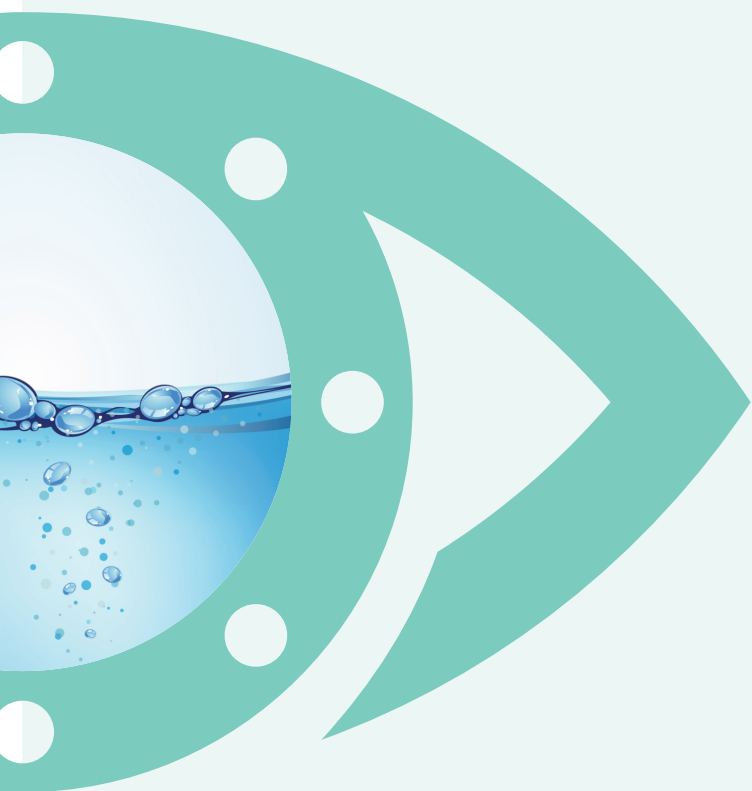


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Metalska industrija Varaždin d.d.



Metalska industrija Varaždin d.d.



Nominalne veličine od DN 40 do DN 1000 od nodularnog lijeva GGG

Fazona zavarene izvedbe od crnog i inox čelika za radne pritiske do 40 bara sa prirubničkim spojem

Nazivni tlakovi: PN 2.5, 4, 6, 10, 16, 25 i 40

Vrste priključnih spojeva: prirubnica, kolčak, KS-spojevi, TJ-spojevi, ISO 2531 (slobodna prirubnica)

Otpornost na koroziju zahvaljujući posebnoj zaštiti korištenjem epoxy praha



Nenngrößen: DN 40 bis DN 1000 aus duktilem Gusseisen GGG

Geschweißte Stahl- und Edelstahlaraturen mit Flansch-Verbindungen für Betriebsdrücke bis PN 40

Nenndruck: PN 2.5, 4, 6, 10, 16, 25 und 40 (höhere Nenndrücke auf Anfrage)

Verbindungen: Flansch, Steckmuffen, KS-Verbindung, AC-Verbindung, TJ-Verbindung, ISO, MJ

Hohe Korrosionsbeständigkeit aufgrund der Epoxidbeschichtung



Nominal sizes: DN 40 up to DN 1000 from ductile cast iron GGG

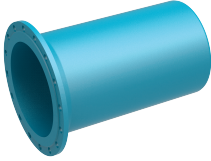
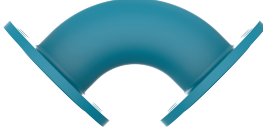

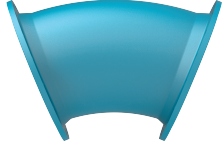








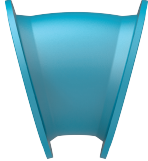


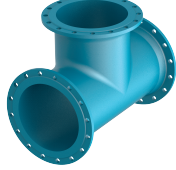








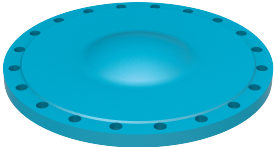

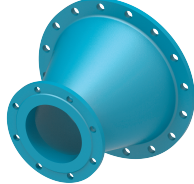
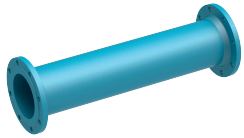








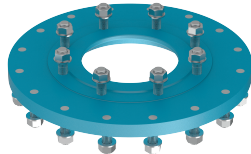
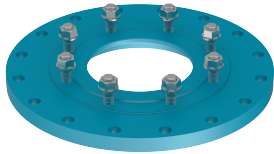
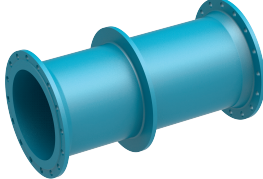
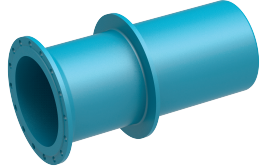








Welded carbon and steel welded fittings production with flange connections for working pressures up to PN 40

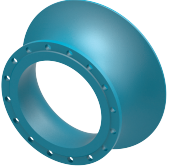
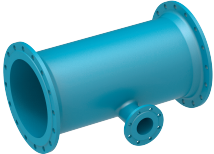
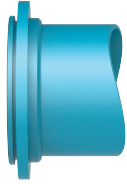








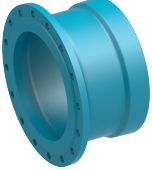
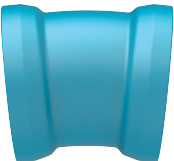






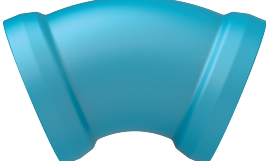
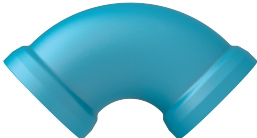
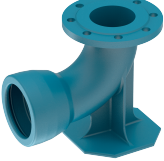






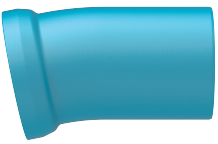




Nominal pressures: PN 2.5, 4, 6, 10, 16, 25 and 40 (higher on request)

Connections: Flange, socket, KS-joint, AC-joint, TJ-joint, ISO, MJ

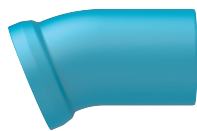
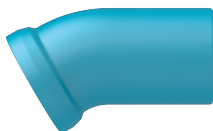
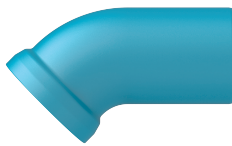






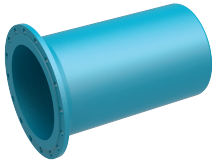

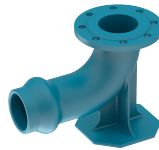





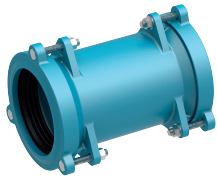


High corrosion resistance due to the use of epoxy powder

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FITTINGS

| SPOJNI KOMAD S PRIRUBNICOM EINFLANSCHSTÜCKE FLANGED SPIGOT PIECES | LUČNI KOMAD S PRIRUBNICAMA FLANSCHENKRÜMMER DOUBLE FLANGED BENDS | LUČNI KOMAD SA STOPALOM FLANSCHENKRÜMMER DOUBLE FLANGED BENDS | LUČNI KOMAD 1/8 S PRIRUBNICAMA FLANSCHBOGENSTÜCKE 1/8 DOUBLE FLANGED 1/8 BENDS |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  |  |  |
|  EN 545  |  EN 545  |  EN 545  |  EN 545  |
| DN50 - DN1200 PN10/16 | DN50 - DN800 PN10/16 | DN50 - DN600 PN10/16 | DN50 - DN800 PN10/16 |
| LUČNI KOMAD 1/12 S PRIRUBNICAMA FLANSCHBOGENSTÜCKE 1/12 DOUBLE FLANGED 1/12 BENDS | LUČNI KOMAD 1/16 S PRIRUBNICAMA FLANSCHBOGENSTÜCKE 1/16 DOUBLE FLANGED 1/16 BENDS | LUČNI KOMAD 1/32 S PRIRUBNICAMA FLANSCHBOGENSTÜCKE 1/32 DOUBLE FLANGED 1/32 BENDS | OTCJEPNI KOMAD S PRIRUBNICAMA T-STÜCKE ALL FLANGED TEES |
|  |  |  |  |
|  EN 545  |  EN 545  |  EN 545  |  EN 545  |
| DN50 - DN800 PN10/16 | DN50 - DN800 PN10/16 | DN50 - DN800 PN10/16 | DN50 - DN1000 PN10/16 |
| ZAVRŠNICI ZA PRIRUBNICU BLINDFLANSCH BLANK FLANGES | KRIŽNI KOMAD S PRIRUBNICAMA KREUZFLANSCHENSTÜCKE ALL FLANGED CROSSES | REDUCIRANI KOMAD S PRIRUBNICAMA FLANSCHENÜBERGANGSTÜCKE DOUBLE SOCKET TAPERS | SPOJNI KOMAD S PRIRUBNICAMA FLANSCHSTÜCKE DOUBLE FLANGED COLLARS |
|  |  |  |  |
|  EN 545  |  EN 545  |  EN 545  |  EN 545  |
| DN50 - DN1200 PN10/16 | DN80 - DN700 PN10/16 | DN50 - DN700 PN10/16 | DN40 - DN1000 PN10/16 |
| PRELAZNA PRIRUBNICA REDUZIERFLANSCH TAPERS FLANGES | PRIRUBNIČKI KOMADI SA ZIDNOM PRIRUBNICOM FLANSCHSTÜCKE MIT MAUERFLANSCH FITTING PIECE WITH WALL FLANGA | | |
|  |  |  |  |
|  EN 545  |  EN 545  |  EN 545  |  EN 545  |
| DN60 - DN600 PN10/16 | DN60 - DN1000 PN10/16 | | |

