

Item	Unit	Data			
		DF25Q/25QE	DF25T	DF30Q/30QE	DF30T

POWERHEAD

Recommended operating range	r/min	5000 – 5600	5500 – 6100
Idle speed	r/min	900 ± 50 (in-gear: approx. 850)	
*Cylinder compression	kPa (kg/cm ² , psi)	1000 – 1400 (10 – 14, 142 – 199)	
*Cylinder compression max. difference between any other cylinders	kPa (kg/cm ² , psi)	100 (1.0, 14)	
*Engine oil pressure	kPa (kg/cm ² , psi)	400 – 500 (4.0 – 5.0, 57 – 71) at 3000 r/min (at normal operating temp.)	
Engine oil		API classification SE, SF, SG, SH, SJ Viscosity rating SAE 10W-40	
Engine oil amounts	L (US/Imp. qt)	3.0 (3.2/2.6): Oil change only 3.2 (3.4/2.8): Oil filter change	
Thermostat operating temperature	°C (°F)	58 – 62 (136 – 144)	

* Figures shown are guidelines only, not absolute service limits.

CARBURETOR**[Pilot screw covered type]**

Type	MIKUNI	B25TI-20	B25TI-22
I.D. mark		89J00	89J10
Main jet	#	135	110
Pilot jet	#	38.8	40
Pilot screw	Turns open	PRE-SET	
Float height	mm	14.6 ± 1	

[Pilot screw uncovered type]

Type	MIKUNI	B25TI-20	B25TI-22
I.D. mark		89J40	89J50
Main jet	#	135	110
Pilot jet	#	38.8	40
Pilot screw	Turns open	1-1/2 ± 1/4	1-1/2 ± 1/4
Float height	mm	14.6 ± 1	

Item	Unit	Data			
		DF25Q/25QE	DF25T	DF30Q/30QE	DF30T

CYLINDER HEAD/CAMSHAFT

Cylinder head distortion	Limit	mm (in)	0.05 (0.002)		
Manifold seating faces distortion	Limit	mm (in)	—		
Cam height	IN	STD	mm (in)	35.185 – 35.345 (1.3852 – 1.3915)	36.076 – 36.236 (1.4203 – 1.4266)
		Limit	mm (in)	35.085 (1.3813)	35.976 (1.4164)
	EX	STD	mm (in)	34.506 – 34.666 (1.3585 – 1.3648)	35.271 – 35.431 (1.3886 – 1.3949)
		Limit	mm (in)	34.406 (1.3546)	35.171 (1.3847)
Camshaft journal oil clearance	STD	mm (in)	0.050 – 0.100 (0.0020 – 0.0039)		
	Limit	mm (in)	0.160 (0.0060)		
Camshaft journal inside diameter (from MAG side)	Top	STD	mm (in)	43.500 – 43.525 (1.7126 – 1.7136)	
		Limit	mm (in)	43.534 (1.7139)	
	2nd	STD	mm (in)	43.700 – 43.725 (1.7205 – 1.7215)	
		Limit	mm (in)	43.734 (1.7218)	
	3rd	STD	mm (in)	43.900 – 43.925 (1.7283 – 1.7293)	
		Limit	mm (in)	43.934 (1.7300)	
	4th	STD	mm (in)	44.100 – 44.125 (1.7362 – 1.7372)	
		Limit	mm (in)	44.134 (1.7376)	
Camshaft journal outside diameter (from MAG side)	Top	STD	mm (in)	43.425 – 43.450 (1.7096 – 1.7106)	
		Limit	mm (in)	43.375 (1.7077)	
	2nd	STD	mm (in)	43.625 – 43.650 (1.7175 – 1.7185)	
		Limit	mm (in)	43.575 (1.7156)	
	3rd	STD	mm (in)	43.825 – 43.850 (1.7254 – 1.7264)	
		Limit	mm (in)	43.775 (1.7234)	
	4th	STD	mm (in)	44.025 – 44.050 (1.7333 – 1.7343)	
		Limit	mm (in)	43.975 (1.7313)	
Camshaft runout	Limit	mm (in)	0.10 (0.004)		
Rocker arm shaft to rocker arm clearance	IN, EX	STD	mm (in)	0.012 – 0.045 (0.0005 – 0.0018)	
		Limit	mm (in)	0.090 (0.0035)	
Rocker arm shaft outside diameter	IN, EX	STD	mm (in)	15.973 – 15.988 (0.6289 – 0.6294)	
Rocker arm inside diameter	IN, EX	STD	mm (in)	16.000 – 16.018 (0.6299 – 0.6306)	
Rocker arm shaft runout	IN, EX	STD	mm (in)	0.12 (0.005)	

