



Sourcing & Service

TOYOTA DIESEL

Liner Kit | Cylinder Kit



REO TECHNOLOGY CORP.

Version:2016

Important Information

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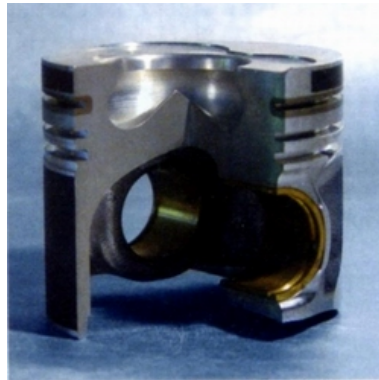
Subject to be changed without notice.

1. Design feature of Pistons



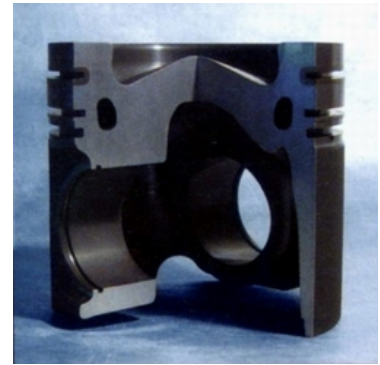
Cast Piston

Distinguish itself with a long operating life and economic viability for gasoline and diesel engines. In this piston, the piston crown, ring zone and skirt make a robust unit. Therefore the possibilities for use range from a small to a large engine



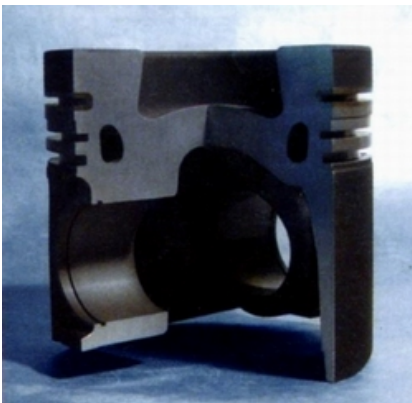
Al-fin Piston

Have a ring carrier made of special cast iron which is cast into piston. This provides protection to the top ring groove from the wear and tear which diesel engines in particular are increase the loads to which the pin boss can be subjected.



Al-fin & cooling gallery piston

The piston is used in situations in which particularly high operating temperature occur. In order to reduce the high temperatures—which are caused by the increased performance—in the piston crown and in the ring area, intensive cooling is done by circulating oil in the cooling gallery.



Al-fin, cooling gallery & head anodized piston

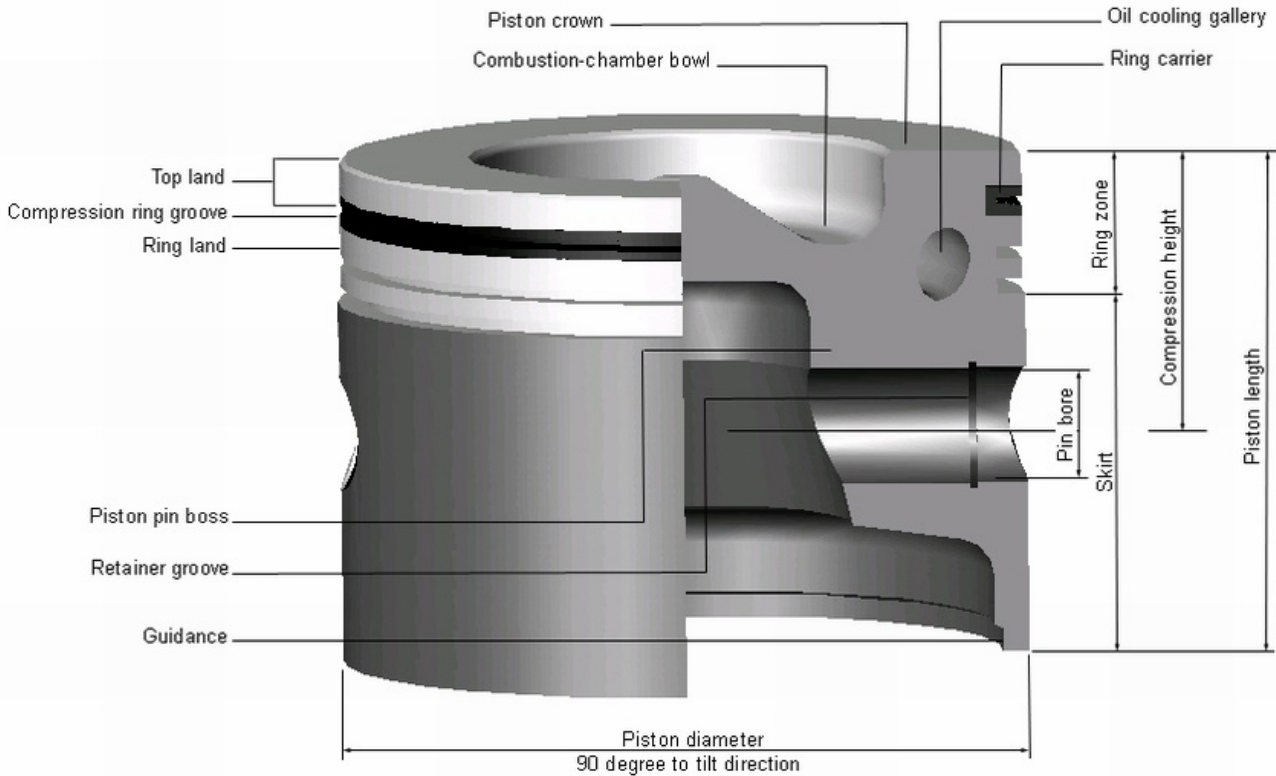
This design is used for highly loaded diesel engines. For additional protection and in order to avoid cracking in the combustion chamber and the crown, the piston has a special hard anodized layer on the piston crown. (Head anodized)