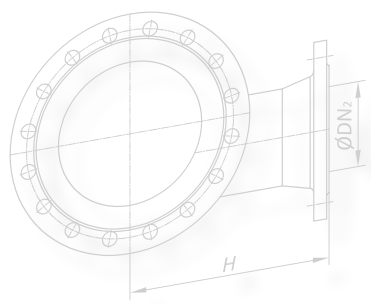
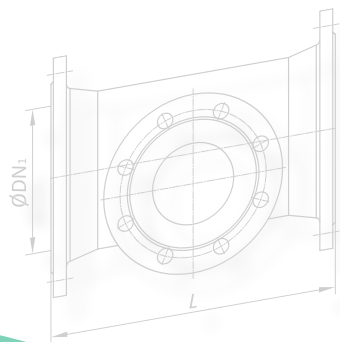
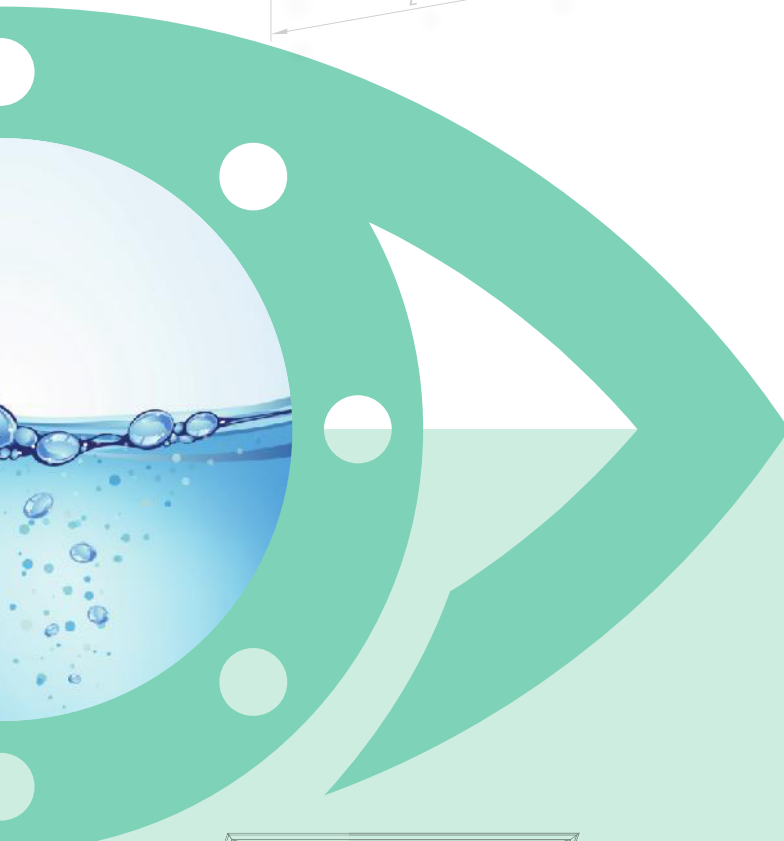
| | | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PRELJEVNI KOMADI ÜBERLAUFSTÜCKE FLANGED BELIMOUTHS | T - KOMAD EKSCENTIRČAN T - FLANSCHSTÜCKE EKSCENTRISCH T - FLANGED INVERT TEE | SKRETNICA ZA HIDRANT ANPASSUNGSFÄHIG BOGEN ADJUSTMENT BEND | DVOKOMORNA SPECIJALNA PRIRUBNICA ZWEIKAMMER - SPECIALFLANSCH PIPE CONNECTION DOUBLECHAMBER |
|  |  |  |  |
|  EN 545  |  EN 545  |  EN 545  |  EN 545  |
| DN80 - DN600 PN10/16 | DN300 - DN600 PN10/16 | DN80 - DN100 PN10/16 | DN50 - DN300 PN10/16 |
| KOMAD S PRIRUBNICOM I TJ-KOLČAKOM STÜCKE FLANSCHMUFFENSTÜCKE TJ-MUFFEN FLANGE AND TJ SOCKET PIECES | LUČNI KOMAD S TJ-KOLČAKOM 11 1/4° BOGENSTÜCK MIT TJ-MUFFEN 11 1/4° TJ 11 1/4° BENDS | LUČNI KOMAD S TJ-KOLČAKOM 22 1/2° BOGENSTÜCK MIT TJ-MUFFEN 22 1/2° TJ 22 1/2° BENDS | LUČNI KOMAD S TJ-KOLČAKOM 30° BOGENSTÜCK MIT TJ-MUFFEN 30° TJ 30° BENDS |
|  |  |  |  |
|  EN 545 |  EN 545 |  EN 545 |  EN 545 |
| DN60 - DN1200 PN10/16 | DN60 - DN1000 PN10/16 | DN60 - DN1000 PN10/16 | DN80 - DN1000 PN10/16 |
| LUČNI KOMAD S TJ-KOLČAKOM 45° BOGENSTÜCK MIT TJ-MUFFEN 45° TJ 45° BENDS | LUČNI KOMAD S TJ-KOLČAKOM 90° BOGENSTÜCK MIT TJ-MUFFEN 90° TJ 90° BENDS | LUČNI KOMAD S PRIRUBNICOM I TJ-KOLČAKOM 90° STÜCKE FLANSCHMUFFENSTÜCKE MIT TJ-MUFFEN 90° FLANGE AND TJ SOCKET 90° BENDS | REDUKCIJSKI KOMAD S TJ-KOLČAKOM DOPPELMUFFEN ÜBERGANGESSTÜCKE TJ CONCENTRIC TAPERS |
|  |  |  |  |
|  EN 545 |  EN 545 |  EN 545 |  EN 545 |
| DN60 - DN1000 PN10/16 | DN60 - DN600 PN10/16 | DN80 - DN100 PN10/16 | DN80 - DN800 PN10/16 |
| ODCIEPNI KOMAD S TJ KOLČACIMA DOPPELMUFFE MIT TJ MUFFENSTUTZEN TJ TEES | ODCIEPNI KOMAD S TJ KOLČAKOM I PRIRUBNICOM DOPPELMUFFENSTÜCKE MIT FLANSCHSTUTZEN FLANGE ON TJ TEES | SPOJNI KOMADI S NAGLAVKOM ÜBERSCHIEBMUFFEN DOUBLE SOCKET COLLARS | LUČNI KOMAD S TYTON-KOLČAKOM 11 1/4° MUFFENBOGEN MIT TYTON-MUFFEN 11 1/4° SOCKET BEND 11 1/4° WITH TYTON-SOCKETS |
|  |  |  |  |
|  EN 545 |  EN 545 |  EN 545 |  EN 545 |
| DN60 - DN200 PN10/16 | DN60 - DN800 PN10/16 | DN60 - DN1200 PN10/16 | DN80 - DN300 PN10/16 |

**FAZONA
FORMSTÜCKE
FITTINGS**

| | | | |
|------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| LUČNI KOMAD S TYTON-KOLČAKOM 22 1/2° MUFFENBOGEN MIT TYTON-MUFFEN 22 1/2° SOCKET BEND 22 1/2° WITH TYTON-SOCKETS | LUČNI KOMAD S TYTON-KOLČAKOM 30° MUFFENBOGEN MIT TYTON-MUFFEN 30° SOCKET BEND 30° WITH TYTON-SOCKETS | LUČNI KOMAD S TYTON-KOLČAKOM 45° MUFFENBOGEN MIT TYTON-MUFFEN 45° SOCKET BEND 45° WITH TYTON-SOCKETS | LUČNI KOMAD S TYTON-KOLČAKOM 90° MUFFENBOGEN MIT TYTON-MUFFEN 90° SOCKET BEND 90° WITH TYTON-SOCKETS |
|  |  |  |  |
|  EN 545 |  EN 545 |  EN 545 |  EN 545 |
| DN80 - DN300 PN10/16 | DN80 - DN300 PN10/16 | DN80 - DN300 PN10/16 | DN100 - DN400 PN10/16 |
| SPOJNI KOMADI S KOLČAKOM I PRIRUBNICOM STÜCKE (MUFFE / FLANSCH) FLANGED SOCKET PIECES | SPOJNI KOMADI S PRIRUBNICOM STÜCKE (FLANSCH) FLANGED SPIGOT PIECES | SPOJNI KOMAD S KOLČACIMA I PRIRUBNICOM STÜCKE (DOPPELMUFFE/ABZW. FLANSCH) DOUBLE SOCKET TEES WITH FLANGED BRANCH | LUČNI KOMAD SA STOPALOM MUFFENFUSSKRÜMMER FLANGED SOCKET 90° DUCKFOOT BEND |
|  |  |  |  |
|  EN 545 |  EN 545 |  EN 545 |  EN 545 |
| DN50 - DN500 PN10/16 | DN50 - DN500 PN10/16 | DN50 - DN300 PN10/16 | DN80 - DN100 PN10/16 |
| SYSTEM DELTA – BRZI SPOJ SYSTEM DELTA – DIE SCHNELLE VERBINDUNG SYSTEM DELTA – FAST CONNECTION | | | |
|  |  | | |
| E - BS | U - BS | | |
|  EN 545 |  EN 545 | | |
| DN50 - DN400 PN10/16 | DN50 - DN400 PN10/16 | | |

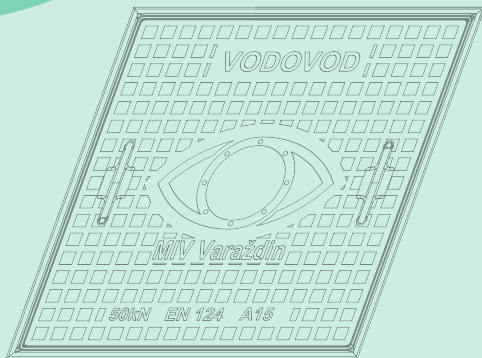
Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015
 Standard beschütung: Pulverbeschited min. 250 mic RAL 5015
 Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015

Prirubnice izvedene za ugradnju prema EN 1092-2 ili na zahtjev prema ostalim standardima.
 Einbaufiansche nach EN 1092-2 oder auf Anfrage nach andere Standard.
 Installation flanges according to EN 1092-2 or on request according to other standard.

