

M Seals Heavy duty seals are especially suited for large diameters and/or rough applications like rolling mills, wind turbines, pulp and paper industry, gearboxes and other demanding applications where you find high speed, great misalignment in severe environments.



DR10

The DR10 range is constructed with a flexible textile reinforced rubber structure that allow an easy fitting, and with a garter spring. Also available in a split form for re-fitting in place, without removing the shaft.

This type normally requires a retaining cover. Can be supplied also with additional dust lip and different types of lubricating grooves (where the seals are used back to back or in tandem).



DR20

The DR20 is a rubber seal with finger spring. In split form, this seal type is very suited for difficult fitting conditions, and in endless form it is also suited as wiper ring in hydraulic applications.



A10

The A10 is a rubber seal with garter spring, with a stiffening steel reinforcement. Good flexibility for easy installation, which in some cases allow use without a retaining cover.

A variation for use in very narrow cross sections is type **A20**. The steel reinforcement can then prevent the seal from tilting in the groove, and the spring is the finger type for secure installation and even radial force.



C10

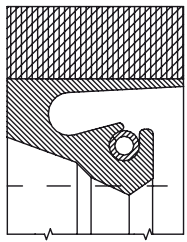
The C10 range is built with a strong steel casing and with a finger leaf+garter spring, making this type of seal especially suited for large misalignments (shaft deflection, large bearing clearances etc.).

This type is also capable of shaft speeds up to 35m/sec. widely used in rolling and paper mills.

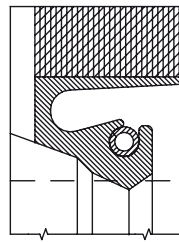
All types are offered in a selection of rubber grades like NBR, FPM and HNBR with or without PTFE content for auto lubricating properties. Some types can even be offered with PTFE anti-friction band vulcanized to the sealing lip for very high circumferential speeds.

The choice of material is highly depending on the actual application, and we at M Seals will happily assist you in the selection.

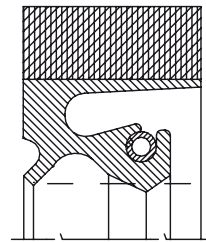
Heavy duty Shaft seals



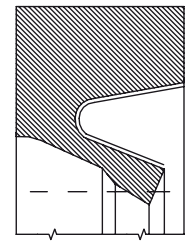
DR10



DR11



DR10S



DR20

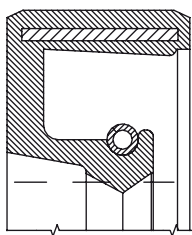
	DR 10 range	DR20 range
Retaining cover required	yes	yes
Available in split form	yes	yes
Available with dust lip	yes, DR10S	yes, DR20S
Dimensions: (see list at www.m-seals.com)	75-2200mm in one piece >2200 mm in more than one piece	75-2200mm in one piece >2200mm in more than one piece
Available with lubrication grooves for use back to back and in tandem:	yes, DR11 / 12	no
Pressure (standard version)	max 0,5 bar as standard	max 0,5 bar as standard
Available in version for higher pressure	yes, DR10T and D12T up to 4 bar	no
Max permissible speed:	15 m/sec	15m/sec
Permissible shaft misalignment:	up to 1,5mm depending of speed	up to 1,5mm depending of speed
Shaft tolerance:	h11	h11
Housing tolerance:	H8	H8
Width tolerance:	+/- 0,1 mm	+/- 0,1 mm
Shaft surface finish:	0,2-0,8 µm Ra (1,0-3,2 µm Rz)	0,2-0,8 µm Ra (1,0-3,2 µm Rz)
Shaft hardness:	40-50 HRC	40-50 HRC
Spring material:	stainless steel	stainless steel

Mounting instructions - type DR10 and DR20 range:

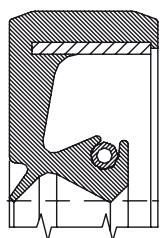
- Must always be used with a retaining cover/clamping-plate of sufficient dimension to avoid distortion. The axial preload secure the stability of the seal.
- Make sure the housing has a chamfering.
- Add some oil to the housing bore, press in the seal gently, and check the location of the lip before tightening the cover evenly

Split types:

- Remove spring from the seal and open it at the joint. Place the spring around the shaft and screw/hook together.
- Then pass the seal over the shaft, and re-mount the spring in the seal.
- Place the split joint at 12:00 o' clock. Only in special applications should the ends be glued together, and if done, extreme care should be taken to make the lip ends line up accurately.
- Enter the seal with the joint first, and work the seal in, from the top and down each side, pressing in the bottom part at last.



