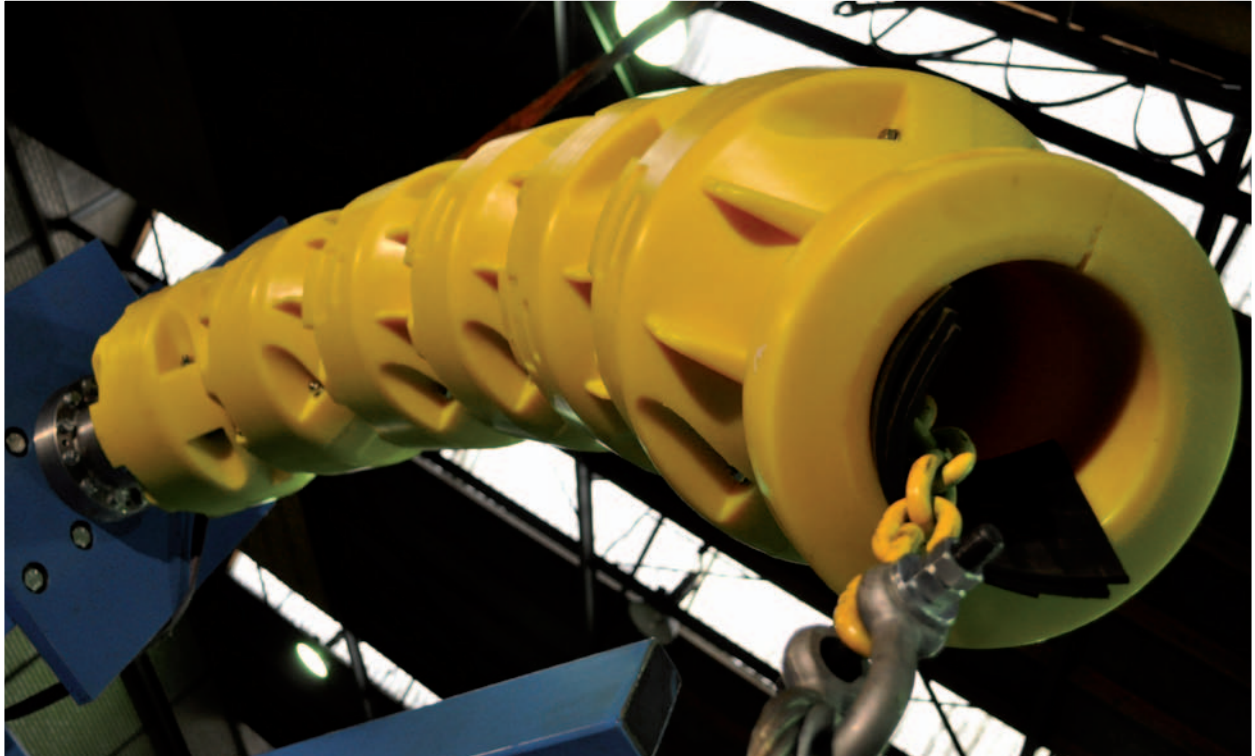


# Bend Restrictors



## Lankhorst Bend Restrictors

Every cable, umbilical or flexible has a maximum bending radius, above which it can be severely damaged and become unusable for operation. In case that no prevention is taken over-bending will usually take place at the attachment point. In subsea applications this is usually either at the platform or at the seabed.

A bend restrictor assembly is a device that can be mounted around the cable and attached to the

structure so that bending of the cable or pipeline will be prevented beyond the designed locking radius of the bend restrictor, thus preventing any over-bending.

