



SST & SERVICE SPECIFICATIONS

| | Page |
|---|-------|
| SST (SPECIAL SERVICE TOOLS) | 10-2 |
| STANDARD BOLT TIGHTENING TORQUE | 10-8 |
| TIGHTENING TORQUE FOR MAIN PARTS | 10-10 |
| SERVICE SPECIFICATIONS | 10-10 |

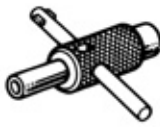
SST (SPECIAL SERVICE TOOLS)**ENGINE TUNE-UP****Oil Filter**

| Illustration | Tool No. | Tool Name |
|---|-------------|-------------------|
|  | 09228-22020 | Oil Filter Wrench |


Valve Clearance

| Illustration | Tool No. | Tool Name |
|---|-------------|-----------------|
|  | 09229-22010 | Engine Oil Tray |

Idle Speed & Idle Mixture Adjustment

| Illustration | Tool No. | Tool Name |
|---|------------------------------|-----------------------------|
|  | (09243-00010) 09243-00020 | Idle Adjusting Screw Wrench |

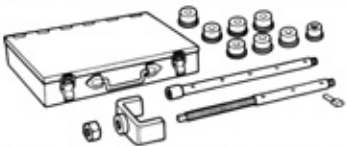




ENGINE SERVICE**Cylinder Head**

| Illustration | Tool No. | Tool Name |
|---|-------------|-------------------------------------|
|  | 09201-60011 | Valve Stem Guide Remover & Replacer |
|  | 09202-43012 | Valve Spring Compressor |


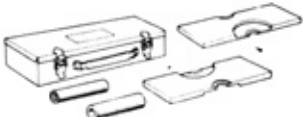

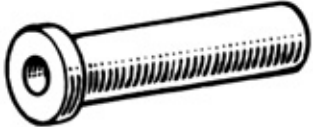
Timing Chain & Camshaft

| Illustration | Tool No. | Tool Name |
|---|-------------|-------------------------------------|
|  | 09213-31021 | Crankshaft Pulley Puller |
|  | 09214-60010 | Crankshaft Pulley & Gear Replacer |
|  | 09223-22010 | Crankshaft Front Oil Seal Replacer, |





Cylinder Block

| Illustration | Tool No. | Tool Name |
|---|-------------|---|
|  | 09215-00100 | Camshaft Bearing Remover & Replacer |
|  | 09222-30010 | Connecting Rod Bushing Remover & Replacer |
|  | 09250-10011 | A Replacer Set |
|  | 09303-35011 | Input Shaft Front Bearing Puller |
|  | 09304-12012 | Input Shaft Front Bearing Replacer |

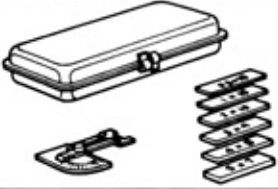


COOLING SYSTEM**Water Pump**

| Illustration | Tool No. | Tool Name |
|--|-------------|---------------------------------------|
|  | 09235-20011 | Water Pump Pulley Seat Puller |
|  | 09236-28011 | Water Pump Overhaul Tool |
|  | 09236-36010 | Water Pump Overhaul Tool |
|  | 09238-48010 | Water Pump Bearing Remover & Replacer |


FUEL SYSTEM**Carburetor (Except KP 61 Series & KM 20 Series)**

| Illustration | Tool No. | Tool Name |
|---|------------------------------|--------------------------------|
|  | 09240-00014 | Carburetor Adjusting Gauge Set |
|  | 09240-00020 | Wire Gauge Set |
|  | (09243-00010) 09243-00020 | Idle Adjusting Screw Wrench |
|  | 09860-11011 | Carburetor Driver Set |



Carburetor (KP 61 Series & KM 20 Series)

| Illustration | Tool No. | Tool Name |
|---|-------------|--------------------------------|
|  | 09240-00014 | Carburetor Adjusting Gauge Set |
|  | 09240-00020 | Wire Gauge Set |
|  | 09860-11011 | Carburetor Driver Set |

CHARGING SYSTEM**On-Vehicle Inspection**

| Illustration | Tool No. | Tool Name |
|---|-------------|--------------------|
|  | 09081-00011 | Alternator Checker |

Alternator

| Illustration | Tool No. | Tool Name |
|--|-------------|------------------------------------|
|  | 09286-46011 | Injection Pump Spline Shaft Puller |
|  | 09325-12010 | Transmission Oil Plug |

STANDARD BOLT TIGHTENING TORQUE

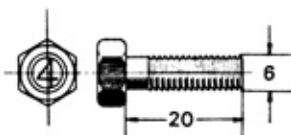
9 1 1 1 1 - 4 0 6 2 0

Part number

Length of bolt: 20 mm

Basic major diameter of thread: 6 mm

Bolt head mark *



* Explanation of bolt head marks are as indicated in the following table.

