



# Automotive Exhaust *Connectors*



**Bengal Industries Pvt. Ltd.**

Bengal Industries manufactures stainless steel corrugated hoses, stainless steel wire braid and hose-assemblies at their state of the art facility in Faridabad, near New Delhi in India.

The ISO-9001:2000 accredited company, was established in 1978, has grown to become one of the major producers of stainless steel corrugated flexible hoses in India. The company is professionally managed by a dedicated and motivated team of professionals.

Only hose manufacturer in India to receive **CE** certification. This is from DNV, Norway for design, manufacture and testing of stainless steel corrugated flexible hose assemblies under Pressure Equipment Directive of European Council 97/23/EC.

Supplying quality products continuously over three decades to over 35 countries worldwide by following a simple philosophy of continuous improvement in all spheres of business activity has now become a tradition. This has benefited the company substantially in attaining the status of priority supplier for its products to all customers in India as well as overseas.

By starting the production of Flexible Exhaust Connectors (Flex pipes / couplings) for vehicle exhaust systems, Bengal Industries has now spread its manufacturing operations into the Automotive Component Industry. A brand new facility has been put up to ensure best quality production of these components.

A belief in offering just a little extra combined with a zero defect product quality is a tradition at Bengal Industries.

# Profile



Lloyd's  
Register

TUV



SGS

Powered by Innovation

## Automotive Exhaust Connectors

Working in Exhaust System and  
absorption of Noise Vibration Harshness (NVH)



# Ensuring Synergy

## Optimizing Engineering

### Introduction

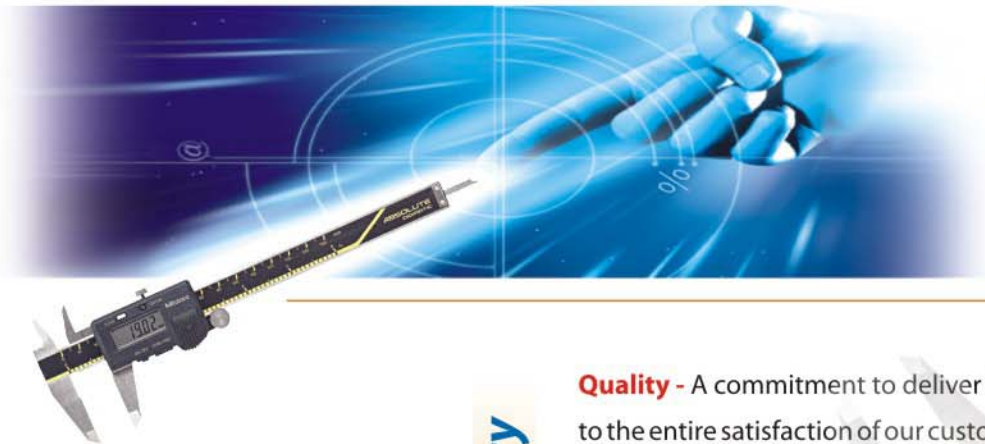
Automotive Exhaust Connector, a part of vehicle exhaust system installed between engine and muffler, is used to decrease noise and vibration from engine exhaust system and absorb thermal expansion of muffler pipe resulted due to high temperature of exhaust gas.

In most of the front wheel drive vehicles, engine is transversely mounted because of the compact design. It helps to protect the silencer and engine from forces at the inlet connection due to high temperatures and fluctuations in exhaust flow rates. It compensates for the misalignment of exhaust pipe, seals the line to protect the catalytic convertor and prevents the air pollution caused by exhaust gases.

Bengal Industries manufactures a wide range of Automotive Exhaust Connectors in the sizes ranging from 1 ½ to 4 inches Nominal Bore Dia and in lengths ranging from 4 to 12 inches.

It has been our constant endeavour to come with state-of-art manufacturing technology.

