TK MV33-1F and PE28 carburetor, for your reference.

Tested Conditions

Carburetor	TK MV33-1F (DT#88600)
Air Temperature	35 degrees Celsius
Humidity	50%
Atmospheric Pressure	1003 hPa
with UNI Air Filter (#UP-4200ST)	
Fuel	Octane#100

Item	Recommendation
Main Jet	#129
Slow Jet	#38
Main No	ϕ2.600
Jet Needle	5A11 Clip position : In the 5th groove from the top
Pilot screw	2 return

PRE-OPERATION INSPECTION AND MAINTENANCE

Carburetor	KEIHIN PE28 (DT#85707)
Air Temperature	20 degrees Celsius
Humidity	50%
Atmospheric Pressure	1000 hPa
with UNI Air Filter (#UP-4200ST)	
Fuel	Octane#100

Item	Recommendation
Main Jet	#122 (DT#87004)
Slow Jet	#38 (DT#89672)
Throttle Valve	#3.0 (Original of DT#85707)
Jet Needle	#65414 / 46JFQ (-2 / ϕ2.505) or 46JFN : Original of KEIHIN PE28 (DT#85707) Clip position : In the 2nd or 3rd groove from the top
Air screw	2 return

PRE-OPERATION INSPECTION AND MAINTENANCE

IGNITION TIMING SELECTION

ANIMA FDX/FLX ENGINE comes with ignition timing selectable CDI unit.

To change the ignition timing, it needs to change the connection of the wires that come out of the CDI unit.

WIRE CONNECTION TABLE

Color of Wire	WHITE	GREEN	YELLOW	GREEN	INGITION TIMING
Timing (1)	○	○	○	○	REDUSE
Timing (2)	○	○	●—●		
Timing (3)	●—●		○	○	
Timing (4)	●—●		●—●		ADVANCE

WARNING

USE ADVANCE TIMING GIVES HIGH TEMPERATURE TO ENGINE.
SERIOUS DAMAGE WILL OCCURE IN THE ENGINE BY ABNORMAL COMBUSTION.

Notes

(a) Reduce Timing gives more torque at low-middle rpm level.

(b) Advance Timing gives more torque at higher rpm level than the Reduce Timing.

Example (How to select)

* To select Timing (2), connect Yellow and Green wires.

REV LIMITER SELECTION

ANIMA FDX/FLX ENGINE comes with rev limiter selectable CDI unit.

To change the rev limiter, it needs to change the connection of the wires that come out of the CDI unit.

WIRE CONNECTION TABLE

Color of Wire	BLUE	GREEN	BLACK/ YELLOW
Rev Limiter (1) -11,500rpm	○	○	○
Rev Limiter (2) -12,200rpm	○	○——	——○
Rev Limiter (3) -12,900rpm	○——	——○	○

Example (How to select)

* To select Rev Limiter (3)-12,900rpm, connect Blue and Green wires.

ENGINE OIL TEMPERATURE CONTROL

WARNING

Engine oil temperature is to be strictly controlled at 90 degrees Celsius (194 degrees Fahrenheit) or lower.

Serious damage will occur in the engine if engine oil temperature exceeds 90 degrees Celsius or 194 degrees Fahrenheit.

It is solely customer's responsibility to control the engine oil temperature.

Any failures caused by overheating are NOT considered as the defects of Products.