SPECIFIED TORQUE FOR STANDARD BOLTS

| Class | Basic diameter mm | Pitch mm | Torque limit | kg-m (ft-lb) |
|-------|-------------------|------------|--------------|--------------|
| 4T | 6 | 1 | 0.4 – 0.7 | (3 – 5) |
| | 8 | 1.25 | 1.0 – 1.6 | (8 – 11) |
| | 10 | 1.25 | 1.9 – 3.1 | (14 – 22) |
| | 10 | 1.5 | 1.8 – 3.0 | (14 – 21) |
| | 12 | 1.25 (ISO) | 3.5 – 5.5 | (26 – 39) |
| | 12 | 1.5 | 3.5 – 5.5 | (26 – 39) |
| | 12 | 1.75 | 3.0 – 5.0 | (22 – 36) |
| | 13 | 1.5 | 4.5 – 7.0 | (33 – 50) |
| | 14 | 1.5 | 5.0 – 8.0 | (37 – 57) |
| | 14 | 2 | 4.7 – 7.7 | (34 – 55) |
| | 16 | 1.5 | 7.5 – 11.0 | (55 – 79) |
| | 16 | 2 | 7.1 – 10.6 | (52 – 76) |
| 5T | 6 | 1 | 0.6 – 0.9 | (5 – 6) |
| | 8 | 1.25 | 1.5 – 2.2 | (11 – 15) |
| | 10 | 1.25 | 3.0 – 4.5 | (22 – 32) |
| | 10 | 1.5 | 2.7 – 4.2 | (20 – 30) |
| | 12 | 1.25 (ISO) | 5.0 – 8.0 | (37 – 57) |
| | 12 | 1.5 | 5.0 – 7.0 | (37 – 50) |
| | 12 | 1.75 | 4.8 – 6.8 | (35 – 49) |
| | 13 | 1.5 | 6.5 – 9.0 | (48 – 65) |
| | 14 | 1.5 | 7.5 – 11.0 | (55 – 79) |
| | 14 | 2 | 7.0 – 10.5 | (51 – 75) |
| | 16 | 1.5 | 12.0 – 17.0 | (87 – 122) |
| | 16 | 2 | 11.5 – 16.5 | (84 – 119) |
| 6T | 6 | 1 | 0.6 – 0.9 | (5 – 6) |
| | 8 | 1.25 | 1.5 – 2.2 | (11 – 15) |
| | 10 | 1.25 | 3.0 – 4.5 | (22 – 32) |
| | 10 | 1.5 | 2.7 – 4.2 | (20 – 30) |
| | 12 | 1.25 (ISO) | 5.0 – 8.0 | (37 – 57) |
| | 12 | 1.5 | 5.0 – 7.0 | (37 – 50) |
| | 12 | 1.75 | 4.8 – 6.8 | (35 – 49) |

SPECIFIED TORQUE FOR STANDARD BOLTS (Cont'd)

| Class | Basic diameter mm | Pitch mm | Torque limit | kg-m (ft-lb) |
|-------|----------------------|------------|--------------|--------------|
| 7T | 6 | 1 | 0.8 – 1.2 | (6 – 8) |
| | 8 | 1.25 | 2.0 – 3.0 | (15 – 21) |
| | 10 | 1.25 | 4.0 – 5.5 | (29 – 39) |
| | 10 | 1.5 | 3.7 – 5.2 | (27 – 37) |
| | 12 | 1.25 (ISO) | 7.5 – 10.5 | (55 – 75) |
| | 12 | 1.5 | 7.0 – 9.0 | (51 – 65) |
| | 12 | 1.75 | 6.0 – 8.5 | (44 – 61) |
| | 13 | 1.5 | 8.0 – 12.0 | (58 – 86) |
| | 14 | 1.5 | 10.0 – 15.0 | (73 – 108) |
| | 14 | 2 | 9.5 – 14.0 | (69 – 101) |
| | 16 | 1.5 | 15.0 – 23.0 | (109 – 166) |
| | 16 | 2 | 14.0 – 22.0 | (102 – 159) |

– Note –

These torque specifications are applicable only for steel (female) threads. They do not apply to other types of material or if the tightening surface is subjected to heat or vibration.

TIGHTENING TORQUE FOR MAIN PARTS

| Tightening parts | kg-m | ft-lb |
|---|---------------|-----------|
| Cylinder head x Cylinder block | 5.4 – 6.6 | 40 – 47 |
| Rocker arm support x Cylinder head | 1.8 – 2.4 | 14 – 17 |
| Manifold x Cylinder head | 2.0 – 3.0 | 15 – 21 |
| Crankshaft bearing cap x Cylinder block | 5.4 – 6.6 | 40 – 47 |
| Connecting rod cap x Connecting rod | 4.0 – 5.2 | 29 – 37 |
| Crankshaft pulley x Crankshaft | 7.5 – 10.5 | 55 – 75 |
| Flywheel x Crankshaft | 5.4 – 6.6 | 40 – 47 |
| Camshaft timing sprocket x Camshaft | 5.4 – 6.6 | 40 – 47 |
| Spark plug x Cylinder head | 1.5 – 2.1 | 11 – 15 |
| Oil pan x Cylinder block | Standard bolt | 0.2 – 0.4 |
| | Step bolt | 0.3 – 0.7 |
| Exhaust manifold x Exhaust pipe | 3.0 – 4.5 | 22 – 32 |