Our long standing experience, efficient operations and modern industrial engineering techniques are combined to guarantee meeting the high quality requirements of our customers.



### Stringent Quality

**Quality** - A commitment to deliver best products to the entire satisfaction of our customers.

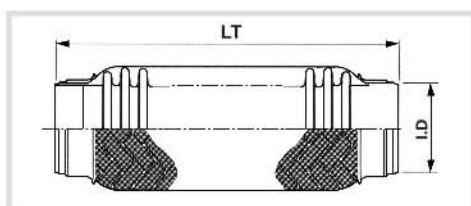
The quality assurance concept is based on the inputs meeting the stringent specifications of raw material. The manufacturing process is continuously monitored, improved and at different stages incorporates routine testing based on the methods, norms and quality plans as per international standards. These ensure each exhaust connector produced gives best results for many years and satisfied customers.

**"A total customer satisfaction"**



**Product ranges covers different types of Automotive Exhaust Connectors made of Stainless Steel AISI 304 material and have a Twin Walled (two ply) construction :**

**Bellow with Outer Braid**



**Automotive Exhaust Connectors with Outer Braid**

These types consist of a stainless steel (AISI 304) twin walled bellow with a single layer of external stainless steel wire braiding, assembled together by using aluminized / stainless steel end caps.

These types of Exhaust Connectors are used where the typical temperature of exhaust is up to 650° C. These are used towards the rear section of the exhaust system. Incase of petrol engines, these are used around the rear silencer whereas incase of Diesel engines, these are used after the catalytic convertor.

| BIPL PART NO. | NOMINAL INSIDE DIAMETER (ØI.D.) | OVERALL LENGTH (LT) |
|---------------|---------------------------------|---------------------|
|               | INCHES (MM)                     | INCHES (MM)         |
| RM 150 040 01 | 1½" (38.60)                     | 4.00 (101.60)       |
| RM 150 160 01 |                                 | 6.00 (152.00)       |
| RM 150 080 01 |                                 | 8.00 (203.00)       |
| RM 150 090 01 |                                 | 9.00 (230.00)       |
| RM 150 100 01 |                                 | 10.00 (251.00)      |
| RM 150 110 01 |                                 | 11.00 (280.00)      |
| RM 175 040 01 | 1¾" (45.50)                     | 4.00 (101.60)       |
| RM 175 060 01 |                                 | 6.00 (152.00)       |
| RM 175 080 01 |                                 | 8.00 (203.00)       |
| RM 175 090 01 |                                 | 9.00 (230.00)       |
| RM 175 100 01 |                                 | 10.00 (251.00)      |
| RM 175 110 01 |                                 | 11.00 (280.00)      |
| RM 200 040 01 | 2" (51.40)                      | 4.00 (101.60)       |
| RM 200 060 01 |                                 | 6.00 (152.00)       |
| RM 200 080 01 |                                 | 8.00 (203.00)       |
| RM 200 090 01 |                                 | 9.00 (230.00)       |
| RM 200 100 01 |                                 | 10.00 (251.00)      |
| RM 200 110 01 |                                 | 11.00 (280.00)      |
| RM 212 040 01 | 2 1/8" (54.50)                  | 4.00 (101.60)       |
| RM 212 060 01 |                                 | 6.00 (152.00)       |
| RM 212 080 01 |                                 | 8.00 (203.00)       |
| RM 212 090 01 |                                 | 9.00 (230.00)       |
| RM 212 100 01 |                                 | 10.00 (251.00)      |
| RM 212 110 01 |                                 | 11.00 (280.00)      |

