



The Crimping people... since 1960

billets ELEKTRO WERKE LTD.



**Cable Lugs, Connectors
& Crimping Tools**



The Crimping people... since 1960

billets ELEKTRO WERKE LTD.

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CRIMPING TOOLS AND TERMINALS

An ISO 9001 / 2000 Company

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Note: Product Dimensions & Quantity packing standard can change without prior notice.

PUB. No. - 07/8K

An ISO 9001 / 2000 Company



(1929-2006)
 In loving memory of Shri. Govindbhai S. Patel
 The Pioneer of Cable Jointing Technology in India
 The Founder of Dowell's and
 3D brand Cable Lugs and Crimping Tools.



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Note: *All dimensions indicated in the catalogue are nominal dimensions, product produced may vary in size within the stipulated tolerances.*



The History

The Company was first established in 1950 by Mr. G. S Patel and started producing Cycle Rickshaws. Mr. Patel with his vast engineering background, subsequently diversified the company into manufacturing:

Stardelta Starters	in 1954	Time Switches Centrifugal Switches for Motors Components of KWH Meters	in 1961
Switchgears	in 1958	Push-Button Switches for fans introduced for the first time in India by us. Terminals and Crimping Tools under the Dowell's Brand	In 1963

and finally **3D** CRIMPING TECHNOLOGY SYSTEM with **3D** range of products from 1979. Mr. G. S. Patel supported by technical expertise from his son Mr. A. G. Patel an Electrical Engineer, pioneered this technology in India, which has applications in Electrical Cable Joining.

The Introduction of **3D** Brand terminals, tools and accessories are the result of long awaited demand from the users, for the products with international standard backed by advanced technology. Mr. G. S. Patel and Mr. A. G. Patel took up the challenge with professional approach and established a manufacturing set-up, which is the only plant of its kind in India of offering wide range of products for cable termination.

The Present

In billets **Elektro Werke Ltd.**, we design, develop manufacture and market our **3D** Brand CRIMPING TECHNOLOGY SYSTEM including Cable Joining Accessories, which are produced from basic Copper Cathodes to finished products under ONE ROOF

Crimping is an advance technique of securing a Terminal/Connector to a conductor by using the special tool to give a perfect electrical joint for the cable to withstand any adverse condition.

Management: billets **Elektro Werke Ltd.** is professionally managed and at the helm are Mr. Ashok G. Patel, Managing director with over 25 years experience in the engineering field and Mr. Chirag A. Patel, Executive director with over 5 years experience.

Product Range:
CRIMPING TOOLS | CONNECTORS | TUBULAR CABLE LUGS | STAMPED CABLE LUGS |
TUBULAR END SLEEVES For CABLES | APPLICATORS For HARNESS MANUFACTURERS. |
WIRE/CABLE CUTTING TOOLS | CRIMPING TOOLS

We have successfully developed and established a market for import substitutes in India.

80% of our sales revenue comes from the international market and rest from the domestic market in following categories: Importers and Wholesalers | Electricity Boards | Projects Refineries | OEMs | etc.

R&D
Accrued technical know-how from reputed manufacturers abroad in different areas of production and quality control with intense dedication to Research & Development during the past many years have enabled us to stay ahead of competition.

Recognition
We have proven recognition from satisfied Overseas Customer in Australia, New Zealand, Singapore, Myanmar, Hong Kong, Gulf Countries, South Africa, Kenya, Spain, Netherlands, Ireland and UK, who have been buying our products for the past 15 years steadfast with implicit faith in our quality and services.

ISO 9001 - 2000 we have standardized our quality control and Inspection procedures as per ISO 9001 - 2000 and have also been certified by TUV

We have also been winning several Export Excellence Awards from the government of India / EEPC.



The Future

We are in the process of expanding our product profile. we have also expanded our manufacturing capacity in the form of new tooling, automation and quality control equipments. Our aim for the future is to make **3D** Cable Lugs and Tools a globally recognized Brand.

Our Motto

The dimensions of our **3D** brand are
1. Quality 2. Consistency of Quality 3. Assured Deliveries.
and to understand the exact needs of the users to recommend/guide them in the correct direction with latest available technique in cable Termination.

Quality Benefits of 3D Terminals

Don't compromise on quality for the sake of price. A cheap quality terminal can affect the optimum functioning of your product. At billets **Elektro Werke Ltd.** we have an experience of more than 40 years in designing and manufacturing cable terminals and crimping tools. We have stringent in-house quality and inspection standards. And we don't compromise. ...

- **Conductivity:** All our input raw materials are checked for conductivity. We only use ETP grade, 99.9% conductivity copper and 60% conductivity aluminum. Incoming material is checked for conductivity and dimensional accuracy.
- **Finish:** All terminals go through deburring and polishing operations to eliminate all sharp edges, which may otherwise hinder fixation on the conductor.
- **Accuracy:** Our tool room has two wire cutting EDM's (Charmilles, Germany), a machining center (Haas, USA), and two spark erosion machines, besides a wide array of lathes, milling machines, drilling machines, grinding machines etc. Our press tools are designed keeping in mind high accuracy. Productivity and quality. The result are lugs manufactured within the dimensional tolerance.

- **Brazing:** we use high quality brazing wire containing 2% silver. This ensures a high flowing rate after melting and an even layer. This leaves a brazing seam with no lumps that spoil the finish of the terminal or affect the crimpability. We also normalize the terminals after brazing and conduct a bend test at the seam to ensure that there is no cracking.



- **Crimpability:** We ensure that our material is at the optimum softness so that operator can crimp the terminal with minimal effort, at the same time ensures that it is hard enough to sustain deformation.



- **Plating:** Our terminals have a tin coating of minimum 5 microns to ensure a shelf life of at least two years. Thickness is checked by Coulometric testing and salt spray tests.



- **Insulation:** Our insulation does not show any stress marks or colour changes even with extreme crimping. We also conduct heat aging and dielectric tests to ensure that the insulation does not degrade in high temperature environments.



Quality Policy




We, at **billets ELEKTRO WERKE Ltd.** are committed to achieving full customer satisfaction and enhancing it. This commitment is shared by all our employees and is an integral part of the fundamental value system of our company.

We shall achieve this by continual improvement of processes, products, services and systems, designed to meet the expectations of the Customers, and thereby foster good partnerships with them.



Frequently Asked Questions





- Which material is used for insulation of sheet metal terminals?
We use sleeves made out of PVC for insulating sheet metal terminals. The operating temperature for these lugs is from 60 degrees C to 100 degrees C. For high temperature applications we can also provide Nylon or Polycarbonate insulating sleeves. For applications where there is a chance of the sleeves coming off due to vibrations (eg railway locomotive) we use a copper sleeve under the PVC insulation, for the enhancing the rigidity.
- Why is the colour of insulation different for various cable sizes?
As per international practice in use, Red colour is for terminals of 1.5 Sq.mm, Blue colour is for terminals of 2.5 Sq.mm & Yellow colour is for terminals of 4-6 Sq.mm,
- What are the Indian standard specifications for our products?
Indian standard specifications are formulated for Aluminum terminals only. At present specifications for copper sheet metal terminals are not formulated. IS 8308 - 1993 covers Aluminum in Line Connectors & IS 8309 - 1993 covers Aluminum Tubular Terminal Ends. We however have obtained license for aluminum cable lugs only. We have also developed lugs and connectors as per DIN specifications, however we don't have certification for the same.
- How do we know the purity of copper or Aluminum used in our products?
We manufacture our copper lugs and connectors from cathodes obtained from LME approved warehouses only. Our aluminum lugs and connectors are manufactured from ISI certified tube manufacturers, who use aluminum ingots of the highest purity. We have in-house testing facilities to check the conductivity for copper and aluminum. Does 99% copper content guarantee 99% IACS conductivity? No. Conductivity is affected by the type of impurities content in balance 1%. It has been observed that 0.5% arsenic may bring down the conductivity to the tune of 50% to 60%
- How to select the right lug for the right cable size?

CONDUCTOR CROSS SECTIONAL AREA mm ²	CONDUCTOR CONSTRUCTION	CONDUCTOR ØØ
 Gross Sectional area of each wire = $\pi r^2 = \pi(2.25)^2 = 4.90 \text{ mm}^2$ Gross Sectional area of conductor = Area of each wire x No. of wires $4.90 \times 7 = 34.3 \text{ mm}^2$ i.e. 35 mm ²	 EXAMPLE 7x 0.5	 EXAMPLE 7.5 Ø
- Flexible wire does not go into the barrel of the same size of terminal?
Outer diameter of flexible wire is maximum compared to the other (stranded or solid) shape. Our terminals are designed to easily receive stranded wires. It becomes difficult to insert the flexible wire into the barrel. Best practice is to form the wire with forming dies or use one higher size of terminal (however that may cause flashing). Use of terminals having easy entry barrels will also provide ease of insertion.
- Why serrations are provided?
Serrations help in cutting oxide film formed over the conductor. (In case of aluminum the oxide film is formed at normal temperature or humidity). Serrations also help in providing better grip of the joint. However, we have taken the pull off test over the same size of crimped terminal, with and without serrations. Though the terminals without serrations withstand lesser pull off load, it is well within the limits of 4Kg./Sq.mm. The use of a corrosion-inhibiting compound (3D-112, 3D-113) is a better option for breaking the oxide layer on the conductor.
- How can corrosion after crimping be reduced or prevented?
It can be prevented or reduced by applying special corrosion inhibiting compounds between the surfaces of different material being used in electrical circuit.



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Crimping Techniques

- How Corrosion Inhibiting Compound (3D-112, 3D-113) should be used?
Compound should be freely applied over the stripped portion of wire and also on the inside surface of barrel. Excess compound will seal the barrel mouth after crimping and in turn prevent the ingress of moisture or other contaminated substances present in the surrounding atmosphere.
Compound is recommended to be used when aluminium lug is used with aluminium conductor.
- How can we know that the crimped joint is proper or not?
A properly crimped joint is one in which the compressed section of the joint is so tightly packed that it almost becomes homogenous.
It can be ascertained by:
Pull Off Load Test - Crimped joint should withstand the pull off load of 4Kg./Sq.mm. Say for 240 Sq.mm. cable, it should withstand 240 X 4 = 960 Kg.
Joint Resistance - As per IS 8337 the resistance of crimped joint on aluminium wire should not be more than the resistance across the length of the conductor equal to the length of barrel of the terminal.
Visual Inspection - Cut a section of the crimped portion and examine the section for air gaps between the conductors, or between the ID wall of the lug and the conductors. Presence of air gaps indicates that the crimping is not homogenous. As shown in the picture:
 
- Can insulated terminals be crimped with the tools meant for non-insulated terminals?
NO. The tools designed for Non-insulated terminals will not properly crimp the terminals. It will also damage the insulating sleeve. The same logic applies for
- What should be the direction of crimping, when crimping multiple crimps on longer barrel lugs?
The direction of crimping should always be away from the palm portion of the barrel in the case of lugs, and should start from the centre in the case of connectors.
 
- What should be the stripping length of conductor?
It should be slightly more than the barrel length, which will give the rough idea whether the conductor has been fully inserted or not. However, wherever possible, it is recommended to use the terminals having inspection vent, which will show if the conductor is fully inserted or not.
- Terminals having bigger stud hole (say 16-mm) can be used with smaller bolt (say 12-mm)?
NO. When the smaller bolt is used with the terminal having higher stud hole, the bolt washer starts forming dish shape while tightening and does not exert proper pressure on the palm. This results in improper contact, which can lead to failure of the termination due to excess heat generation. This is illustrated by the picture below. The electrical contractor in this case had terminated the lug on a fuse gear with a considerably smaller area, resulting in melting of the lug.
 
- What is the importance of spring washer in any bolted connections?
When the current flows through any conductive metal, heat is generated. The conducting metal expands when the heat is generated and contracts when the current stops flowing. Spring washer helps in maintaining proper pressure on bolted joints during expansion and contraction.
- Can terminals be crimped without the recommended crimping tools?
Our lugs and tools are designed to offer the best possible electrical and mechanical joint. We have found that some electricians and electrical contractors prefer using hammers or pliers to crimp a lug. This technique brought about just to save some expense, is absolutely NOT recommended by us. Mainly because hammering a terminal will not provide the adequate pull-off load strength.
 