SERVICE SPECIFICATIONS

ENGINE TUNE-UP

| | | | |
|--|-------------|-----------|-----------------|
| Drive belt deflection at 10 kg (22 lb) | | | |
| Fan – Alternator | 7 – 11 mm | | 0.28 – 0.43 in. |
| Crank – A/C compressor | 11 – 14 mm | | 0.43 – 0.55 in. |
| Battery electrolyte specific gravity at 20°C (68°F) | 1.25 – 1.27 | | |
| Engine oil capacity | | | |
| 2K, 3K-C & 3K-H | | | |
| Dry refill w/ Oil filter | 3.6 liters | 3.8 US qt | 3.2 Imp. qt |
| Drain & refill w/ Oil filter | 3.4 liters | 3.6 US qt | 3.0 Imp. qt |
| w/o Oil filter | 2.9 liters | 3.1 US qt | 2.6 Imp. qt |
| 4K & 4K-C | | | |
| Dry refill w/ Oil filter | 3.7 liters | 3.9 US qt | 3.3 Imp. qt |
| Drain & refill w/ Oil filter | 3.5 liters | 3.7 US qt | 3.1 Imp. qt |
| w/o Oil filter | 3.0 liters | 3.2 US qt | 2.6 Imp. qt |
| Coolant capacity w/ Heater | | | |
| 2K, 3K-C & 3K-H | 5.6 liters | 5.9 US qt | 4.9 Imp. qt |
| KE70 series (Europe & Sweden) | 5.8 liters | 6.1 US qt | 5.1 Imp. qt |
| KE70 series (ex. Europe & Sweden) | 6.2 liters | 6.6 US qt | 5.5 Imp. qt |
| KM20 series (4K RHD & 4K-C) | 6.7 liters | 7.1 US qt | 5.9 Imp. qt |
| KM20 series (4K LHD) | 6.9 liters | 7.3 US qt | 6.1 Imp. qt |
| USA & Canada 4K-C | 5.7 liters | 6.0 US qt | 5.0 Imp. qt |

ENGINE TUNE-UP (Cont'd)

| | | | | |
|--|-----------------------------------|----|---|--------------------------------|
| Spark plug | | | | |
| Gap | California & General Destinations | | 0.8 mm | 0.031 in. |
| | USA (ex. California) & Canada | | 1.1 mm | 0.043 in. |
| Distributor | Dwell angle | | 52° ± 6° | |
| | Rubbing block gap | | 0.45 mm | 0.0177 in. |
| | Air gap | | 0.20 – 0.40 mm | 0.0079 – 0.0157 in. |
| Ignition timing | | | 8° BTDC/Idling | |
| Firing order | | | 1–3–4–2 | |
| Valve clearance | Hot | IN | 0.20 mm | 0.0079 in. |
| | | EX | 0.30 mm | 0.0118 in. |
| | Cold | IN | 0.13 mm | 0.0051 in. |
| | | EX | 0.23 mm | 0.0091 in. |
| Idle speed | USA (ex. California) & Canada | | 650 rpm | Cooling fan OFF |
| | California | | 700 rpm | Cooling fan OFF |
| | 2K, 3K-C, 3K-H, 4K M/T & | | | |
| | Sweden 4K-C | | 750 rpm | (w/ cooling fan OFF) |
| | Australia 4K & 4K-C | | 800 rpm | |
| | 4K A/T | | 850 rpm | |
| CO concentration | | | | |
| | 2K (KP60 series), | | 0.5 – 1.5% | HIC system OFF/Idling |
| | 3K-C, 3K-H & 4K | | 0.5 – 3.5% | HIC system OFF/Idling |
| | 2K (KP36 series) | | 0.3 – 2.0% | HIC system OFF/Idling |
| | Sweden 4K-C | | 1.0% | HIC system OFF/Idling |
| | Australia 4K-C | | — | |
| | USA & Canada 4K-C | | | |
| Dash pot setting speed | | | | |
| | Australia 4K | | 1,700 rpm | |
| | 3K-C | | 2,000 rpm | Vacuum advance OFF |
| | Australia 4K-C & 4K (KM20 series) | | 2,100 rpm | AI system & Vacuum advance OFF |
| | Sweden 4K-C | | 2,300 rpm | |
| Throttle positioner (USA & Canada) | | | 2,000 rpm | EGR system OFF |
| Compression pressure at 250 rpm | STD | | 11.0 kg/cm ² | 156 psi |
| | Limit | | 9.0 kg/cm ² | 128 psi |
| Difference of pressure between cylinders | | | Less than 1.0 kg/cm ² (14 psi) | |

ENGINE**Cylinder Head**

| | | | |
|-----------------|-----------------------|---------------|--|
| Surface warpage | Limit | 0.05 mm | 0.0020 in. |
| Maximum reface | Limit | 0.2 mm | 0.008 in. |
| Valve seat | Contact surface angle | 45° | |
| | Contact width | IN | 1.1 – 1.8 mm |
| | | EX | 1.2 – 1.8 mm |
| | Refacing angle | 30°, 45°, 65° | 0.043 – 0.071 in. 0.047 – 0.071 in. |

Valve Guide Bushing

| | | | |
|--|----------|--------------------|---------------------|
| Protrusion from cylinder head | | 18 mm | 0.71 in. |
| Inner diameter | | 8.01 – 8.03 mm | 0.3154 – 0.3161 in. |
| Outer diameter | STD | 13.040 – 13.051 mm | 0.5134 – 0.5138 in. |
| | O/S 0.05 | 13.090 – 13.101 mm | 0.5154 – 0.5158 in. |
| Replacing temperature (Cylinder head side) | | 100 – 130°C | 212 – 266°F |