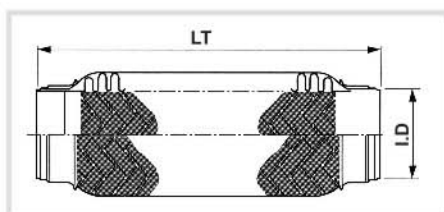
| BIPL PART NO. | NOMINAL INSIDE DIAMETER (ØI.D.) | OVERALL LENGTH (LT) |
|---------------|---------------------------------|---------------------|
|               | INCHES (MM)                     | INCHES (MM)         |
| RM 225 040 01 | 2¼" (57.50)                     | 4.00 (101.60)       |
| RM 225 160 01 |                                 | 6.00 (152.00)       |
| RM 225 080 01 |                                 | 8.00 (203.00)       |
| RM 225 090 01 |                                 | 9.00 (230.00)       |
| RM 225 100 01 |                                 | 10.00 (251.00)      |
| RM 225 110 01 |                                 | 11.00 (280.00)      |
| RM 250 040 01 | 2 ½" (63.50)                    | 4.00 (101.60)       |
| RM 250 060 01 |                                 | 6.00 (152.00)       |
| RM 250 080 01 |                                 | 8.00 (203.00)       |
| RM 250 090 01 |                                 | 9.00 (230.00)       |
| RM 250 100 01 |                                 | 10.00 (251.00)      |
| RM 250 110 01 |                                 | 11.00 (280.00)      |
| RM 300 040 01 | 3" (76.50)                      | 4.00 (101.60)       |
| RM 300 060 01 |                                 | 6.00 (152.00)       |
| RM 300 080 01 |                                 | 8.00 (203.00)       |
| RM 300 090 01 |                                 | 9.00 (230.00)       |
| RM 300 100 01 |                                 | 10.00 (251.00)      |
| RM 300 110 01 |                                 | 11.00 (280.00)      |
| RM 400 040 01 | 4" (101.60)                     | 4.00 (101.60)       |
| RM 400 060 01 |                                 | 6.00 (152.00)       |
| RM 400 080 01 |                                 | 8.00 (203.00)       |
| RM 400 090 01 |                                 | 9.00 (230.00)       |
| RM 400 100 01 |                                 | 10.00 (251.00)      |
| RM 400 110 01 |                                 | 11.00 (280.00)      |

\* Other sizes can be made as per specific customer requirement.

# Shaping Excellence

by Sustaining Innovation

## Bellow with Inner Braid



### Automotive Exhaust Connectors (Bellows) with outer braid and with Inner Braid Hose provided on the inner diameter

These types have an internal sleeve of stainless steel wire braiding.

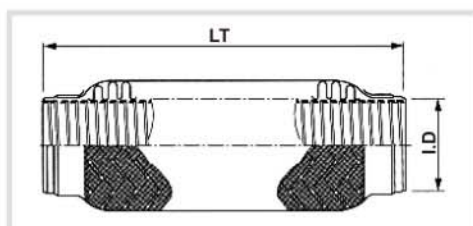
These types of Exhaust Connectors are used where the temperature and the noise levels are more than usual. The noise can be caused by the engine characteristics, and air flows over the bellows. The internal sleeve braid reduces the noise and dissipates the heat. Incases, where there is an excessive movement caused by the wear and tear, the internal braid sleeve prevents the over extension of the bellow. A braid lined Exhaust Connector is used where the typical temperature of exhaust is upto 800°C.