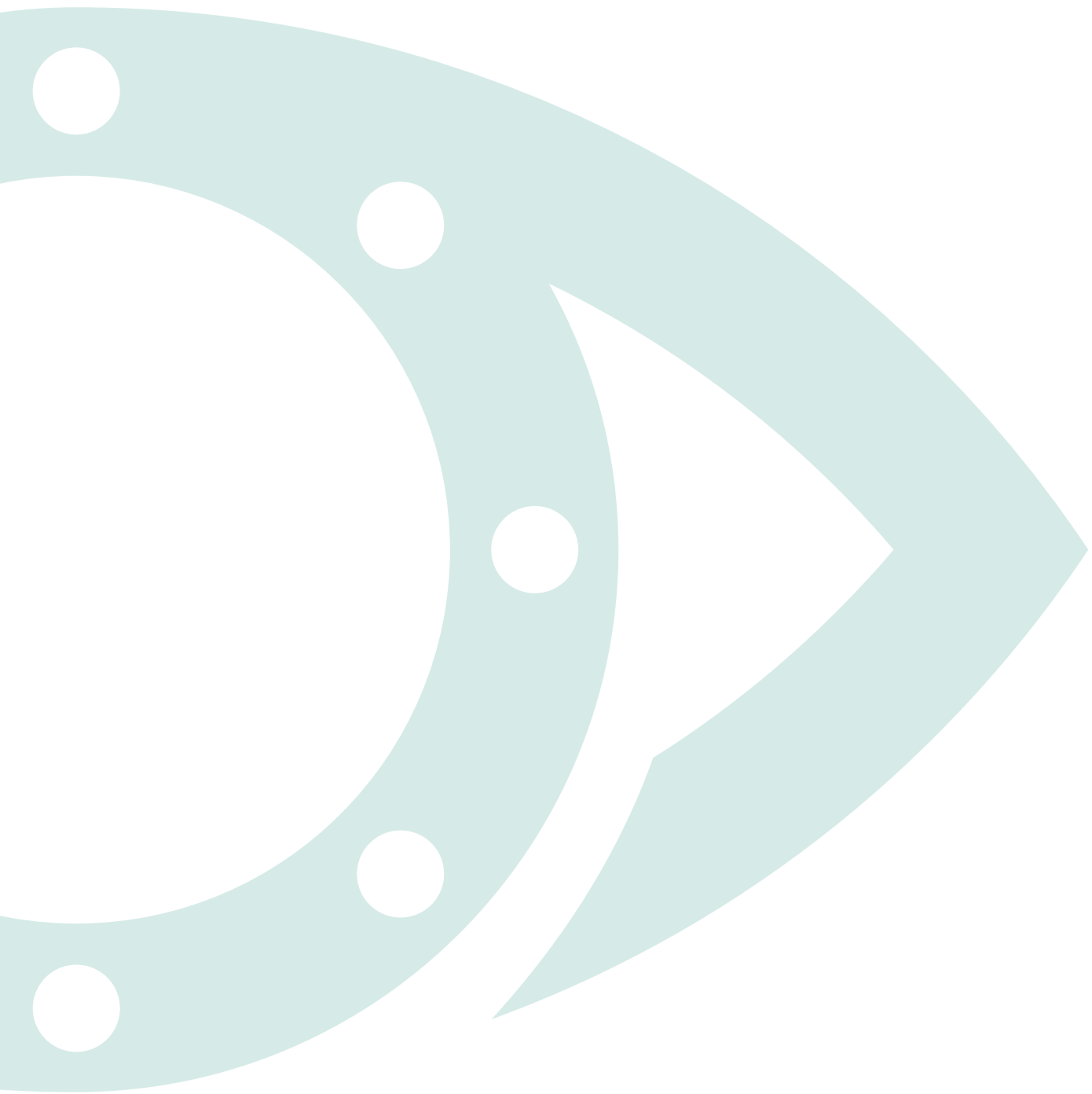


Technical Catalogue

Fazonski komadi × Formstücken × Fittings
Kanalska armatura × Kanalarmaturen × Sewer Castings



Metalska industrija Varaždin d.d.





Poštovani korisniče,

u Vašim rukama je nova verzija kataloga proizvoda Metalske industrije Varaždin, izdanje 2016. godine. Katalog sadrži naše glavne i najprodavanije grupe ventila. Uz proizvode navedene u ovom katalogu, Metalska industrija Varaždin u svojem proizvodnom programu nudi različite vrste armature i fazone. Informacije možete pronaći u digitalnoj verziji kataloga armatura i fazona, koja se nalazi na našoj web stranici (www.miv.hr) ili slanjem upita u naš odjel prodaje.

Posebno je važno istaknuti našu fleksibilnost i personalizirani pristup klijentima i tehničkim zahtjevima projekta, odnosno „custom made“ pristup. Budući da se kompletan ciklus izrade odvija u našim proizvodnim pogonima smještenim u gradu Varaždinu u Hrvatskoj, odlikuje nas sposobnost brze reakcije na tražene modifikacije proizvoda i nadzor nad kvalitetom u svim fazama proizvodnje. Osim mogućnosti varijacija i prilagodbi naših proizvoda, naglašavamo i fleksibilnost kod izbora elektro, hidrauličkih i pneumatskih aktuatora budući da surađujemo s vodećim svjetskim proizvođačima opreme.

Svjesni smo činjenice da nas samo zadovoljstvo naših klijenata i krajnjih korisnika naših ventila i fazona vodi prema daljnjem razvoju tvrtke te prije svega nastojimo biti fokusirani na kvalitetu proizvoda, rokove isporuke, tehničku podršku klijentima, brzi odziv na zahtjeve klijentima i razvijanju dugoročnih poslovnih odnosa.

Više od 65 godina tradicije i iskustva u izradi ventila i fazona, kao i više od 75 godina tradicije u lijevanju, pokazuje da se možete pouzdati u nas. Naš sustav kvalitete i upravljanja okolišem potvrđen je od strane ugledne međunarodne certifikacijske kuće. Cjelokupna lista certifikata sustava i proizvoda te odobrenja za specifična tržišta se nalazi na našim web stranicama.

Molimo Vas da se za sva pitanja obratite našem prodajnom timu.

Uprava



Lieber Kunde,

Sie halten eine neue Version des MIV-Katalog für das Jahr 2016. Der Katalog enthält unsere Haupt- und meistverkauften Ventilgruppen. Über die in diesem Katalog aufgeführten Produkte hinaus hat Metalska Industrija Varaždin in ihrer Produktpalette verschiedene Arten von Ventilen und Armaturen, über die Sie in der Online-Version des Katalogs von Ventilen und Armaturen auf unserer Website (www.miv.hr) oder durch eine Anfrage an unsere Verkaufsabteilung mehr erfahren können.

Es ist besonders wichtig, unsere Flexibilität und individuelle Kundenansprache und technischen Anforderungen des Projekts zu unterstreichen, sowie unseren "custom-made"-Ansatz. Da der komplette Zyklus der Entwicklung in unseren Produktionsstätten in der Stadt Varaždin in Kroatien stattfindet, sind wir in der Lage in allen Phasen der Produktion schnell auf die erforderliche Änderung des Produkts und die Qualitätskontrolle zu reagieren. Neben der Möglichkeit der Variation und Anpassung unserer Produkte betonen wir auch unsere Flexibilität bei der Auswahl von elektrischen, hydraulischen und pneumatischen Stellantrieben, wo wir mit den weltweit führenden Hersteller von Geräten zusammen arbeiten.

Wir sind uns bewusst, dass es nur die Zufriedenheit unserer Kunden und Endverbraucher unserer Ventile und Armaturen ist, die uns zur Entwicklung unseres Unternehmens führt, und wir versuchen es hauptsächlich, uns auf die Produktqualität, Lieferung und technische Kundenbetreuung zu konzentrieren, schnell auf Anfragen von Kunden zu reagieren und langfristige Geschäftsbeziehungen zu entwickeln.

Mehr als 65 Jahre Tradition und Erfahrung in Ventilen und Armaturen sowie mehr als 75 Jahre Gießereierfahrung zeigen, dass Sie sich auf uns verlassen können. Unser System der Qualitätssicherung und Umweltschutz-Management wurde von einem renommierten internationalen Unternehmen zertifiziert. Eine vollständige Liste der Zertifikate für die Systeme und Produkte, sowie von Zulassungen für bestimmte Märkte finden Sie auf unserer Website.

Für weitere Fragen steht Ihnen unser Verkaufsteam gerne zur Verfügung.

Die Verwaltung



Dear customer,

You are holding a new version of the MIV catalog for the year 2016. The catalog contains our main and best-selling groups of valves. In addition to the products listed in this catalog, Metalska Industrija Varaždin has in its product range different kinds of valves and fittings about which you may learn in the online version of the catalog of valves and fittings on our website (www.miv.hr) or by sending a query to our Sales Department.