Valve

| | | | | |
|---------------------|-------|---------|------------------|---------------------|
| Overall length | STD | IN | 99.9 mm | 3.933 in. |
| | | EX | 100.1 mm | 3.941 in. |
| | Limit | IN & EX | 99.5 mm | 3.917 in. |
| Face angle | | | 44.5° | |
| Stem diameter | STD | IN | 7.965 – 7.980 mm | 0.3136 – 0.3142 in. |
| | | EX | 7.960 – 7.975 mm | 0.3134 – 0.3140 in. |
| Stem oil clearance | STD | IN | 0.030 – 0.065 mm | 0.0012 – 0.0026 in. |
| | | EX | 0.035 – 0.070 mm | 0.0014 – 0.0028 in. |
| | Limit | IN | 0.08 mm | 0.0031 in. |
| | | EX | 0.10 mm | 0.0039 in. |
| Head edge thickness | Limit | IN | 0.8 mm | 0.031 in. |
| | | EX | 0.9 mm | 0.035 in. |

Valve Spring

| | | | |
|------------------|-------|---------|-----------|
| Free length | | 46.5 mm | 1.831 in. |
| Installed length | | 38.4 mm | 1.512 in. |
| Installed load | STD | 31.8 kg | 70.1 lb |
| | Limit | 25.0 kg | 55.1 lb |
| Squareness | Limit | 1.6 mm | 0.063 in. |

Valve Rocker Arm & Shaft

| | | | |
|---------------|-------|----------------|---------------------|
| Oil clearance | STD | 0.02 – 0.04 mm | 0.0008 – 0.0016 in. |
| | Limit | 0.06 mm | 0.0024 in. |

Valve Lifter

| | | | |
|----------------|----------|--------------------|---------------------|
| Oil clearance | STD | 0.015 – 0.029 mm | 0.0006 – 0.0011 in. |
| | Limit | 0.1 mm | 0.004 in. |
| Outer diameter | STD | 19.978 – 19.999 mm | 0.7865 – 0.7874 in. |
| | O/S 0.05 | 20.028 – 20.049 mm | 0.7885 – 0.7893 in. |

Camshaft

| | | | | |
|-----------------------|-------|--------------------|-------------------------|---------------------|
| Circle runout | | Limit | 0.03 mm | 0.0012 in. |
| Thrust clearance | | STD | 0.070 – 0.138 mm | 0.0028 – 0.0054 in. |
| | | Limit | 0.3 mm | 0.012 in. |
| Bearing oil clearance | STD | No. 1, No. 4 | 0.025 – 0.066 mm | 0.0010 – 0.0026 in. |
| | | No. 2, No. 3 | 0.030 – 0.071 mm | 0.0012 – 0.0028 in. |
| | Limit | | 0.1 mm | 0.004 in. |
| | | | | |
| Journal diameter | STD | No. 1 (from front) | 43.209 – 43.225 mm | 1.7011 – 1.7018 in. |
| | | No. 2 | 42.954 – 42.970 mm | 1.6911 – 1.6917 in. |
| | | No. 3 | 42.704 – 42.720 mm | 1.6813 – 1.6819 in. |
| | | No. 4 | 42.459 – 42.475 mm | 1.6716 – 1.6722 in. |
| Bearing type | | | STD, U/S (0.125, 0.250) | |
| Cam height | STD | IN | 36.469 – 36.569 mm | 1.4358 – 1.4397 in. |
| | | EX | 36.369 – 36.469 mm | 1.4318 – 1.4358 in. |
| | Limit | IN | 36.17 mm | 1.4240 in. |
| | | EX | 36.07 mm | 1.4201 in. |

Timing Chain Tensioner & Damper

| | | | |
|----------------------------------|-------|---------|-----------|
| Tensioner plunger head thickness | Limit | 12.0 mm | 0.472 in. |
| Vibration damper thickness | Limit | 7.0 mm | 0.276 in. |

Timing Chain & Sprocket

| | | | |
|------------------------------|-------|----------|------------|
| Chain slack at 10 kg (22 lb) | Limit | 13.5 mm | 0.531 in. |
| Chain elongation | Limit | 272.7 mm | 10.736 in. |
| Crankshaft sprocket wear | Limit | 59.4 mm | 2.339 in. |
| Camshaft sprocket wear | Limit | 113.8 mm | 4.480 in. |

Manifold

| | | | |
|----------------------------|-------|--------|-----------|
| Installing surface warpage | Limit | 0.3 mm | 0.012 in. |
|----------------------------|-------|--------|-----------|

Cylinder Block

| | | | | |
|---|---------------|----------|--------------------------------|---------------------|
| Warpage | | Limit | 0.05 mm | 0.0020 in. |
| Cylinder bore | 2K | STD | 72.00 – 72.05 mm | 2.8346 – 2.8366 in. |
| | 3K, 4K Series | STD | 75.00 – 75.05 mm | 2.9528 – 2.9547 in. |
| Wear | | Limit | 0.2 mm | 0.008 in. |
| Taper and out-of-round | | Limit | Less than 0.02 mm (0.0008 in.) | |
| Difference of bore diameter between cylinders | | | Less than 0.05 mm (0.0020 in.) | |
| Valve lifter bore diameter | | STD | 20.000 – 20.021 mm | 0.7874 – 0.7882 in. |
| | | O/S 0.05 | 20.050 – 20.071 mm | 0.7894 – 0.7902 in. |