| BIPL PART NO. | NOMINAL INSIDE DIAMETER (ØI.D.)<br>INCHES (MM) | OVERALL LENGTH (LT)<br>INCHES (MM) | BIPL PART NO. | NOMINAL INSIDE DIAMETER (ØI.D.)<br>INCHES (MM) | OVERALL LENGTH (LT)<br>INCHES (MM) |
|---------------|------------------------------------------------|------------------------------------|---------------|------------------------------------------------|------------------------------------|
| RM 150 040 02 | 1½" (38.60)                                    | 4.00 (101.60)                      | RM 225 040 02 | 2 ¼" (57.50)                                   | 4.00 (101.60)                      |
| RM 150 160 02 |                                                | 6.00 (152.00)                      | RM 225 160 02 |                                                | 6.00 (152.00)                      |
| RM 150 080 02 |                                                | 8.00 (203.00)                      | RM 225 080 02 |                                                | 8.00 (203.00)                      |
| RM 150 090 02 |                                                | 9.00 (230.00)                      | RM 225 090 02 |                                                | 9.00 (230.00)                      |
| RM 150 100 02 |                                                | 10.00 (251.00)                     | RM 225 100 02 |                                                | 10.00 (251.00)                     |
| RM 150 110 02 |                                                | 11.00 (280.00)                     | RM 225 110 02 |                                                | 11.00 (280.00)                     |
| RM 175 040 02 | 1¾" (45.50)                                    | 4.00 (101.60)                      | RM 250 040 02 | 2 ½" (63.50)                                   | 4.00 (101.60)                      |
| RM 175 060 02 |                                                | 6.00 (152.00)                      | RM 250 060 02 |                                                | 6.00 (152.00)                      |
| RM 175 080 02 |                                                | 8.00 (203.00)                      | RM 250 080 02 |                                                | 8.00 (203.00)                      |
| RM 175 090 02 |                                                | 9.00 (230.00)                      | RM 250 090 02 |                                                | 9.00 (230.00)                      |
| RM 175 100 02 |                                                | 10.00 (251.00)                     | RM 250 100 02 |                                                | 10.00 (251.00)                     |
| RM 175 110 02 |                                                | 11.00 (280.00)                     | RM 250 110 02 |                                                | 11.00 (280.00)                     |
| RM 200 040 02 | 2" (51.40)                                     | 4.00 (101.60)                      | RM 300 040 02 | 3" (76.50)                                     | 4.00 (101.60)                      |
| RM 200 060 02 |                                                | 6.00 (152.00)                      | RM 300 060 02 |                                                | 6.00 (152.00)                      |
| RM 200 080 02 |                                                | 8.00 (203.00)                      | RM 300 080 02 |                                                | 8.00 (203.00)                      |
| RM 200 090 02 |                                                | 9.00 (230.00)                      | RM 300 090 02 |                                                | 9.00 (230.00)                      |
| RM 200 100 02 |                                                | 10.00 (251.00)                     | RM 300 100 02 |                                                | 10.00 (251.00)                     |
| RM 200 110 02 |                                                | 11.00 (280.00)                     | RM 300 110 02 |                                                | 11.00 (280.00)                     |
| RM 212 040 02 | 2 1/8" (54.50)                                 | 4.00 (101.60)                      | RM 400 040 02 | 4" (101.60)                                    | 4.00 (101.60)                      |
| RM 212 060 02 |                                                | 6.00 (152.00)                      | RM 400 060 02 |                                                | 6.00 (152.00)                      |
| RM 212 080 02 |                                                | 8.00 (203.00)                      | RM 400 080 02 |                                                | 8.00 (203.00)                      |
| RM 212 090 02 |                                                | 9.00 (230.00)                      | RM 400 090 02 |                                                | 9.00 (230.00)                      |
| RM 212 100 02 |                                                | 10.00 (251.00)                     | RM 400 100 02 |                                                | 10.00 (251.00)                     |
| RM 212 110 02 |                                                | 11.00 (280.00)                     | RM 400 110 02 |                                                | 11.00 (280.00)                     |

\* Other sizes can be made as per specific customer requirement.



## Bellow with Interlock Liner



### Automotive Exhaust Connectors (Bellows) with Outer Braid and with Interlock liner provided on the inner diameter

These types consist of an internal sleeve of Interlock Hose. It has air space in between the bellow I.D. and Interlock Hose.

