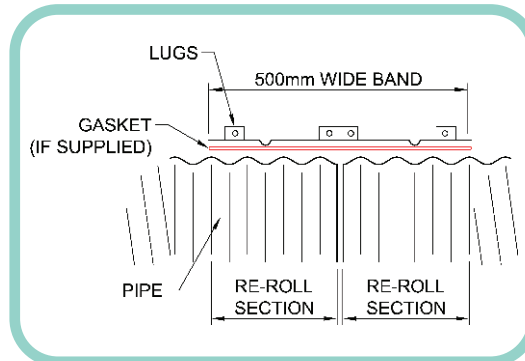
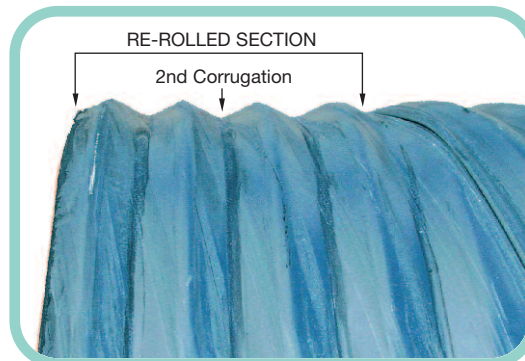


HELIBORE INSTALLATION GUIDE

1. Bed pipe on pre-shaped bed.
2. Where gaskets are being used, the gaskets should be placed around the pipe ends, equally over the joint. Overlap the gasket at the crown of the pipe and fix in place with double-sided tape. Lightly grease the inside face of the coupling band with the pipe grease provided.
3. Place bottom segment of the band with the band dimple seated into the second corrugation of the re-rolled section of the pipe and chock in position with a timber wedge.
4. Bed next pipe so that its second re-roll corrugation seats into the band dimple.
5. Place the second part of the band over the pipe ensuring a good and even seating of the band dimple into the second re-roll corrugation of each pipe.
6. Locate the M12 studs provided through the lugs and place saddle washers, loosely tighten the nuts ensuring that the curved face of the saddle washers sit into the radius of the lugs.
7. Tighten down the nuts on the studs, evenly on each lug at both sides of the pipe. If necessary "dress" the band with a small rubber mallet while tightening.
8. Inspect internally to ensure uniform contact with the gasket, if gaskets are used.



It is important that the pipes are laid at a constant grade and line relative to each other. Any significant deviation from line and level will create problems in locating and tightening the coupling band. The larger the pipe diameter, the more important true line and level will be.

Where bitumen paved inverts are installed, there might be a tendency for the pipes to assume a slightly egg-shaped profile during lifting and handling. This should be monitored when the pipes are placed end to end prior to positioning the second or third segments of the coupling band. If there is a poor match in terms of shape then the pipe ends should be jacked into shape by the use of Acrow props or similar and held in a true circular profile whilst the coupling bands are placed and tightened and if needed be left in position until backfill is placed.

Generally, pipes over 1.4m diameter have match marked ends and each pipe is marked with a pipe sequence number. Pipes should be laid in this sequence to ensure good diameter match.

Please read in conjunction with HANDLING GUIDE and EXCAVATION & BACKFILL REQUIREMENTS.

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HANDLING GUIDE

Although corrugated steel pipes are known for their strength, they should be handled with reasonable care. Pipe should never be dumped directly from a truck bed while unloading, but should be lifted in such a way to protect the galvanised or coated surface. Similarly pipes should not be dragged across a site.

Corrugated steel pipes are relatively light in weight, they can be handled with simple, light equipment. In assessing crange requirements the contractor should ascertain the heaviest part of any delivery. This information will be on the drawing or be available from Tubosider UK Ltd.

Pipes should ideally be handled with a double sling, to prevent excessive localised stresses in the pipe that could cause damage.

Tubosider pipes are typically supplied in around 7m lengths. In the case of longer pipes it may be prudent to use a spreader beam for off-loading and placing.