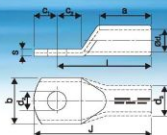


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CABLE LUGS FOR COMPRESSION

CONNECTIONS COVER PLATE TYPE,
FOR COPPER CONDUCTORS
AS PER DIN 46 236
MATERIAL: ELECTROLYTIC COPPER
SURFACE: ELECTRO TINNED

BRIGHT FINISH WITHOUT TIN PLATED MADE TO ORDER



Conductor size	Bolt size	3D CAT. NO.	Dimensions in mm											Temp.
			d ₁	a	b	d ₂	C ₁	C ₂	I	J	S	J	Temp.	
6	M 5	3D-2958	3.8	10	8.5	5.3	5.5	7.5	7.6	24	24	31.5	1.4	100
	M 6	3D-2959	3.8	10	8.5	8.4	5.6	7.5	7.5	24	24	31.5	1.4	100
	M 8*	3D-2206	3.8	10	13	8.4	5.6	10	10	24	24	34.0	0.8	100
10	M 6	3D-2960	4.5	10	9	5.3	6.0	7.5	7.5	27	27	34.5	1.3	100
	M 8	3D-2961	4.5	10	9	8.4	6.0	7.5	7.5	27	27	34.5	1.3	100
	M 8*	3D-2207	4.5	10	13	8.4	6.0	10	10	27	27	37.0	0.8	100
	M 10	3D-2207M10	4.5	10	16	10.5	6.0	12	12	27	27	39.0	0.7	100
16	M 6	3D-2962	5.5	20	13	6.4	8.5	7.5	8.0	36	36	43.5	2.5	100
	M 8	3D-2963	5.5	20	13	8.4	8.5	10	10	36	36	46.0	2.5	100
	M 10	3D-2964	5.5	20	17	10.5	8.5	12	12	36	36	48.0	1.9	100
	M 12*	3D-2225	5.5	20	18	13	8.5	13	13	36	36	48.0	1.8	100
25	M 6	3D-2965	7	20	14	8.4	10	7.5	8.0	36	36	45.5	2.8	90
	M 8	3D-2966	7	20	16	8.4	10	10	10	36	36	48.0	2.5	90
	M 10	3D-2967	7	20	17	10.5	10	12	12	36	36	50.0	2.3	90
	M 12	3D-2968	7	20	19	13	10	13	13	36	36	51.0	2.1	90
35	M 8*	3D-2328	8.2	20	17	6.4	12.5	7.5	8.0	42	42	49.5	4.1	25
	M 8	3D-2969	8.2	20	17	8.4	12.5	10	10	42	42	52.0	4.1	25
	M 10	3D-2970	8.2	20	19	10.5	12.5	12	12	42	42	54.0	3.6	25
	M 12	3D-2971	8.2	20	21	13	12.5	13	13	42	42	56.0	3.3	25
50	M 8	3D-2972	10	28	20	8.4	14.5	10	10	52	52	62.0	4.3	25
	M 10	3D-2973	10	28	22	10.5	14.5	12	12	52	52	64.0	3.9	25
	M 12	3D-2974	10	28	24	13	14.5	13	13	52	52	65.0	3.6	25
	M 16	3D-2975	10	28	28	17	14.5	16	16	52	52	68.0	3.0	25
70	M 8	3D-2976	12	28	24	8.4	16.5	10	10	65	65	65.0	4.5	25
	M 10	3D-2977	12	28	24	10.5	16.5	12	12	65	65	67.0	4.5	25
	M 12	3D-2978	12	28	24	13	16.5	13	13	65	65	68.0	4.5	25
	M 16	3D-2979	12	28	30	17	16.5	16	16	65	65	71.0	3.6	25
95	M 8*	3D-2330	13.5	35	28	8.4	19	12	12	65	65	77.0	5.0	15
	M 10	3D-2980	13.5	35	28	10.5	19	12	12	65	65	77.0	5.0	15
	M 12	3D-2981	13.5	35	28	13	19	13	13	65	65	78.0	5.0	15
	M 16	3D-2982	13.5	35	32	17	19	16	16	65	65	81.0	4.3	15

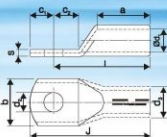




CABLE LUGS FOR COMPRESSION

CONNECTIONS COVER PLATE TYPE,
FOR COPPER CONDUCTORS
AS PER DIN 46 235
MATERIAL: ELECTROLYTIC COPPER
SURFACE: ELECTRO TINNED

BRIGHT FINISH WITHOUT TIN PLATED MADE TO ORDER

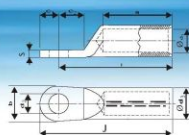


Conductor mm ²	Screw Ø	3D CAT. NO.	Dimensions in mm										pos
			d ₁	a	b	d ₂	d ₃	C ₁	C ₂	l	J	S	
120	M 10	3D-2983	16	35	32	10.5	21.0	15	16	70	85	4.5	20
	M 12	3D-2984	16	35	32	13	21.0	16	17	70	86	4.5	20
	M 16	3D-2985	16	35	32	17	21.0	19	20	70	89	4.5	20
	M 20	3D-2986	16	35	36	21	21.0	21	22	70	91	3.8	20
150	M 10	3D-2987	17	35	34	10.5	23.5	15	16	78	93	6.0	15
	M 12	3D-2988	17	35	34	13	23.5	16	17	78	94	6.0	15
	M 16	3D-2989	17	35	34	17	23.5	19	20	78	97	6.0	15
	M 20	3D-2990	17	35	40	21	23.5	21	22	78	98	5.1	15
185	M 10	3D-2991	19	40	37	10.5	26	15	16	82	97	6.6	10
	M 12	3D-2992	19	40	37	13	26	16	17	82	98	6.6	10
	M 16	3D-2993	19	40	37	17	26	19	20	82	101	6.6	10
	M 20	3D-2994	19	40	40	21	26	21	22	82	103	6.1	10
240	M 12	3D-2995	22	40	42	13	29	16	17	92	108	6.6	8
	M 16	3D-2996	22	40	42	17	29	19	20	92	111	6.6	8
	M 20	3D-2997	22	40	45	21	29	21	22	92	113	6.2	8
300	M 16	3D-2998	24.5	50	46	17	32.0	19	22	100	119	7.2	5
	M 20	3D-2999	24.5	60	46	21	32.0	22	22	100	122	7.2	5
400	M 16	3D-3000	27.5	70.0	54	17	38.5	25	25	115	140	10.5	5
	M 20	3D-2496	27.5	70.0	54	21	38.5	25	25	115	140	10.5	5
500	M 30	3D-2497	31	70.0	60	21	42	25	28	125	150	10.5	1



CABLE LUGS FOR COMPRESSION

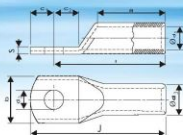
CONNECTION
RING TYPE, FOR ALUMINIUM CONDUCTOR
DIN 46 235
MADE FROM SOLID ROD
MATERIAL: ELECTRICAL GRADE OF ALUMINIUM
FINISH: BRIGHT NATURAL
FILLED WITH COMPOUND & CAP



Conductor mm ²	Screw Ø	3D CAT. NO.	Dimensions in mm										pos
			d ₁	a	b	d ₂	d ₃	C ₁	C ₂	l	J	S	
16	M 8	3D-2491 14	8.8	30	25	8.4	12	12.5	15.5	50	62.5	4	00
	M 10	3D-2491 16	8.8	30	25	11	12	12.5	15.5	50	62.5	4	00
25	M 8	3D-2491	8.8	30	25	8.4	12	12.5	15.5	50	62.5	4	00
	M 10	3D-2492	8.8	30	25	11	12	12.5	15.5	50	62.5	4	00
M 12	3D-2493	8.8	30	25	13	12	12.5	15.5	50	62.5	4	00	
35	M 8	3D-2494	8	42	25	8.4	14	12.5	15.5	62	74.5	4	00
	M 10	3D-2495	8	42	25	11	14	12.5	15.5	62	74.5	4	00
	M 12	3D-2496	8	42	25	13	14	12.5	15.5	62	74.5	4	00
50	M 8	3D-2497	8.8	42	25	8.4	16	12.5	15.5	62	74.5	5.5	25
	M 10	3D-2498	8.8	42	25	11	16	12.5	15.5	62	74.5	5.5	25
	M 12	3D-2499	8.8	42	25	13	16	12.5	15.5	62	74.5	5.5	25
70	M 8	3D-2470	11.2	62	25	8.4	18.5	12.5	15.5	72	84.5	5.5	25
	M 10	3D-2471	11.2	62	25	11	18.5	12.5	15.5	72	84.5	5.5	25
	M 12	3D-2472	11.2	62	25	13	18.5	12.5	15.5	72	84.5	5.5	25
95	M 10	3D-2473	13.2	56	25	11	22	12.5	15.5	75	87.5	6	25
	M 12	3D-2474	13.2	56	25	13	22	12.5	15.5	75	87.5	6	25
120	M 10	3D-2475	14.7	56	30	11	23	15	20	80	95	7.5	25
	M 12	3D-2476	14.7	56	30	13	23	15	20	80	95	7.5	25
	M 16	3D-2477	14.7	56	30	17	23	15	20	80	95	7.5	25
150	M 10	3D-2478	16.3	60	30	11	25	15	20	90	105	8	25
	M 12	3D-2479	16.3	60	30	13	25	15	20	90	105	8	25
	M 16	3D-2480	16.3	60	30	17	25	15	20	90	105	8	25
185	M 10	3D-2481	18.3	60	30	11	28.5	15	20	91	106	8	20
	M 12	3D-2482	18.3	60	30	13	28.5	15	20	91	106	8	20
	M 16	3D-2483	18.3	60	30	17	28.5	15	20	91	106	8	10
240	M 12	3D-2484	21	70	38	13	32	19	24	103	122	11	10
	M 16	3D-2485	21	70	38	17	32	19	24	103	122	11	10
	M 20	3D-2486	21	70	38	21	32	19	24	103	122	11	10
300	M 12	3D-2487	23.3	70	38	13	34	19	24	103	122	13	8
	M 16	3D-2488	23.3	70	38	17	34	19	24	103	122	13	8
	M 20	3D-2489	23.3	70	38	21	34	19	24	103	122	13	8
400	M 12	3D-2490	26	73	38	13	38.5	19	24	118	135	14	5
	M 16	3D-2491	26	73	38	17	38.5	19	24	118	135	14	5
	M 20	3D-2492	26	73	38	21	38.5	19	24	118	135	14	5
500	M 12	3D-2493	29	79	44	13	44	22	24	122	144	15	4
	M 16	3D-2494	29	79	44	17	44	22	24	122	144	15	4
	M 20	3D-2495	29	79	44	21	44	22	24	122	144	15	4



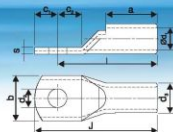
CABLE LUGS FOR COMPRESSION CONNECTION
RING TYPE FOR ALUMINIUM CONDUCTOR
DIN 46329
MADE FROM TUBE
MATERIAL: ELECTRICAL GRADE OF ALUMINIUM
FINISH: BRIGHT NATURAL,
FILLED WITH COMPOUND & CAP



Conductor cross-section	Bolt Ø	3D CAT. NO.	Dimensions in mm											pss
			d ₁	b	h	d ₂	d ₃	C ₁	C ₂	I	J	S		
16	M 8	3D-24611U 16	5,8	30	18	8,4	12	12,5	15,5	53	65,5	4,8	50	
	M 10	3D-24611U 10	5,8	30	18	11	12	12,5	15,5	53	65,5	4,8	50	
25	M 8	3D-24621U 8	6,8	30	18	8,4	12	12,5	15,5	54	66,5	4,2	50	
	M 10	3D-24621U 10	6,8	30	18	11	12	12,5	15,5	54	66,5	4,2	50	
	M 12	3D-24621U 12	6,8	30	18	13	12	12,5	15,5	54	66,5	4,2	50	
35	M 8	3D-24641U 8	8	42	21	8,4	14	12,5	15,5	67	79,5	4,9	50	
	M 10	3D-24641U 10	8	42	21	11	14	12,5	15,5	67	79,5	4,9	50	
	M 12	3D-24641U 12	8	42	21	13	14	12,5	15,5	67	79,5	4,9	50	
50	M 8	3D-24671U 8	9,8	42	25	8,4	16	12,5	15,5	69	81,5	5,0	50	
	M 10	3D-24671U 10	9,8	42	25	11	16	12,5	15,5	69	81,5	5,0	50	
	M 12	3D-24671U 12	9,8	42	25	13	16	12,5	15,5	69	81,5	5,0	50	
70	M 8	3D-24701U 8	11,2	52	28	8,4	18,5	12,5	15,5	81	93,5	6,0	40	
	M 10	3D-24701U 10	11,2	52	28	11	18,5	12,5	15,5	81	93,5	6,0	40	
	M 12	3D-24701U 12	11,2	52	28	13	18,5	12,5	15,5	81	93,5	6,0	40	
95	M 10	3D-24731U 10	13,2	56	32	11	22	12,5	15,5	88	100	7,6	25	
	M 12	3D-24731U 12	13,2	56	32	13	22	12,5	15,5	88	100	7,6	25	
120	M 10	3D-24751U 10	14,7	56	32	11	23	15	20	91	106	7,6	25	
	M 12	3D-24751U 12	14,7	56	32	13	23	15	20	91	106	7,6	25	
	M 16	3D-24771U 14,7	56	32	17	23	15	20	91	106	7,6	25		
150	M 10	3D-24781U 10	16,3	60	35	11	25	15	20	99	114	8,0	20	
	M 12	3D-24781U 12	16,3	60	35	13	25	15	20	99	114	8,0	20	
	M 16	3D-24801U 16,3	60	35	17	25	15	20	99	114	8,0	20		
185	M 10	3D-24811U 10	18,3	60	40	11	28,5	15	20	101	116	9,3	15	
	M 12	3D-24821U 12	18,3	60	40	13	28,5	15	20	101	116	9,3	15	
	M 16	3D-24831U 18,3	60	40	17	28,5	15	20	101	116	9,3	15		
240	M 12	3D-24841U 12	21	70	45	13	32	19	24	116	135	10,1	10	
	M 16	3D-24851U 16	21	70	45	17	32	19	24	116	135	10,1	10	
	M 20	3D-24861U 21	70	45	21	32	19	24	116	135	10,1	10		
300	M 12	3D-24871U 12	23,3	70	49	13	34	19	24	120	140	9,8	5	
	M 16	3D-24881U 16	23,3	70	49	17	34	19	24	120	140	9,8	5	
	M 20	3D-24891U 23,3	70	49	21	34	19	24	120	140	9,8	5		
400	M 12	3D-24901U 12	26	73	58	13	38,5	19	24	126	145	10,9	4	
	M 16	3D-24911U 16	26	73	58	17	38,5	19	24	126	145	10,9	4	
	M 20	3D-24921U 26	73	58	21	38,5	19	24	126	145	10,9	4		
500	M 12	3D-24931U 12	29	79	62	13	44	22	24	135	157	13,8	4	
	M 16	3D-24941U 16	29	79	62	17	44	22	24	135	157	13,8	4	
	M 20	3D-24951U 29	79	62	21	44	22	24	135	157	13,8	4		