Piston & Piston Ring

| | | | | |
|--------------------------------------|------------------------|----------------|---------------------|---------------------|
| Piston diameter | 2K | STD | 71.96 – 72.01 mm | 2.8331 – 2.8350 in. |
| | | O/S 0.50 | 72.46 – 72.51 mm | 2.8528 – 2.8547 in. |
| | | O/S 0.75 | 72.71 – 72.76 mm | 2.8626 – 2.8646 in. |
| | | O/S 1.00 | 72.96 – 73.01 mm | 2.8724 – 2.8744 in. |
| | 3K, 4K Series | STD | 74.96 – 75.01 mm | 2.9512 – 2.9531 in. |
| | | O/S 0.50 | 75.46 – 75.51 mm | 2.9709 – 2.9728 in. |
| | | O/S 0.75 | 75.71 – 75.76 mm | 2.9807 – 2.9827 in. |
| | | O/S 1.00 | 75.96 – 76.01 mm | 2.9905 – 2.9925 in. |
| Cylinder to piston clearance | | 0.03 – 0.05 mm | 0.0012 – 0.0020 in. | |
| Piston ring end gap | Compression ring No. 1 | 0.10 – 0.28 mm | 0.0039 – 0.0110 in. | |
| | Compression ring No. 2 | 0.15 – 0.30 mm | 0.0059 – 0.0118 in. | |
| | Oil ring | 0.2 – 0.9 mm | 0.008 – 0.035 in. | |
| Piston ring to ring groove clearance | | | | |
| | Compression ring No. 1 | 0.03 – 0.07 mm | 0.0012 – 0.0028 in. | |
| | Compression ring No. 2 | 0.02 – 0.06 mm | 0.0008 – 0.0024 in. | |
| Piston pin installing temperature | | 70 – 80°C | 158 – 176°F | |

Connecting Rod & Bearing

| | | | |
|--------------------------------------|-------|-----------------------------------|---------------------|
| Thrust clearance | STD | 0.200 – 0.304 mm | 0.0079 – 0.0120 in. |
| | Limit | 0.35 mm | 0.0138 in. |
| Bearing oil clearance | STD | 0.016 – 0.040 mm | 0.0006 – 0.0016 in. |
| | Limit | 0.10 mm | 0.0039 in. |
| Bearing type | | STD, U/S (0.05, 0.25, 0.50, 0.75) | |
| Bushings to piston pin oil clearance | STD | 0.004 – 0.008 mm | 0.0002 – 0.0003 in. |
| | Limit | 0.05 mm | 0.0020 in. |

Crankshaft

| | | | |
|----------------------------|-----------|-----------------------------------|---------------------|
| Circle runout | Limit | 0.04 mm | 0.0016 in. |
| Thrust clearance | STD | 0.040 – 0.242 mm | 0.0016 – 0.0095 in. |
| | Limit | 0.3 mm | 0.012 in. |
| Taper and out-of-round | Limit | 0.01 mm | 0.0004 in. |
| Main journal oil clearance | STD | 0.016 – 0.040 mm | 0.0006 – 0.0016 in. |
| | Limit | 0.10 mm | 0.0039 in. |
| Main journal bearing type | | STD, U/S (0.05, 0.25, 0.50) | |
| Main journal diameter | STD | 49.976 – 50.000 mm | 1.9676 – 1.9685 in. |
| U/S finished diameter | U/S 0.25 | 49.733 – 49.743 mm | 1.9580 – 1.9584 in. |
| | U/S 0.50 | 49.483 – 49.493 mm | 1.9481 – 1.9485 in. |
| Pin journal oil clearance | STD | 0.016 – 0.040 mm | 0.0006 – 0.0016 in. |
| | Limit | 0.10 mm | 0.0039 in. |
| Pin journal bearing type | | STD, U/S (0.05, 0.25, 0.50, 0.75) | |
| Pin journal diameter | STD | 41.976 – 42.000 mm | 1.6526 – 1.6535 in. |
| U/S finished diameter | U/S 0.25 | 41.723 – 41.733 mm | 1.6426 – 1.6430 in. |
| | U/S 0.50 | 41.473 – 41.483 mm | 1.6328 – 1.6332 in. |
| | U/S 0.75 | 41.223 – 41.233 mm | 1.6229 – 1.6233 in. |
| Thrust washer thickness | STD | 2.43 – 2.48 mm | 0.0957 – 0.0976 in. |
| | O/S 0.125 | 2.49 – 2.54 mm | 0.0980 – 0.1000 in. |
| | O/S 0.250 | 2.55 – 2.60 mm | 0.1004 – 0.1024 in. |

Flywheel

| | | | |
|---------------|-------|--------|-----------|
| Circle runout | Limit | 0.1 mm | 0.004 in. |
|---------------|-------|--------|-----------|

LUBRICATING SYSTEM**Oil Pump**

| | | | |
|----------------|-------|----------------|---------------------|
| Tip clearance | STD | 0.04 – 0.16 mm | 0.0016 – 0.0063 in. |
| | Limit | 0.2 mm | 0.008 in. |
| Side clearance | STD | 0.03 – 0.09 mm | 0.0012 – 0.0035 in. |
| | Limit | 0.15 mm | 0.0059 in. |
| Body clearance | STD | 0.10 – 0.16 mm | 0.0039 – 0.0063 in. |
| | Limit | 0.2 mm | 0.008 in. |