Pipes should be handled with nylon slings and not with pipe hooks or similar items that can cause damage to pipe ends. A spreader beam may be used.

Do NOT lift with single strap or without bite.
ALWAYS follow site safety procedures.

INSTALLATION KIT

As a minimum the following items are required:

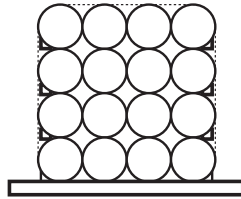
- 2 spanners to suit M12 nuts.
- Small Rubber Mallet

Tubosider can supply at extra cost a pneumatic wrench installation kit for use with a compressor.

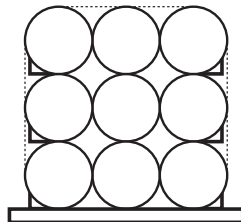
**For more information contact sales on
01744 452900.**



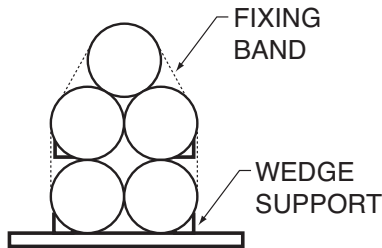
HELIBORE PIPE TRANSPORTATION METHOD



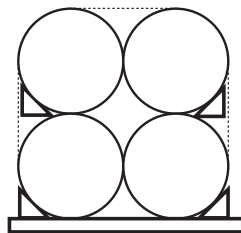
Ø600



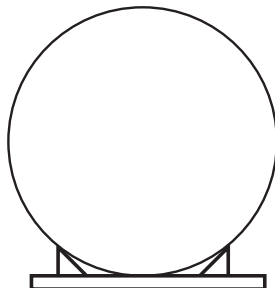
Ø700 TO Ø900



Ø1000



Ø1100 TO Ø1400



Ø1500 TO Ø3600

WEIGHT GUIDE FOR UNLOADING

SIZE RANGE HELIBORE 68

Clear Internal Diameter (m)	WEIGHT PER METRE (kg) HELIBORE 68					Clear End Area (m ²)
	STEEL THICKNESS (mm)					
	1.5	2.0	2.5	3.0	3.5	
0.3	14	-	-	-	-	0.07
0.4	18	-	-	-	-	0.13
0.5	23	-	-	-	-	0.20
0.6	27	36	-	-	-	0.28
0.7	32	41	-	-	-	0.38
0.8	36	47	-	-	-	0.50
0.9	41	53	66	79	90	0.64
1.0	45	59	73	87	100	0.78
1.1	50	65	80	95	109	0.95
1.2	54	72	89	106	118	1.13

INDICATIVE WEIGHTS FOR GALVANISED PIPES

SIZE RANGE HELIBORE 125

Clear Internal Diameter (m)	WEIGHT PER METRE (kg) HELIBORE 125					Clear End Area (m ²)
	STEEL THICKNESS (mm)					
	1.5	2.0	2.5	3.0	3.5	
1.2	55	73	90	108	124	1.13
1.4	65	85	105	125	145	1.54
1.5	69	91	113	134	156	1.77
1.6	74	97	120	143	166	2.01
1.8	83	109	135	161	187	2.55
2.0	92	121	150	178	207	3.14
2.2	102	133	165	196	227	3.80
2.4	-	145	179	214	248	4.52
2.6	-	-	194	231	268	5.31
2.8	-	-	-	249	289	6.16
3.0	-	-	-	267	309	7.07
3.2	-	-	-	-	329	8.04
3.4	-	-	-	-	350	9.08
3.6	-	-	-	-	371	10.18