TUBULAR CABLE LUGS
STANDARD TYPE,
WITH INSPECTION HOLE,
MATERIAL: E COPPER
SURFACE: TIN PLATED.



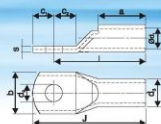
Conductor cross-section	Bolt Ø	3D CAT. NO.	Dimensions in mm											pss
			Ø ₁	b	h	Ø ₂	Ø ₃	C ₁	C ₂	I	J	S		
1.5	M 4	3D-2622	1,8	5	8	4,2	3,7	4	5	12	16	1	100	
	M 5	3D-2623	1,8	5	8	5,2	3,7	4	5	12	16	1	100	
	M 6	3D-2624	1,8	5	10	6,5	3,7	5	6	13	18	0,8	100	
2.5	M 4	3D-2625	2,4	7	8	4,2	4,0	4	5	14	18	1	100	
	M 5	3D-2627	2,4	7	8	5,2	4,0	4	5	14	18	1	100	
	M 6	3D-2628	2,4	7	10	6,5	4,0	5	6	15	20	0,8	100	
	M 8	3D-2629	2,4	7	11	8,2	4,0	6,5	6,5	17,5	24	0,7	100	
4	M 5	3D-2630	3,1	7	10	5,2	4,8	5	6	15	20	1	100	
	M 5	3D-2632	3,1	7	9	4,8	5	6	15	20	1	100		
	M 6	3D-2631	3,1	7	10	6,5	4,8	5	6	15	20	1	100	
	M 8	3D-2633	3,1	7	12	8,4	4,8	6,5	6,5	17,5	24	0,8	100	
6	M 5	3D-2634	3,8	9	10	5,2	5,5	5	6	18	23	1,2	100	
	M 6	3D-2635	3,8	9	10	6,5	5,5	5	6	18	23	1,2	100	
	M 8	3D-2637	3,8	9	12	8,4	5,5	5	9,5	21,5	27	1,2	100	
	M 10	3D-2638	3,8	9	10	10,2	5,5	9	11	23	32	0,8	100	
10	M 5	3D-2642	4,5	9	12	5,2	6,2	6	7	19	25	1,2	100	
	M 6	3D-2643	4,5	9	12	6,5	6,2	6	7	19	25	1,2	100	
	M 8	3D-2645	4,5	9	12	8,4	6,2	6	9	21	27	1,2	100	
16	M 5	3D-2652	5,4	12	12	6,5	7,1	7	7	23	30	1,4	100	
	M 6	3D-2653	5,4	12	12	6,5	7,1	7	7	23	30	1,4	100	
	M 8	3D-2655	5,4	12	12	8,4	7,1	7	9	25	32	1,4	100	
25	M 5	3D-2661	6,0	12	12	8,4	7,7	7	9	25	32	1,7	50	
	M 6	3D-2663	6,8	12	13	6,5	8,8	7	9	23	30	2,0	50	
	M 8	3D-2665	6,8	12	13	8,4	8,8	7	9	23	32	2,0	50	
	M 8	3D-2666	6,8	12	16	8,4	8,8	10	11	27	37	1,6	50	
	M 10	3D-2668	6,8	12	16	10,5	8,8	10	11	27	37	1,6	50	
	M 12	3D-2670	6,8	12	18	13	8,8	12	13	29	41	1,4	50	





TUBULAR CABLE LUGS

STANDARD TYPE,
WITH INSPECTION HOLE,
MATERIAL: E COPPER
SURFACE: TIN PLATED.

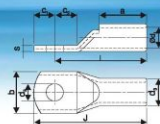


Conductor size ^{mm²}	Bolt Ø	3D CAT NO.	Dimensions in mm													picc
			Item Ø	Item Len.	Item Wdg.	Item Dia.	Item Dia.	Item Dia.	Item Dia.	Item Dia.	Item Dia.	Item Dia.	Item Dia.	Item Dia.	Item Dia.	
			d ₁	a	b	d ₂	c ₁	c ₂	c ₃	f	J	S	E			
35	M 8	3D-2673	8.2	12	15	6.5	10.6	9	9	26	38	2.4	30			
	M 8	3D-2674	8.2	15	18	6.5	10.6	9	9	26	38	2.4	30			
	M 8	3D-2676	8.2	12	15	6.4	10.6	9	9	26	35	2.4	30			
	M 8	3D-2677	8.2	15	18	6.4	10.6	9	9	26	38	2.4	30			
	M 10	3D-2679	8.2	15	18	10.2	10.6	9	11	31	40	2.4	30			
	M 10	3D-2680	8.2	12	18	10.5	10.6	10	11	28	38	2.0	30			
	M 10	3D-2681	8.2	15	18	10.5	10.6	10	11	31	41	2.0	30			
	M 12	3D-2683	8.2	15	20	13	10.6	12	13	33	48	1.8	30			
	50	M 8	3D-2687	10.0	18	18	6.5	12.8	10	11	33	43	2.9	40		
		M 8	3D-2689	10.0	18	18	8.4	12.8	10	11	33	43	2.9	40		
		M 10	3D-2691	10.0	18	18	10.5	12.8	10	11	33	43	2.9	25		
		M 12	3D-2693	10.0	18	20	13	12.8	12	13	35	47	2.5	25		
M 12		3D-2696	10.0	18	18	12.5	12.8	10	13	35	47	2.9	25			
70		M 8	3D-2697	11.2	18	21	6.5	14.7	12	13	38	50	3.5	25		
	M 8	3D-2698	11.2	18	21	8.4	14.7	12	13	38	50	3.5	25			
	M 10	3D-2699	11.2	18	21	10.5	14.7	12	13	38	50	3.5	25			
	M 12	3D-2700	11.2	18	21	13.0	14.7	12	13	38	50	3.5	25			
	M 14	3D-2704	11.2	18	28	15.0	14.7	16	16	41	57	2.2	25			
	M 16	3D-2705	11.2	18	28	17.0	14.7	16	16	41	57	2.2	25			
95	M 8	3D-2708	13.5	20	25	8.4	17.4	13	13	42	55	3.9	25			
	M 10	3D-2709	13.5	20	25	10.5	17.4	13	13	42	55	3.9	25			
	M 12	3D-2712	13.5	20	25	13.0	17.4	13	13	42	55	3.9	25			
	M 14	3D-2713	13.5	20	28	15	17.4	16	16	45	61	3.9	25			
	M 16	3D-2715	13.5	20	28	17	17.4	16	16	45	61	3.2	25			
	120	M 8	3D-2718	15.0	22	28	8.4	19.4	14	14	48	60	4.4	18		
M 10		3D-2717	15.0	22	28	10.5	19.4	14	14	48	60	4.4	18			
M 12		3D-2719	15.0	22	28	13.0	19.4	14	14	48	60	4.4	18			
M 14		3D-2721	15.0	22	28	15.0	19.4	16	16	48	64	4.4	18			
M 16		3D-2722	15.0	22	28	17.0	19.4	16	16	48	64	4.4	18			



TUBULAR CABLE LUGS

STANDARD TYPE,
WITH INSPECTION HOLE,
MATERIAL: E COPPER
SURFACE: TIN PLATED.



Conductor size ^{mm²}	Bolt Ø	3D CAT NO.	Dimensions in mm													picc
			Item Ø	Item Len.	Item Wdg.	Item Dia.	Item Dia.	Item Dia.	Item Dia.	Item Dia.	Item Dia.	Item Dia.	Item Dia.	Item Dia.		
			d ₁	a	b	d ₂	c ₁	c ₂	c ₃	f	J	S	E			
150	M 8	3D-2726	16.5	26	30	8.4	21.2	16	16	53	69	4.7	12			
	M 10	3D-2727	16.5	26	30	10.5	21.2	16	16	53	69	4.7	12			
	M 12	3D-2729	16.5	26	30	13.0	21.2	16	16	53	69	4.7	12			
	M 14	3D-2732	16.5	26	30	15.0	21.2	16	16	53	69	4.7	12			
	M 16	3D-2733	16.5	26	30	17.0	21.2	16	16	53	69	4.7	12			
	M 20	3D-2734	16.5	26	34	21.0	21.2	19	23	53	69	4.7	12			
185	M 10	3D-2736	18.5	32	34	10.5	23.5	17	17	61	78	5.0	20			
	M 12	3D-2737	18.5	32	34	13.0	23.5	17	17	61	78	5.0	20			
	M 14	3D-2738	18.5	32	34	15.0	23.5	17	17	61	78	5.0	20			
	M 16	3D-2741	18.5	32	34	17.0	23.5	17	17	61	78	5.0	20			
	M 20	3D-2743	18.5	32	34	21.0	23.5	17	17	61	78	5.0	20			
240	M 10	3D-2747	21.0	38	38	10.5	26.5	20	20	72	92	5.5	15			
	M 12	3D-2748	21.0	38	38	13.0	26.5	20	20	72	92	5.5	15			
	M 14	3D-2749	21.0	38	38	15.0	26.5	20	20	72	92	5.5	15			
	M 16	3D-2750	21.0	38	38	17.0	26.5	20	20	72	92	5.5	15			
	M 20	3D-2751	21.0	38	38	21.0	26.5	20	20	72	92	5.5	15			
300	M 12	3D-2754	23.5	42	43	13.0	30.0	22	22	79	101	6.5	8			
	M 14	3D-2755	23.5	42	43	15.0	30.0	22	22	79	101	6.5	8			
	M 16	3D-2756	23.5	42	43	17.0	30.0	22	22	79	101	6.5	8			
	M 20	3D-2757	23.5	42	43	21.0	30.0	22	22	79	101	6.5	8			
400	M 12	3D-2760	26.8	44	50.1	13.0	34.8	26	26	86	114	8.0	5			
	M 14	3D-2761	26.8	44	50.1	15.0	34.8	26	26	86	114	8.0	5			
	M 16	3D-2762	26.8	44	50.1	17.0	34.8	26	26	86	114	8.0	5			
	M 18	3D-2763	26.8	44	50.1	17.0	34.8	26	26	83	105	8.0	5			
	M 20	3D-2764	26.8	44	50.1	21.0	34.8	22	27	83	105	8.0	5			
	M 20	3D-2765	26.8	44	50.1	21.0	34.8	26	26	86	114	8.0	5			
500	M 16	3D-2769	30.0	48	56	17.0	39.0	28	28	96	124	9.0	5			
	M 20	3D-2770	30.0	48	56	21.0	39.0	28	28	96	124	9.0	5			
630	M 16	3D-2773	35.0	56	65	17.0	45.0	33	33	111	144	10.0	5			
	M 20	3D-2774	35.0	56	65	21.0	45.0	33	33	111	144	10.0	5			

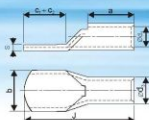




The Clamping people... since 1989

TUBULAR CABLE LUGS

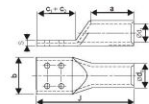
STANDARD TYPE, W/O STUD HOLE
WITH INSPECTION HOLE,
MATERIAL: E COPPER
SURFACE : TIN PLATED



Conductor mm ²	Bolt Ø	3D CAT NO.	Dimensions in mm											pos
			a	b	C ₁	C ₂	d ₁	d ₂	d ₃	l	J	S		
400	BLK	3D-2758	44	60.1	20	20	28.8	-	34.8	88	114	8	5	
	BLK	3D-2768	48	56.0	28	28	30.0	-	38.0	96	124	8	4	
	BLK	3D-2778	66	65.0	33	33	35.0	-	48.0	111	144	10	3	
630	BLK	3D-2777	78	72.8	37	38	39.0	-	50.6	133	170	11.8	10	
	BLK	3D-2776	90	60.8	45	45	43.0	-	66.2	156	200	13.2	6	

3D TUBULAR CABLE LUGS

STANDARD TYPE,
WITH 4 STUD HOLES,
WITH INSPECTION HOLE,
MATERIAL: E COPPER
SURFACE : TIN PLATED.