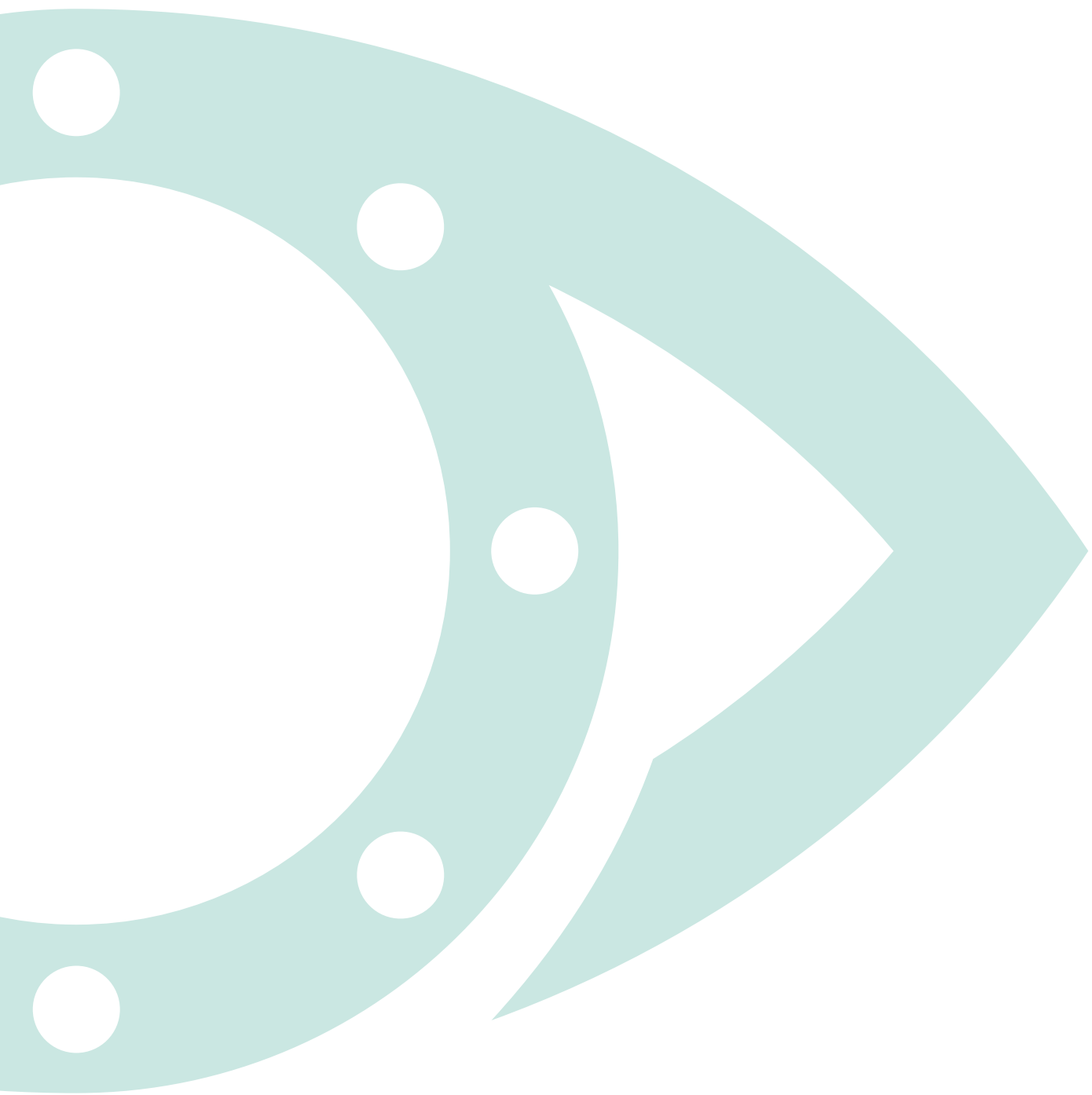
It is particularly important to emphasize our flexibility and personalized approach to customers and technical requirements of the project, as well as our "custom-made" approach. Since the complete cycle of development takes place at our production facilities located in the city of Varaždin in Croatia, we are able to respond quickly to the required modification of the product and quality control at all stages of production. In addition to the possibility of variation and adaptation of our products, we also emphasize our flexibility in the selection of electrical, hydraulic and pneumatic actuators where we work with the world's leading equipment manufacturers.

We are aware that it is only the satisfaction of our customers and end-users of our valves and fittings that is leading us to further development of the company, and above all we are trying to focus on product quality, delivery, technical customer support, responding quickly to requests from customers and developing long-term business relationships.

More than 65 years of tradition and experience in making valves and fittings as well as more than 75 years of experience in casting show that you can rely on us. Our system of quality and environmental protection management has been certified by a renowned international company. Full list of certificates for the systems and products, and of approvals for specific markets can be found on our website.

For any further questions, please contact our sales team.

The Board





Razvojnu karakteristiku tvrtke čine stalna proširivanja i modernizacija proizvodnih pogona, rast kvalitete proizvoda i širenje proizvodnog programa, sve veće sudjelovanje u poslovima međunarodne suradnje te sve veći udio inozemnog tržišta u ukupnoj prodaji. Metalska industrija danas je dioničko društvo koje kotira na Zagrebačkoj burzi. Dobro razvijena poslovna i tehnička suradnja s partnerima u zemlji te širom Europe i svijeta daju tvrtci dodatnu kvalitetu te ju čine pouzdanim i prepoznatljivim poslovnim partnerom.

KVALITETA I POUZDANOST

MIV d.d. posjeduje certifikate za upravljanje kvalitetom ISO 9001:2008 i ISO 14000:2004, GSK za proizvode i procese te PED 97/23/EC i IPPC (Integrirano sprečavanje i kontrola zagađenja).



Charakteristisch für das Wachstum unseres Unternehmens sind stetige Erweiterungen und Modernisierungen unserer Fertigung, eine kontinuierlich wachsende Qualitätssicherung und die Ausweitung unserer Produktpalette, eine immer größere Teilnahme an grenzüberschreitenden Kooperationsgeschäften und ein stetig ansteigender Anteil des Exportgeschäftes am Gesamtumsatz. Das Unternehmen Metalska industrija Varaždin ist heute an der Börse eingeführt. Eine sehr gut entwickelte geschäftliche und technische Zusammenarbeit mit Partnern sowohl im Inland, als auch weltweit, geben dem Unternehmen eine zusätzliche Qualitätsnote. Dies verleiht dem Unternehmen einen zuverlässigen und bekannten Namen auf dem Markt.

QUALITÄT UND ZUVERLÄSSIGKEIT

Das Unternehmen MIV AG ist nach dem Qualitätsmanagementsystem ISO 9001:2008 und ISO 14000:2004 zertifiziert und verfügt über das IPPC-Zertifikat (Integrierte Vorbeugung und Kontrolle von Umweltverschmutzung).



The Company is characterised by constant expansion and modernisation of foundry, production and manufacturing plants, increasing product quality and constant expansion of product lines, increased international cooperation, number of international projects and a rising share of foreign markets as a part of total sales. Today Metalska industrija Varaždin is company which is floating on Zagreb stock exchange. Well developed business and technical cooperation with partners from Europe and around the globe have additionally boosted the quality of the Company which has developed into a reliable and recognisable business partner.

QUALITY AND RELIABILITY

MIV has a Certificate of Production Process Control in accordance with ISO 9001:2008 and ISO 14001:2004, PED 97/23/EC and IPPC (Integrated Pollution Prevention and Control) as well as environmental permits.

POVIJEST GESCHICHTE HISTORY



- 1939. - otvorena prva ljevaonica u Varaždinu
- 1954. - početak proizvodnje armatura
- 1992. - dioničko društvo
- 2000. - MIV d.d. privatizacija i kotacija na burzi
- 2007. - promjena vlasništva

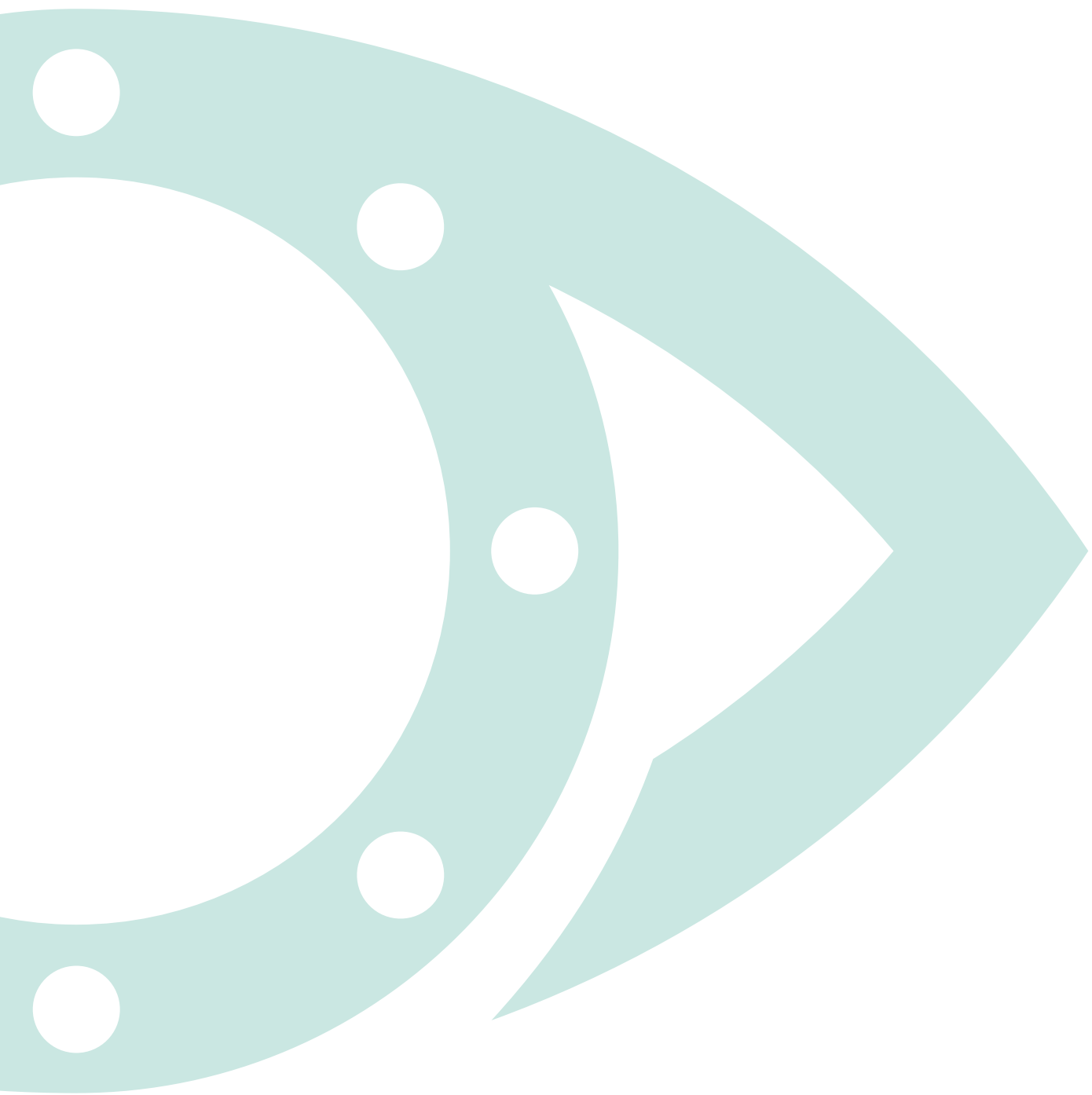
Od 2007. godine do danas MIV d.d. (Hrvatska, EU) neprestano radi na 3R projektu (racionalizacija, reorganizacija i restrukturiranje) i Lean Manufacturing