Two pieces piston

Consist of a steel piston head and an aluminum piston skirt which have a moveable connection to each other via the piston pin. Due to great strength and low wear and tear, it is possible to achieve low exhaust emission values for diesel engines that are subjected to particularly high loads.

2. Technical Terms of the piston



Fitting recommendation

Shrink fit

Assembling pistons and pins with shrink fit in the con rod requires the greatest of care. It is particularly important that there is freedom of movement between piston and pin after assembly.

Floating pin

For pistons with floating pins, the enclosed circlips serve to fix the piston in the piston pin bore. The circlips must be mounted with a suitable tool. When this is done it should be ensured that the circlips fit completely into the slot for which they are intended and that the impact is always in the stroke direction of the piston.

Never use old circlips and avoid pressing them together too much, otherwise permanent deformations can result.

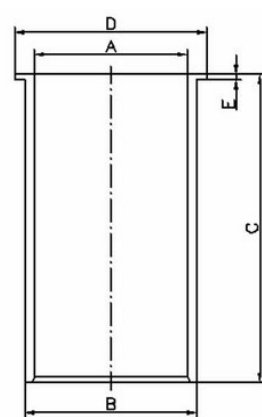
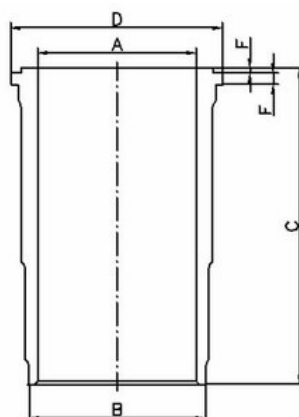
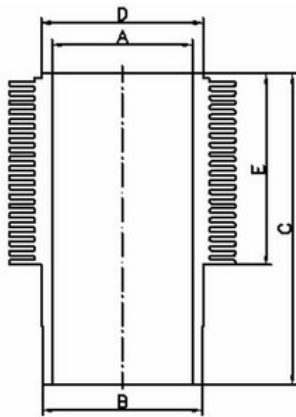
Installation of the piston

When the piston is installed, the installation direction must be observed. The impacts on the individual piston rings are to be distributed evenly across their circumference. The pin locking device is to be installed in such a way that the impact is at the top or the bottom. The cylinder bore or the pistons and the rings must be oiled.

In order to avoid damage when the piston is being fitted in the cylinder bore, a suitable tool is to be used for assembly.

In the case of Diesel engines, the clearance must be measured and the relevant instructions from the engine manufacturer must be followed. The part of the engine (cylinder block, crankshaft, con rod and piston) must be cleaned carefully before assembly to remove machining residues and deposits.

