

Action code: **WHEN CONVENIENT**

### Heavy Duty Piston Ring Pack

SL12-554/JAP  
January 2012

#### Concerns

Owners and operators of MAN B&W two-stroke marine diesel engines. Type: MC/MC-C/ME/ME-C/ME-GI with CPR-CL ring pack configuration.

#### Summary

New alternative ring pack configuration for 60-65-70 bore and S/K80 Mk 8, and lower, two-stroke diesel engines.

Dear Sirs

Since 2006 we have been using a piston ring configuration on 98, 90 and some 80 bore engines with cermet hard coating on the liner running surface of the 1st and 4th piston rings, combined with chromium on the lower face of the 1st and 2nd piston rings.

The service results have been very good, and we have seen many advantages that we would like to offer as an alternative to the standard ring pack configuration for our other CPR-CL top ring.

We therefore introduce an alternative heavy duty ring configuration, which is similar to the large bore ring pack standard.

This configuration can be utilised by owners and operators wishing to improve the mean time between overhaul or, in special applications, where the cylinder condition would benefit, for example in connection with utilising low-sulphur fuel operation.

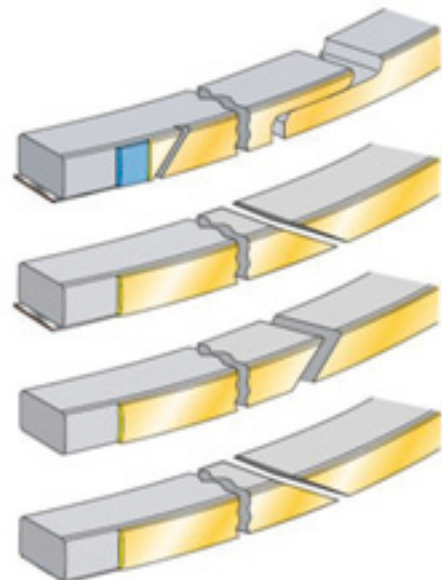
Yours faithfully



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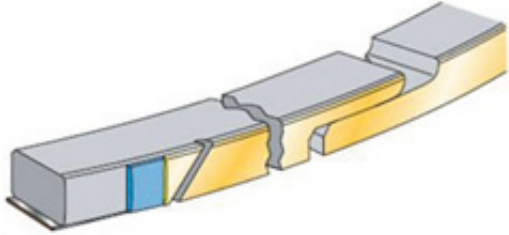
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**Alternative Heavy Duty Ring Configuration:**

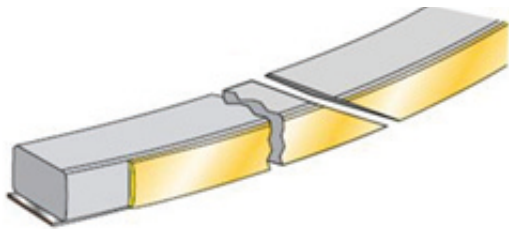
**1st ring**

CL-grooves:	CPR E4-180
Base material:	Vermicular cast iron, CV1
Hard coating:	Cermet coating
Running-in coating:	Alu coating
Bottom face:	Chrome plating



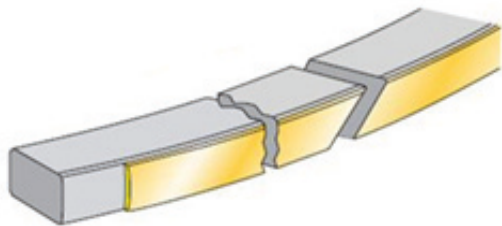
**2nd ring – left cut**

Base material:	Grey cast iron, CF5
Running-in coating:	Alu coating
Bottom face:	Chrome plating



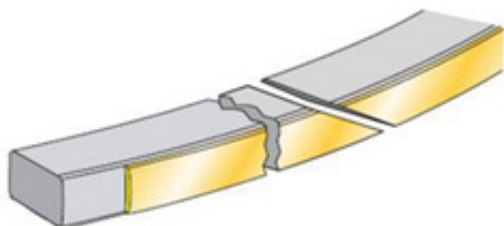
**3rd ring – right cut**

Base material:	Grey cast iron, CF5
Running-in coating:	Alu coating



**4th ring – left cut**

Base material:	Grey cast iron, CF5
Running-in coating:	Alu coating



**Hard coating (cermet)**

The hard coating on the 1st ring is introduced to reduce the wear on the top ring and ensure that the CL (Controlled Leakage) grooves, in extreme cases, are not prematurely worn out. Additionally, the cermet coating contributes to keeping an acceptable liner wear rate, e.g. when the fuel sulphur amount is not high enough to keep the controlled corrosion at a desired level.

