

# TECHNICAL DATA - ENGINE

ENGINE	FE, FS 450e/6
Design	1-cylinder 4-stroke engine with balancer shaft, liquid cooled
Displacement	449.2 cc
Bore/Stroke	100 / 57.2 mm
Ratio	13:1
Carburetor Keihin	FE: FCR-MX 39 FS: FCR-MX 41
Fuel	unleaded fuel with at least RON 95 (USA = Premium PON91)
Valve timing	4 valves over rocker arm and 1 overhead camshaft, camshaft drive through single chain
Valve diameter Intake	35 mm
Valve diameter Exhaust	30 mm
Valve clearance cold Intake	0.12 mm
Valve clearance cold Exhaust	0.12 mm
Crank shaft bearing	2 cylinder roller bearing
Connecting rod bearing	needle bearing
Top end bearing	bronze bushing
Piston	aluminium alloy forged
Piston rings	1 compression ring, 1 oil scraper ring
Engine lubrication	pressure circulation lubrication with two rotor pumps
Engine oil	full synthetic oil (Motorex Power Synt 4T SAE 10W50)
Quantity of engine oil	1.0 liter
Primary ratio	straight geared spur wheels 29:78 Z
Clutch	mult disc clutch in oil bath
Transmission (claw shifted)	6-speed
Gear ratio	
1st gear	14:33
2nd gear	17:30
3rd gear	19:26
4th gear	23:25
5th gear	24:22
6th gear	27:20
Ignition system	contactless DC - CDI ignition with digital advanced system, Typ KOKUSAN
Generator	12V 150W
Spark plug	NGK DCPR 8 E
Spark plug gap	0.6 mm
Cooling system	liquid cooled, permanent rotation through mechanically driven water pump
Cooling liquid	1.0 liter, 50% antifreeze, 50% distilled water, at least -25° C
Starting equipment	kickstarter/electric starter

BASIC CARBURETOR SETTING			
	FE 450e/6 EU/AUS-UK	FE 450e/6 USA	FS 450e/6 EU
Type of carburetor	Keihin FCR-MX 39	Keihin FCR-MX 39	Keihin FCR-MX 41
Carburetor ID number	3925C	3925C	4125D
Main jet	178	178	182
Jet needle	OBDVT (OBDVR)	OBDVT	OBDVT
Idling jet	38 (40)	38	38
Main air jet	200	200	200
Idle air jet	100	100	100
Needle	2nd from top (6th from top)	2nd from top	2nd from top
Starting jet	85	85	85
Mixture control screw open	1.5 (2)	1.5	1.5
Slide	15	15	15
Restriction	slide stop	—	slide stop
Pump diaphragm stop	858 / 2.15 mm	858 / 2.15 mm	858 / 2.15 mm
Hot start knob	ø 2.5 mm	ø 2.5 mm	ø 2.5 mm

# TECHNICAL DATA - ENGINE

ENGINE	FE 550e/6	FE, FS 650e/6	FS 650c/6
Design	Liquid-cooled, 1-cylinder 4-stroke Otto engine with balancer weight		
Displacement	549.8 cc	628.3 cc	
Bore/Stroke	100 / 70 mm	100 / 80 mm	
Ratio	11.8:1	11.8:1	
Carburetor Keihin	FCR-MX 41		
Fuel	unleaded fuel with at least RON 95 (USA = Premium PON 91)		
Valve timing	4 valves controlled over rocker arm and 1 camshaft, camshaft drive with single chain		
Valve diameter Intake	35 mm		
Valve diameter Exhaust	30 mm		
Valve clearance cold Intake	0.12 mm		
Valve clearance cold Exhaust	0.12 mm		
Crank shaft bearing	2 roller bearings		
Connecting rod bearing	needle bearing		
Top end bearing	bronze bush		
Piston	Light alloy – forged		
Piston rings	1 compression ring, 1 oil scraper ring		
Engine lubrication	pressure lubrication with trochoid rotor pump		
Engine oil	fully synthetic engine oil (Motorex Power Synt 4T SAE 10W50)		
Quantity of engine oil	1.0 Liter		
Primary ratio	straight-toothed spur wheels 29:78t		
Clutch	multi-disk clutch in oil bath		
Transmission (claw shifted)	6-speed		
Gear ratio			
1st gear	14:33		
2nd gear	17:30		
3rd gear	19:26		
4th gear	23:25		
5th gear	24:22		
6th gear	27:20		
Ignition system	breakerless transistorized DC-CDI ignition system with digital ignition advance, type KOKUSAN		
Generator	12V 150W		
Spark plug	NGK DCPR 8 E		
Spark plug gap	0.6 mm		
Cooling system	liquid cooled, permanent circulation of cooling liquid through water pump		
Cooling liquid	1.0 liter, mixing ratio 50% antifreeze, 50% distilled water, at least -25° C		
Starting equipment	kickstarter/electric starter		