3. Types and technical terms of the cylinder liner



Main dimensions

- A = maximum finished diameter for pre-machined liners(Fully-finished)
- B = Fitting diameter
- C =Total length
- D =Flange diameter
- E =Flange height
- F =Fire protection rim height

Fitting recommendation

Wet cylinder liners



The location bores and particularly the running surfaces in the cylinder block must be cleaned carefully, and they must be undamaged. Corroded surfaces must be reworked (use flange liners and outer diameter oversize liners). As this is done, make sure that the liners move in easily and that they take up the correct position (the projecting length of the liner must be in accordance with the regulations of the engine manufacturer). After the liner has been installed with the seal rings that belong to it (use slip agent), the cylinder diameter is to be checked—particularly in the region of seal rings—so as to determine whether any deformation has been caused by pinched sealing rings. Using the wrong sealing rings (wrong diameter/wrong material) can cause a narrowing of the cylinder, which can lead to engine damage. The cooling system should be pressure tested after the liners have been installed, so as to determine whether there is any leakage before the engine is started.

Semi-finished cylinder liners



The surface which supports the flange must be vertical to the location bore and it must be sufficiently and evenly beveled. If the liner flange is unevenly supported it can tear off. After the installation of the liner, which is only semi-finished in its inside diameter, this cylinder boring is finely bored and then finished by honing until it has the specified dimensions or, in the case of finely bored liner, it is only finished by honing (tolerance accordingly to DIN/ISO H5). The surface of the liner must be flush to the sealing surface of the cylinder block; if necessary, the block surface and the liner must be finished by surface grinding.

Finished cylinder liners



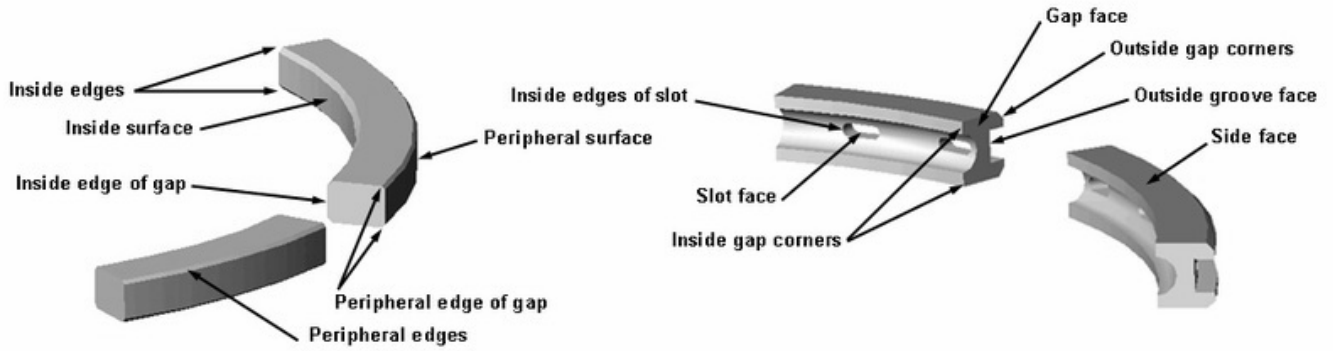
Before the liner is installed, the locating bore in the cylinder block must be cleaned carefully, and must be checked to ensure the accuracy of the dimensions and to determine whether any distortion has occurred. Out-of-center or damaged bores can be reworked for the installation of oversize liners. It is important for this that the locating bore is cylindrical, as this is what determines the geometrical shape of the inside of the pressed-in, thin-walled liner.

Finned cylinders



In accordance with the instructions from the engine manufacturer, cast iron cylinders or light alloy cylinders are used. Light alloy cylinders are separated into several groups due to the small installation clearance in the standard cylinder dimensions.

4. Types and technical terms of the piston ring



Cross-section configurations

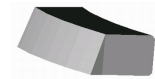
Sealing rings



Barrel-faced ring



Rectangular ring



Taper-faced ring



Half keystone ring



Keystone ring



Napier ring



Scraper ring(Stepped)

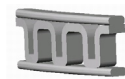
Oil control rings



Bevelled edge oil control ring

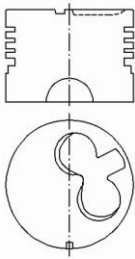
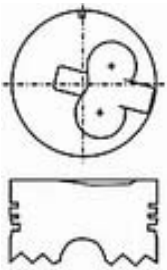
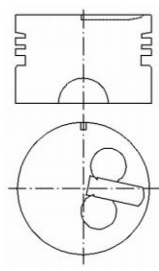
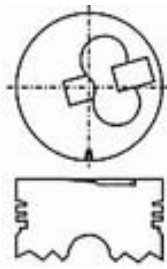