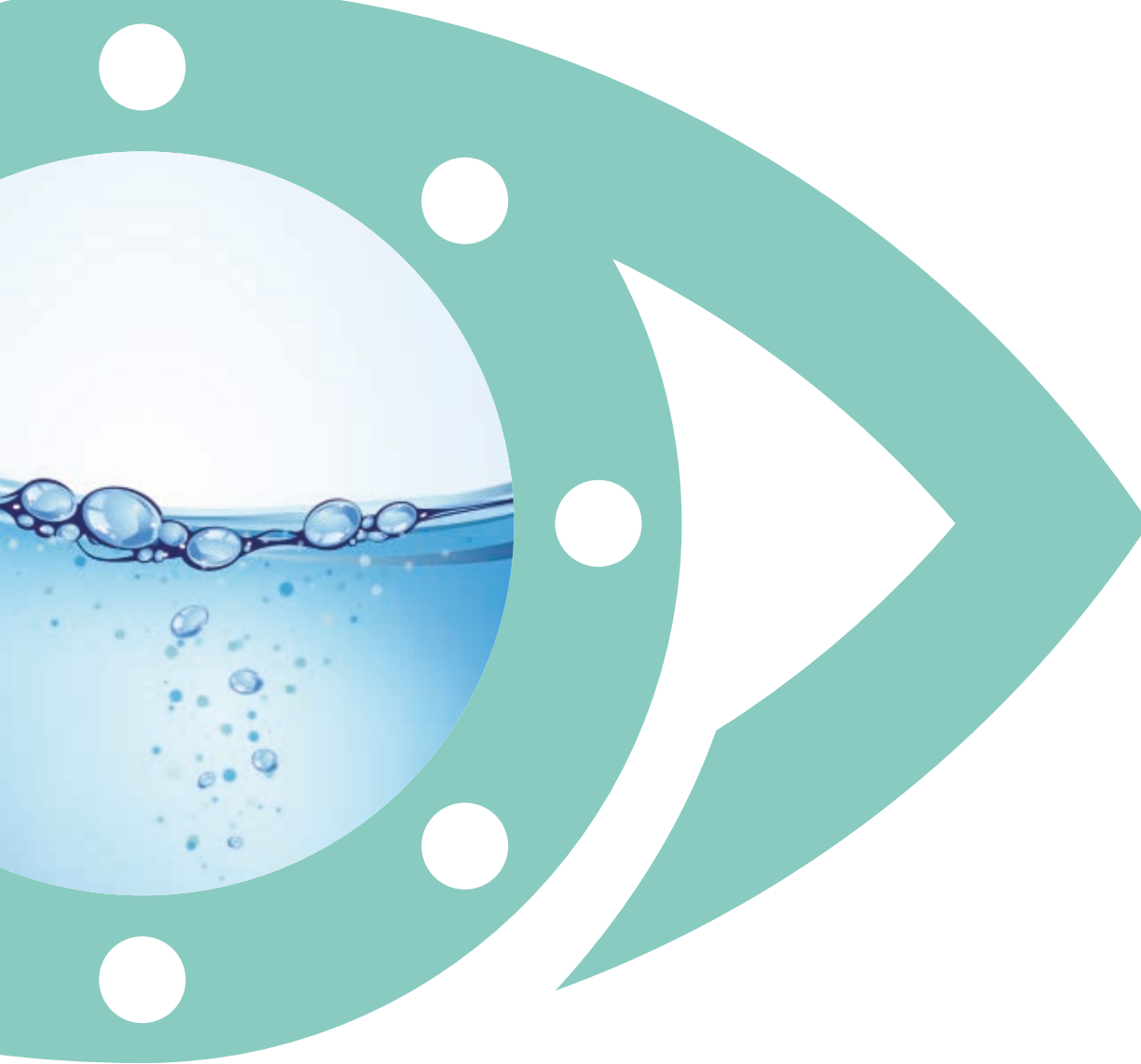
- 1939 - Giesserei Varaždin, Kroatiens erste Eisengiesserei wurde gegründet
- 1954 - Die Armaturenproduktion begann
- 1992 - Aktiengesellschaft umgewandelt
- 2000 - Privatisiert und an der Börse eingeführt
- 2007 - Eigentümerwechsel

Von 2007 bis heute MIV d.d. (Kroatien, die EU) kontinuierliches arbeiten an dem 3R Projekten (Restrukturierung, Rationalisierung, Reorganisation) und Lean Manufacturing

- 1939 - Foundry Varaždin, Varaždin's (Croatia's) first iron foundry, opens for business
- 1954 - valve production starts
- 1992 - joint-stock company
- 2000 - privatised and floated on the stock exchange
- 2007 - ownership changes

From 2007 to today MIV d.d. (Croatia, EU) has been working hard on the 3R Project (Restructuring, Rationalisation and Reorganization) and Lean Manufacturing





PRINCIPI

Povjerenje, uvažavanje, poštenje, razumijevanje, transparentnost, profesionalnost i zakonitost.

VIZIJA

Postati neizostavna tvrtka kupcima u Europi i svijetu za kupnju proizvoda iz spektra armatura i fazona za vodovodne i kanalizacijske sustave, te sustave za energetiku, inzistirajući na permanentnoj kvaliteti procesa i proizvoda, koristeći se pritom znanjem i inovativnošću.

MISIJA

Voditi se načelima poslovne i društvene odgovornosti te održivog razvoja koristeći se pritom svojim znanjima, iskustvima i novim tehnologijama kako bismo u proizvodni proces, uz tradiciju, utkali inovativnost i time postati prepoznatljivi na tržištu nudeći kvalitetan proizvod našim kupcima.

PRINZIPIEN

Vertrauen, Respekt, Verständnis, Ehrlichkeit, Transparenz, Professionalität und Legalität.

VISION

Das Unternehmen zu einem unverzichtbaren Zulieferer qualitativ hochwertiger Armaturen und Formstücke, für den Bau von Wasser- und Abwassersystemen, Systemen für die Energie- und Verarbeitungsindustrie, für Kunden in Europa und weltweit heranwachsen zu lassen.

MISSION

Als Unternehmen, welches nach den Prinzipien der Wirtschaft und der sozialen Verantwortung, sowie einer nachhaltigen Entwicklung, geführt wird, nutzt MIV d.d. seine Kenntnisse, Erfahrungen und neue Technologien, um Innovation und traditionelle Produktions- und Fertigungsprozesse zu verbinden, hierdurch seine Marktposition zu festigen und seinen Kunden, beständig qualitativ hochwertige Produkte anzubieten.

PRINCIPLES

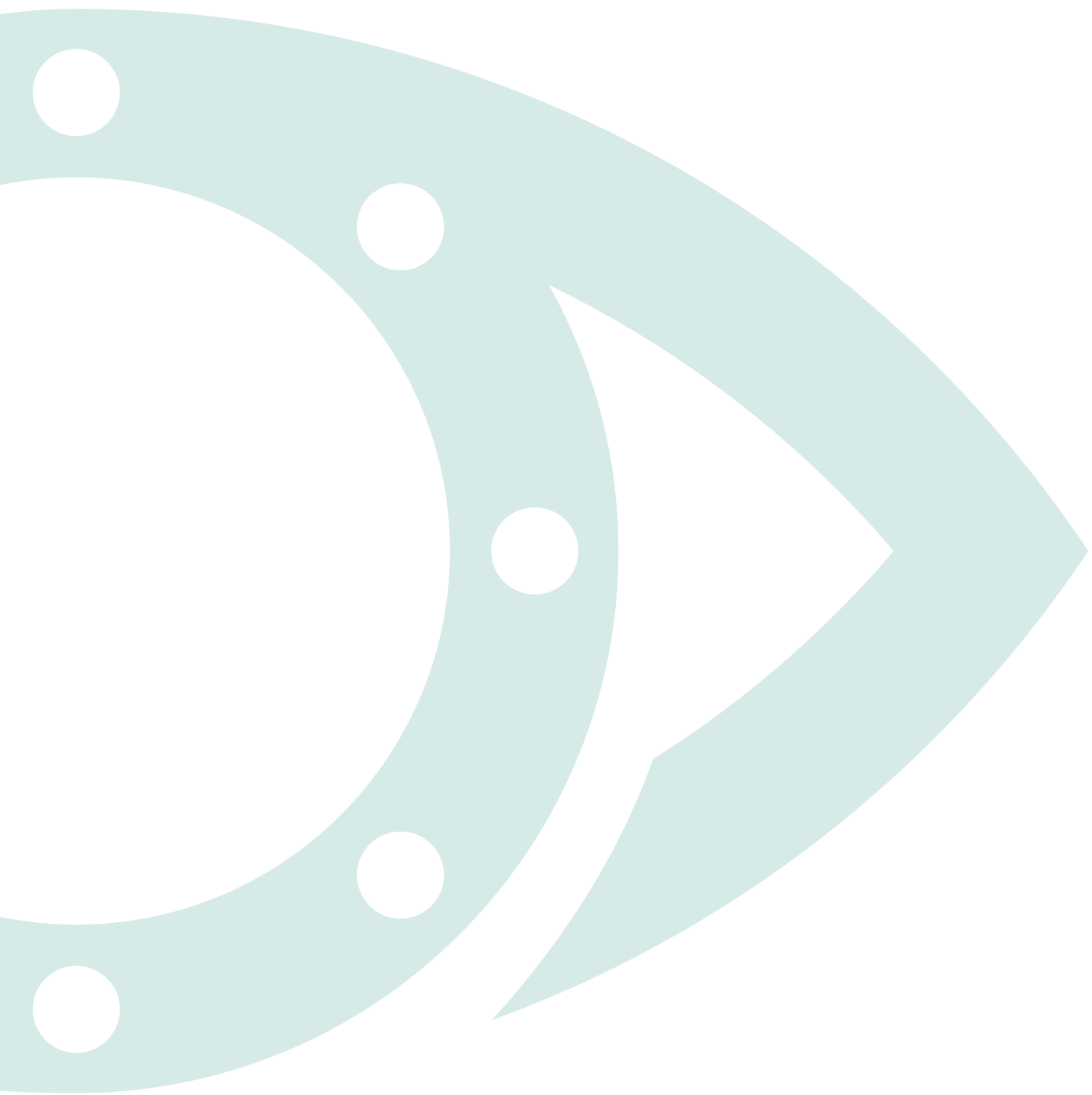
Trust, Respect, Honesty, Understanding, Transparency, Professionalism and Legality

