



FABRICATED PRODUCTS

E-03

CATALOGUE SHEET

**EUTIT, s.r.o.**

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## A. DEFINITION

Fabricated products are described as below:

Abrasion resistant pipework with or without flanges  
Various technology abrasion (wear) resistant linings

Catalogue sheet applies to all disciplines of manufacture, lining, quality control and final despatch.

Steel or other casing materials are lined with Cast Basalt ( Cat. sheet E-01) , Eucor (Cat. sheet E-02) as well as other wear resistant materials.

Wear resistant linings are fabricated from:

tiles, formpieces, bend segments, reducers, „ T“ pcs, breeches pipes, nozzles, cyclones, liners ( tubes) and other shaped products.

Application: In pipework which material is mechanically, chemically high stressed and material is damaged by wear and by high temperature.

In pneumatic , hydraulic and other transportation Systems, in various pipeline profiles (round, square etc.), separators, cement-mixers, grinding rollers, coal and sand bins, chutes etc.

Generally , lined pipework and wear resistant linings show significantly higher resistance to abrasion in comparison with alloy steel and cast iron pipe work.

Appreciation: Cast Basalt products' certificates

No.: 03 – 8933, No.: 03 – 8934

issued 1.12.1998

TZÚS Praha.

Eucor certificate

No.: C1 – 96 – 0466

issued 29.10.1996,

No.: CO 3015 – 98 – 001

Issued 30.1.1998

CO 3015 TZÚS Praha

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e-mail: [eutit@eutit.cz](mailto:eutit@eutit.cz) <http://www.eutit.cz>**B. TECHNICAL DATA**

Abrasion resistant pipework lined by Basalt and Eucor (zirconia-corundum material) is applied in pneumatic transportation of pulverized and fine-grained medium up to max. speed 22 m/sec. and in hydraulic transportation of abrasive materials and sludge up to the speed of 2,2 m/sec.

Operating gauge pressure max. 1,6 MPa.

Material:

**Cast Basalt and Eucor technical data**

	<b>BASALT</b>	<b>EUCOR</b>
Mohs hardness (CSN EN 101)	min. 8.degree	min. 9. degree
Volume mass (CSN EN 993-1)	2900 – 3000 kg.m <sup>-3</sup>	min. 3500 kg.m <sup>-3</sup>
Compressive strength (CSN EN 993-5)	300 - 450 MPa	min. 300 MPa
Wear resistance (CSN EN ISO 10545-6)	max. loss 110 mm <sup>3</sup>	max. 30 mm <sup>3</sup>

Cast Basalt characteristics are as stated in the Catalogue sheet E-01.

Eucor characteristics are as stated in the Catalogue sheet E-02.

Casing, flanges quality: generally steel of quality range 11 according to the Czech standard ČSN

**Fabrication:**

Fabrication, steel specification, wear resistant lining materials, bonding adhesive, and type of mortar is chosen by the manufacturer so that the pipework complies with all standard parameters.

**Cavity filling:**

A gap, between wear resistant lining and a steel casing is filled with cement mortar. Facings are cleaned and grounded to comply with standard allowable tolerances.

**Coating:**

Primary coating S 2129, tint 0500, in accordance with standard ON 13 0420 is applied.

All other methods of coating including shot blasting can be used depending on the customer's request. Sealing face and flange faces remain uncoated.

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## C.CONSTRUCTIONAL UNITS TECHNICAL SPECIFICATION

General specification for pipework lining:

- Weldless steel pipes according to the Czech standard ČSN 42 5715 (eventually ČSN 42 6710).
- Spiral weld steel pipes according to the Czech standard ČSN 42 5738
- Longitudinal weld steel pipes of an abnormal dimension, or in accordance with customer's request.
- Welding-neck flat flanges or loose rotating flanges with a welding ring according to the Czech standard ČSN 13 1222 - 131224, ČSN 13 1273 - 13 1275, ČSN 13 1160.
- Flanges in accordance with drawing ( bend segments) or in accordance with customer's request.
- Foreign standard flanges- DIN, UNI, ANSI etc.

Specific flange dimensions are stated in standard charts. Other application are available upon agreement between manufacturer and customer.

Flanges generally supplied with sealing surface according to the Czech standard ČSN 13 1061, which specifies rough sealing face.

Make -up pieces of length up to 1,5 m can be supplied together with flanged pipes and together with bend tubes in the range of all standardized degree. No make -up pieces are supplied together with adapting pieces.