Coil spring loaded beveled edge
oil control ring

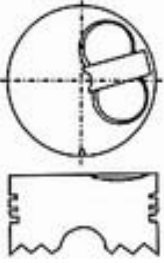
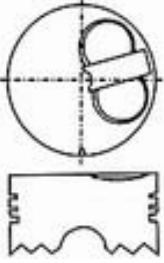
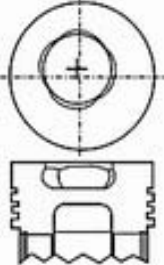
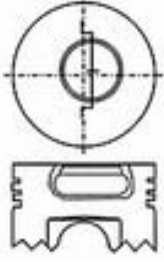


Steel-rail oil control ring
(multi piece)

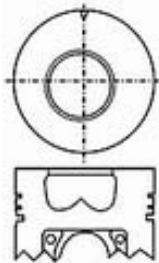


Liner Kit For TOYOTA

Engine Code	Bore Size (m/m)	No of Cyl.	Liner Kit	Liner	Piston	Pin Bushing	Ring
B BU15 Dyna 2977cc	95.0	4		11461-56010	13101-56011		13011-56011 R28110
Piston : Liner :				Length 190.0 O/D 100.0 Flange Dia. 108.0 Flange Height 2.5+1.0	Length 101.3 Comp. Height 52.3 Pin Dia. 29.0 Length 79.0		1st 2.5H 2nd 2.5 3rd 2.5 Oil 4.5
B BU30 Dyna Toyoace 2977cc	95.0	4	TYKT1560300	11461-56020	13101-56030	90999-73065	13011-56012 13011-56013 13011-56021 13011-56022 R28910
Piston : Liner :				Length 190.0 O/D 102.0 Flange Dia. 108.0 Flange Height 2.5+1.0	Length 101.3 Comp. Height -2.6 Pin Dia. 29.0 Length 79.1		1st 2.5H 2nd 2.5 Oil 4.5
B Late Dyna Toyoace 2977cc	95.0	4			13101-56050		13011-56040 R28715
Piston : Liner :				Length O/D Flange Dia. Flange Height	Length 101.2 Comp. Height 52.2 Pin Dia. 29.0 Length 72.0		1st 2.5H 2nd 2.5 Oil 4.0
2B Landcruiser 3168cc	98.0	4	TODKT1701	11461-57010	13101-57011	90999-73065	13011-57010 R28180
Piston : Liner :				Length 190.0 O/D 102.0 Flange Dia. 107.6 Flange Height 2.5+1.0	Length 101.2 Comp. Height -3.2 Pin Dia. 32.0 Length 77.0		1st 2.5H 2nd 2.5 Oil 4.5

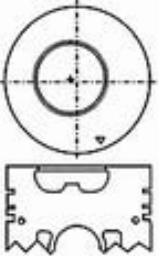
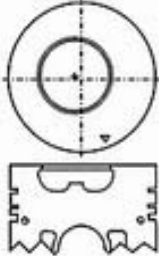
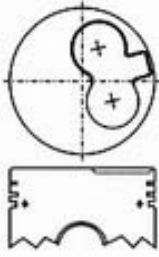
Liner Kit For TOYOTA