These types of Exhaust Connectors are used in conditions where the temperature level is above 800°C and the noise levels are also on an extremely higher side.

| BIPL PART NO. | NOMINAL INSIDE DIAMETER (ØI.D.)<br>INCHES (MM) | OVERALL LENGTH (LT) |
|---------------|------------------------------------------------|---------------------|
|               |                                                | INCHES (MM)         |
| RM 150 040 03 | 1½" (38.60)                                    | 4.00 (101.60)       |
| RM 150 160 03 |                                                | 6.00 (152.00)       |
| RM 150 080 03 |                                                | 8.00 (203.00)       |
| RM 150 090 03 |                                                | 9.00 (230.00)       |
| RM 150 100 03 |                                                | 10.00 (251.00)      |
| RM 150 110 03 |                                                | 11.00 (280.00)      |
| RM 175 040 03 | 1¾" (45.50)                                    | 4.00 (101.60)       |
| RM 175 060 03 |                                                | 6.00 (152.00)       |
| RM 175 080 03 |                                                | 8.00 (203.00)       |
| RM 175 090 03 |                                                | 9.00 (230.00)       |
| RM 175 100 03 |                                                | 10.00 (251.00)      |
| RM 175 110 03 |                                                | 11.00 (280.00)      |
| RM 200 040 03 | 2" (51.40)                                     | 4.00 (101.60)       |
| RM 200 060 03 |                                                | 6.00 (152.00)       |
| RM 200 080 03 |                                                | 8.00 (203.00)       |
| RM 200 090 03 |                                                | 9.00 (230.00)       |
| RM 200 100 03 |                                                | 10.00 (251.00)      |
| RM 200 110 03 |                                                | 11.00 (280.00)      |
| RM 212 040 03 | 2 1/8" (54.50)                                 | 4.00 (101.60)       |
| RM 212 060 03 |                                                | 6.00 (152.00)       |
| RM 212 080 03 |                                                | 8.00 (203.00)       |
| RM 212 090 03 |                                                | 9.00 (230.00)       |
| RM 212 100 03 |                                                | 10.00 (251.00)      |
| RM 212 110 03 |                                                | 11.00 (280.00)      |

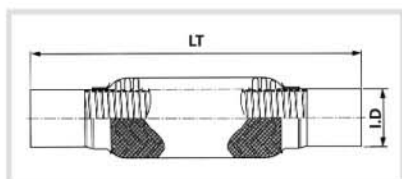
| BIPL PART NO. | NOMINAL INSIDE DIAMETER (ØI.D.)<br>INCHES (MM) | OVERALL LENGTH (LT) |
|---------------|------------------------------------------------|---------------------|
|               |                                                | INCHES (MM)         |
| RM 225 040 03 | 2 ¼" (57.50)                                   | 4.00 (101.60)       |
| RM 225 160 03 |                                                | 6.00 (152.00)       |
| RM 225 080 03 |                                                | 8.00 (203.00)       |
| RM 225 090 03 |                                                | 9.00 (230.00)       |
| RM 225 100 03 |                                                | 10.00 (251.00)      |
| RM 225 110 03 |                                                | 11.00 (280.00)      |
| RM 250 040 03 | 2 ½" (63.50)                                   | 4.00 (101.60)       |
| RM 250 060 03 |                                                | 6.00 (152.00)       |
| RM 250 080 03 |                                                | 8.00 (203.00)       |
| RM 250 090 03 |                                                | 9.00 (230.00)       |
| RM 250 100 03 |                                                | 10.00 (251.00)      |
| RM 250 110 03 |                                                | 11.00 (280.00)      |
| RM 300 040 03 | 3" (76.50)                                     | 4.00 (101.60)       |
| RM 300 060 03 |                                                | 6.00 (152.00)       |
| RM 300 080 03 |                                                | 8.00 (203.00)       |
| RM 300 090 03 |                                                | 9.00 (230.00)       |
| RM 300 100 03 |                                                | 10.00 (251.00)      |
| RM 300 110 03 |                                                | 11.00 (280.00)      |
| RM 400 040 03 | 4" (101.60)                                    | 4.00 (101.60)       |
| RM 400 060 03 |                                                | 6.00 (152.00)       |
| RM 400 080 03 |                                                | 8.00 (203.00)       |
| RM 400 090 03 |                                                | 9.00 (230.00)       |
| RM 400 100 03 |                                                | 10.00 (251.00)      |
| RM 400 110 03 |                                                | 11.00 (280.00)      |

\* Other sizes can be made as per specific customer requirement.