### 1. TERMINOLOGY

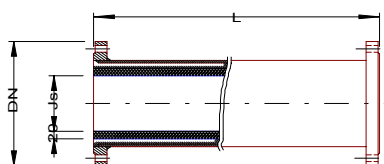
1. **ABRASION RESISTANT PIPE-WORK:** fabricated of flanged steel items lined with abrasion resistant linings.

2. **OTHER ABRASION RESISTANT UNITS( COMPONENTS):**

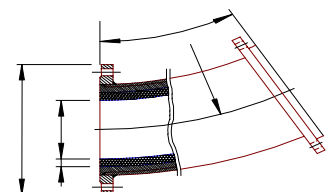
flanged or nonflanged items lined with abrasion resistant materials

3. **FLANGED STRAIGHT PIPES (drw no.1)** 4. **FLANGED BEND PIPES (drw no.2)**

Drw. No. 1



Drw. No. 2



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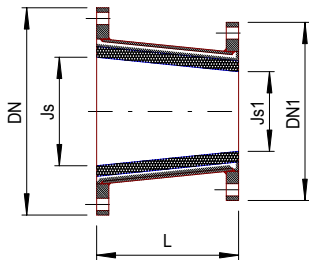
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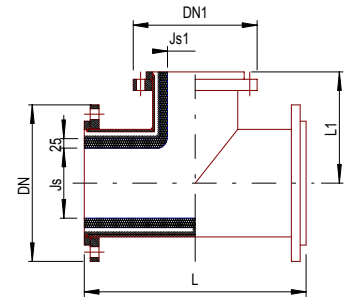
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e-mail: [eutit@eutit.cz](mailto:eutit@eutit.cz) <http://www.eutit.cz>**5. FLANGED REDUCERS ( drw no.3)****6. FLANGED ADAPTING PIECES (drw no.4)**

Drw. No.3



Drw. No.4

**7.MAKE-UP PIECES** - pipes, bends supplied as single items to complete a fabrication**8.FLANGES** - loose ( rotating), fix welded and others

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## 2.SINGLE UNITS DIMENSION CHARTS

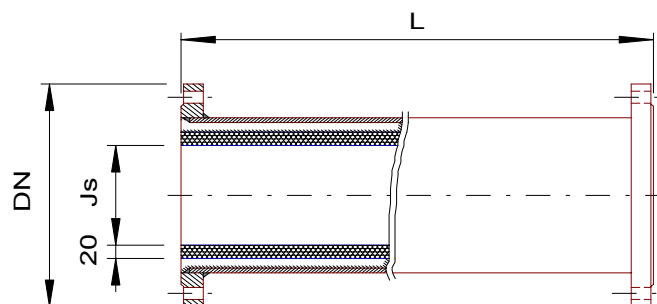
a) FLANGED STRAIGHT PIPES lined with basalt or Eucor, bonded by epoxy resin up to 1,0 MPa pressure

(see chart no. 1, see drw no. 5)

DN - flange nominal dimension Js - nominal diameter D - steel pipe outer diameter ( in mm )

**DIMENSION CHART NO.: 1**

DN	Js	D	L							
			500	1000	1500	2000	3000	4000	5000	6000
			weight (kg)							
125	40	133	32	52	72	92	-	-	-	-
125	50	133	32	52	72	92	-	-	-	-
125	65	159	37	64	91	118	-	-	-	-
125	82,5	159	36	61	85	110	159	209	259	308
150	100	194	40	65	91	116	167	218	269	320
175	125	219	50	82	114	146	209	273	337	400
200	150	219	56	94	130	167	241	315	389	460
225	175	245	62	103	133	184	256	328	410	510
250	204	273	73	121	169	218	315	412	508	605
300	254	324	88	147	207	266	384	502	620	738
350	303	377	110	182	256	325	469	613	757	900
400	356	426	129	209	289	368	528	688	848	1007
450	400	480	133	223	314	404	587	770	953	-
600	500	630	253	430	607	784	1139	1493	1847	-



Drw.No.5

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**FABRICATION:**

- Casing with two fix welded flanges
- Casing with one fix welded flange and one loose flange
- Make-up pieces , pipes which are completed to a needed length: Make up piece  
Two flanges( one fixed,one in bulk)needful linings is supplied.

**The following purchase order parameters is required**

 Flanged straight pipe (DN), type of linings, linings nominal diameter (Js), length (L),  
type of flanges (fix, loose) etc.