Engine Code	Bore Size (m/m)	No of Cyl.	Liner Kit	Liner	Piston	Pin Bushing	Ring
3B Landcruiser Dyna Coaster 3431cc	102.0	4	TODKT2702	11461-58010	13101-58011	90999-73088	13011-58010 13011-58011 R28880
Piston : Liner :				Length 187.5 O/D 106.0 Flange Dia. 111.7 Flange Height 2.5+1.0	Length 101.3 Comp. Height -5.1 Pin Dia. 32.0 Length 84.0		1st 2.5H 2nd 2.5 Oil 4.0
3B New Landcruiser Dyna Coaster 3431cc	102.0	4	TYKT1580500	11461-58010	13101-58050	90999-73116	13011-58050 13011-58051 R28880
Piston : Al-Fin Liner :				Length 187.5 O/D 106.0 Flange Dia. 111.7 Flange Height 2.5+1.0	Length 101.2 Comp. Height -5.0 Pin Dia. 32.0 Length 72.0		1st 2.5H 2nd 2.0 Oil 4.0
11B BU65 Dyna Toyoace 2977cc	95.0	4	TYKT1560410	11461-56030	13101-56041	90999-73099	13011-56012 13011-56013 13011-56021 13011-56022 R28910
Piston : Liner :				Length 190.0 O/D 99.0 Flange Dia. 104.6 Flange Height 2.5+1.0	Length 98.2 Comp. Height -18.0 Pin Dia. 34.0 Length 75.0		1st 2.5H 2nd 2.5 Oil 4.5
11B New BU84 Dyna Toyoace 2977cc	95.0	4	TYKT1560600	11461-56060	13101-56060	90999-73116	13011-56040 13011-56041 R28715 R28855
Piston : Al-fin & Round Combustion Chamber 38mm Liner :				Length 190.0 O/D 99.0 Flange Dia. 104.6 Flange Height 2.5+1.0	Length 90.4 Comp. Height -20.3 Pin Dia. 32.0 Length 72.0		1st 2.5H 2nd 2.0 Oil 4.0

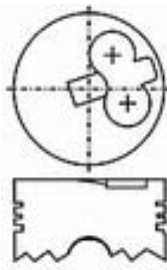
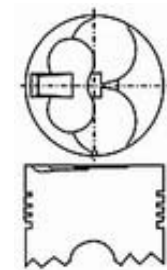
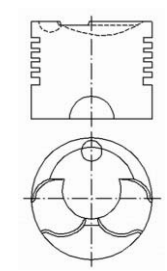
Liner Kit For TOYOTA

Engine Code	Bore Size (m/m)	No of Cyl.	Liner Kit	Liner	Piston	Pin Bushing	Ring
13B Dyna Coaster 3431cc	102.0	4	TODKT4803	11461-58020	13101-58021	90999-73099	13011-58030 R28881
Piston : Al-fin & Round Combustion Chamber 46mm Liner :				Length 187.5 O/D 106.0 Flange Dia. 111.7 Flange Height 2.5+1.0	Length 104.4 Comp. Height -22.0 Pin Dia. 34.0 Length 84.0		1st 2.5 2nd 2.5 Oil 4.5
13BT Dyna Coaster 3431cc	102.0	4	TYKT1580300	11461-58020	13101-58030		13011-58040 R28815
Piston : Al-fin & Round Combustion Chamber 49mm Liner :				Length 187.5 O/D 106.0 Flange Dia. 111.7 Flange Height 2.5+1.0	Length 98.4 Comp. Height 63.5 Pin Dia. 34.0 Length 79.0		1st 2.5H 2nd 2.5 Oil 4.5
14B Dyna Coaster 3660cc	102.0	4	TODKT6021	11461-58040	13101-58040	90999-73116	13011-58050 13011-58051 R28882
Piston : Al-fin & Round Combustion Chamber 42mm Liner :				Length 192.0 O/D 106.0 Flange Dia. 111.7 Flange Height 2.5+1.0	Length 86.9 Comp. Height -18.8 Pin Dia. 32.0 Length 72.0		1st 2.5H 2nd 2.0 Oil 4.0
14BT Dyna Coaster 3660cc	102.0	4	TYKT1580600	11461-58040	13101-58060	90999-73100	13011-58060 R28575
Piston : Al-fin & Round Combustion Chamber 42mm Liner :				Length 192.0 O/D 106.0 Flange Dia. 111.7 Flange Height 2.5+1.0	Length 94.8 Comp. Height -19.1 Pin Dia. 34.0 Length 79.0		1st 3.0H 2nd 2.0 Oil 4.0