INDICATIVE WEIGHTS FOR GALVANISED PIPES

27.06.2011

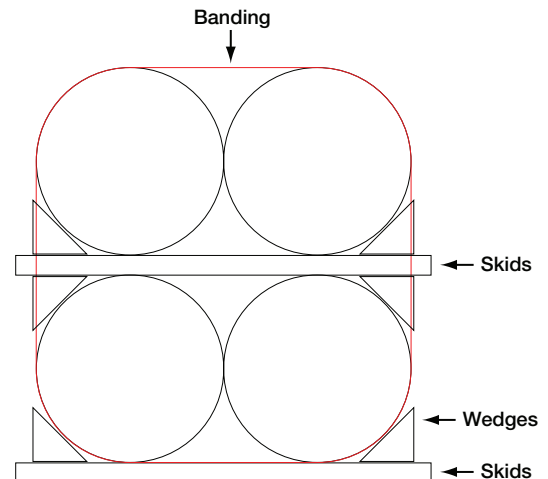
OFF-LOADING GUIDE

For safe transport and handling, Tubosider fasten pipes together with steel banding. Packs of pipes sit on the vehicle on wooden skids to enable placing at the factory from a crane or fork lift truck. Skids are also used between rows of pipes. Chocks are used to stop lateral movement of the pipes.

When off loading a pack of pipes, nylon slings should be used if lifting by excavator or crane. Alternatively use a fork lift truck or excavator with fork attachments.

When the pack is placed at ground level, the banding can be removed as required and the pack split. Single pipes can then be handled with care, again using a crane with slings or forks.

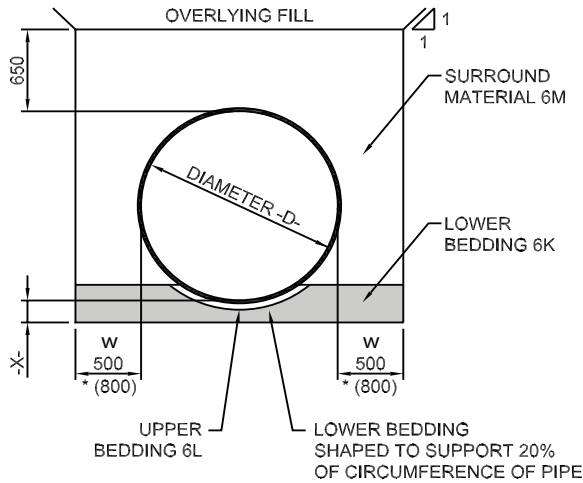
Notes: The above is for guidance and should be followed in conjunction with current health & safety guidelines and site health & safety policy.



Please note that the skids on the vehicle bed can be retained for use and disposal on site. Be aware of the possibility of nails and splintering

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EXCAVATION AND BACKFILL REQUIREMENTS ACCORDING TO BD12. Single Pipe Run



Minimum depth (X) of Lower Bedding material to be equal to Diameter (D) divided by 10. Therefore for a 1.8m pipe, X = 180mm. For a 2.4m pipe, X = 240mm etc.

*Dimension W to be 500mm for pipes less than 3m diameter. Dimension W to be 800mm for pipes 3m and above.

The above information is drawn from the Design Manual For Roads And Bridges. The materials listed below are as described in Series 600 MCHW1.

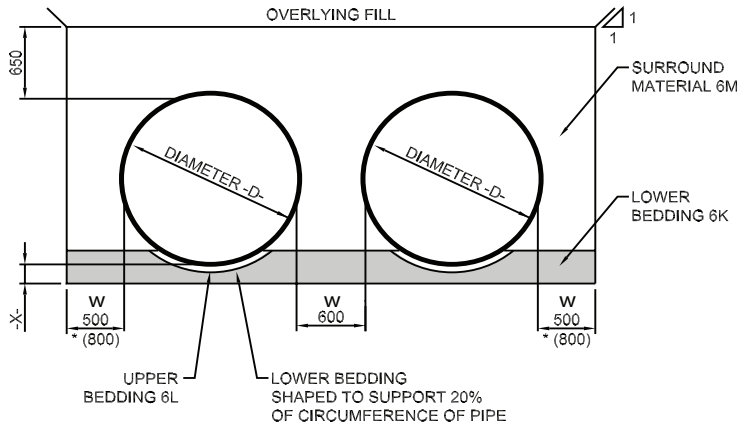
Backfill & Bedding Materials Specification