COOLING SYSTEM**Radiator**

| | | | |
|--|-------|--------------------------------|-----------------|
| Radiator cap relief valve opening pressure | | | |
| | STD | 0.75 – 1.05 kg/cm ² | 10.7 – 14.9 psi |
| | Limit | 0.6 kg/cm ² | 8.5 psi |

Water Pump

| | | |
|--------------------------------|-----------|-------------|
| Bearing installing temperature | 75 – 85°C | 167 – 185°F |
|--------------------------------|-----------|-------------|

Thermostat

| Valve opening temperature | Low temp. type | | High temp. type | |
|---------------------------|-------------------------------------|------------------------------------|-----------------|--|
| | Start to open at | 82°C 180°F | 88°C 190°F | |
| Fully opens at | 95°C 203°F | 100°C 212°F | | |
| Valve opening travel | More than 8 mm (0.31 in.) | More than 8 mm (0.31 in.) | | |
| Identification mark | 82 punch mark or Blue painting mark | 88 punch mark or Red painting mark | | |

FUEL SYSTEM**Carburetor (Except KP 61 Series & KM 20 Series)**

| | | | | | |
|--|-----------|--|--|-----------------------|---------------------|
| Acceleration pump stroke | | | | 4.85 mm | 0.1909 in. |
| 2K, 4K & 4K-C | | | | 3.25 mm | 0.1280 in. |
| 3K-C & 3K-H | | | | | |
| Float level | | | | | |
| Raised position | | | | | |
| 2K, 3K-C & 3K-H | | | | 6.0 mm | 0.236 in. |
| 4K & 4K-C | | | | 7.5 mm | 0.295 in. |
| Lowered position | | | | | |
| 2K, 3K-C & 3K-H | | | | 0.9 mm | 0.035 in. |
| 4K & 4K-C | | | | 0.6 mm | 0.024 in. |
| Throttle valve closed angle | Primary | | | 9° | |
| (from horizontal plane) | Secondary | | | 20° | |
| Throttle valve fully opened angle | Primary | | | 90° | |
| (from horizontal plane) | Secondary | | | 90° | |
| Fast idle angle at choke valve fully closed | | | | | |
| (from horizontal plane) | | | | 26° | |
| Choke breaker clearance (Europe 4K A/T) | | | | 2.22 – 2.32 mm | 0.0874 – 0.0913 in. |
| Idle mixture adjusting screw preset position | | | | | |
| 2K & 4K | | | | Screw out 2-1/2 turns | |
| 3K-C & 3K-H | | | | Screw out 3 turns | |
| 4K-C | | | | Screw out 1-1/2 turns | |

| | | | | | | |
|--------------|-----------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| Jet diameter | | 2K (KP36 series) | 2K (KP60 series) | 3K-C & 3K-H | 4K | 4K-C |
| Main jet | Primary | 0.92 mm (0.0362 in.) | 0.96 mm (0.0378 in.) | 1.05 mm (0.0413 in.) | 1.05 mm (0.0413 in.) | 1.10 mm (0.0433 in.) |
| | Secondary | 1.62 mm (0.0638 in.) | 1.59 mm (0.0626 in.) | 1.41 mm (0.0555 in.) | 1.68 mm (0.0661 in.) | 1.53 mm (0.0602 in.) |
| Slow jet | | 0.47 mm (0.0185 in.) | 0.45 mm (0.0177 in.) | 0.47 mm (0.0185 in.) | 0.50 mm (0.0197 in.) | 0.53 mm (0.0209 in.) |
| Power jet | | 0.85 mm (0.0335 in.) | 0.73 mm (0.0287 in.) | 0.80 mm (0.0315 in.) | 0.60 mm (0.0236 in.) | 0.80 mm (0.0315 in.) |

Carburetor (KP 61 Series & KM 20 Series)

| | | | | | |
|---|-----------|-----------------------|--|-------------------|--|
| Acceleration pump stroke | | | | | |
| KP61 series | | 3.25 mm | | 0.1280 in. | |
| KM20 series | | 5.0 mm | | 0.197 in. | |
| Float level | | | | | |
| Raised position | | 7.5 mm | | 0.295 in. | |
| Lowered position | | 0.9 mm | | 0.035 in. | |
| Throttle valve closed angle | Primary | 9° | | | |
| (from horizontal plane) | Secondary | 20° | | | |
| Throttle valve fully opened angle | Primary | 90° | | | |
| (from horizontal plane) | Secondary | 75° (KP61 series) | | 90° (KM20 series) | |
| Kick-up | | | | | |
| Secondary throttle valve to body clearance (Primary throttle valve fully opened) | | | | | |
| KP61 series | | 0.22 mm | | 0.0087 in. | |
| KP20 series | | 0.32 mm | | 0.0126 in. | |
| Secondary touch angle (from horizontal plane) | | 50° | | | |
| Fast idle angle at first cam (from horizontal plane) | | | | | |
| General destinations & Europe | | 24° | | | |
| USA & Canada | | 26° | | | |
| Australia | | 25° | | | |
| Choke opener angle (from horizontal plate) | | 72° | | | |
| Choke breaker angle (from horizontal plane) | | 64° | | | |
| Idle mixture adjusting screw preset position | | Screw out 2-1/4 turns | | | |