A10

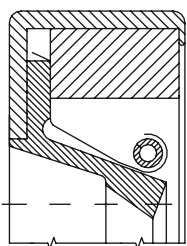


A10S

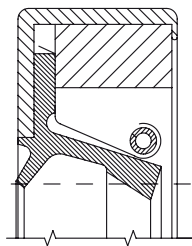
	A10 range
Retaining cover required	no, can be self-retaining in many applications
Available in split form	possible with special design- please inquire M seals
Available with dust lip	yes, A10S
Dimensions:	75-2200mm see dimension list at www.m-seals.com
Available with lubrication grooves for use back to back and tandem:	yes, A11
Pressure (standard version)	non, if used without cover
Available in version for higher pressure	no
Max permissible speed:	15m/sec
Permissible shaft misalignment:	up to 1,5mm depending of speed
Shaft tolerance:	h11
Housing tolerance:	H8
Width tolerance:	+/- 0,1 mm
Shaft surface finish:	0,2-0,8 µm Ra (1,0-3,2 µm Rz)
Shaft hardness:	40-50 HRC
Spring material:	stainless steel



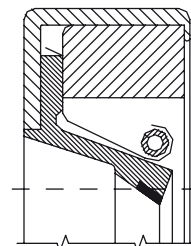
Heavy duty Shaft seals



C10



C10S



C14

	C10 range
Retaining cover required	no
Available in split form	no
Available with dust lip	yes, C10S
Dimensions:	150-1450mm - see dimension list at www.m-seals.com
Available with lubrication grooves for use back to back and tandem:	N / R
Pressure (standard version)	0,4 bar as standard
Available in version for higher pressure	C10T up to 1 bar
Max permissible speed:	C10 max 20 m/sec - type C14 with PTFE wear piece on the lip, up to 36 m/sec
Permissible shaft misalignment:	max 2,5 mm.
Shaft tolerance:	h11
Housing tolerance:	See table below below for housing tolerance and chamfer
Shaft surface finish:	0,2 - 0,6 μm Ra depending on service speed
Shaft hardness:	30-50 HRC depending on expected service speed
Spring material:	stainless steel

Housing tolerances for C10-range seals

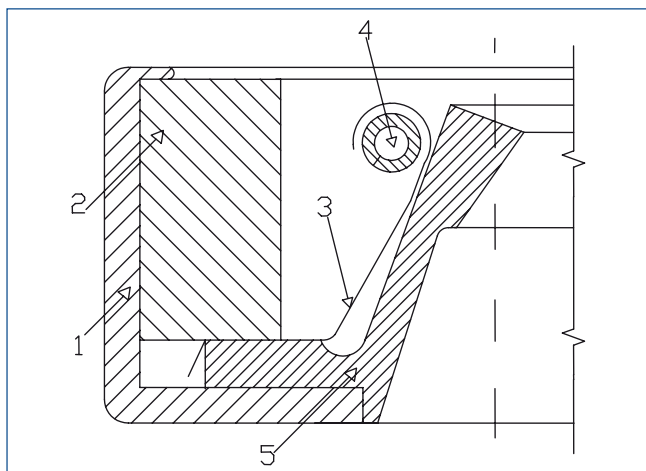
Housing bore:	
$\leq 76 \pm 0.025$	$256 - 510 + 0.05/-0.10$
$77 - 150 \pm 0.040$	$511 - 1015 + 0.05/-0.15$
$151 - 255 \pm 0.050$	$> 1015 + 0.05/-0.25$

Chamfer

Shaft \varnothing mm	Fitting chamfer 20°
≤ 250	x 7.00 mm
> 250	x 12.00 mm

Seal Construction

The illustration below shows the construction of the C10 seal range and its components.



1. Steel outer ring in Fe-PO3 with a finish surface according to the relevant DIN standard for outer diameters.
2. Steel filler ring in Fe37 steel providing the rigidity required ensuring an accurate assembly of the seal in the groove.
3. Stainless steel spring carrier of BS 301 S is designed:
 - a) to ensure the spring retention during the assembly.
 - b) if necessary to permit the removal and refitting of garter spring in AISI 316, to provide a predetermined sealing lip preload which will permit the sealing element to follow shaft deflections.
4. Garter spring in AISI 316 to provide a regulated loading on the sealing lip and enable the sealing element to follow shaft deflections.
5. Sealing element is available in NBR, FPM or HNBR, and is bonded to the steel outer ring.
For selection, see page 9.