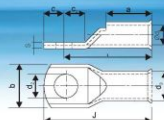
Conductor mm ²	Bolt Ø	3D CAT NO.	Dimensions in mm											pos
			a	b	C ₁	C ₂	d ₁	d ₂	d ₃	l	J	S		
300	M -Ø4	3D-2768	42	58.0	18.3	18.3	23.5	8.5	30.0	98.7	115	6.5	5	
	M -Ø4	3D-2767	44	58.0	18.3	18.3	28.5	8.5	34.8	103.7	120	8	10	
	M -Ø4	3D-2775	66	65.0	20.3	20.3	35.0	8.5	45.0	98.3	144	10	10	



The Clamping people... since 1989

TUBULAR CABLES LUGS

ECONOMY-EASY ENTRY BARREL, WITH INSPECTION VENT
FOR COPPER CONDUCTOR
MATERIAL: E COPPER
SURFACE : TIN PLATED



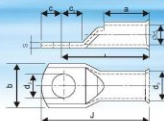
Conductor Mm ²	Bolt Ø	3D CAT NO.	Dimensions in mm											pos
			a	b	C ₁	C ₂	d ₁	d ₂	d ₃	l	J	S		
1.5	M 3	3D-2284	6	7	4	5	1.8	3.2	3.7	14	18	1.2	100	
	M 4	3D-2285	6	8	4	5	1.8	4.2	3.7	14	18	1.0		
	M 5	3D-2286	6	8	4	6	1.8	5.2	3.7	15	19	1.0		
2.5	M 3	3D-2288	6	10	5	7	1.8	6.5	3.7	16	21	0.8	100	
	M 4	3D-2287	7	7	4	5	2.4	3.2	4	15	19	1.1		
	M 5	3D-2287	7	8	4	6	2.4	4.2	4	16	20	1.0		
4	M 4	3D-2271	7	10	5	7	2.4	6.5	4	17	22	0.8	100	
	M 5	3D-2272	7	10	5	7	2.4	6.5	4	19	26	0.7		
	M 6	3D-2273	9	12	7	8	3.1	8.5	4.8	21	28	0.9		
6	M 4	3D-2270	9	12	7	8	3.1	8.5	4.8	21	28	0.9	100	
	M 5	3D-2274E	10	8	4	5	3.8	5.2	5.5	18	22	1.5		
	M 6	3D-2276E	10	8	4	6	3.8	6.2	5.5	19	23	1.2		
10	M 8	3D-2278E	10	10	5	7	3.8	8.5	5.5	20	25	1.0	100	
	M 10	3D-2277E	10	12	7	8	3.8	10.5	5.5	22	29	0.8		
	M 12	3D-2280E	16	16	9	10	3.8	13	5.5	25	34	0.7		
16	M 5	3D-2279E	10	9	4	6	4.5	6.2	6.2	19	23	1.6	100	
	M 6	3D-2279E	10	10	5	7	4.5	6.5	6.2	20	25	1.4		
	M 8	3D-2280E	10	12	7	8	4.5	8.5	6.2	22	29	1.2		
25	M 10	3D-2281E	10	16	9	10	4.5	10.5	6.2	25	34	0.8	100	
	M 12	3D-2282E	10	18	11	12	4.5	13	6.2	28	38	0.8		
	M 5	3D-2283E	12	10	4	6	5.4	6.2	7.1	21	26	1.6		
50	M 6	3D-2284E	12	10	5	7	5.4	6.5	7.1	22	27	1.6	50	
	M 8	3D-2285E	12	12	7	8	5.4	8.5	7.1	24	31	1.4		
	M 10	3D-2286E	12	16	9	10	5.4	10.5	7.1	27	36	1.0		
100	M 12	3D-2287E	12	18	11	12	5.4	13	7.1	30	41	0.8	100	
	M 5	3D-2134E	12	13	7	7	7.0	6.2	8.8	23	30	1.8		
	M 6	3D-2288E	12	13	7	7	7.0	6.5	8.8	23	30	1.8		
50	M 8	3D-2289E	12	13	7	9	7.0	8.5	8.8	25	32	1.8		
	M 10	3D-2290E	12	16	9	11	7.0	10.5	8.8	28	37	1.4		
	M 12	3D-2291E	12	18	11	12	7.0	13	8.8	30	41	1.2		





The Grouping people... since 1980

TUBULAR CABLE LUGS
ECONOMY-EASY ENTRY BARREL WITH INSPECTION VENT.
FOR COPPER CONDUCTOR
MATERIAL: E COPPER
SURFACE: TIN PLATED.

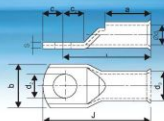


Conductor Mm ²	Bolt Ø	3D CAT NO.	Dimensions in mm											pcs
			a	b	c	c ₁	c ₂	d ₁	d ₂	d ₃	l	J	S	
35	M 5	3D-2136E	15	16	8	8	8	8,6	5,2	10,8	28	36	25	80
		3D-2292E	15	16	8	8	8,6	6,5	10,8	28	36	25	80	
		3D-2293E	15	16	8	8	8,6	8,5	10,8	28	36	25	80	
		3D-2294E	15	16	9	11	8,6	10,5	10,8	31	40	25	80	
		3D-2295E	15	18	11	12	8,6	13	10,8	33	44	1,9	80	
		3D-2296E	15	20	12	14	8,6	15	10,8	35	47	1,7	80	
50	M 8	3D-2297E	16	17	10	10	9,6	6,8	11,8	32	42	2,2	80	
		3D-2298E	16	17	10	10	9,6	8,5	11,8	32	42	2,2	80	
		3D-2299E	16	17	10	10	9,6	10,5	11,8	32	42	2,2	80	
		3D-2300E	16	18	10	10	9,6	13	11,8	32	42	2,0	80	
		3D-2301E	16	20	12	12	9,6	15	11,8	34	46	1,8	80	
		3D-2302E	16	24	14	14	9,6	17	11,8	38	52	1,5	80	
70	M 8	3D-2136E	18	22	11	11	12	6,5	15	36	47	2,9	25	
		3D-2303E	18	22	11	11	12	8,5	15	36	47	2,9	25	
		3D-2304E	18	22	11	11	12	10,5	15	36	47	2,9	25	
		3D-2305E	18	22	11	11	12	13	15	36	47	2,9	25	
		3D-2306E	18	22	14	14	12	15	15	39	53	2,9	25	
		3D-2307E	18	24	14	14	12	17	15	40	54	2,7	25	
95	M 20	3D-2137E	18	30	18	18	12	21	15	46	64	2,1	25	
		3D-2308E	20	24	12	12	13,6	8,5	16,5	40	52	2,9	25	
		3D-2309E	20	24	12	12	13,5	10,5	16,5	40	52	2,9	25	
		3D-2310E	20	24	12	12	13,5	13	16,5	40	52	2,9	25	
		3D-2311E	20	24	14	14	13,5	15	16,5	42	56	2,9	25	
		3D-2312E	20	24	14	14	13,5	17	16,5	42	56	2,9	25	
120	M 20	3D-2313E	30	18	18	18	13,5	21	16,5	48	66	2,4	25	
		3D-2314E	22	27	12	12	15	8,5	19	43	55	4,0	25	
		3D-2315E	22	27	12	12	15	10,5	19	43	55	4,0	25	
		3D-2316E	22	27	12	12	15	13	19	43	55	4,0	25	
		3D-2317E	22	27	14	14	15	15	19	45	59	4,0	25	
		3D-2318E	22	27	14	14	15	17	19	45	59	4,0	25	



The Grouping people... since 1980

TUBULAR CABLE LUGS
ECONOMY-EASY ENTRY BARREL WITH INSPECTION VENT.
FOR COPPER CONDUCTOR
MATERIAL: E COPPER
SURFACE: TIN PLATED.



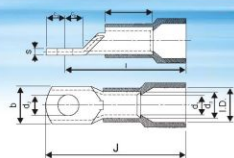
Conductor Mm ²	Bolt Ø	3D CAT NO.	Dimensions in mm											pcs
			a	b	c	c ₁	c ₂	d ₁	d ₂	d ₃	l	J	S	
150	M 8	3D-2144E	26	30	14	14	16,5	8,5	21	50	84	4,4	25	
		3D-2320E	26	30	14	14	16,5	10,5	21	50	84	4,4	25	
		3D-2321E	26	30	14	14	16,5	13	21	50	84	4,4	25	
		3D-2322E	26	30	14	14	16,5	15	21	50	84	4,4	25	
		3D-2323E	26	30	14	14	16,5	17	21	50	84	4,4	25	
		3D-2324E	26	30	18	18	16,5	21	21	54	72	4,4	25	
185	M 10	3D-2325E	28	33	14	14	18	10,5	23,1	53	87	4,1	20	
		3D-2326E	28	33	14	14	18	13	23,1	53	87	4,1	20	
		3D-2327E	28	33	14	14	19	15	23,1	53	87	4,1	20	
		3D-2328E	28	33	14	14	19	17	23,1	53	87	4,1	20	
240	M 10	3D-2138E	33	38	15	15	21	10,5	26	61	78	4,8	10	
		3D-2300E	33	38	15	15	21	13	26	61	78	4,8	10	
		3D-2331E	33	38	15	15	21	15	26	61	78	4,8	10	
		3D-2322E	33	38	15	15	21	17	26	61	78	4,8	10	
300	M 20	3D-2333E	33	38	18	18	21	21	26	64	82	4,8	10	
		3D-2139	42	44	19	19	24,5	10,5	30	78	95	5,3	5	
		3D-2140	42	44	19	19	24,5	13	30	78	95	5,3	5	
		3D-2334	42	44	19	19	24,5	15	30	78	95	5,3	5	
400	M 16	3D-2335	42	44	19	19	24,5	17	30	78	95	5,3	5	
		3D-2336	42	44	19	19	24,5	21	30	78	95	5,3	5	
		3D-2141	44	47,6	20	20	27	13	32,2	82	102	5,0	5	
		3D-2143	44	47,6	20	20	27	15	32,2	82	102	5,0	5	
600	M 20	3D-2237	44	47,6	20	20	27	17	32,2	82	102	5,0	5	
		3D-2238	44	47,6	20	20	27	21	32,2	82	102	5,0	5	
		3D-2142	48	54	22	22	30	15	36,4	90	112	6,3	5	
		3D-2239	48	54	22	22	30	17	36,4	90	112	6,3	5	
630	M 20	3D-2240	48	54	22	22	30	17	36,4	90	112	6,3	5	
		3D-2241	56	64	27	27	35	17	43,6	106	132	8,6	5	
		3D-2242	56	64	27	27	35	21	43,6	106	132	8,6	5	
		M10x4 3D-2243	56	64	27	27	35	10,6	43,6	116	136	8,6	5	