**Material:**

 Steel casings and flanges according to the standard 11373 or 11353, basalt or eucor linings  
according to the E-01 Cast Basalt and E-02 Eucor.

**b) FLANGED BEND PIPES** lined with basalt or Eucor, bonded by epoxy resin up to 1,0 MPa  
pressure ( see chart 2, drw no.6)

DN - flange nominal dimension Js - nominal diameter D - steel casing outer diameter (in mm)

**DIMENSION CHART NO.: 2**

DN	Js	D	15°					30°				45°		
			Radius					Radius				Radius		
			750	1000	1500	2000	3000	750	1000	1500	2000	750	1000	1500
			weight (kg)					weight (kg)				weight (kg)		
125	40	133	20	23	28	33	44	28	33	44	54	36	44	60
125	50	133	20	23	28	33	44	28	33	44	54	36	44	60
125	65	159	21	24	31	37	48	30	35	48	60	40	47	67
125	82,5	159	22	25	32	39	49	31	36	49	62	41	49	69
150	100	182	26	30	38	46	62	38	46	62	78	50	62	87
175	125	205	29	34	43	52	70	43	52	70	88	57	70	98
200	150	230	35	39	50	60	81	50	60	81	102	66	81	113
225	175	262	39	45	57	69	95	57	69	95	119	70	95	134
250	204	290	42	54	63	77	105	63	77	105	134	85	105	160
300	254	340	53	60	78	95	129	88	95	129	164	104	129	186
350	303	391	64	74	94	114	153	94	114	153	192	124	153	230
400	356	442	83	96	123	148	198	123	148	198	250	161	198	244
450	400	480	95	107	135	163	219	135	163	219	275	178	219	300
600	500	630	139	160	203	245	330	139	245	330	415	267	330	501

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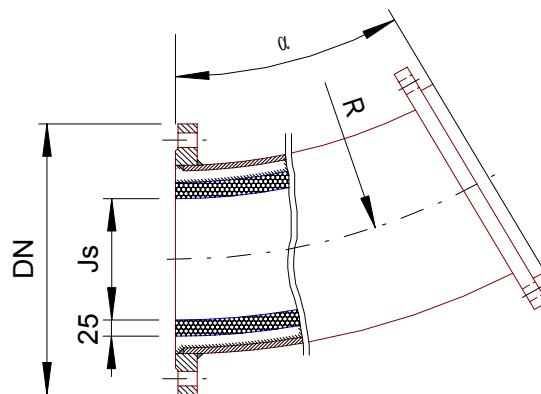
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Drw. No. 6

**FABRICATION**

- Casing with two fix welded flanges
- Casing with one fix welded flange and one loose flange
- Make up pieces , bend tubes which are modified to a needed angle: Make up piece Two fix welded flanges ,needful quantity of linings is supplied.

Needed angle is obtained by cutting the bend tubes' central part out and by welding again on the site.

**The following purchase order parameters is required**

Flanged bend pipe (DN), linings dimension, nominal bore (Js), Radius (R), bend angle, type of flanges (fixed, loose) etc.

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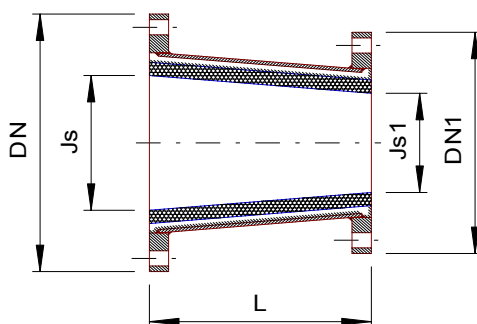
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c) **FLANGED REDUCERS** ,lined with basalt or Eucor, bonded by epoxy resin up to 1,0 MPa pressure ( see chart no.3, drw no..7)

**DIMENSION CHART NO.:3**

Flange nominal dim.		Lining nominal dim		Length (mm)	Weight
DN	DN1	Js	Js1	L	kg
125	125	50	40	150	18
125	125	65	50	150	19
125	125	82,5	65	150	19
175	125	125	82,5	300	32
200	175	150	125	150	30
250	200	204	150	300	49
300	200	254	150	550	83
300	250	254	204	250	55
350	250	303	204	500	96
350	300	303	254	250	67
400	300	356	254	500	116
400	350	356	303	250	84
600	500	500	356	750	252



Drw.No.7

**Fabrication**

- Reducers supplied together with two fix welded flanges.