Lower bedding material	6K	Natural gravel, natural sand, crushed gravel, crushed rock other than argillaceous rock, crushed concrete, well-burnt colliery spoil or any combination thereof
Upper bedding material	6L	Natural gravel, natural sand, crushed gravel, crushed rock other than argillaceous rock, crushed concrete, well-burnt colliery spoil or any combination thereof
Surround Material	6M	Natural gravel, natural sand, crushed gravel, crushed rock other than argillaceous rock, crushed concrete, well-burnt colliery spoil or any combination thereof

Material	PERCENTAGE BY MASS PASSING THE SIZE SHOWN									
	Size (mm) BS Series						Size (µm) BS Series			
	75	20	10	5	2	1.18	600	300	150	63
Lower bedding 6K		100								0-10
Upper bedding 6L			100	89-100	60-100	30-100	15-100	5-70	0-15 except 0-20 for crushed rock	
Surround 6M	100									0-10

27.06.2011

EXCAVATION AND BACKFILL REQUIREMENTS ACCORDING TO BD12. Multiple Pipe Run



Minimum depth (X) of Lower Bedding material to be equal to Diameter (D) divided by 10. Therefore for a 1.8m pipe, X = 180mm. For a 2.4m pipe, X = 240mm etc.

*Dimension W to be 500mm for pipes less than 3m diameter. Dimension W to be 800mm for pipes 3m and above.

The above information is drawn from the Design Manual For Roads And Bridges. The materials listed below are as described in Series 600 MCHW1.

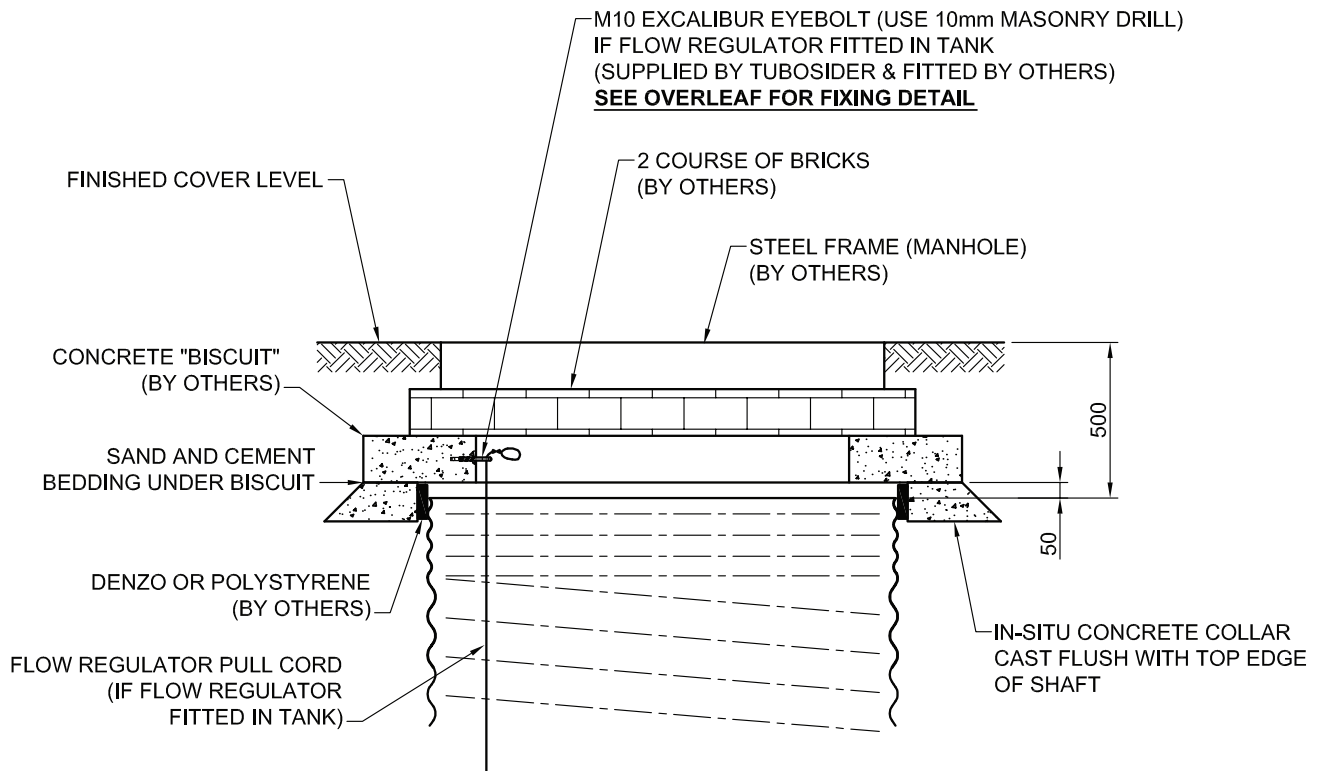
Backfill & Bedding Materials Specification