The Clamping people... since 1980

TUBULAR CABLE LUGS
WITH INSULATION CAP
STANDARD TYPE WITH INSPICTION VENT
MATERIAL: E COPPER-NYLON
SURFACE: TIN PLATED



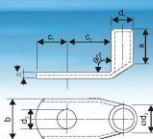
Conductor mm ²	Bolt Ø	3D CAT NO.	Dimensions in mm									pcs	
			a	b	c ₁	c ₂	d ₁	d ₂	l	J	S		
10	M 6	3D-2643F	9	12	6	7	4.5	6.5	6.2	27	33	1.2	100
	M 8	3D-2645F	9	12	6	9	4.5	8.4	6.2	34	40	1.2	
	M 10	3D-2647F	9	19	10	10	4.5	10.5	6.2	36	46	1.8	
16	M 6	3D-2653F	12	12	7	7	6.4	8.5	7.1	38	45	1.4	100
	M 8	3D-2655F	12	12	7	9	6.4	8.4	7.1	40	47	1.4	
	M 10	3D-2658F	12	19	10	10	6.4	10.5	7.1	41	51	1.8	
25	M 6	3D-2663F	12	13	7	7	6.8	8.5	8.8	39	48	2.0	50
	M 8	3D-2666F	12	18	10	11	6.8	8.4	8.8	43	53	1.6	
	M 10	3D-2669F	12	18	10	11	6.8	10.5	8.8	43	53	1.8	
35	M 6	3D-2677F	15	15	9	9	8.2	8.4	10.6	45	56	2.4	50
	M 10	3D-2681F	15	19	10	11	8.2	10.5	10.6	49	59	2.0	
	M 12	3D-2683F	15	20	12	13	8.2	13.0	10.6	53	63	1.8	
50	M 6	3D-2699F	16	18	10	11	9.5	8.4	12.4	53	63	2.9	25
	M 10	3D-2691F	16	19	10	11	9.5	10.5	12.4	53	63	2.9	
	M 12	3D-2693F	16	20	12	13	9.5	13.0	12.4	55	67	2.5	
70	M 6	3D-2686F	18	21	12	13	11.2	8.4	14.7	38	72	3.5	25
	M 10	3D-2696F	18	21	12	13	11.2	10.5	14.7	38	72	3.5	
	M 12	3D-2705F	18	21	12	13	11.2	13.0	14.7	38	72	3.5	
95	M 6	3D-2706F	20	25	13	13	13.5	8.4	17.4	66	79	3.9	25
	M 10	3D-2706F	20	25	13	13	13.5	10.5	17.4	66	79	3.9	
	M 12	3D-2712F	20	25	13	13	13.5	13.0	17.4	66	79	3.9	
120	M 10	3D-2717F	22	28	14	14	15.0	10.5	19.4	17	84	4.4	20
	M 12	3D-2718F	22	28	14	14	15.0	13.0	19.4	17	84	4.4	
	M 10	3D-2727F	26	30	16	16	16.5	10.5	21.2	83	99	4.7	20
M 12	3D-2729F	26	30	16	16	16.5	13.0	21.2	83	99	4.7		



The Clamping people... since 1980

TUBULAR CABLE LUGS
90° ANGLE TUBE DIMENSIONS AS PER
DIN 45 235
MATERIAL: ELECTROLYTIC COPPER
SURFACE: ELECTRO TINNED

COPPER FINISH ON REQUEST



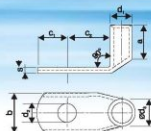
Conductor mm ²	Bolt Ø	3D CAT NO.	Dimensions in mm							pcs
			d ₁	a	b	d ₂	C ₁	C ₂		
6	M 5	3D-2958 N	3.8	10	8.5	6.3	5.5	7	9	100
	M 6	3D-2959 N	3.8	10	8.5	6.4	5.5	7	10	100
	M 8	3D-2206 N	3.8	10	13	8.4	5.5	10	13	100
10	M 6	3D-2960 N	4.5	10	9	6.3	6.0	7	10	100
	M 8	3D-2961 N	4.5	10	9	6.4	6.0	7	10	100
	M 8	3D-2207 N	4.5	10	13	8.4	6.0	10	13	100
16	M 6	3D-2962 N	6.5	20	13	6.4	8.5	7	11	50
	M 8	3D-2963 N	6.5	20	13	6.4	8.5	10	13	50
	M 10	3D-2964 N	6.5	20	17	10.5	8.5	12	15	50
	M 12	3D-2325 N	6.5	20	18	13	8.5	13	18	50
25	M 6	3D-2965 N	7	20	14	6.4	10	7	11	50
	M 8	3D-2966 N	7	20	16	8.4	10	10	13	50
	M 10	3D-2967 N	7	20	17	10.5	10	12	15	50
	M 12	3D-2968 N	7	20	19	13	10	13	18	50
35	M 6	3D-2328 N	8.2	20	17	6.4	12.5	7	13	25
	M 8	3D-2969 N	8.2	20	17	8.4	12.5	10	15	25
	M 10	3D-2970 N	8.2	20	19	10.5	12.5	12	16	25
	M 12	3D-2971 N	8.2	20	21	13	12.5	13	20	25
50	M 8	3D-2972 N	10	28	20	8.4	14.5	10	13	25
	M 10	3D-2973 N	10	28	22	10.5	14.5	12	16	25
	M 12	3D-2974 N	10	28	24	13	14.5	13	18	25
	M 16	3D-2975 N	10	28	28	17	14.5	16	22	25





TUBULAR CABLE LUGS
90° ANGLE TUBE DIMENSIONS AS PER
DIN 46 235
MATERIAL: ELECTROLYTIC COPPER
SURFACE: ELECTRO TINNED

COPPER FINISH ON REQUEST

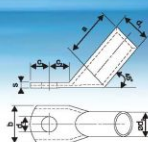


Conductor mm ²	Bolt Ø	3D CAT NO.	Dimensions in mm						pos	
			d ₁	a	b	d ₂	d ₃	C ₁		C ₂
70	M 8	3D-2978 N	11,5	28	24	8,4	16,5	10	14	25
	M 10	3D-2977 N	11,5	28	24	10,5	16,5	12	16	25
	M 12	3D-2978 N	11,5	28	24	13	16,5	13	18	25
	M 16	3D-2979 N	11,5	28	30	17	16,5	16	22	20
95	M 8	3D-2930 N	13,5	35	28	8,4	19	12	17	10
	M 10	3D-2980 N	13,5	35	28	10,5	19	12	18	10
	M 12	3D-2981 N	13,5	35	28	13	19	13	20	10
	M 16	3D-2982 N	13,5	35	32	17	19	16	22	10
120	M 10	3D-2983 N	15,5	35	32	10,5	21,0	15	17	15
	M 12	3D-2984 N	15,5	35	32	13	21,0	16	18	15
	M 16	3D-2985 N	15,5	35	32	17	21,0	19	21	15
	M 20	3D-2986 N	15,5	35	38	21	21,0	21	24	15
150	M 10	3D-2987 N	17	35	34	10,5	23,5	15	17	10
	M 12	3D-2988 N	17	35	34	13	23,5	16	18	10
	M 16	3D-2989 N	17	35	34	17	23,5	19	22	10
	M 20	3D-2990 N	17	35	40	21	23,5	21	24	10
185	M 10	3D-2991 N	19	40	37	10,5	25,5	15	22	10
	M 12	3D-2992 N	19	40	37	13	25,5	16	22	10
	M 16	3D-2993 N	19	40	37	17	25,5	19	22	10
	M 20	3D-2994 N	19	40	40	21	25,5	21	24	10
240	M 12	3D-2995 N	21,5	40	42	13	29	16	22	10
	M 16	3D-2996 N	21,5	40	42	17	29	19	22	10
	M 20	3D-2997 N	21,5	40	45	21	29	21	24	10



TUBULAR CABLE LUGS
45° ANGLE TUBE DIMENSIONS AS PER
DIN 46 235
MATERIAL: ELECTROLYTIC COPPER
SURFACE: ELECTRO TINNED

COPPER FINISH ON REQUEST



Conductor mm ²	Bolt Ø	3D CAT NO.	Dimensions in mm						pos	
			d ₁	a	b	d ₂	d ₃	C ₁		C ₂
6	M 5	3D-2958 Y	3,8	10	8,5	5,3	5,5	7	9	100
	M 6	3D-2959 Y	3,8	10	8,5	6,4	5,5	7	10	100
	M 8	3D-2206 Y	3,8	10	13	8,4	5,5	10	13	100
10	M 5	3D-2960 Y	4,5	10	9	5,3	6,0	7	10	100
	M 6	3D-2961 Y	4,5	10	9	6,4	6,0	7	10	100
	M 8	3D-2207 Y	4,5	10	13	8,4	6,0	10	13	100
16	M 6	3D-2962 Y	5,5	20	13	6,4	8,5	7	11	50
	M 8	3D-2963 Y	5,5	20	13	8,4	8,5	10	13	50
	M 10	3D-2964 Y	5,5	20	17	10,5	8,5	12	15	50
	M 12	3D-2325 Y	5,5	20	18	13	8,5	13	18	50
25	M 6	3D-2965 Y	7	20	14	6,4	10	7	11	50
	M 8	3D-2966 Y	7	20	16	8,4	10	10	13	50
	M 10	3D-2967 Y	7	20	17	10,5	10	12	15	50
	M 12	3D-2968 Y	7	20	19	13	10	13	18	50
35	M 6	3D-2336 Y	8,2	20	17	6,4	12,5	7	13	25
	M 8	3D-2969 Y	8,2	20	17	8,4	12,5	10	15	25
	M 10	3D-2970 Y	8,2	20	19	10,5	12,5	12	16	25
	M 12	3D-2971 Y	8,2	20	21	13	12,5	13	20	25
50	M 8	3D-2972 Y	10	28	20	8,4	14,5	10	13	25
	M 10	3D-2973 Y	10	28	22	10,5	14,5	12	16	25
	M 12	3D-2974 Y	10	28	24	13	14,5	13	18	25
	M 16	3D-2975 Y	10	28	28	17	14,5	16	22	15



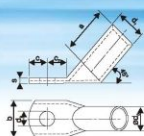


The Clamping people... since 1980

TUBULAR CABLE LUGS

45° ANGLE TUBE DIMENSIONS AS PER
DIN 46 235
MATERIAL: ELECTROLYTIC COPPER
SURFACE: ELECTRO TINNED

COPPER FINISH ON REQUEST



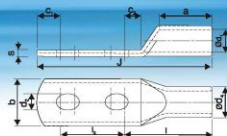
Conductor mm²	Bolt Ø	3D CAT NO.	Dimensions In mm								Pin		
			d ₁	a	b	d ₂	d ₃	C ₁	C ₂	l		l ₁	J
70	M 8	3D-2976 Y	11,5	28	24	8,4	16,5	10	14	25			
	M 10	3D-2977 Y	11,5	28	24	10,5	16,5	12	16	25			
	M 12	3D-2978 Y	11,5	28	24	13	16,5	13	18	25			
	M 16	3D-2979 Y	11,5	28	30	17	16,5	16	22	20			
95	M 8	3D-2330 Y	13,5	35	28	8,4	19	12	17	10			
	M 10	3D-2980 Y	13,5	35	28	10,5	19	12	18	10			
	M 12	3D-2981 Y	13,5	35	28	13	19	13	20	10			
	M 16	3D-2982 Y	13,5	35	32	17	19	16	22	10			
120	M 10	3D-2983 Y	15,5	35	32	10,5	21,0	15	17	15			
	M 12	3D-2984 Y	15,5	35	32	13	21,0	16	18	15			
	M 16	3D-2985 Y	15,5	35	32	17	21,0	19	21	15			
	M 20	3D-2986 Y	15,5	35	38	21	21,0	21	24	15			
150	M 10	3D-2987 Y	17	35	34	10,5	23,5	15	17	10			
	M 12	3D-2988 Y	17	35	34	13	23,5	16	18	10			
	M 16	3D-2989 Y	17	35	34	17	23,5	19	22	10			
	M 20	3D-2990 Y	17	35	40	21	23,5	21	24	10			
185	M 10	3D-2991 Y	19	40	37	10,5	25,5	15	22	10			
	M 12	3D-2992 Y	19	40	37	13	25,5	16	22	10			
	M 16	3D-2993 Y	19	40	37	17	25,5	19	22	10			
	M 20	3D-2994 Y	19	40	40	21	25,5	21	24	10			
240	M 12	3D-2995 Y	21,5	40	42	13	29	18	22	10			
	M 16	3D-2996 Y	21,5	40	42	17	29	19	22	10			
	M 20	3D-2997 Y	21,5	40	45	21	29	21	24	10			



The Clamping people... since 1980

COMPRESSION CABLE LUGS

FOR COPPER CONDUCTORS ACCORDING TO
DIN 46 201,
TUBE DIMENSIONS: DIN 46 235
MATERIAL: E-COPPER
SURFACE: TIN PLATED,
ALTERNATIVELY COPPER FINISH
TYPE I: WITH TWO LONG HOLES IN THE PALM

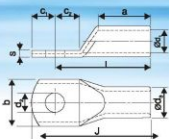


Conductor mm²	Bolt Ø	3D CAT NO.	Dimensions In mm								Pin		
			d ₁	a	b	d ₂	d ₃	C ₁	C ₂	l		l ₁	J
70	2 x M 12		11,5	28	24	13	16,5	13	13	55	50-62	130	25
95	2 x M 12		13,5	35	28	13	19,0	13	13	65	50-62	140	20
120	2 x M 12		15,5	35	32	13	21,0	16	17	70	50-62	140	20
150	2 x M 12		17	35	34	13	23,5	16	17	78	50-62	156	25
185	2 x M 12		19	40	37	13	25,5	16	17	82	50-62	180	20
240	2 x M 12		21,5	40	42	13	29,0	16	17	92	50-62	170	10