BASIC CARBURETOR SETTING					
	FE 550e/6 EU/AUS-UK	FE 550e/6 USA	FE, FS 650e/6 EU	FE 650e/6 USA	FS 650c/6 EU
Type of carburetor	Keihin FCR-MX 41	Keihin FCR-MX 41	Keihin FCR-MX 41	Keihin FCR-MX 41	Keihin FCR-MX 41
Carburetor ID number	4125D	4125D	4138E	4138E	4138E
Main jet	182	182	160	160	160
Jet needle	OBDVT (OBDVR)	OBDVT	OBDVT (OBEKR)	OBDVT	OBEKR
Idling jet	38 (40)	38	38 (45)	38	45
Main air jet	200	200	200	200	200
Idle air jet	100	100	100	100	100
Needle position	5th from top	5th from top	2nd from top	2nd from top	4th from top
Starting jet	85	85	85	85	85
Mixture control screw open	1.5	1.5	0.5	0.5	1.5
Slide	15	15	15	15	15
Restriction	slide stop	—	slide stop	—	—
Pump diaphragm stop	858 / 2.15 mm	858 / 2.15 mm	858 / 2.15 mm	858 / 2.15 mm	858 / 2.15 mm
Hot start knob	diameter 2.5 mm	diameter 2.5 mm	diameter 3.8 mm	diameter 3.8 mm	diameter 3.8 mm

# TECHNICAL DATA - ENGINE

TIGHTENING TORQUES		
HH collar screws on housing, clutch cover, ignition cover	M6	10 Nm
Oil drain plug	M12x1,5	20 Nm
HH plug oil screen	M20x1,5	15 Nm
AH collar screw on oil filter cover	M5	6 Nm
Plug on pressure relief valve	M12x1,5	20 Nm
HH screws on oil pump cover	M4	Loctite 243 + 5 Nm
HH collar screw on cylinder head top section	M6	10 Nm
AH screws on valve cover	M5	6 Nm
HH collar screws on water pump cover	M6	10 Nm
HH screws on cylinder head	M10	50 Nm
HH screw on cylinder head	M6	10 Nm
AH screws on camshaft gear	M8	Loctite 243 + 28 Nm
HH nut on automatic decompression stop	M5	Loctite 270 + 8 Nm
AH screws on rocker arm shaft silencer cap	M5	Loctite 243 + 6 Nm
Counternut on valve adjusting screw	M6x0,75	11 Nm
HH nut on primary pinion	M16x1	Loctite 2701 + 110 Nm
HH nut on idler shaft gear	M16x1	Loctite 2701 + 110 Nm
HH nut on clutch drive	M18x1,5	Loctite 243 + 120 Nm
HH collar screws on clutch springs	M6	Loctite 243 + 8 Nm
AH screw shift on shift roller lock	M6	Loctite 243 + 10 Nm
HH collar screw on locking lever	M6	Loctite 243 + 10 Nm
HH collar screw on shift roller bearing	M6	Loctite 243 + 10 Nm
HH collar screws on chain tensioner	M6	10 Nm
HH screw chain tensioning rail	M5	Loctite 243 + 6 Nm
HH screw on chain guide rail	M6	Loctite 243 + 6 Nm
HH collar screws on stator FE/FS models	M6	Loctite 243 + 10 Nm
HH collar screws on pulse generator	M5	Loctite 243 + 6 Nm
HH collar nut on rotor	M12x1	60 Nm
HH screw on kickstarter	M6	Loctite 243 + 25 Nm
Phillips screws on kickstarter release plate	M5	Loctite 243 + 6 Nm
HH collar screw on shift lever	M6	10 Nm
Spark plug	M12x1,25	20 Nm
Plug on engine blocking bore	M8	20 Nm
Diaphragm valve	M4	Loctite 243 + 1,5 Nm