**The following purchase order parameters is required**

Flanged reducer, (DN and DN 1), linings dimension (Js) ,length (L), type of flanges ( fixed, loose) etc.



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e-mail: [eutit@eutit.cz](mailto:eutit@eutit.cz)<http://www.eutit.cz>**Material**

- Steel casings and flanges according to the standard 11373 or 11353 basalt or eucor linings according to the E 01 and E 02.

**d) FLANGED ADAPTING PIECES T 90<sup>0</sup>**, lined with basalt or eucor, bonded by epoxy resin up to 1,0 MPa pressure ( see chart no.:4, drw no.:8)

**DIMENSION CHART NO.: 4**

Flange nominal dim		Lining nominal dim		Length (mm)	Length (mm)	Weight
DN	DN1	Js	Js1	L	L1	kg
125	125	40	40	400	200	40
125	125	40	40	400	200	40
125	125	50	50	400	200	40
125	125	50	50	400	200	43
125	125	65	65	400	200	43
125	125	65	65	450	225	43
125	125	82,5	82,5	450	225	43
175	125	82,5	82,5	500	250	66
175	175	125	125	550	275	78
200	175	125	125	575	238	91
200	200	150	150	600	300	94
250	200	150	150	650	325	121
250	250	204	204	700	350	138
300	250	204	204	750	375	170
300	300	254	254	800	400	195
350	250	204	204	800	400	217
350	300	254	254	850	425	242
350	350	303	303	900	450	260
450	450	400	400	1000	500	315

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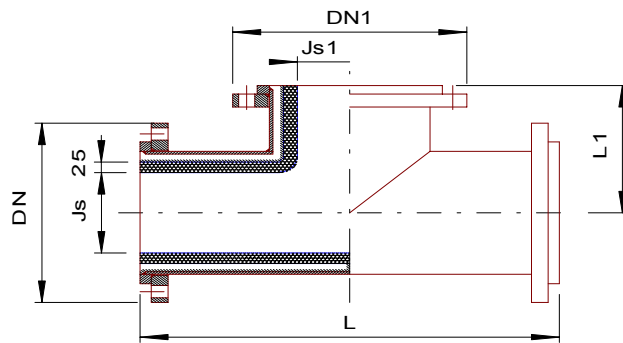
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Drw. No 8

### Fabrication

Flanged adapting pieces are supplied together with fixed flanges and as well with rotating ones according to the below tab:

Flanges
Two fixed flanges ( one on the body, one collared)and one rotating
One fixed flange (on the body) and others-rotating (body,neck)
All flanges fixed
All flanges rotating(loose)

### The following purchase order parameters is required

Flanged adapting piece (T, DN and DN 1),type of linings- dimension, (Js and Js1) , length (L and L1), type of flanges (fixed, loose) etc.

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e) SPECIAL FLANGES up to 0,6 and 1,0 MPa pressure (see chart no.: 5)

**DIMENSION CHART NO.: 5**

(dimension in mm)

**FIXED FLANGES PN 6**

DN	worked for:	D	D1	D2	D3	a	d	Bolts	
								Qty	Thread
175	pipe.	197	295	255	234	22	18	8	M16
175	bend.	207	295	255	234	22	18	8	M16
175	rotating	210	295	255	0	22	18	8	M16
225	pipe	248	340	305	285	22	18	8	M16
225	bend	265	340	305	285	22	18	8	M16
225	rotating	268	340	305	0	22	18	8	M16
450	pipe	482	590	550	525	28	23	16	M22
450	bend	482	590	550	525	28	23	16	M22
450	rotating	486	590	550	0	28	23	16	M22

**FIXED FLANGES PN 10**

DN	worked for:	D	D1	D2	D3	a	d	Bolts	
								Qty	Thread
175	pipe	197	315	270	242	26	23	8	M20
175	bend	207	315	270	242	26	23	8	M20
175	rotating	210	315	270	242	26	23	8	M20
225	pipe	248	370	325	300	26	23	8	M20
225	bend	265	370	325	300	26	23	8	M20
225	rotating	268	370	325	300	26	23	8	M20
450	pipe	482	615	565	535	32	27	20	M24
450	pipe	482	615	565	535	32	27	20	M24
450	rotating	486	615	565	535	32	27	20	M24