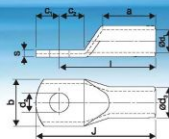
The Clamping people... since 1982

TUBULAR CABLE LUGSSTANDARD NEW TYPE,
WITHOUT INSPECTION HOLE,
MATERIAL: ELECTROLYTIC COPPER
SURFACE: ELECTRO TIN PLATED

Conductor area	Bolt Ø	3D CAT. NO.	Dimensions in mm											pos
			d ₁	a	b	d ₂	C ₁	C ₂	I	J	S			
6	M 5	3D-2149	3,5	9	10	5,5	6,5	6,5	7,5	21	27,5	2,3	100	
	M 6	3D-2150	3,5	9	12	6,5	6,5	6,5	7,5	21	27,5	1,9	100	
	M 8	3D-2110	3,5	9	15	8,5	6,5	10	10	23	33,0	1,5	100	
	M 10	3D-2158	3,5	9	17	10,5	6,5	12	12	25	37,0	1,4	100	
M 12	3D-2159	3,5	9	19	13	6,5	13	13	28	41,0	1,2	100		
10	M 5	3D-2041	4,5	10	12	5,5	7	6,5	7,5	22	28,5	1,8	100	
	M 6	3D-2183	4,5	10	12	6,5	7	6,5	7,5	22	28,5	1,8	100	
	M 8	3D-2184	4,5	10	15	8,5	7	10	10	25	35,0	1,5	100	
	M 10	3D-2160	4,5	10	17	10,5	7	12	12	27	39,0	1,3	100	
M 12	3D-2161	4,5	10	19	13	7	13	13	29	42,0	1,2	100		
16	M 5	3D-2185	5,5	13	12	5,5	8,5	5,5	6,5	26	31,5	2,7	50	
	M 6	3D-2186	5,5	13	12	6,5	8,5	6,5	7,5	27	32,2	2,7	50	
	M 8	3D-2187	5,5	13	15	8,5	8,5	8,5	9,5	29	37,5	2,2	50	
	M 10	3D-2162	5,5	13	17	10,5	8,5	10,5	11,5	31	41,5	1,9	50	
M 12	3D-2163	5,5	13	19	13	8,5	12	13	33	45,0	1,7	50		
25	M 5	3D-2165	7	15	14	5,5	10	7,5	7,5	30	37,5	2,8	25	
	M 6	3D-2189	7	15	14	6,5	10	7,5	7,5	30	37,5	2,8	25	
	M 8	3D-2190	7	15	16	8,5	10	10	10	32	42,0	2,5	25	
	M 10	3D-2191	7	15	18	10,5	10	12	12	34	46,0	2,2	25	
M 12	3D-2166	7	15	19	13	11	13	13	35	48,0	2,1	25		
M 14	3D-2167	7	15	21	15	10	14,5	14,5	38	52,5	1,9	25		
35	M 6	3D-2192	8,5	17	17	6,5	12	7,5	7,5	32	39,5	3,3	25	
	M 8	3D-2193	8,5	17	17	8,5	12	10	10	34	44,0	3,3	25	
	M 10	3D-2014	8,5	17	19	10,5	12	12	12	37	49,0	2,9	25	
	M 12	3D-2168	8,5	17	21	13	12	13	13	38	51,0	2,6	25	
M 14	3D-2169	8,5	17	21	15	13	14,5	14,5	40	54,5	2,6	25		
M 16	3D-2006	8,5	17	26	17	12	16	16	42	58,0	2,1	25		
50	M 6	3D-2001	10	19	20	8,5	14	10	10	37	47,0	3,7	25	
	M 8	3D-2003	10	19	20	8,5	14	10	10	37	47,0	3,7	25	
	M 10	3D-2004	10	19	20	10,5	14	12	12	39	51,0	3,7	25	
	M 12	3D-2170	10	19	23	13	14	13	13	43	56,0	3,2	25	
M 14	3D-2171	10	19	23	15	14	14,5	14,5	45	59,5	3,2	25		
M 16	3D-2007	10	19	28	17	14	16	16	46	62,0	2,7	25		
M 20	3D-2008	10	19	30	21	14	19	19	48	67,0	2,5	25		
70	M 6	3D-2005	12	21	23	8,5	16,5	10	10	43	53,0	4,3	15	
	M 8	3D-2121	12	21	23	8,5	16,5	10	10	43	53,0	4,3	15	
	M 10	3D-2164	12	21	23	10,5	16,5	12	12	44	56,0	4,3	15	
	M 12	3D-2188	12	21	23	13	16,5	13	13	46	59,0	4,3	15	
M 14	3D-2172	12	21	23	15	16,5	14,5	14,5	48	62,5	3,7	15		
M 16	3D-2173	12	21	28	17	16,5	16	16	50	66,0	3,6	15		
M 20	3D-2129	12	21	30	21	16,5	19	19	53	72,0	3,3	10		



The Clamping people... since 1982

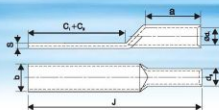
TUBULAR CABLE LUGSSTANDARD NEW TYPE,
WITHOUT INSPECTION HOLE,
MATERIAL: ELECTROLYTIC COPPER
SURFACE: ELECTRO TIN PLATED

Conductor area	Bolt Ø	3D CAT. NO.	Dimensions in mm											pos
			d ₁	a	b	d ₂	C ₁	C ₂	I	J	S			
95	M 8	3D-2015	13,5	25	26	8,5	18	12	12	48	60,0	4,2	25	
	M 10	3D-2018	13,5	25	26	10,5	18	12	12	48	60,0	4,2	25	
	M 12	3D-2019	13,5	25	26	12	18	13	13	49	62,0	4,2	25	
	M 14	3D-2174	13,5	25	26	15	18	14,5	14,5	51	65,5	4,2	25	
M 16	3D-2175	13,5	25	28	17	18	16	16	54	70,0	3,9	25		
M 20	3D-2130	13,5	25	36	21	18	22	22	60	82,0	3,0	25		
120	M 8	3D-2020	15	28	28	8,5	19,5	14	14	51	65,0	4,3	20	
	M 10	3D-2021	15	28	28	10,5	19,5	14	14	51	65,0	4,3	20	
	M 12	3D-2022	15	28	28	13	19,5	14	14	51	65,0	4,3	20	
	M 14	3D-2023	15	28	28	15	19,5	15	15	52	67,0	4,3	20	
M 16	3D-2035	15	28	30	17	19,5	16	16	54	70,0	4,0	20		
M 20	3D-2176	15	28	36	21	19,5	22	22	63	80,0	3,3	20		
150	M 8	3D-2056	16,5	30	31	8,5	21	14	14	56	70,0	4,2	10	
	M 10	3D-2057	16,5	30	31	10,5	21	14	14	56	70,0	4,2	10	
	M 12	3D-2058	16,5	30	31	13	21	15	15	57	72,0	4,2	10	
	M 14	3D-2059	16,5	30	31	15	21	15	15	57	72,0	4,2	10	
M 16	3D-2040	16,5	30	31	17	21	16	16	58	74,0	4,2	10		
M 20	3D-2177	16,5	30	36	21	21	22	22	66	88,0	3,6	10		
185	M 10	3D-2042	19	30	35	10,5	24	18	18	65	83,0	4,8	10	
	M 12	3D-2043	19	30	35	13	24	18	18	65	83,0	4,8	10	
	M 14	3D-2044	19	30	35	15	24	18	18	65	83,0	4,8	10	
	M 16	3D-2045	19	30	35	17	24	18	18	65	83,0	4,8	10	
M 20	3D-2046	19	30	39	21	24	22	22	69	91,0	4,3	10		
240	M 10	3D-2047	21	35	39	10,5	26	21,5	19	72	88,5	4,7	5	
	M 12	3D-2048	21	35	39	13	26	21,5	19	72	88,5	4,7	5	
	M 14	3D-2049	21	35	39	15	26	21,5	19	72	88,5	4,7	5	
	M 16	3D-2050	21	35	39	17	26	21,5	19	72	88,5	4,7	5	
M 20	3D-2051	21	35	39	21	26	21,5	19	72	88,5	4,7	5		
300	M 12	3D-2052	23,5	44	43	13	29,5	24	24	87	111	5,8	5	
	M 14	3D-2053	23,5	44	43	15	29,5	24	24	87	111	5,8	5	
	M 16	3D-2122	23,5	44	43	17	29,5	24	24	87	111	5,8	5	
	M 20	3D-2131	23,5	44	43	21	29,5	24	24	87	111	5,8	5	
400	M 12	3D-2123	27	44,0	49	13	34	24	24	90	114	6,8	5	
	M 14	3D-2124	27	44,0	49	15	34	24	24	90	114	6,8	5	
	M 16	3D-2125	27	44,0	49	17	34	24	24	90	114	6,8	5	
	M 20	3D-2129	27	44,0	49	21	34	24	24	90	114	6,8	5	





TUBULAR CABLE LUGS
 LONG PALM / LONG BARREL TYPE
 GAS PROOF, WITHOUT INSPECTION HOLE
 MATERIAL: ELECTROLYTIC COPPER
 SURFACE: ELECTRO TIN PLATED



Conductor cross-section	Bolt Ø	3D CAT. NO.	Dimensions in mm							pos
			d ₁	a	b	d ₂	C ₁ + C ₂	J	S	
16	BLK	3D-2012	5.5	21	16	7.9	61	86	100	100
25	BLK	3D-2012	7.1	29	16	9.5	61	95	100	70
35	BLK	3D-2015	8.2	35	18	11.2	72	112	100	50
50	BLK	3D-2009	9.5	44	18.2	12.8	80	130	100	80
70	BLK	3D-2010	11.2	48	21.1	14.3	100	154	100	80
95	BLK	3D-2011	13.4	54	25	17.4	100	161	100	30
120	BLK	3D-2453	15.6	60	28.5	20.6	100	168	100	20
150	BLK	3D-2013	16.7	60	32	22.5	100	169	100	20
185	BLK	3D-2014	18.4	64	35	24.2	100	174	100	15
240	BLK	3D-2454	21.2	80	40	28.2	100	192	100	10
300	BLK	3D-2016	23.5	90	45	31.3	105	208	100	10
400	BLK	3D-2017	26.8	100	50	34.8	110	228	100	1
500	BLK	3D-2018	30.0	105	56	39.0	110	235	100	1
630	BLK	3D-2455	34.0	115	65	45.0	110	247	100	1



COMPRESSION JOINTS
 AS PER DIN 46 287 PART 1
 FOR NON TENSION CONNECTORS
 MATERIAL: ELECTROLYTIC COPPER
 FINISH: COPPER FINISH
 REDUCTION IN LEVIES TO CONNECT
 DIFFERENT CROSS SECTIONS SEE

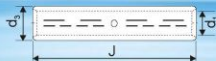


Conductor cross-section	3D CAT. NO.	CODE	Dimensions in mm				pos
			d ₁	d ₂	J	pos	
6	3D-2394	5	3.8	5.3	30	100	
10	3D-2395	6	4.5	6	30	100	
16	3D-2396	8	5.5	8.5	50	100	
25	3D-2397	10	7	10	50	50	
35	3D-2398	12	8.2	12.5	50	50	
50	3D-2399	14	10	14.5	56	50	
70	3D-2400	16	11.5	16.5	56	50	
95	3D-2401	18	13.5	19	70	25	
120	3D-2402	20	15.5	21	70	25	
150	3D-2403	22	17	23.5	80	10	
185	3D-2404	25	19.0	26	85	10	
240	3D-2405	28	21.5	29.0	90	10	
300	3D-2406	32	24.5	32	100	5	
400	3D-2407	38	27.5	38.5	150	5	
500	3D-2408	42	31	42	160	1	
625	3D-2409	44	34.5	44	160	1	
800	3D-2410	52	40	52	200	1	
1000	3D-2411	58	44	58	200	1	

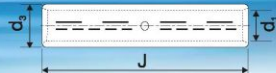




BUTT-CONNECTORS
STANDARD TYPE
MATERIAL: ELECTROLYTIC COPPER
SURFACE: ELECTRO TINNED



COMPRESSION JOINTS AL
DIN46 267 PART 2
FOR NON TENSION CONNECTION
MATERIAL: AL 99.5
SURFACE: BRIGHT



Conductor mm ²	3D CAT. NO.	Dimensions in mm			pos
		d ₁	d ₂	J	
0.75	3D-2431	1.3	2.8	20	100
1.5	3D-2432	1.8	3.3	25	100
2.5	3D-2433	2.3	4.2	25	100
4	3D-2434	3	5	25	100
6	3D-2435	3.5	6.5	25	100
10	3D-2654	4.5	7	30	100
16	3D-2456	5.5	8.5	35	100
25	3D-2457	7	10	40	50
35	3D-2458	8.5	12	45	50
50	3D-2459	10	14	50	50
70	3D-2055	12	16.5	55	50
95	3D-2056	13.5	18	60	25
120	3D-2057	15	19.5	65	25
150	3D-2081	16.5	21	70	10
185	3D-2082	19	24	75	10
240	3D-2083	21	26	85	10
300	3D-2084	23.5	29.5	100	5
400	3D-2085	27	34	100	5