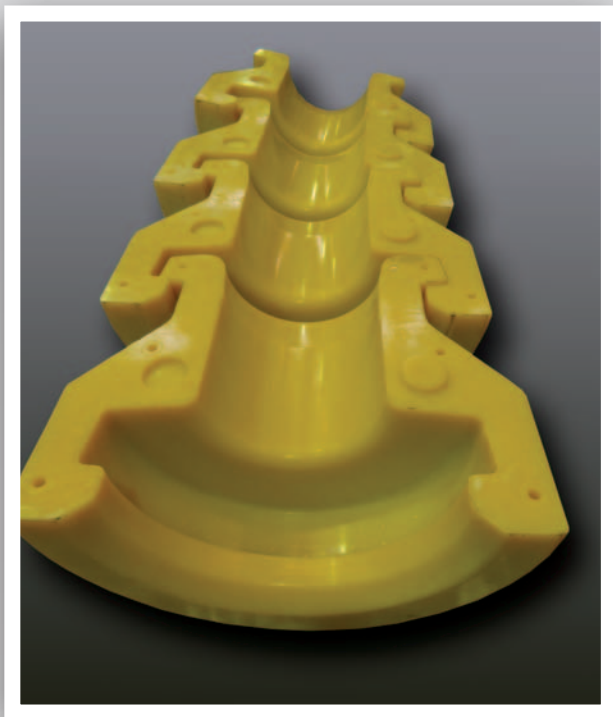
Lankhorst bend restrictors are proven in the field on many subsea applications and are manufactured from the most suitable hard-wearing, tough and damage resistant materials. All parts are interchangeable, and special attention is given to the ease of installation.

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### Design features

Bend restrictors can be made for any OD, any required locking radius, and any maximum bending moment.

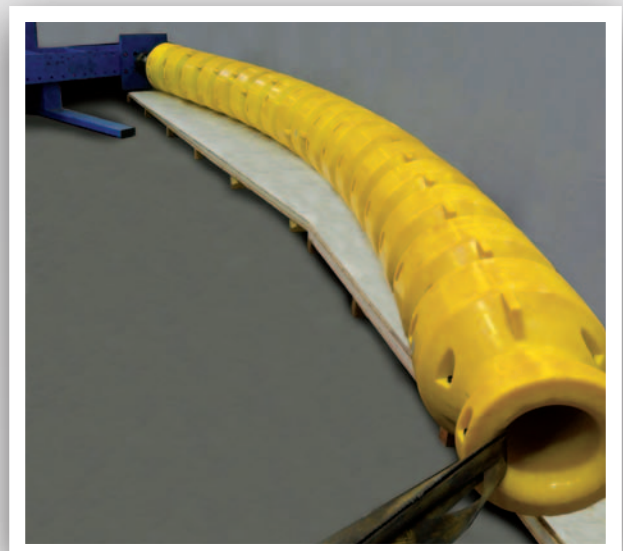
We have several design options for interfacing with the fixed structure, such as male or female reaction collars to allow a restrictor string to be attached to an end fitting, or tether clamps to allow the string to be fixed to the cable in case attachment is required away from the end fitting termination.



### Testing

Lankhorst has various testing equipment in house, which can be used to qualify the bend restrictor design according to client's specification.

Our bending test rig can be used to determine the resistance against the maximum bending moment and determine the bending radius at the maximum bending moment, or to test the breaking moment of the bend restrictor assembly.



# Bend Restrictors

## References

Many projects all over the world have been executed, where bend restrictors have been delivered for cables, umbilicals and flexibles. Examples of recent projects are:

- Umbilicals for the BP Na Kika and BP Galapagos projects
- Production and Water Injection Flowlines of the BP Block 18 Greater Plutonio project
- Temporary umbilicals of the Burullus West Delta Deep Marine gas field
- Pump umbilical of the Repsol Montanzo & Lubina field



And many others. A full reference list is available upon request.

## Lankhorst Mouldings Offshore

Lankhorst Mouldings Offshore have a proven track record in providing the offshore industry with innovative polymer based technical solutions that stand the test of time. Lankhorst Mouldings has for over 30 years been producing products using our unique thick-walled plastic moulding technology. We can supply high-performance innovatively engineered products to

meet the demands of the offshore industry. Lankhorst Mouldings products utilize field proven technology and experience to provide superior technical solutions. The company's technical solutions are designed not only to meet the customers' requirements, but are also foreseen to be used again and again.



*Leader in Offshore Engineering Solutions*



### Why use Lankhorst Bend Restrictors on your umbilicals and flexibles

- With an extensive experience of supplying products to the Offshore Industry we understand your application.
- Our field proven technology will provide solutions that stand the test of time.
- Fast and simple installation with interlocking segments, all pieces are interchangeable.
- All installation options are available with female and male type interface collars as well as tether clamps
- Hard wearing, tough and damage resistant  
Polyurethane allows for peace of mind during installation.