# Technological Competence

that Enriches Endurance

## Bellow with Welded Ends



### Automotive Exhaust Connectors (Bellows) with Welded Ends.

All the sizes in Bellows with Outer Braid, Inner Braid and Interlock Liner can also be supplied with Welded Ends.

**Materials for Nipple** : Stainless Steel, Aluminium Coated Steel

**Thickness of Nipple** : 1.2 mm or 1.5 mm

| BIPL PART NO. | NOMINAL INSIDE DIAMETER (ØI.D.) | OVERALL LENGTH (LT) |
|---------------|---------------------------------|---------------------|
|               | INCHES (MM)                     | INCHES (MM)         |
| RM 150 080 04 | 1½" (38.60)                     | 8.00 (203.00)       |
| RM 150 100 04 |                                 | 10.00 (251.00)      |
| RM 150 120 04 |                                 | 12.00 (304.00)      |
| RM 150 140 04 |                                 | 14.00 (350.00)      |
| RM 150 150 04 |                                 | 15.00 (375.00)      |
| RM 175 080 04 | 1¾" (45.50)                     | 8.00 (203.00)       |
| RM 175 100 04 |                                 | 10.00 (251.00)      |
| RM 175 120 04 |                                 | 12.00 (304.00)      |
| RM 175 140 04 |                                 | 14.00 (350.00)      |
| RM 175 150 04 |                                 | 15.00 (375.00)      |
| RM 200 080 04 | 2" (51.40)                      | 8.00 (203.00)       |
| RM 200 100 04 |                                 | 10.00 (251.00)      |
| RM 200 120 04 |                                 | 12.00 (304.00)      |
| RM 200 140 04 |                                 | 14.00 (350.00)      |
| RM 200 150 04 |                                 | 15.00 (375.00)      |
| RM 212 080 04 | 2 1/8" (54.50)                  | 8.00 (203.00)       |
| RM 212 100 04 |                                 | 10.00 (251.00)      |
| RM 212 120 04 |                                 | 12.00 (304.00)      |
| RM 212 140 04 |                                 | 14.00 (350.00)      |
| RM 212 150 04 |                                 | 15.00 (375.00)      |

| BIPL PART NO. | NOMINAL INSIDE DIAMETER (ØI.D.) | OVERALL LENGTH (LT) |
|---------------|---------------------------------|---------------------|
|               | INCHES (MM)                     | INCHES (MM)         |
| RM 225 080 04 | 2¼" (57.50)                     | 8.00 (203.00)       |
| RM 225 100 04 |                                 | 10.00 (251.00)      |
| RM 225 120 04 |                                 | 12.00 (304.00)      |
| RM 225 140 04 |                                 | 14.00 (350.00)      |
| RM 225 150 04 |                                 | 15.00 (375.00)      |
| RM 250 080 04 | 2 ½" (63.50)                    | 8.00 (203.00)       |
| RM 250 100 04 |                                 | 10.00 (251.00)      |
| RM 250 120 04 |                                 | 12.00 (304.00)      |
| RM 250 140 04 |                                 | 14.00 (350.00)      |
| RM 250 150 04 |                                 | 15.00 (375.00)      |
| RM 300 080 04 | 3" (76.50)                      | 8.00 (203.00)       |
| RM 300 100 04 |                                 | 10.00 (251.00)      |
| RM 300 120 04 |                                 | 12.00 (304.00)      |
| RM 300 140 04 |                                 | 14.00 (350.00)      |
| RM 300 150 04 |                                 | 15.00 (375.00)      |
| RM 400 080 04 | 4" (101.60)                     | 8.00 (203.00)       |
| RM 400 100 04 |                                 | 10.00 (251.00)      |
| RM 400 120 04 |                                 | 12.00 (304.00)      |
| RM 400 140 04 |                                 | 14.00 (350.00)      |
| RM 400 150 04 |                                 | 15.00 (375.00)      |