Item	Unit	Data			
		DF25Q/25QE	DF25T	DF30Q/30QE	DF30T

VALVE/VALVE GUIDE

Valve diameter	IN		mm (in)	23.1 (0.91)
	EX		mm (in)	29.6 (1.17)
Valve clearance (Cold engine condition)	IN	STD	mm (in)	0.13 – 0.17 (0.005 – 0.007)
	EX	STD	mm (in)	0.13 – 0.17 (0.005 – 0.007)
Valve seat angle	IN		—	15°, 45°
	EX		—	15°, 45°
Valve guide to valve stem clear- ance	IN	STD	mm (in)	0.020 – 0.047 (0.0008 – 0.0019)
		Limit	mm (in)	0.070 (0.0028)
	EX	STD	mm (in)	0.035 – 0.062 (0.0014 – 0.0024)
		Limit	mm (in)	0.090 (0.0035)
Valve guide inside diameter	IN, EX	STD	mm (in)	5.500 – 5.512 (0.2165 – 0.2170)
Valve guide pro- trusion	IN, EX	STD	mm (in)	14.0 (0.55)
Valve stem out- side diameter	IN	STD	mm (in)	5.465 – 5.480 (0.2152 – 0.2157)
	EX	STD	mm (in)	5.450 – 5.465 (0.2146 – 0.2152)
Valve stem end length	IN	Limit	mm (in)	7.00 (0.276)
	EX		mm (in)	6.00 (0.236)
Valve stem end deflection	IN	Limit	mm (in)	0.14 (0.006)
	EX	Limit	mm (in)	0.18 (0.007)
Valve stem runout	IN, EX	Limit	mm (in)	0.05 (0.002)
Valve head radial runout	IN, EX	Limit	mm (in)	0.08 (0.003)
Valve head thickness	IN	STD	mm (in)	1.0 (0.04)
		Limit	mm (in)	0.5 (0.02)
	EX	STD	mm (in)	1.3 (0.05)
		Limit	mm (in)	0.7 (0.03)
Valve seat con- tact width	IN	STD	mm (in)	1.3 – 1.5 (0.05 – 0.06)
	EX	STD	mm (in)	1.3 – 1.5 (0.05 – 0.06)
Valve spring free length		STD	mm (in)	47.38 (1.865)
		Limit	mm (in)	45.48 (1.791)
Valve spring tension		STD	N (kg, lbs)	193 – 223 (19.3 – 22.3, 42.5 – 49.2) for 37.5 mm (1.48 in)
		Limit	N (kg, lbs)	177 (17.7, 39.0) for 37.5 mm (1.48 in)
Valve spring squareness		Limit	mm (in)	2.0 (0.08)