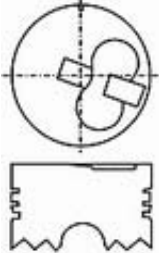
Liner Kit For TOYOTA

Engine Code	Bore Size (m/m)	No of Cyl.	Liner Kit	Liner	Piston	Pin Bushing	Ring
15B 4104cc	108.0	4	TYKT1580800	11461-58080	13101-58080	90999-73134	13011-58080
Piston : Al-fin, Round Combustion Chamber 48mm Liner :				Length 200.0 O/D 112.0 Flange Dia. Flange Height	Length 94.5 Comp. Height -21.3 Pin Dia. 34.0 Length 73.0		1st 3.0H 2nd 2.0 Oil 4.0
15BT 4104cc	108.0	4	TYKT1580910	11461-58080	13101-58091	90999-73134	13011-58090
Piston : Al-fin & Oil Gallery Liner :				Length 200.0 O/D 112.0 Flange Dia. Flange Height	Length 94.5 Comp. Height -16.0 Pin Dia. 34.0 Length 73.0		1st 3.0H 2nd 2.0 Oil 4.0
15BT 4104cc	108.0	4			13101-58120		
Piston : Liner :				Length O/D Flange Dia. Flange Height	Length 94.5 Comp. Height -16.0 Pin Dia. 34.0 Length 73.0		1st 2nd Oil
2C Late 1988'~ Carina Tamaraw FX 1974cc	86.0	4	TYKT1641100	11461-64090	13101-64110	90999-73102	13011-64109 13011-64202 13011-64210 R28245
Piston : Liner :				Length 154.0 O/D 90.0 Flange Dia. Flange Height	Length 77.0 Comp. Height -1.4 Pin Dia. 27.0 Length 58.0		1st 2.0H 2nd 2.0 Oil 3.0

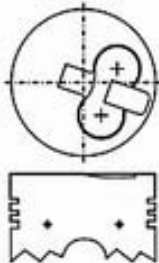

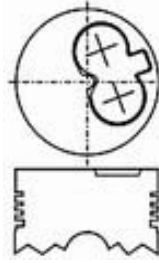
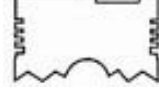
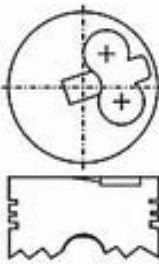

Liner Kit For TOYOTA

Engine Code	Bore Size (m/m)	No of Cyl.	Liner Kit	Liner	Piston	Pin Bushing	Ring
1DZ Estima ,Lucina Emina CXR11G 2486cc	86.0	4	TYKT1782010	11461-78200	13101-78201		13011-78201 R28993
Piston : Al-Fin & Head Anodized Liner :				Length 175.0 O/D 89.0 Flange Dia. 93.0 Flange Height 8.0	Length 77.0 Comp. Height -2.3 Pin Dia. 27.0 Length 68.0		1st 2.0H 2nd 2.0 Oil 4.0
2D DA118 Truck 6494cc	105.0	6	11046-79055	11461-77021	13101-77020	90999-73080 90999-73081	13011-77040 13011-77041 13011-77050 R28160
Piston : Liner :				Length 233.0 O/D 115.5 Flange Dia. 121.0 Flange Height 10.0+1.0	Length 133.0 Comp. Height -3.8 Pin Dia. 34.0 Length 88.8		1st 3.0H 2nd 2.5 3rd 2.5 Oil 5.0
2D DA115 DA90,DB90,DA90D,DB92,DA95,DB102,DA110,DR11, DA115D,DB100C, 6494cc	105.0	6			13101-77013		13011-77022 13011-77023 13011-77010 13011-77020 R28710
Piston : Liner :				Length O/D Flange Dia. Flange Height	Length 138.0 Comp. Height 73.0 Pin Dia. 34.0 Length 88.5		1st 3.0 2nd 3.0 3rd 3.0 Oil 5.0 Oil 5.0
1HDT	94.0	6			13101-17020		
Piston : Liner :				Length O/D Flange Dia. Flange Height	Length 80.7 Comp. Height 49.7 Pin Dia. 33.0 Length 73.0		1st 2nd Oil

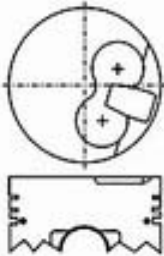
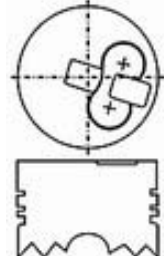
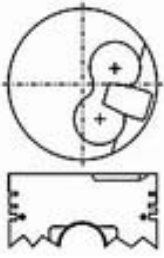
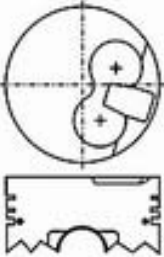
Liner Kit For TOYOTA