Conductor mm ²	3D CAT. NO.	Dimensions in mm			pos
		d ₁	d ₂	J	
25	3D-2412	8.8	12.0	70	50
35	3D-2413	8.0	14.0	85	50
50	3D-2414	8.8	16.0	85	50
70	3D-2415	11.2	18.5	105	25
85	3D-2416	13.2	22.0	105	25
120	3D-2417	14.7	23.0	105	25
150	3D-2418	16.3	25.0	125	25
185	3D-2419	18.3	28.5	125	15
240	3D-2420	21.0	32.0	145	10
300	3D-2421	23.3	34.0	145	5
400	3D-2422	26.0	38.5	210	5
500	3D-2423	29.0	44.0	210	4





CONNECTOR, NOM. TENSION
STANDARD TYPE
 WITH PAINT & STOPPED
 MATERIAL: ELECTROLYTIC COPPER
 SURFACE: ELECTRO TREATED



COMPRESSION JOINTS
FOR HIGH TENSION CONNECTION
 MATERIAL: ELECTROLYTIC COPPER
 SURFACE: ELECTRO TREATED



Conductor mm ²	3D CAT NO	Dimensions in mm				Ø mm
		L	Ø	Ø	J	
1.5	3D-2802	1.8	3.7	12	100	
2.5	3D-2804	2.4	4.3	18	100	
4	3D-2806	3.1	4.8	18	100	
6	3D-2808	3.8	5.5	18	100	
10	3D-2810	4.5	6.2	20	100	
16	3D-2812	5.4	7.1	20	80	
20	3D-2816	6.0	7.7	20	80	
25	3D-2817	6.4	8.6	20	80	
35	3D-2820	8.3	10.6	36	80	
50	3D-2822	10.0	12.6	40	80	
70	3D-2826	11.3	16.7	40	80	
95	3D-2828	13.0	17.8	48	35	
120	3D-2830	15.0	18.6	48	20	
160	3D-2833	16.0	21.2	50	15	
180	3D-2836	18.0	23.0	50	10	
240	3D-2838	21.0	26.0	80	10	
300	3D-2841	25.0	30.0	80	5	
400	3D-2843	28.0	34.0	91	5	
500	3D-2844	30.0	38.0	112	4	
630	3D-2846	34.0	43.0	112	2	
800	3D-2847	38.0	50.0	130	10	
1000	3D-2849	45.0	58.0	170	10	

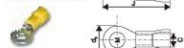


Conductor mm ²	3D CAT NO	Dimensions in mm				Ø mm
		L	Ø	Ø	J	
1.5	3D-2848	1.9	3.2	15	100	
2.5	3D-2850	2.4	4.8	15	100	
6	3D-2851	3.5	5.5	15	100	
10	3D-2852	4.5	6.2	20	100	
16	3D-2853	5.4	7.1	20	100	
25	3D-2854	6.9	8.8	32	100	
35	3D-2855	8.2	10.6	36	50	
50	3D-2856	10.0	12.0	40	50	
70	3D-2857	11.2	14.7	40	50	
95	3D-2858	13.0	17.4	45	20	
130	3D-2859	15.0	19.4	45	20	
160	3D-2860	16.0	21.2	50	10	
180	3D-2861	18.0	23.0	50	10	
240	3D-2862	21.0	26.0	80	10	
300	3D-2863	25.0	30.0	80	5	
400	3D-2864	28.0	34.0	90	5	
500	3D-2865	30.0	38.0	100	4	
630	3D-2866	34.0	43.0	110	2	
800	3D-2867	38.0	50.0	130	10	
1000	3D-2868	45.0	58.0	170	10	



Terminal Ends, Ring Type

Standard Type, With Insulating Sleeve
Material: E-Copper + PVC
Surface: Tin Plated



Con-Bolt	3D	mm-Ø	Cat.No.	d ₁	d ₂	d ₃	C	J
4x6-4	3D-3188	3.5	10	5.5	27			
4x6-5	3D-3189	3.5	10	5.5	27			
4x6-5	3D-3200	3.5	8	5.5	30			
4x6-5	3D-3201	3.5	12	5.5	28			
4x6-5	3D-3204	3.5	12	5.5	30			
4x6-6	3D-3202	3.5	12	5.5	28			
4x6-6	3D-3205	3.5	12	5.5	30			
4x6-6	3D-3206	3.5	14	5.5	33.5			
4x6-6	3D-3203	3.5	12	5.5	28			
4x6-6	3D-3207	3.5	14	5.5	33.5			
4x6-6	3D-3209	3.5	16	5.5	38			
4x6-6	3D-3211	3.5	18	5.5	38			
4x6-6	3D-3208	3.5	14	5.5	33.5			
4x6-6	3D-3210	3.5	18	5.5	38			
4x6-6	3D-3212	3.5	18	5.5	38			
4x6-6	3D-3213	3.5	18	5.5	38			

Terminal Ends, Ring Type

Double Grip, With Insulating Sleeve
Material: E-Copper + PVC
Surface: Tin Plated



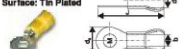
Con-Bolt	3D	mm-Ø	Cat.No.	d ₁	d ₂	d ₃	C	J
0.5x1.5-3	3D-3337	1.6	8	3.2	19			
0.5x1.5-3	3D-3338	1.6	8	3.2	19			
0.5x1.5-3	3D-3341	1.6	8	3.2	18			
0.5x1.5-3	3D-3344	1.6	8	3.2	21			
0.5x1.5-3.5	3D-3396	1.6	7.2	3.2	21			
0.5x1.5-3.5	3D-3339	1.6	8	3.2	19			
0.5x1.5-3.5	3D-3342	1.6	8.8	3.2	18			
0.5x1.5-4	3D-3340	1.6	8	3.2	19			
0.5x1.5-4	3D-3343	1.6	8.8	3.2	18			
0.5x1.5-4	3D-3345	1.6	8	3.2	21			
0.5x1.5-4	3D-3347	1.6	7	3.2	19.5			
0.5x1.5-4	3D-3348	1.6	10	3.2	23			
0.5x1.5-5	3D-3346	1.6	8	3.2	21			
0.5x1.5-5	3D-3348	1.6	10	3.2	23			
0.5x1.5-8	3D-3350	1.6	10	3.2	23			
0.5x1.5-6	3D-3351	1.6	12	3.2	23			
2.5-3	3D-3382	2.3	6.5	3.9	17.8			
2.5-3.5	3D-3383	2.3	6.5	3.9	17.7			

Con-Bolt

mm-Ø	3D	Cat.No.	d ₁	d ₂	C	J
2.5-3.5	3D-3384	2.3	8	3.9	21	
2.5-4	3D-3385	2.3	8	3.9	21	
2.5-5	3D-3386	2.3	8	3.9	21	
2.5-5	3D-3387	2.3	10	3.9	23	
2.5-6	3D-3389	2.3	12	3.9	27	
2.5-6	3D-3388	2.3	10	3.9	23	
2.5-6	3D-3390	2.3	12	3.9	27	
2.5-6	3D-3392	2.3	18	3.9	37	
2.5-8	3D-3391	2.3	18	3.9	27	
2.5-8	3D-3393	2.3	16	3.9	30	
2.5-10	3D-3394	2.3	16	3.9	30	
2.5-10	3D-3395	2.3	18	3.9	34	
2.5-12	3D-3396	2.3	18	3.9	34	

Terminal Ends, Ring Type

Double Grip, With Insulating Sleeve
Material: E-Copper + PVC
Surface: Tin Plated



Con-Bolt	3D	mm-Ø	Cat.No.	d ₁	d ₂	b	J
4x6-4	3D-3430	3.5	5.5	8	28		
4x6-4	3D-3485	3.5	10	28			
4x6-4	3D-3484	3.5	5.5	8	28		
4x6-5	3D-3486	3.5	5.5	10	29		
4x6-5	3D-3487	3.5	5.5	8	31.8		
4x6-5	3D-3488	3.5	5.5	12	29		
4x6-5	3D-3501	3.5	5.5	12	31		
4x6-6	3D-3489	3.5	5.5	12	29		
4x6-6	3D-3502	3.5	5.5	12	31		
4x6-6	3D-3503	3.5	5.5	14	34.5		
4x6-8	3D-3500	3.5	5.5	12	29		
4x6-8	3D-3504	3.5	5.5	14	34.5		
4x6-8	3D-3506	3.5	5.5	16	39		
4x6-8	3D-3508	3.5	5.5	18	39		
4x6-8	3D-3505	3.5	5.5	14	34.5		
4x6-10	3D-3507	3.5	5.5	16	39		
4x6-10	3D-3509	3.5	5.5	18	39		
4x6-12	3D-3510	3.5	5.5	18	39		

Terminal Ends, Fork Type

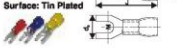
Standard Type, Brazed Seam
Material: E-Copper
Surface: Tin Plated



Con-Bolt	3D	mm-Ø	Cat.No.	d ₁	d ₂	C	J
0.5x1.5-2	3D-1700	1.6	4.5	3.2	13		
0.5x1.5-3	3D-1903	1.6	6.0	3.2	14		
0.5x1.5-3.5	3D-1699	1.6	6.8	3.2	14.5		
0.5x1.5-3.5	3D-1700	1.6	6.0	3.2	14		
0.5x1.5-4	3D-1701	1.6	8.0	3.2	16		
0.5x1.5-4	3D-1704	1.6	6.5	3.2	16		
0.5x1.5-4	3D-1875	1.6	8.0	3.2	16		
0.5x1.5-5	3D-1702	1.6	10.0	3.2	18		
0.5x1.5-5	3D-1698	1.6	8.0	3.2	21		
2.5-3	3D-1902	2.4	5.8	4	14		
2.5-3	3D-1889	2.3	6.0	3.9	14		
2.5-3.5	3D-1890	2.3	6.0	3.9	14		
2.5-3.5	3D-1884	2.3	6.5	3.9	15		
2.5-4	3D-1892	2.3	6.5	3.9	15		
2.5-4	3D-1891	2.3	8.0	3.9	16		
2.5-5	3D-1893	2.3	10.0	3.9	19		
2.5-5	3D-1903	2.3	10.8	4.8	21		
2.5-5	3D-1896	2.3	10.0	3.9	19		
4x6-3	3D-1906	3.5	6.0	5.5	15		
4x6-3.5	3D-1907	3.5	6.0	5.5	15		
4x6-4	3D-1733	3.5	8.0	5.5	17		
4x6-4	3D-1914	3.5	8.0	5.5	18		
4x6-5	3D-1734	3.5	8.0	5.5	17		
4x6-5	3D-1908	3.5	10.0	5.5	20		
4x6-6	3D-1915	3.5	11.0	5.6	21.5		
10-6	3D-1917	6.5	16.0	6.9	27		
10-6	3D-1918	6.5	16.0	6.9	27		
16-5	3D-1922	6.3	10.0	7.7	26		

Terminal Ends, Fork Type

Standard Type, Brazed Seam
Material: E-Copper
With PVC Sleeve
Surface: Tin Plated



Con-Bolt	3D	mm-Ø	Cat.No.	d ₁	d ₂	C	J
0.5x1.5-2	3D-3600	1.6	4.8	3.2	18		
0.5x1.5-3	3D-3605	1.6	6	3.2	19		
0.5x1.5-3.5	3D-3641	1.6	8	3.2	19		
0.5x1.5-3.5	3D-3639	1.6	8.8	3.2	19		
0.5x1.5-4	3D-3647	1.6	6.5	3.2	20		
0.5x1.5-4	3D-3642	1.6	8	3.2	21		
0.5x1.5-5	3D-3650	1.6	8	3.2	21		

Terminal Ends, Round Pin Type

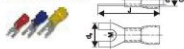
W/O Sleeve, Brazed Seam
Material: E-Copper
Surface: Tin Plated



Con-Bolt	3D	mm-Ø	Cat.No.	d ₁	d ₂	C	J
0.5x1.5-4	3D-3643	1.6	10	3.2	23		
0.5x1.5-4	3D-3638	1.6	8	3.2	26		
2.5-3	3D-3671	2.4	5.6	4	19		
2.5-3	3D-3661	2.3	6	3.9	19		
2.5-3.5	3D-3662	2.3	6	3.9	19		
2.5-3.5	3D-3657	2.3	6.5	3.9	20		
2.5-4	3D-3663	2.3	8	3.9	21		
2.5-4	3D-3666	2.3	8.5	3.9	22		
2.5-6	3D-3664	2.3	10	3.9	24		
2.5-6	3D-3673	2.6	10.6	4.6	25		
2.5-6	3D-3670	2.3	10	3.9	24		
4x6-3	3D-3674	3.5	6	5.5	24		
4x6-3.5	3D-3675	3.5	6	5.5	24		
4x6-4	3D-3676	3.5	6	5.5	27		
4x6-4	3D-3720	3.5	6	5.5	25		
4x6-5	3D-3731	3.5	8	5.5	25		
4x6-5	3D-3681	3.6	10	5.6	29		
4x6-5	3D-3680	3.6	11	5.6	30.5		