Item	Unit	Data			
		DF25Q/25QE	DF25T	DF30Q/30QE	DF30T

CYLINDER/PISTON/PISTON RING

Cylinder distortion	Limit	mm (in)	0.030 (0.0012)	
Piston to cylinder clearance	STD	mm (in)	0.020 – 0.040 (0.0008 – 0.0016)	
	Limit	mm (in)	0.100 (0.0039)	
Cylinder bore	STD	mm (in)	65.000 – 65.020 (2.5591 – 2.5598)	
Cylinder measuring position		mm (in)	50 (2.0) from cylinder top surface	
Piston skirt diameter	STD	mm (in)	64.970 – 64.990 (2.5579 – 2.5587)	
Piston measuring position		mm (in)	19 (0.7) from piston skirt end	
Cylinder bore wear	Limit	mm (in)	0.100 (0.0039)	
Piston ring end gap	1st	STD	0.12 – 0.27 (0.005 – 0.011)	
		Limit	0.70 (0.028)	
	2nd	STD	0.35 – 0.50 (0.014 – 0.020)	
		Limit	1.00 (0.039)	
Piston ring free end gap	1st	STD	Approx. 9.1 (0.36)	
		Limit	7.3 (0.29)	
	2nd	STD	Approx. 9.0 (0.35)	
		Limit	7.2 (0.28)	
Piston ring to groove clearance	1st	STD	0.03 – 0.07 (0.001 – 0.003)	
		Limit	0.12 (0.005)	
	2nd	STD	0.02 – 0.06 (0.001 – 0.002)	
		Limit	0.10 (0.004)	
Piston ring groove width	1st	STD	1.02 – 1.04 (0.040 – 0.041)	
	2nd	STD	1.21 – 1.23 (0.0476 – 0.0484)	
	Oil	STD	2.01 – 2.03 (0.079 – 0.080)	
Piston ring thickness	1st	STD	0.97 – 0.99 (0.038 – 0.039)	
	2nd	STD	1.17 – 1.19 (0.046 – 0.047)	
Pin clearance in piston pin hole	STD	mm (in)	0.006 – 0.019 (0.0002 – 0.0007)	
	Limit	mm (in)	0.040 (0.0016)	
Piston pin outside diameter	STD	mm (in)	15.995 – 16.000 (0.6297 – 0.6299)	
	Limit	mm (in)	15.980 (0.6291)	
Piston pin hole diameter	STD	mm (in)	16.006 – 16.014 (0.6302 – 0.6305)	
	Limit	mm (in)	16.030 (0.6311)	
Pin clearance in conrod small end	STD	mm (in)	0.003 – 0.016 (0.0001 – 0.0006)	
	Limit	mm (in)	0.050 (0.0020)	
Conrod small end bore	STD	mm (in)	16.003 – 16.011 (0.6300 – 0.6304)	

Item	Unit	Data			
		DF25Q/25QE	DF25T	DF30Q/30QE	DF30T

CRANKSHAFT/CONROD

Conrod small end inside diameter	STD	mm (in)	16.003 – 16.011 (0.6300 – 0.6304)
Conrod big end oil clearance	STD	mm (in)	0.020 – 0.040 (0.0008 – 0.0016)
	Limit	mm (in)	0.065 (0.0026)
Conrod big end inside diameter	STD	mm (in)	39.000 – 39.018 (1.5354 – 1.5361)
Crank pin outside diameter	STD	mm (in)	35.982 – 36.000 (1.4166 – 1.4173)
Crank pin outside diameter difference (out-of-round and taper)	Limit	mm (in)	0.010 (0.0004)
Conrod bearing thickness	STD	mm (in)	1.486 – 1.502 (0.0585 – 0.0591)
Conrod big end side clearance	STD	mm (in)	0.100 – 0.250 (0.0039 – 0.0098)
	Limit	mm (in)	0.350 (0.0138)
Conrod big end width	STD	mm (in)	21.950 – 22.000 (0.8642 – 0.8661)
Crank pin width	STD	mm (in)	22.100 – 22.200 (0.8700 – 0.8740)
Crankshaft center journal runout	Limit	mm (in)	0.04 (0.002)
Crankshaft journal oil clearance	STD	mm (in)	0.020 – 0.040 (0.0008 – 0.0016)
	Limit		0.065 (0.0026)
Crankcase bearing holder inside diameter	STD	mm (in)	44.000 – 44.018 (1.7323 – 1.7330)
Crankshaft journal outside diameter	STD	mm (in)	39.982 – 40.000 (1.5741 – 1.5748)
Crankshaft journal outside diameter difference (out-of-round and taper)	Limit	mm (in)	0.010 (0.0004)
Crankshaft bearing thickness	STD	mm (in)	1.996 – 2.012 (0.0768 – 0.0792)
Crankshaft thrust play	STD	mm (in)	0.11 – 0.31 (0.004 – 0.012)
	Limit	mm (in)	0.35 (0.014)
Crankshaft thrust bearing thickness	STD	mm (in)	2.470 – 2.520 (0.0972 – 0.0992)