Engine Code	Bore Size (m/m)	No of Cyl.	Liner Kit	Liner	Piston	Pin Bushing	Ring
1HDT	94.0	6			13101-17080		
Piston : Liner :				Length O/D Flange Dia. Flange Height	Length 80.4 Comp. Height 49.4 Pin Dia. 33.0 Length 73.0		1st 2nd Oil
1HDT Late	94.0	6			13101-17040		
Piston : Liner :				Length O/D Flange Dia. Flange Height	Length 80.7 Comp. Height 49.7 Pin Dia. 33.0 Length 73.0		1st 2nd Oil
1HDT New	94.0	6			13101-17060		
Piston : Liner :				Length O/D Flange Dia. Flange Height	Length 80.7 Comp. Height 49.7 Pin Dia. 33.0 Length 73.0		1st 2nd Oil
2H	91.0	6	TODKT3002	11461-68010	13101-68010	90999-73087	13011-68010 13011-68020 13011-96601 R28680
Landcruiser Coaster 3980cc							
Piston : Al-Fin Liner :				Length 183.5 O/D 95.0 Flange Dia. 101.0 Flange Height 2.5+1.0	Length 102.2 Comp. Height 52.1-1.8 Pin Dia. 29.0 Length 74.0		1st 2.5H 2nd 2.5 Oil 4.0

Liner Kit For TOYOTA

Engine Code	Bore Size (m/m)	No of Cyl.	Liner Kit	Liner	Piston	Pin Bushing	Ring
2J 3G Dyna 2481cc	88.0	4	TODKT1801	11461-48011	13101-48015(L) 13101-48014(R)	90999-70048 90999-73069 90999-73083	13011-48022 13011-48023 13011-48030 R28780
Piston : Liner :				Length 183.5 O/D 93.0 Flange Dia. 98.0 Flange Height 2.5+1.0	Length 102.2 Comp. Height 52.2 -3.1 Pin Dia. 27.0 Length 74.0	 	1st 2.5H 2nd 2.5 Oil 4.0
2J 4G Dyna JK170B,JK171B,JK170DH,JK175,JK171DH,JK176,JK176V 2481cc	88.0	4	TYKT1220610 TYKT1220600	11461-48011	13101-22061 13101-22060	90999-70048 90999-73069 90999-73083	13011-48013 13011-48021 R28770
Piston : Liner :				Length 183.5 O/D 93.0 Flange Dia. 98.0 Flange Height 2.5+1.0	Length 102.2 Comp. Height 52.2 -2.1 Pin Dia. 27.0 Length 74.0	 	1st 2.5H 2nd 2.5 3rd 2.5 Oil 4.0
1KZ Hi-Ace Land cruiser Hi-Lux Surf 2982cc	96.0	4	TYKT1670300	11461-78301	13101-67030		13011-67030 R28773
Piston : Liner :				Length 182.5 O/D 100.0 Flange Dia. 105.8 Flange Height 8.0	Length 80.7 Comp. Height 45.7 Pin Dia. 34.0 Length 73.0		1st 1.94H 2nd 2.0 Oil 3.0
2L Crown Chaser Corona MarkII 2466cc	92.0	4	TYKT1540600	11461-54060	13101-54060	90999-70048 90999-73069 90999-73083	13011-54050 13011-54060 13011-54061 13011-54062 R28740
Piston : Liner :				Length 160.5 O/D 96.0 Flange Dia. 101.0 Flange Height 3.5+1.0	Length 86.2 Comp. Height 49.3 -1.5 Pin Dia. 27.0 Length 74.0	 	1st 2.0H 2nd 2.0 Oil 4.0