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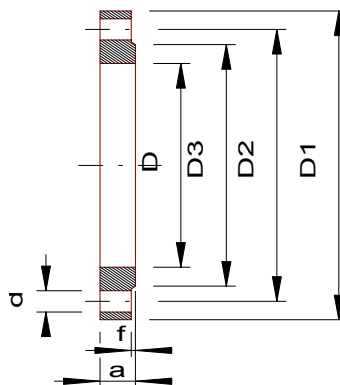
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DN	D	D9 rotating	D1	D2	D3	a	d	Bolts	
								Qty	Thread
150	184	287	280	240	212	24	23	8	M20
200	232	235	335	295	268	26	23	8	M20
250	292	295	390	350	320	26	23	12	M20
300	340	344	440	400	370	28	23	12	M20
350	394	398	500	460	430	30	23	16	M20
400	445	550	565	515	482	32	27	16	M24
600	633	639	780	725	685	36	30	20	M27

Flanges intended for fabricated bends.



Drw.No.9

**D. DIMENSION TOLERANCE**

- Permitted tolerance of straight lined items length is allowed only in extension of the total sum of all used pipes' (lining) tolerances unless agreed anotherwise
- Permitted tolerance of bend lined items length is allowed only in extension of the total sum of all used bend segments' (lining) tolerances unless agreed anotherwise
- Casing and abrasive resistant linings alignment's permitted tolerance:  $\pm 2$  mm.
- Abrasion resistant linings' mismatch tolerance:  $\pm 2$  mm.
- Permitted tolerances of steel items' dimension and shape in accordance with the existing standards ( see annexed list of standards)

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- Linings should not protrude and be within 0,0-1,5 mm of the flange face or pipe end
- Fabricated straight parts and bend segments' tolerances should be agreed

### **E. PRODUCTS' INSPECTION**

Inspection can be undertaken, if agreed with purchaser in the manufacturer's factory. Manufacturing drawings, if needed, should be agreed when purchase contract is written and signed.

### **F. PRODUCTS' INSPECTION**

Full dimensional inspection takes place including quality of workmanship. On agreed terms, other parameters can be checked.

Each product is checked.

Each product is marked by the vendor inspection.

Subdeliveries are checked as well ( testimonials, certificates).

Products are supplied together with the „Quality statement“ or with the“ Statement of conformity“

Other method of checking shall be agreed in written form in a purchase contract.

### **G.PACKING,STOCKING,TRANSPORT**

Products are loaded inside of trucks, containers, railway waggons in bulk, unless agreed otherwise.

All products are secured against rolling during handling, stocking and hauling.

During above stated process all products are treated with care to prevent damage.

### **H. ORDER, PURCHASE CONTRACT**

Every order or purchase contract should specify the following:

- a) Quantity, all ordered single units(components) and weight
- b) Items marking in accordance with this standard or others(drawing etc.)
- c) According to the Dimension charts of the standard E-03
- d) Parameters of a transported medium ( temperature, pressure, ratio, speed, granulity etc.)
- e) Special requirements as far as coating, drawing, fabrication etc.

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1. ON 13 0420 – Atmospheric corrosion prevention
2. ON 13 0430 – Pipe-work componets' packing
3. ČSN 13 1061 – Flanges' sealing surface adjustment
4. ČSN 13 1222 – Fixed welding flanges PN 6
5. ČSN 13 1223 – Fixed welding flanges PN 10
6. ČSN 13 1224 – Fixed welding flanges PN 16
7. ČSN 13 1273 – Rotating flanges and welding rings PN 10
8. ČSN 13 1274 – Rotating flanges and welding rings PN 10
9. ČSN 13 1160 – Flanges
10. ON 13 2510 – Flanged pipes lined with basalt PN 6
11. ON 13 2511 – Flanged pipes lined with basalt PN 10
12. ON 13 2518 – Flanged bend tubes lined with basalt PN 6
13. ON 13 2519 – Flanged bend tubes lined with basalt PN 10
14. ON 13 2522 – Flanged reducers lined with basalt Th25 mm, PN 6 a PN 10
15. ON 13 2524 – Flanged adapting pieces T 90<sup>0</sup> basalt lined Th 25 mm, PN 6 a PN 10
16. ČSN 45 5715 – Weldless steel pipes
17. ČSN 42 5738 – Steel pipes welded
18. ČSN 42 6710 – Weldless pipes
19. E-01 - Cast Basalt – Catalogue sheet
20. E-02 - Eucor (zirconia-corundum material) – Catalogue sheet

Note:

Branch norms (ON) were cancelled. They are however used for Catalogue Sheet E-03.