Terminal Ends, Fork Type

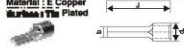
Double Grip, With Insulating Sleeve
Material: E-Copper With PVC Sleeve
Surface: Tin Plated



Con-Bolt	3D	mm-Ø	Cat.No.	d ₁	d ₂	C	J
0.5x1.5-3	3D-3686	1.6	3.2	6.8	19		
2.5-3.5	3D-3689	2.3	3.9	6.5	20		
4x6-3	3D-3688	3.5	8.5	6	24		
4x6-3.5	3D-3690	3.5	5.5	6	24		

Terminal Ends, Rectangular Pin Type

Brazed Seam
Material: E-Copper
Surface: Tin Plated



Con	3D	mm ²	Cat.No.	d ₁	d ₂	b	J
10	3D-1041	4.3	8.7	4.3	22		
16	3D-1042	5.3	7.3	2.7	25		
16	3D-1043	5.8	8.2	5.5	26.0		
25	3D-1044	7.5	11.1	7.0	31.0		
36							

Hand Crimping Tool - 3D-17



Crimping range is from 1.5mm² to 6mm²

Hand Crimping Tool - 3D-2



Crimping range is from 1.5mm² to 16mm²

Hand Crimping Tool - 3D-7



Crimping range is from 1.5mm² to 6mm²

Hand Crimping Tool - 3D-48



Crimping range is from 0.5mm² to 16mm²

Hand Crimping Tool - 3D-52



Crimping range is from 0.5mm² to 6mm²

Cable Cutter - 3D-31



Wire cutting tool with a range of 6mm diameter.

Hand Crimping Tool - 3D-63



Crimping range is from 10mm² to 16mm²

Hand Crimping Tool - 3D-7



Crimping range is from 2.5 to 400mm²

Hand Crimping Tool - 3D-95



Crimping range is from 10mm² to 185mm²

Dieless hand tool - 3D-95B



Dieless hand tool & with two adapter handles crimping range from 10 to 185mm²
Cu light duty terminals & connectors
Al terminals & Al connectors

Our other products

COPPER BUS BARS



COPPER BUS BARS



T & X COPPER CONNESTORS



COPPER EARTHING STRIPS PLAIN & PERFORETED

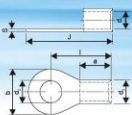


COPPER TINNED TOOTHED BUS BAR



SOLDERLESS TERMINALS

RING TYPE: DIN 48 234
MATERIAL: E-COPPER
SURFACE: ELECTRO TINNED



Conductor cross area	3D CAT. NO.	Dimensions in mm										Pcs
		d _f	s	b	f	d _s	f	J	g	g	g	
6	4 3D-1162	3.6	5	8	5.6	4.3	14	18	1.0	100		
	5 3D-1163	3.6	6	10	5.6	5.3	15	20	1.0	100		
	6 3D-1164	3.6	6	11	5.6	6.5	16	21.5	1.0	100		
	8 3D-1165	3.6	6	14	6	8.4	19	26	1.0	100		
	10 3D-1166	3.6	6	18	6	10.5	21	30	1.0	100		
10	5 3D-1167	4.52	8	10	6.72	5.3	16	21	1.1	100		
	6 3D-1168	4.52	8	11	6.72	6.5	17	22.5	1.1	100		
	8 3D-1169	4.5	8	14	6.72	8.4	20	27	1.1	100		
	10 3D-1170	4.5	8	18	6.72	10.5	21	30	1.1	100		
	12 3D-1171	4.5	8	22	6.72	13	23	34	1.1	100		
16	5 3D-1172	5.8	10	11	8.2	5.3	20	25.5	1.2	100		
	6 3D-1173	5.8	10	11	8.2	6.5	20	25.5	1.2	100		
	8 3D-1174	5.8	10	14	8.2	8.4	22	29	1.2	100		
	10 3D-1175	5.8	10	18	8.2	10.5	24	33	1.2	100		
	12 3D-1176	5.8	10	22	8.2	13	26	37	1.2	100		
25	5 3D-1177	7.52	11	12	10.52	5.3	25	31	1.5	50		
	6 3D-1178	7.52	11	12	10.52	6.5	25	31	1.5	50		
	8 3D-1179	7.52	11	16	10.52	8.4	25	33	1.5	50		
	10 3D-1180	7.52	11	18	10.52	10.5	26	35	1.5	50		
	12 3D-1181	7.52	11	22	10.52	13	28	42	1.5	50		
16 3D-1182	7.52	11	28	10.52	17	35	49	1.5	50			
35	6 3D-1183	9.02	12	15	12.22	6.5	28	33.5	1.6	50		
	8 3D-1184	9.02	12	16	12.22	8.4	28	34	1.6	50		
	10 3D-1185	9.02	12	18	12.22	10.5	27	36	1.6	50		
	12 3D-1186	9.02	12	22	12.22	13	31	42	1.6	50		
	16 3D-1187	9.02	12	28	12.22	17	36	50	1.6	50		
50	6 3D-1188	11	16	18	14.6	6.5	34	43	1.8	40		
	8 3D-1189	11	16	18	14.6	8.4	34	43	1.8	40		
	10 3D-1190	11	16	18	14.6	10.5	34	43	1.8	40		
	12 3D-1191	11	16	22	14.6	13	36	47	1.8	40		
	16 3D-1192	11	16	28	14.6	17	40	54	1.8	40		
70	6 3D-1193	13	18	22	17	6.5	38	49	2.0	25		
	8 3D-1194	13	18	22	17	8.4	38	49	2.0	25		
	10 3D-1195	13	18	22	17	10.5	38	49	2.0	25		
	12 3D-1196	13	18	22	17	13	38	49	2.0	25		
	16 3D-1197	13	18	28	17	17	42	56	2.0	25		
95	8 3D-1198	15	20	24	20	8.4	42	54	2.5	20		
	10 3D-1199	15	20	24	20	10.5	42	54	2.5	20		
	12 3D-1200	15	20	24	20	13	42	54	2.5	20		
	16 3D-1201	15	20	28	20	17	44	58	2.5	20		
	120	8 3D-1202	6.5	22	24	25.2	8.4	44	56	3.0	25	
10 3D-1203		6.5	22	24	25.2	10.5	44	56	3.0	25		
12 3D-1204		6.5	22	24	25.2	13	44	56	3.0	25		
16 3D-1205		6.5	22	28	25.2	17	48	62	3.0	25		

Terminal Ends, Ring Type

Standard Type, W/O Sleeve,
Brazed Seam
Material: E-Copper
Surface: Tin Plated



Con-Bolt mm ² -Ø	3D Cat.No.	d _f	d _s	b	J
0.501-5.2	3D-1203	1.6	3.2	6	14
0.501-5.25	3D-1242	1.6	3.2	6	14
0.501-5.3	3D-1247	1.6	3.2	6	14
0.501-5.3	3D-1260	1.6	3.2	6	14
0.501-5.3	3D-1265	1.6	3.2	6	16
0.501-5.3.5	3D-1261	1.6	3.2	14	14
0.501-5.3.5	3D-1257	1.6	3.2	6.8	13
0.501-5.4	3D-1241	1.6	3.2	6	14
0.501-5.4	3D-1258	1.6	3.2	6.8	13
0.501-5.4	3D-1246	1.6	3.2	6	14
0.501-5.4	3D-1261	1.6	3.2	7	14.5
0.501-5.4	3D-1266	1.6	3.2	10	18
0.501-5.4	3D-1246	1.6	3.2	6	14
0.501-5.4	3D-1266	1.6	3.2	10	18
0.501-5.4	3D-1262	1.6	3.2	10	18
0.501-5.5	3D-1267	1.6	3.2	10	18
0.501-5.5	3D-1224	1.6	3.2	10	18
0.501-5.6	3D-1268	1.6	3.2	15	18
2.5-3	3D-1308	2.3	3.9	6.5	12.7
2.5-3.5	3D-1262	2.3	3.9	6.5	12.7
2.5-3.5	3D-1309	2.3	3.9	8	16
2.5-4	3D-1296	2.3	3.9	8	16
2.5-5	3D-1304	2.3	3.9	8	16
2.5-6	3D-1310	2.3	3.9	10	18
2.5-5	3D-1313	2.3	3.9	12	22
2.5-8	3D-1342	2.3	3.9	10	18
2.5-8	3D-1305	2.3	3.9	12	22
2.5-8	3D-1314	2.3	3.9	16	25
2.5-8	3D-1307	2.3	3.9	12	22
2.5-8	3D-1311	2.3	3.9	16	25
2.5-10	3D-1267	2.3	3.9	16	25
2.5-10	3D-1524	2.3	3.9	18	29
2.5-12	3D-1438	2.3	3.9	18	29
406-4	3D-1432	3.5	5.5	8	17
406-6	3D-1435	3.5	5.5	10	19
406-6	3D-1431	3.5	5.5	8	17
406-6	3D-1433	3.5	5.5	10	19
406-6	3D-1405	3.5	5.5	10	19
406-6	3D-1404	3.5	5.5	12	22
406-6	3D-1415	3.5	5.5	12	20
406-6	3D-1417	3.5	5.5	12	22
406-6	3D-1406	3.5	5.5	14	26.5
406-8	3D-1416	3.5	5.5	10	20
406-8	3D-1421	3.5	5.5	14	26.5
406-8	3D-1407	3.5	5.5	16	30
406-8	3D-1429	3.5	5.5	18	30
406-9	3D-1410	3.5	5.5	14	26.5

Con-Bolt mm ² -Ø	3D Cat.No.	d _f	d _s	b	J
406-10	3D-1427	3.5	5.5	16	30
406-10	3D-1428	3.5	5.5	18	30
406-12	3D-1430	3.5	5.5	18	30
10-4	3D-1463	4.3	6.3	10	22
10-4	3D-1464	4.3	6.3	10	22
10-5	3D-1459	4.3	6.3	10	22
10-5	3D-1460	4.3	6.3	10	22
10-6	3D-1465	4.3	6.3	12	23
10-8	3D-1468	4.3	6.3	18	27
10-8	3D-1467	4.3	6.3	18	27
10-10	3D-1461	4.3	6.3	18	27
10-10	3D-1468	4.3	6.3	22	34
10-12	3D-1462	4.3	6.3	22	34
16-5	3D-1519	5.6	8	10	24
16-5	3D-1517	5.6	8	12	26
16-6	3D-1511	5.6	8	12	26
16-6	3D-1519	5.6	8	16	30
16-8	3D-1512	5.6	8	16	30
16-8	3D-1519	5.6	8	18	33
16-8	3D-1513	5.6	8	16	30
16-10	3D-1514	5.6	8	18	33
16-10	3D-1520	5.6	8	22	35
16-12	3D-1515	5.6	8	22	35
25-6	3D-1567	7.5	11.1	12	31
25-6	3D-1551	7.5	11.1	16	37
25-6	3D-1558	7.5	11.1	16	37
25-6	3D-1559	7.5	11.1	16	37
25-6	3D-1557	7.5	11.1	22	42
35-4	3D-1584	9	12.6	18	31
35-8	3D-1581	9	12.6	16	31
35-8	3D-1586	9	12.6	18	36
35-10	3D-1582	9	12.6	18	36
35-10	3D-1586	9	12.6	22	42
35-12	3D-1583	9	12.6	22	42
50-8	3D-1609	10.5	14.1	18	43
50-10	3D-1607	10.5	14.1	18	43
50-10	3D-1610	10.5	14.1	22	43
50-10	3D-1611	10.5	14.1	24	48
50-10	3D-1608	10.5	14.1	24	48
50-16	3D-1612	10.5	14.1	22	42
70-10	3D-1637	12	16	22	47
70-12	3D-1638	12	16	22	47
70-12	3D-1638	12	16	24	54
70-16	3D-1639	12	16	28	58
90-10	3D-1661	13.5	18.1	22	46
90-10	3D-1652	13.5	18.1	24	50
95-12	3D-1660	13.5	18.1	24	50
95-16	3D-1653	13.5	18.1	28	58
120-12	3D-1668	15	20.2	26	52
120-16	3D-1659	15	20.2	32	64

Con-Bolt mm ² -Ø	3D Cat.No.	d _f	d _s	b	J
150-20	3D-1660	15	20.2	40	72
150-12	3D-1668	16.5	23.7	34	66
150-16	3D-1660	16.5	23.7</		

