

Drive Shaft -DOM tubing.

Electric Resistance Welded - Drawn Over Mandrel (ERW- DOM) tubing has become a material of choice in a wide range of industries including automotive , farm machinery and home appliances because of its performance and cost benefits.

TI's infrastructure, built over 50 years, begin with continuous strip pickling line capable of handling upto 20 T of HR coils of width upto 1250 mm and slitters to produce narrower width. 4 cold rolling mills provide precision steel strips for a wide range of application including tubes. There are over 12 tube mills and multiple draw benches to produce precision tubes of wide size ranges

Tubes used for drive shaft application used in automobile are regularly produced at TI- India. These tubes are supplied to various domestic and international customers.

DOM (Drawn Over Mandrel) – Electric Resistance Welded tubes are preferred due to its ability to produce drive shaft tubes with consistent dimensional accuracy and uniform strength.

At TI, Quality checks are done starting from raw material stage to finished product to ensure that the final tubes conform to customer requirement in full. Control Plans are developed in line with QS 9000 system requirement after thorough PFMEA (Process Failure Mode and Effect Analysis). Micro structure examination is carried out at welding stage after every setting change to ensure weld quality and preventive steps are taken immediately to prevent defects.

Selection of material and the drawing process is designed keeping in mind the end mechanical property specified by the customer



Important requirements of drive shaft tubes are

- Control of dimension on O.D and Wall thickness to narrow band.
- Close wall thickness control and hence accurate concentricity of O.D and I.D.
- Controlled straightness.

At drawing stage the dimensions are controlled closely by using appropriate tooling and setting. This ensures narrow spread of wall thick and hence uniform cross section area.

Statistical process control tools are used for key product characteristics at drawing stage for continuous monitoring of dimensions to ensure that the process capability is achieved.

Apart from the mechanical tests like UTS, YS, % Elongation and hardness, Johnson Torsional Elastic limit test is also done, if required, to verify that the tubes meet the specified torsional load.

Tubes are subjected to 100% eddy current testing at final stage. If required, hydro-testing is performed upto 2000 PSI pressure.

Tubes can also be supplied in cut length condition. Final tubes are arranged in hexagonal shape, wrapped in HDPE sleeve, and identified with tag before shipment. Several size ranges are produced for various designs of drive shaft used in variety of commercial vehicles and trucks.

Typical sizes that are being produced are listed in the following table

TYPICAL SIZES OF DRIVE SHAFT TUBES

S.No	Tube Size (mm)	Material	Tolerance on OD or ID (mm)	Tolerance on WT (mm)	UTS (min.) (kg/mm ²)	YS (min.) (kg/mm ²)	Elongati on (min.) (%)
1	75 OD X 1.6 WT	JIS STKM 13	+/-0.2	+/-0.15	45	36.5	12
2	84 ID X 3.0 WT	SAE 1020	-0.1/-0.35	-0/+0.2	55	50	12
3	94.75 ID X 3.41 WT	SAE 1020	-0.1/-0.35	-0/+0.2	55	50	12
4	84 ID X 2.41 WT	SAE 1020	-0.1/-0.35	-0/+0.2	55	50	12
5	59.25 ID X 2.11 WT	SAE 1020	-0.1/-0.35	-0/+0.2	55	50	12
6	76.20 OD X 1.65 WT	SAE 1020	+/-0.15	+/-0.15	55	50	10
7	50.80 OD X 2.41 WT	SAE 1020	+/-0.15	+/-0.15	55	50	10
8	76.20 OD X 1.63 WT	SAE 1020	+/-0.13	-0.06/+0.05	55	50	10
9	88.90 OD X 1.63 WT	SAE 1020	+/-0.13	-0.06/+0.05	55	50	10
10	50.80 OD X 1.63 WT	SAE 1020	-0.08/+0.13	-0.06/+0.05	55	50	10
11	77.00 OD X 1.90 WT	St 52.3	+/-0.2	+/-0.1	60	-	6

Other general requirements that are met:

1. Wall thickness variation=0.1mm max.,
2. O.D and I.D ovality = 50 % of tolerance
3. Drift expansion = 12 % min.,
4. Straightness = 0.5/1000 mm max.,
5. Flattening = ¼ D min.,

These are some typical sizes. Other sizes of customer specific requirements can also be offered.

Our satisfied customers include Spicer India, Hardy Spicer- Australia, Toyota Kirloskar, Akkardan- Turkey, KPT-Iran with 75 % market share in India.



INDIA

TII Precision Steel Tubes- Global Standards, Engineered Solutions



MURUGAPPA GROUP

TUBE INVESTMENTS OF INDIA
UNIT: TUBE PRODUCTS OF INDIA- EXPORTS DIVISION
AVADI- CHENNAI- INDIA- 600054
TEL: 91-44-6383099/323/212/244/338/339
FAX: 91-44-6383110/6383211
E MAIL: sales@tubeproductsofindia.com
Web Site: www.tubeproductsofindia.com

Manufacturers of precision CDW/ DOM steel tubes conforming to ASTM/DIN/BS/JIS and customer specific standards being exported worldwide