Lower bedding material	6K	Natural gravel, natural sand, crushed gravel, crushed rock other than argillaceous rock, crushed concrete, well-burnt colliery spoil or any combination thereof
Upper bedding material	6L	Natural gravel, natural sand, crushed gravel, crushed rock other than argillaceous rock, crushed concrete, well-burnt colliery spoil or any combination thereof
Surround Material	6M	Natural gravel, natural sand, crushed gravel, crushed rock other than argillaceous rock, crushed concrete, well-burnt colliery spoil or any combination thereof

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Lower bedding 6K		100								0-10
Upper bedding 6L			100	89-100	60-100	30-100	15-100	5-70	0-15 except 0-20 for crushed rock	
Surround 6M	100									0-10

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TYPICAL ACCESS SHAFT FINISHING DETAIL



NOTES:

1. When calculating access shaft heights Tubosider allow 500mm between finished cover level (FCL) and top of shaft.
2. The 500mm is typically made up of a concrete "biscuit", 2 courses of bricks and a steel manhole frame. Any discrepancy can be taken up within the brickwork.
3. Prior to placing the "biscuit" the top of the shaft should be wrapped with denzo or polystyrene and the concrete ring should be cast with the top approx. 50mm above the top of the shaft. The "biscuit" should then be bedded onto the concrete ring with sand and cement mortar.
4. Concrete "biscuit", bricks, cover and frame supplied by others.

To Fix a Screwbolt

TOOLING

Use hammer drill and sds drill bit.

Drill bit diameter:- ensure correct diameter is selected for the fixing to be used and is not worn below minimum tolerance.

NB. when drilling into dense concrete observe the maximum efficient working life of the drill bit.

PREPARATION

Hole depth must be 2 times diameter plus the full working length of the bolt, to allow for the dust created when the bolt is installed into the pre-drilled hole.

Remove surplus dust from the drilled hole by easing the drill bit up and down within the hole and blowing clear.

INSTALLATION

To install the screwbolt use a branded ratchet spanner with a full hexagon socket, or impact wrench. We recommend the use of the bosch gds or similar. To ensure that you do not ream out the drilled hole set the impact wrench to slow start.

This will also avoid any excessive torque stress being applied to the bolt.

Apply pressure to head of bolt to ensure engagement of first thread.

If resistance is encountered when screwing down the bolt, simply unscrew one turn to release trapped dust, and then continue to tighten down. The bolt is set when the built in washer, at the underside of the head of the bolt, meets the face of the object being fixed to the substrate.

No further tightening of the fixing is necessary.