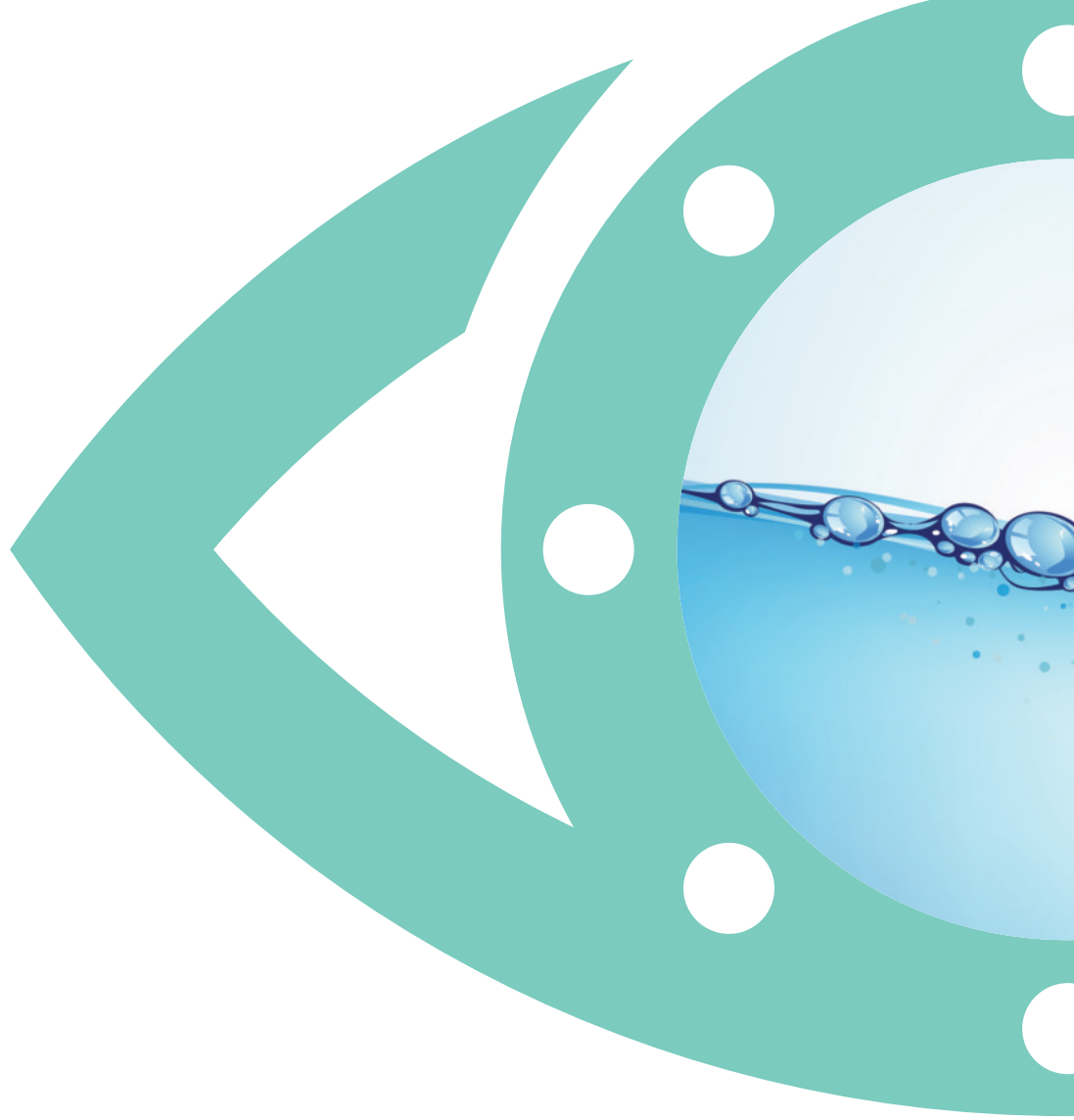
VISION

To become an indispensable company for customers in Europe and around the world. To produce high-quality products of valves and fittings for the construction of water and sewage systems, systems for energy, insisting on a permanent quality of processes and products, using the knowledge and innovation.

MISSION

As a company led by principles of business and social responsibility as well as sustainable development, MIV d.d. uses its knowledge, experience and new technologies to add innovation to traditional production and manufacturing processes, thereby become even more recognizable on the market and offering customers high-quality products.





OD IDEJE DO GOTOVOG PROIZVODA

VON DER IDEE BIS ZUM FERTIGEN PRODUKT

FROM AN IDEA TO THE FINISHED PRODUCT

OD IDEJE DO GOTOVOG PROIZVODA

VON DER IDEE BIS ZUM FERTIGEN PRODUKT

FROM AN IDEA TO THE FINISHED PRODUCT

1. ISTRŽIVANJE I RAZVOJ
ENTWICKLUNG UND DESIGN
DESIGN AND DEVELOPMENT

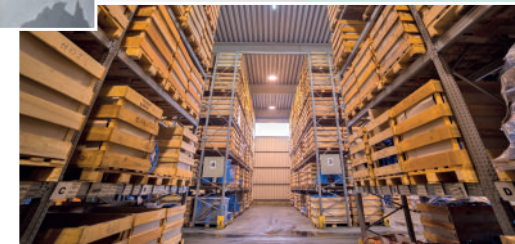


10. PRODAJA - stalan rast prodaje i izvoz u više od 40 zemalja svijeta
VERKAUF
Vertriebsexpansion und Ausfuhr in mehr als 40 Länder weltweit
SALES to more than 40 countries worldwide