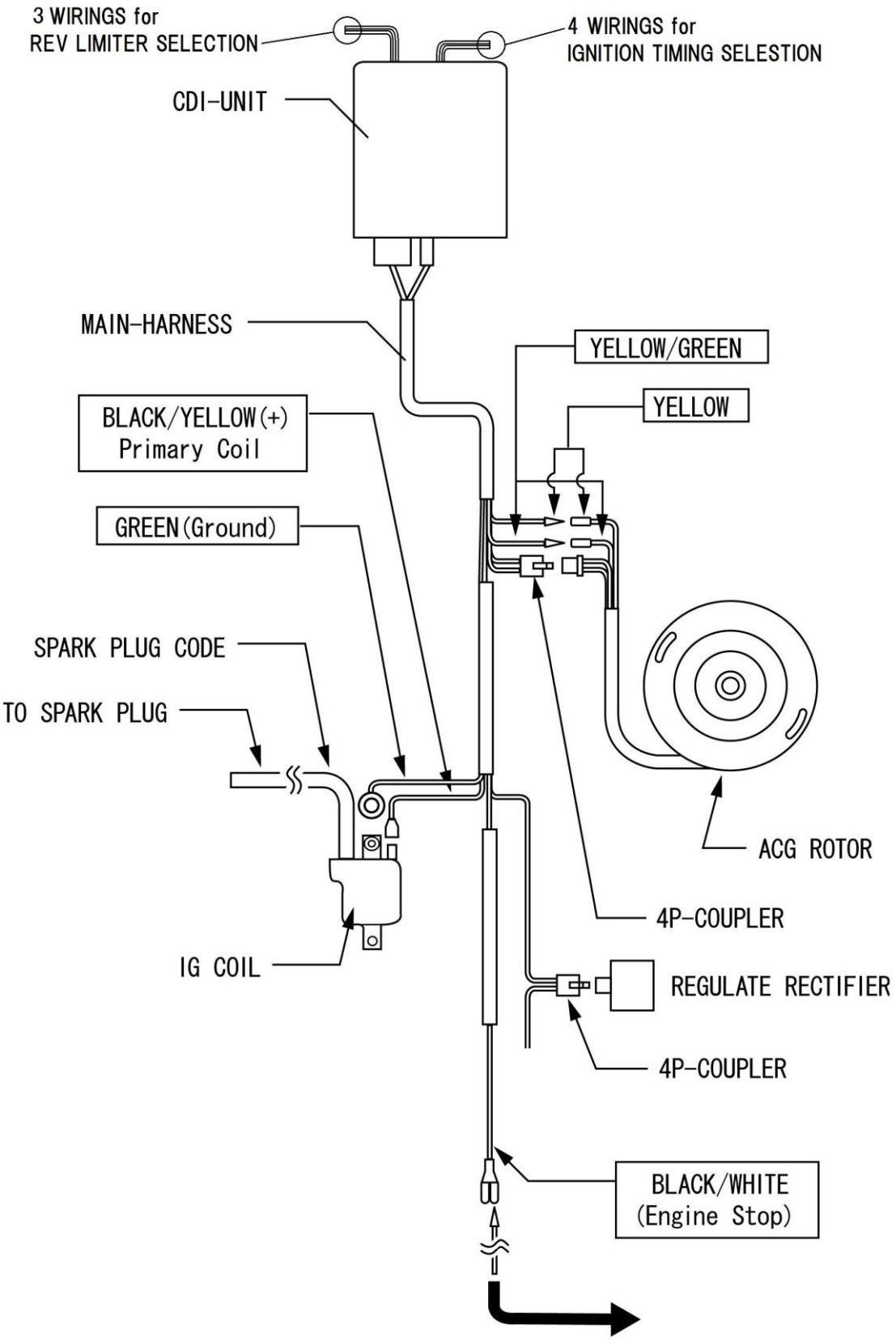
It is highly recommended to use HIGH-EFFICIENT OIL COOLER and OIL TEMPERATURE GAUGE to protect the engine.

The above OIL COOLER is just a recommendation.

Engine oil temperature can be heated up over 90 degrees Celsius or 194 degrees Fahrenheit, even if the above recommended OIL COOLER is used.

Again, customer needs to control the oil temperature very carefully.

ELECTRICAL DIAGRAM for SZ



TIGHTENING TORQUE

Standard

Size	Tightening Torque N.m (kgf.m)	Size	Tightening Torque N.m (kgf.m)
5mm Bolt, Nut	5.2 (0.5)	5mm Screw	4.2 (0.4)
6mm Bolt, Nut	10 (1.0)	6mm Screw	9.0 (0.9)
8mm Bolt, Nut	22 (2.2)	6mm Screw (Small Flange)	10 (1.0)
10mm Bolt, Nut	34 (3.5)	6mm Screw (Large Flange)	12 (1.2)
12mm Bolt, Nut	54 (5.5)	8mm Flange Bolt, Nut	27 (2.8)
		10mm Flange Bolt, Nut	39 (4.0)

Others

Nut M8, Cylinder Head : 22N.m (2.2kgf.m)

Nut M14, Clutch center and Primary Gear : 44N.m (4.5kgf.m)

Nut M12, Magnet Rotor : 59N.m (6.0kgf.m)

Bolt M12, Oil Drain : 24N.m (2.4kgf.m)

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