| | | | | | |
|--------------|-----------|-------------------------|-------------------------|-------------------------|-------------------------------------|
| Jet diameter | | 4K | 4K-C Australia | 4K-C California | USA (ex. California) & Canada |
| Main jet | Primary | 1.02 mm (0.0402 in.) | 1.03 mm (0.0406 in.) | 1.05 mm (0.0413 in.) | 1.02 mm (0.0402 in.) |
| | Secondary | 1.53 mm (0.0602 in.) | 1.53 mm (0.0602 in.) | 1.35 mm (0.0531 in.) | 1.32 mm (0.0520 in.) |
| Slow jet | Primary | 0.44 mm (0.0173 in.) | 0.45 mm (0.0177 in.) | 0.48 mm (0.0189 in.) | 0.48 mm (0.0189 in.) |
| | Secondary | 0.80 mm (0.0315 in.) | 0.80 mm (0.0315 in.) | — | — |
| Power jet | | 0.50 mm (0.0197 in.) | 0.50 mm (0.0197 in.) | 0.47 mm (0.0185 in.) | 0.47 mm (0.0185 in.) |

STARTING SYSTEM

Starter

| | | | | | | | |
|-------------------------------------|--------|-------|--|---|-----------|---|-----------|
| Motor type | | | | Conventional type | | Reduction type | |
| Rating voltage and output power | | | | 12V, 0.6 kw & 0.8 kw | | 12V, 1.0 kw | |
| No-load characteristic | | | | | | | |
| Current | 0.6 kw | | | Less than 55 A at 11 V | | Less than 90 A at | |
| | 0.8 kw | | | Less than 50 A at 11 V | | 11.5 V | |
| Revolution | 0.6 kw | | | 3,500 rpm | | More than 3,000 rpm | |
| | 0.8 kw | | | 5,000 rpm | | | |
| Armature shaft | | | | | | | |
| Outer diameter | | | | 12.43 – 12.44 mm (0.4894 – 0.4898 in.) | | —— | |
| Bushing bore | | | | 12.475 – 12.505 mm (0.4911 – 0.4923 in.) | | —— | |
| Bushing to shaft clearance | | STD | | 0.035 – 0.077 mm (0.0014 – 0.0030 in.) | | —— | |
| Thrust clearance | | Limit | | 0.2 mm 0.008 in. | | —— | |
| | | Limit | | 1 mm 0.04 in. | | —— | |
| Commutator | | | | | | | |
| Outer diameter | 0.6 kw | STD | | 32.7 mm | 1.287 in. | 30 mm | 1.18 in. |
| | | Limit | | 31.0 mm | 1.220 in. | 29 mm | 1.14 in. |
| | 0.8 kw | STD | | 28 mm | 1.10 in. | | |
| | | Limit | | 27 mm | 1.06 in. | | |
| Runout | | Limit | | 0.3 mm | 0.012 in. | 0.2 mm | 0.008 in. |
| Mica depth | | STD | | 0.4 – 0.8 mm (0.016 – 0.031 in.) | | 0.45 – 0.75 mm (0.0177 – 0.0295 in.) | |
| | | Limit | | 0.2 mm 0.008 in. | | ← | |
| Brush | | | | | | | |
| Length | 0.6 kw | STD | | 19 mm | 0.75 in. | 13.5 mm | 0.531 in. |
| | | Limit | | 10 mm | 0.39 in. | ← | |
| | 0.8 kw | STD | | 16 mm | 0.63 in. | | |
| | | Limit | | 10 mm | 0.39 in. | | |
| Spring tension | 0.6 kw | | | 1.05 – 1.35 kg (2.3 – 2.9 lb) | | 1.5 – 2.0 kg (3.3 – 4.4 lb) | |
| | 0.8 kw | | | 1.02 – 1.38 kg (2.2 – 3.0 lb) | | —— | |
| Pinion end to stop collar clearance | | | | 0.1 – 4.0 mm (0.004 – 0.157 in.) | | | |

IGNITION SYSTEM

Distributor

| | | |
|---------------------------------|----------------|---------------------|
| Rubbing block gap | 0.45 mm | 0.0177 in. |
| Air gap | 0.2 – 0.4 mm | 0.008 – 0.016 in. |
| Dwell angle | 52° ± 6° | |
| Governor shaft thrust clearance | 0.15 – 0.50 mm | 0.0059 – 0.0197 in. |
| Signal generator resistance | 140 – 180 Ω | |

Distributor (Cont'd)