2. RADIONICA ZA IZRADU MODELA
AUSARBEITUNG UND FERTIGUNG VON MODELLEN
PATTERN MACHINING & WORKSHOP



9. SKLADIŠTE
LAGER
WAREHOUSE



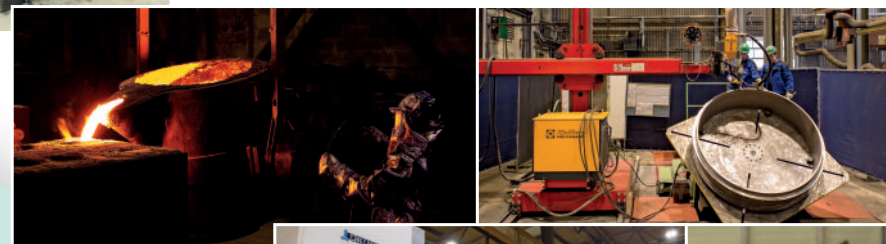
3. PRIPREMA MODELA ZA LIJEVANJE
MODELL FÜR GIESEN
MOLD PREPARATION FOR CASTING



8. PAKIRANJE - IPPC palete
VERPACKUNG UND VERSAND - IPPC Paletten
PACKING - IPPC treated pallets



4. LJEVAONICA I ZAVARENE KONSTRUKCIJE
GIESSEREI UND SCHWEISSKONSTRUKTIONEN
FOUNDRY & WELDING DEPARTMENT



7. MONTAŽA I TESTIRANJE
MONTAGE UND PRÜFSTATION
ASSEMBLING AND TESTING



5. STROJNA OBRADA - CNC strojevi
MASCHINELLE BEARBEITUNG
CNC Bearbeitungszentren
PRODUCTION - CNC technology



6. POVRŠINSKA ZAŠTITA - WRAS certifikat
OBERFLÄCHENSCHUTZ - WRAS Zertifikate
COATING - WRAS certificate



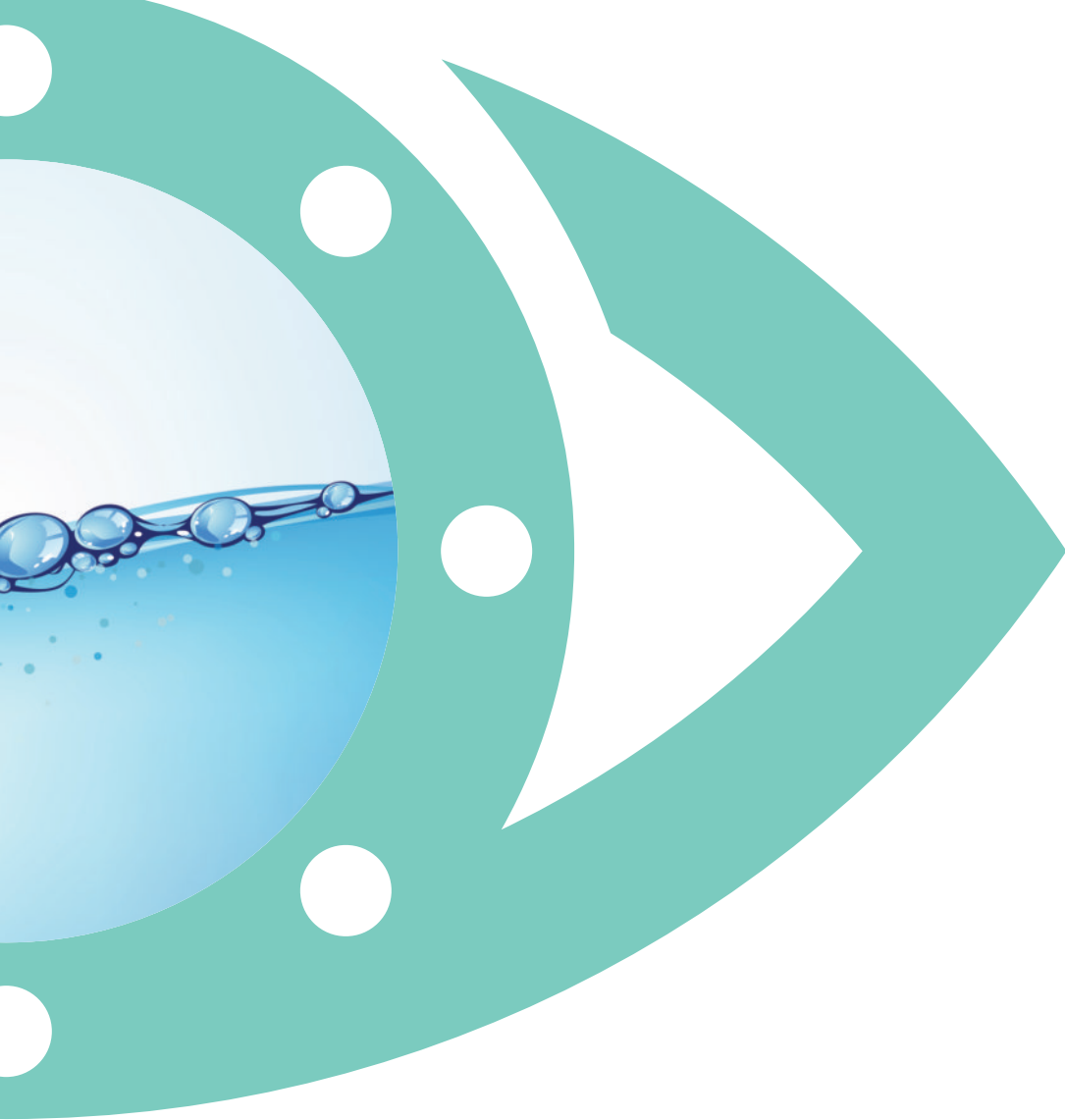
Rijetko se koja tvrtka može pohvaliti činjenicom da zastupa sve segmente proizvodnje, od projektiranja, izrade prototipa, lijevanja, obrade odvajanjem čestica, zavarivanja, do površinske zaštite, montaže i ispitivanja proizvedenih dijelova. MIV d.d. jedna je od rijetkih tvrtki koja na istom mjestu ima i ljevaonicu i pogon za strojnu obradu.

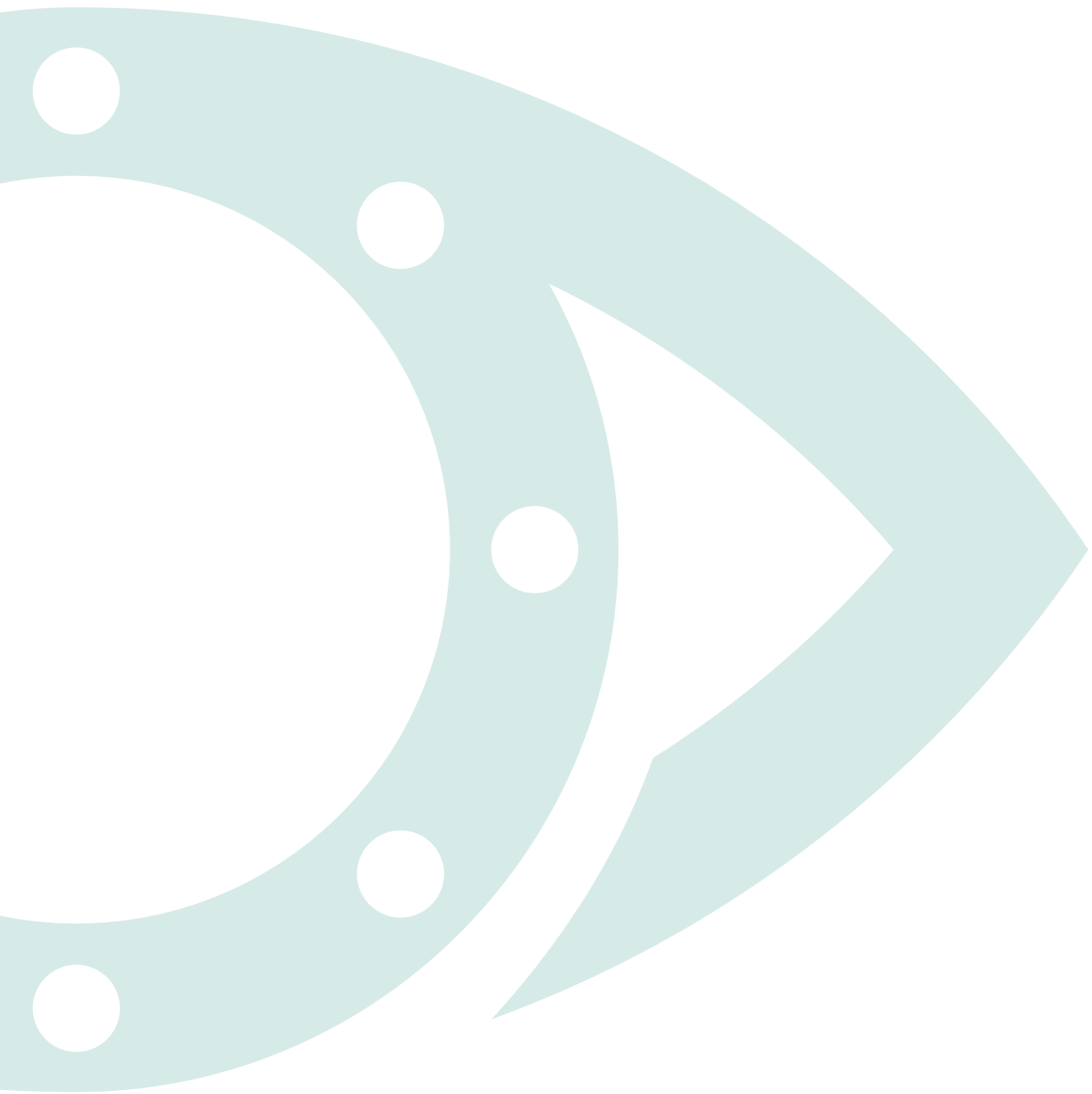


Selten kann ein Unternehmen damit werben, dass es alle Segmente der Fertigung unter einem Dach vereint. MIV verfügt über eine eigene Projektteilung, Prototypenfertigung, Gießerei, maschinelle Bearbeitung, Schweißabteilungen, verschiedene Anlagen für den Oberflächenschutz, Montage, und einer Qualitätskontrolle für halbfertige und fertige Produkte.



Not many companies today have the capacity to represent all segments of the production process, from design, prototype making, casting, machining, welding, surface protection to assembling and testing of manufactured products. MIV is one of few European companies featuring design facilities, a foundry and a machine processing plant at the same location.





KAZALO

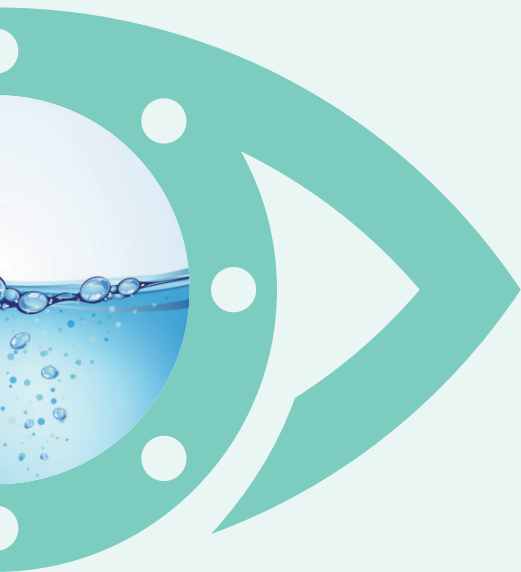
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FAZONSKI KOMADI S PRIRUBNICOM I CIJEVI
FORMSTÜCKE MIT FLANSCHEN UND ROHRE
FITTINGS WITH FLANGES AND PIPES



MIV



Metalska industrija Varaždin d.d.





SPOJNI KOMAD S PRIRUBNICOM
EINFLANSCHSTÜCKE
FLANGED SPIGOT PIECES

F

Art N°
701

Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015

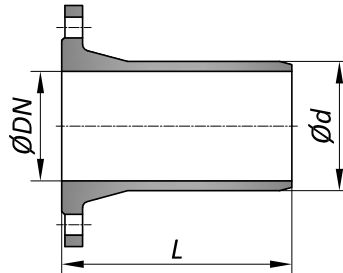
Standard beschichtung: Pulverbeschichted min. 250 mic RAL 5015

Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015

Prirubnice prema EN 1092-2 ili na zahtjev prema ostalim standardima.