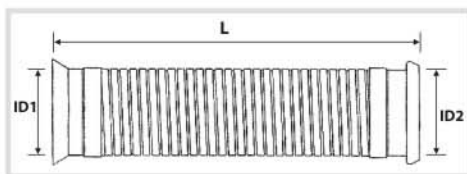
\* Other sizes can be made as per specific customer requirement.



## Inter - Lock Tubes



| BIPL PART NO. | EQUIVALENT OE REF. | ID 1 | ID 2 | L   |
|---------------|--------------------|------|------|-----|
| RM 35950      | 6214900065         | 100  | 100  | 290 |
| RM 35951      | 6204900365         | 76   | 76   | 293 |



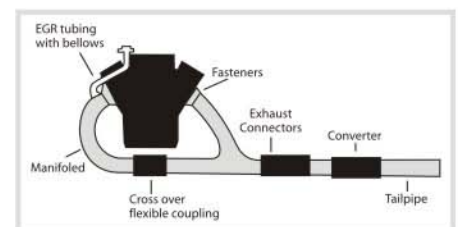
## Exhaust Gas Recirculation (EGR) Tube

Exhaust gas recirculation technology is recycling of small amount of the exhaust gas to reduce oxides of nitrogen (Nox) that is one of the air polluting gas, by lowering the temperatures of engine interiors and absorption of vibration and heat expansion from engine.

EGR tube assembly carries unburnt gas vapours from the exhaust manifold chambers to the intake manifold and is reintroduced into the engine firing sequence. It is used in conjunction with catalytic converter for better performance. It also enhances the life of critical engine moving parts. The gases are cooled before they are fed back.

The typical external EGR tube is mounted between the exhaust manifold or crossover pipe and the EGR control valve. Because the gas temperatures can exceed 650°C. (1200°F), the resulting thermal expansion loads on the tube can cause early valve, tube, or manifold failure.

Without using a very efficient EGR, the emission regulation of 2005 for Japan and Euro-4 regulation for Europe will be very hard to pass.



# Leadership Through Technology

**Bengal Industries** also manufactures Stainless Steel Annular Corrugated Flexible Hoses, hose assemblies and fittings. Only hose manufacturer in India to receive the "CE" certification from DNV, Norway for Design, Manufacture and Testing of stainless steel corrugated flexible hose assemblies under pressure equipment directive of European Council 97/23/EC.

The manufacturing range varies from 6mm to 250mm Nominal Bore i.e. 1/4" to 10" NB. The stainless steel grades include SS 321 and SS 316-L hoses (with or without braid). Bulk hoses and finished hose assemblies (threaded, flanged, couplings and special, rings) form a regular part of our production. The hoses made by us conform to BS-6501 (Part-I) 1991 and ISO-10380:2003.

The end connections are TIG Welded / Brazed by our welders approved by Lloyds register/DNV.

Welding procedures and welders are qualified as per ASME section IX by **Lloyds Register** and as per BS 4870 Part -1 : 1981 and BS 4871 Part -1 : 1982 by **DNV**.



# CORPORATE

## ***MOTTO :***

*Commitment to achieving excellence through the provision of Zero Defect Product Quality thereby building the customer's confidence and trust in the company and its products.*

*Continuous improvement in product and service together with technology innovation*



[www.bengalind.com](http://www.bengalind.com)



[www.bengalind.com](http://www.bengalind.com)



**BENGAL INDUSTRIES PVT. LTD.**  
(100% Export Oriented Unit)

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