Liner Kit For TOYOTA

Engine Code	Bore Size (m/m)	No of Cyl.	Liner Kit	Liner	Piston	Pin Bushing	Ring
2L New 2L II Crown Chaser Corona MarkII 2466cc	92.0	4	TYKT1540700	11461-54060	13101-54070		13011-54050 13011-54060 13011-54061 13011-54062 R28740
Piston : Al-Fin Liner :				Length 160.5 O/D 96.0 Flange Dia. 101.0 Flange Height 3.5+1.0	Length 80.3 Comp. Height 44.3 -2.5 Pin Dia. 27.0 Length 70.0		1st 2.0H 2nd 2.0 Oil 4.0
2LT Crown Chaser Corona MarkII 2466cc	92.0	4	TYKT1540800	11461-54060	13101-54080	90999-73094 90999-73118	13011-54050 13011-54060 13011-54061 13011-54062 R28740
Piston : Al-Fin Liner :				Length 160.5 O/D 96.0 Flange Dia. 101.0 Flange Height 3.5+1.0	Length 86.2 Comp. Height 49.2 -2.0 Pin Dia. 29.0 Length 74.0		1st 2.0H 2nd 2.0 Oil 4.0
2LT 2L IIT Crown Chaser Corona MarkII 2466cc	92.0	4	TYKT1540900	11461-54060	13101-54090 13101-54091	90999-73115	13011-54050 13011-54060 13011-54061 13011-54062 R28740
Piston : Al-Fin & Oil Gallery Liner :				Length 160.5 O/D 96.0 Flange Dia. 101.0 Flange Height 3.5+1.0	Length 80.3 Comp. Height 44.3 -2.4 Pin Dia. 29.0 Length 74.0		1st 2.0H 2nd 2.0 Oil 4.0
3L Toyoace Hi-Luxe Hi-Ace Van LY51 2779cc	96.0	4	TYKT1541000	11461-54100	13101-54100	90999-73115	13011-54120 R28006
Piston : Al-Fin Liner :				Length 190.0 O/D 100.0 Flange Dia. 107.6 Flange Height 2.5+1.0	Length 80.3 Comp. Height 42.3 -2.0 Pin Dia. 29.0 Length 74.0		1st 2.0H 2nd 2.0 Oil 4.0

Liner Kit For TOYOTA

Engine Code	Bore Size (m/m)	No of Cyl.	Liner Kit	Liner	Piston	Pin Bushing	Ring	
1PZ	94.0	5			13101-17010		13011-18010 13011-18030 R28643	
Land Cruiser (90'-94') ,3500cc								
Piston :				Length	Length		1st	2.0H
Liner :				O/D	Comp. Height		2nd	2.0
				Flange Dia.	Pin Dia.		Oil	4.0
				Flange Height	Length			
1W	104.0	6	TYKT1780200	11461-78020	13101-78020		13011-78010 R28781	
Piston :Round Combustion Chamber 51mm								
Liner :				Length	Length		1st	2.5
				O/D	Comp. Height		2nd	2.0
				Flange Dia.	Pin Dia.		Oil	5.0
				Flange Height	Length			
1Z	96.0	4	TODKT8055	11461-78301	13101-78300		13011-78300 R28545	
Dyna 2953cc								
Piston :Round Combustion Chamber 50mm				Length	Length		1st	2.0
Liner :			O/D	Comp. Height			2nd	2.0
			Flange Dia.	Pin Dia.			Oil	4.0
			Flange Height	Length				
2Z	98.0	4	TYKT1787000	11461-78700	13101-78700		13011-78700 13011-78701-71 13011-78760-71 R28065	
3496cc								
Piston :Round Combustion Chamber 56mm				Length	Length		1st	2.0
Liner :			O/D	Comp. Height			2nd	2.0
			Flange Dia.	Pin Dia.			Oil	4.0
			Flange Height	Length				

Liner Kit For TOYOTA

Engine Code	Bore Size (m/m)	No of Cyl.	Liner Kit	Liner	Piston	Pin Bushing	Ring
12Z	96.0	6	TYKT1783600	11461-78360	13101-78360		
Forklift 5FD/G 50~80 95PS							
Piston : Round Combustion Chamber 54mm Liner :				Length 182.5 O/D 100.0 Flange Dia. 105.8 Flange Height 8.0	Length 87.9 Comp. Height 50.0 Pin Dia. 32.0 Length 77.0		1st 2nd Oil
13Z	98.0	6	TYKT1787600	11461-78700	13101-78760		13011-78701-71 13011-78760-71 R28065
Piston : Al-fin & Round Combustion Chamber 45mm Liner :				Length 181.0 O/D 101.0 Flange Dia. 107.0 Flange Height 5.0	Length 94.5 Comp. Height 56.5 Pin Dia. 32.0 Length 77.0		1st 2.0 2nd 2.0 Oil 4.0
14Z	98.0	6					
Piston : Al-fin & Round Combustion Chamber 47mm Liner :				Length O/D Flange Dia. Flange Height	Length 94.4 Comp. Height 56.4 Pin Dia. 32.0 Length 78.0		1st 2nd Oil



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