**Chromium plating**

Chromium plating has been introduced on the lower faces of the 1st and 2nd piston rings. The chromium plating enables the rings to endure higher levels of abrasive particles.

A high level of fuel cleaning must always be ensured when the fuel contains abrasive particles (catalytic fines).

It is impossible to keep the combustion chamber 100% free of abrasive particles, and some of the particles end up in the cylinder lube oil film, on the cylinder liner piston crown, and in the piston ring grooves, where the particles can be trapped on the lower surface of the piston rings. In severe cases, the ring grooves are worn down prematurely due to flexing of the piston ring during the engine stroke.

By hard-chrome plating the lower face, the surface structure becomes smooth and prevents the abrasive particles from being trapped, thereby reducing the ring groove wear.

**Large bore ring configuration**

Today's piston ring configuration on K80 Mk. 9, K90-98, and S90 bore Mk. 8 & 9 engines is different to other marine engines. Over time, the engine development has necessitated an upgrade of the ring pack to a semi-hard coated (rings 1 and 4) ring pack, and the application of chromium on the lower face of rings 1 and 2.

We have been using this configuration since 2006 with good results, and subsequent tests on other engine sizes have led to the introduction of the above alternative standard on 60-65-70-bore engine types.

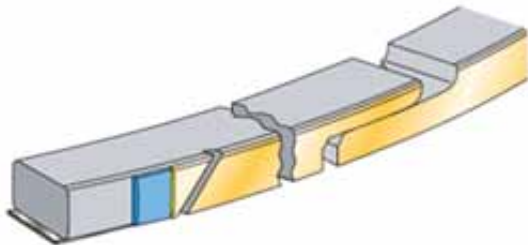
It would also be beneficial to apply the large bore standard on older versions of the above engine types, so as to increase the margin against scuffing.

**Large Bore Ring Configuration:**

**K80 Mk. 9, K90 & K98, S90 Mk. 8-9**

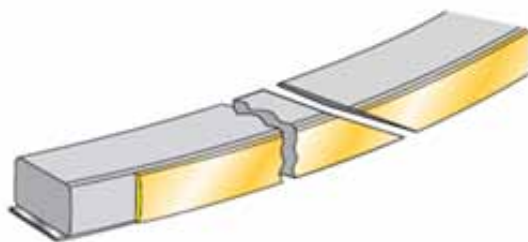
**1st ring**

CL-grooves:	CPR E4-180
Base material:	Vermicular cast iron, CV1
Hard coating:	Cermet coating
Run-in coating:	Alu coating
Bottom face:	Chrome plating



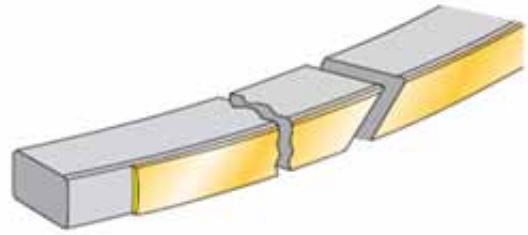
**2nd ring – left cut**

Base material:	Grey cast iron, CF5
Run-in coating:	Alu coating
Bottom face:	Chrome plating



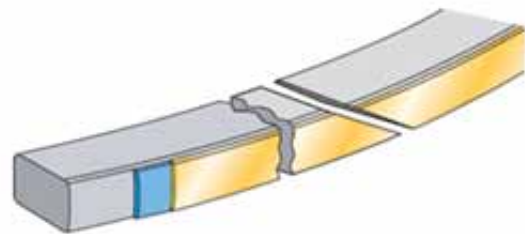
**3rd ring – right cut**

Base material:	Grey cast iron, CF5
Run-in coating:	Alu coating



**4th ring – left cut**

Base material:	Grey cast iron, CF5
Hard coating:	Cermet coating
Run-in coating:	Alu coating



To place an order, or for further advice or clarification, you are welcome to contact MAN Diesel & Turbo PrimeServ in Copenhagen (email: [Primeserv-cph@mandiesel.com](mailto:Primeserv-cph@mandiesel.com)).

Questions regarding this service letter can be directed at our Operation department in Copenhagen (email: [Operation-cph@mandieselturbo.com](mailto:Operation-cph@mandieselturbo.com)).