| Distributor advance angle (Part No.) | Governor | | Vacuum | | |
|--|------------------------------------|--|----------|--------------|----------------|
| | Dis. rpm | Advance angle | mm Hg | in. Hg | Advance angle |
| (19100-24050) | 500 ± 100 | Advance begins | 110 ± 20 | 4.33 ± 0.78 | Advance begins |
| (19100-24120) | 1,750 | 12 ± 1° | 200 | 7.87 | 6 ± 1.5° |
| 2K Europe, 3K-H | 3,000 | 14 ± 1° | 260 | 10.24 | 9 ± 1.0° |
| (19100-24170) | 650 ± 100 | Advance begins | 110 ± 20 | 4.33 ± 0.78 | Advance begins |
| 3K-C | 1,700 | 9.5 ± 1° | 200 | 7.87 | 6 ± 1.5° |
| | 3,100 | 13.5 ± 1° | 260 ± 10 | 10.24 ± 0.39 | 9 ± 1.0° |
| (19100-13100) | 600 ± 100 | Advance begins | 100 ± 20 | 3.94 ± 0.79 | Advance begins |
| (19100-13110) | 1,750 | 12.0 ± 1° | 141 ± 5 | 5.55 ± 0.20 | 3.6 ± 1.0° |
| 2K General & 4K | 2,700 | 14.0 ± 1° | 180 ± 10 | 7.13 ± 0.39 | 6.5 ± 0.7° |
| | | | 220 ± 5 | 8.66 ± 0.20 | 9.0 ± 1.0° |
| (19100-13080) | 650 | Advance begins | 100 ± 15 | 3.94 ± 0.59 | Advance begins |
| 4K Europe | 1,700 | 9.5 ± 1° | 150 | 5.91 | 4.6 ± 1.5° |
| KM20 series | 3,100 | 13.5 ± 1° | 210 | 8.27 | 9.0 ± 1.4° |
| | | | 270 ± 5 | 10.63 ± 0.20 | 12.0 ± 1.0° |
| (19100-24101) | 650 ± 110 | Advance begins | 100 ± 15 | 3.94 ± 0.59 | Advance begins |
| 4K & 4K-C | 1,700 | 9.5 ± 1° | 210 | 8.27 | 9.0 ± 1.4° |
| Australia | 3,100 | 13.5 ± 1° | 270 ± 5 | 10.63 ± 0.20 | 12.0 ± 1.0° |
| (19100-13070) 4K-C Sweden | 600 ± 120 947 1,800 3,000 | Advance begins 2.8 ± 1° 11 ± 1° 14.5 ± 1° | Main | | |
| | | | 110 ± 20 | 4.33 ± 0.78 | Advance begins |
| | | | 170 ± 7 | 6.69 ± 0.28 | 4.2 ± 0.9° |
| | | | 230 ± 5 | 9.06 ± 0.20 | 7.5 ± 1.0° |
| | | | Sub | | |
| | | | 300 ± 21 | 11.81 ± 0.83 | Advance begins |
| | | | 380 ± 5 | 14.96 ± 0.20 | 5 ± 1.0° |
| (19100-13090) (19100-13130) 4K-C USA & Canada | 500 1,800 2,800 | Advance begins 11 ± 1° 13.5 ± 1° | Main | | |
| | | | 80 ± 15 | 3.15 ± 0.59 | Advance begins |
| | | | 200 ± 15 | 7.87 ± 0.20 | 9.2° ± 1.0° |
| | | | 300 | 11.81 | 15° ± 1.0° |
| | | | Sub | | |
| | | | 170 | 6.69 | Advance begins |
| | | | 230 | 9.06 | 5° ± 1.0° |

Ignition Coil

| | | |
|------------------------------|----------------------|------------------------|
| Primary coil resistance | w/o Igniter | 1.2 – 1.5 Ω |
| | w/ Igniter | 1.3 – 1.7 Ω |
| Secondary coil resistance | w/o Igniter | 8 – 12 k Ω |
| | w/ Igniter | 10 – 15 k Ω |
| External resistor resistance | w/o Igniter | 1.3 – 1.5 Ω |
| | w/ Igniter | 1.1 – 1.3 Ω |
| Insulation resistance | w/500 V megohm meter | More than 10M Ω |

High Tension Cord

| | | |
|------------|-------|-------------------------------|
| Resistance | Limit | Less than 25 k Ω /cord |
|------------|-------|-------------------------------|

Spark Plug

| | | | |
|------|-----------------------------------|-----|--|
| Type | General Destinations | ND | W16EP, W16EX-U |
| | | NGK | BP5ES-L, BP5EA-L |
| | Europe & Sweden | ND | W16EPR, W16EXR-U |
| | | NGK | BPR5ES, BPR5EA-L, BPR5EY |
| | Australia | ND | W16EX-U, W14EX-U |
| | | NGK | BP5EA-L, BP5EA |
| | USA (ex. California) & Canada | ND | W14EXR-U11, W16EXR-U11 |
| | | NGK | BPR5EA11, BPR5EA-L11, BPR4EY11, BPR5EY11 |
| | California | ND | W14EXR-U, W16EXR-U |
| | | NGK | BPR5EA, BPR5EA-L, BPR4EY, BPR5EY |
| Gap | California & General Destinations | | 0.8 mm 0.031 in. |
| | | | 1.1 mm 0.043 in. |

CHARGING SYSTEM**Alternator**

| | | | | |
|-----------------------|-------|------------------------|-----------|--------------------|
| Rating output current | | w/o IC regulator | | w/ IC regulator |
| | | 30 A, 40 A, 45 A, 50 A | | 45 A |
| Rotor coil resistance | | 3.9 – 4.1 Ω | | 2.8 – 3.0 Ω |
| Brush exposed length | STD | 12.5 mm | 0.492 in. | ← |
| | Limit | 5.5 mm | 0.217 in. | ← |

Alternator Regulator

| | | |
|--------------------|---------------|----------------------------------|
| Regulating voltage | Tirril type | 13.8 – 14.8 V (w/o IC regulator) |
| | Built-in type | 13.8 – 14.4 V (w/ IC regulator) |

Prepared by

TOYOTA MOTOR SALES CO., LTD.

Export-Technical Department

Haruhi Center

First Printing: February, 1981

Publication No. 36103

Printed in Japan