Item	Unit	Data			
		DF25Q/25QE	DF25T	DF30Q/30QE	DF30T

ELECTRICAL

Ignition timing	Degrees	BTDC 5 – BTDC 31	BTDC 5 – BTDC 29
Over revolution limiter	r/min	6300	6500
CKP sensor resistance	Ω at 20 °C	148 – 222 [R–B, W/B–R/W]	
Power source coil resistance	Ω at 20 °C	10.1 – 15.1 [Br–G, W–G]	
Ignition coil resistance	Primary	Ω at 20 °C	0.17 – 0.23
	Secondary	k Ω at 20 °C	4.8 – 7.2
Spark plug cap resistance	k Ω at 20 °C	4 – 6	
Battery charge coil resistance	Ω at 20 °C	Manual start model: 0.20 – 0.30 [R–Y] Electric start model: 0.27 – 0.40 [R–Y]	
Battery charge coil output (12 V)	Watt	Manual start model: 80 Electric start model: 180	
Standard spark plug	Type	NGK	DCPR6E
	Gap	mm (in)	0.8 – 0.9 (0.031 – 0.035)
Fuse amp. rating	A	25 (Applicable model)	
Recommended battery capacity (12 V)	Ah (kC)	40 (144) or larger	
Cylinder temp. sensor resistance (Thermistor characteristic)	k Ω at 25 °C	1.8 – 2.3	
Choke solenoid coil resistance	Ω at 20 °C	3.8 – 4.2 (Applicable model)	
Starter motor relay coil resistance	Ω at 20 °C	3.5 – 5.1 (Applicable model)	
PTT motor relay coil resistance	Ω at 20 °C	25 – 37 (Applicable model)	

STARTER MOTOR (Applicable model)

Max. continuous time of use	Sec	30	
Motor output	kW	0.6	
Brush length	STD	mm (in)	12.5 (0.49)
	Limit	mm (in)	9.0 (0.35)
Commutator undercut	STD	mm (in)	0.5 – 0.8 (0.02 – 0.03)
	Limit	mm (in)	0.2 (0.01)
Commutator outside diameter	STD	mm (in)	30.0 (1.18)
	Limit	mm (in)	29.0 (1.14)
Commutator outside diameter difference	STD	mm (in)	0.05 (0.002)
	Limit	mm (in)	0.40 (0.016)
Pinion to ring gear gap	STD	mm (in)	3.0 – 5.0 (0.12 – 0.20)

PTT MOTOR (Applicable model)

Brush length	STD	mm (in)	9.8 (0.39)
	Limit	mm (in)	4.8 (0.19)
Commutator outside diameter	STD	mm (in)	19.5 (0.77)
	Limit	mm (in)	18.5 (0.73)

PEAK VOLTAGE

Requirements for peak voltage measurement

- Remove all spark plugs to eliminate the variables at cranking speed.
- Crank with recoil starter or starter motor.
- Use a STEVENS peak voltage tester, Model CD-77.

Testing sequence		Tester probe connection		Peak voltage	Tester range	Remarks	
		+ (Red)	- (Black)				
1	CDI out-put	No. 1	Orange	Black	64 V or over	POS 500	With ignition coil connected
		No. 2	Blue				
		No. 3	Light green				
2	Power source coil output	Brown	Green	21 V or over	POS 500	With CDI unit disconnected	
		White					
3	CKP sensor output	No. 1	Red	Black	3 V or over		SEN 50
		No. 2	Red/White	White/Black			
4	Battery charge coil output	Manual start	Yellow	Red	4 V or over	POS 50	With rectifier disconnected
		Electric start		8 V or over			