Einbauflandsche nach EN 1092-2 oder auf Anfrage nach andere Standard.

Flanges according to EN 1092-2 or on request according to other standard.



EN 545



RAL GSK
 GSK-ID: 1238



| Nazivni promjer Nennweite Nominal size DN | L | d | Masa Gewicht Weight (kg) | |
|--------------------------------------------------------|-----|------|---------------------------------------|-------|
| | | | PN 10 | PN 16 |
| 40 | 335 | 56 | 6 | |
| 50 | 340 | 66 | 7,5 | |
| 60 | 345 | 77 | 7,6 | |
| 65 | 345 | 82 | 7,6 | |
| 80 | 350 | 98 | 7,8 | |
| 100 | 360 | 118 | 9,7 | |
| 125 | 370 | 144 | 12,5 | |
| 150 | 380 | 170 | 15,8 | |
| 200 | 400 | 222 | 22,8 | |
| 250 | 420 | 274 | 31,8 | 35,8 |
| 300 | 440 | 326 | 43,3 | 47,7 |
| 350 | 460 | 378 | 52,3 | 55,3 |
| 400 | 480 | 429 | 64,3 | 70,3 |
| 450 | 500 | 480 | 82,1 | 92,3 |
| 500 | 520 | 532 | 93,9 | 108,9 |
| 600 | 560 | 635 | 135 | 159 |
| 700 | 600 | 738 | 179 | 198 |
| 800 | 600 | 842 | 239 | 250 |
| 900 | 600 | 945 | 287 | 298 |
| 1000 | 600 | 1048 | 354 | 376 |
| 1100 | 600 | 1152 | 400 | 435 |
| 1200 | 600 | 1255 | 469 | 526 |

Q 90°

LUČNI KOMAD S PRIRUBNICAMA FLANSCHENKRÜMMER DOUBLE FLANGED BENDS

Art N°
713

Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015

Standard beschichtung: Pulverbeschichted min. 250 mic RAL 5015

Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015

Prirubnice prema EN 1092-2 ili na zahtjev prema ostalim standardima.

Einbauf lansche nach EN 1092-2 oder auf Anfrage nach andere Standard.

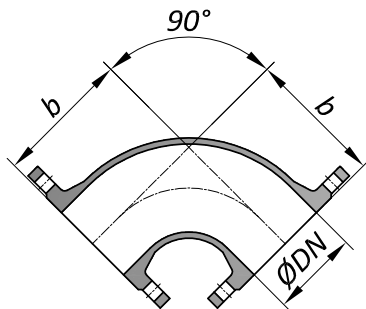
Flanges according to EN 1092-2 or on request according to other standard.



EN 545



RAL GSK
GSK-ID: 1238



| Nazivni promjer Nennweite Nominal size DN | b | Masa Gewicht Weight (kg) | |
|--------------------------------------------------------|-----|---------------------------------------|-------|
| | | PN 10 | PN 16 |
| 50 | 150 | 6,5 | |
| 60 | 160 | 7,3 | |
| 65 | 165 | 8,2 | |
| 80 | 165 | 9,5 | |
| 100 | 180 | 11,9 | |
| 125 | 200 | 15,6 | |
| 150 | 220 | 20,5 | |
| 200 | 260 | 31 | 30,5 |
| 250 | 350 | 50 | 49 |
| 300 | 400 | 70 | 69,5 |
| 350 | 450 | 90,5 | 96 |
| 400 | 500 | 116,5 | 126 |
| 450 | 550 | 168 | 172 |
| 500 | 600 | 184 | 212 |
| 600 | 700 | 276 | 326 |
| 700 | 800 | 394 | 420 |
| 800 | 900 | 540 | 578 |

LUČNI KOMAD SA STOPALOM
FLANSCHENKRÜMMER
DOUBLE FLANGED BENDS

N 90°

Art N°
714

Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015

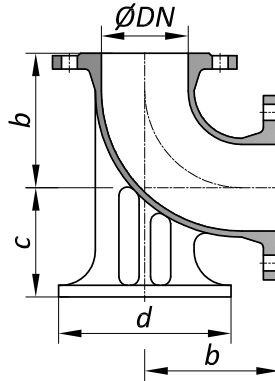
Standard beschichtung: Pulverbeschichted min. 250 mic RAL 5015

Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015

Prirubnice prema EN 1092-2 ili na zahtjev prema ostalim standardima.

Einbaufansche nach EN 1092-2 oder auf Anfrage nach andere Standard.

Flanges according to EN 1092-2 or on request according to other standard.



EN 545



RAL GSK
GSK-ID: 1238



| Nazivni promjer Nennweite Nominal size DN | b | c | d | Masa Gewicht Weight (kg) | |
|--------------------------------------------------------|-----|-----|-----|---------------------------------------|-------|
| | | | | PN 10 | PN 16 |
| | | | | 50 | 150 |
| 65 | 165 | 100 | 165 | 11,5 | |
| 80 | 165 | 110 | 180 | 13 | |
| 100 | 180 | 125 | 200 | 16,8 | |
| 125 | 200 | 140 | 225 | 22 | |
| 150 | 220 | 160 | 250 | 29,5 | |
| 200 | 260 | 190 | 300 | 46 | 45,5 |
| 250 | 350 | 225 | 350 | 73,5 | 72,5 |
| 300 | 400 | 255 | 400 | 104 | 103 |
| 350 | 450 | 290 | 450 | 137 | 142 |
| 400 | 500 | 320 | 500 | 178 | 187 |
| 450 | 550 | 355 | 550 | 235 | 259 |
| 500 | 600 | 385 | 600 | 286 | 314 |
| 600 | 700 | 450 | 700 | 432 | 482 |

FFK 45°

LUČNI KOMAD 1/8 S PRIRUBNICAMA
 FLANSCHBOGENSTÜCKE 1/8
 DOUBLE FLANGED 1/8 BENDS

Art N°
 715

Standardna površinska zaščita: plastificirano min. 250 mic RAL 5015

Standard beschichtung: Pulverbeschichtet min. 250 mic RAL 5015

Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015

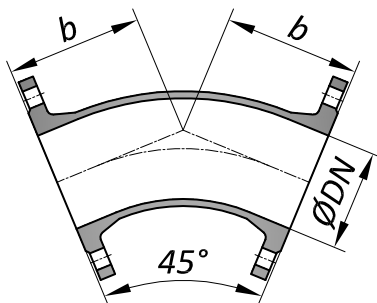
Prirubnice prema EN 1092-2 ili na zahtjev prema ostalim standardima.
 Einbaufansche nach EN 1092-2 oder auf Anfrage nach andere Standard.
 Flanges according to EN 1092-2 or on request according to other standard.



EN 545



RAL GSK
 GSK-ID: 1238



| Nazivni promjer Nennweite Nominal size DN | b | Masa Gewicht Weight (kg) | |
|--------------------------------------------------------|-----|---------------------------------------|-------|
| | | PN 10 | PN 16 |
| 50 | 150 | 8 | |
| 60 | 160 | 8,2 | |
| 65 | 165 | 8,7 | |
| 80 | 130 | 9,1 | |
| 100 | 140 | 11,4 | |
| 125 | 150 | 14,6 | |
| 150 | 160 | 18,7 | |
| 200 | 180 | 27,5 | 27 |
| 250 | 350 | 55 | 54 |
| 300 | 400 | 78 | 82 |
| 350 | 298 | 77 | 82,5 |
| 400 | 324 | 96 | 112 |
| 450 | 350 | 121 | 145 |
| 500 | 375 | 145 | 180 |
| 600 | 426 | 212 | 270 |
| 700 | 478 | 293 | 326 |
| 800 | 529 | 403 | 448 |

LUČNI KOMAD 1/12 S PRIRUBNICAMA
FLANSCHBOGENSTÜCKE 1/12
DOUBLE FLANGED 1/12 BENDS

FFK 30°

Art N°
816

Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015

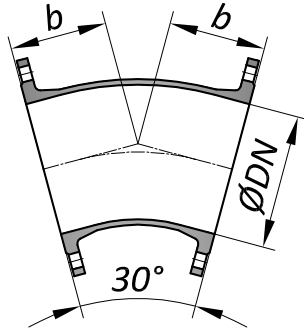
Standard beschichtung: Pulverbeschichted min. 250 mic RAL 5015

Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015

Prirubnice prema EN 1092-2 ili na zahtjev prema ostalim standardima.

Einbauflapsche nach EN 1092-2 oder auf Anfrage nach andere Standard.

Flanges according to EN 1092-2 or on request according to other standard.



EN 545



RAL GSK
GSK-ID: 1238



| Nazivni promjer Nennweite Nominal size DN | b | Masa Gewicht Weight (kg) | |
|--------------------------------------------------------|-----|---------------------------------------|-------|
| | | PN 10 | PN 16 |
| | | 50 | 150 |
| 65 | 165 | 9,1 | |
| 80 | 130 | 9,5 | |
| 100 | 140 | 12 | |
| 125 | 150 | 15 | |
| 150 | 160 | 19,5 | |
| 200 | 180 | 29 | 28,5 |
| 250 | 210 | 41,5 | 40,5 |
| 300 | 255 | 59,5 | 59 |
| 350 | 165 | 65 | 71 |
| 400 | 183 | 73 | 82,5 |
| 500 | 220 | 109 | 137 |
| 600 | 309 | 212 | 257 |
| 700 | 346 | 360 | 386 |
| 800 | 383 | 493 | 529 |

FFK 22 1/2°

LUČNI KOMAD 1/16 S PRIRUBNICAMA
FLANSCHBOGENSTÜCKE 1/16
DOUBLE FLANGED 1/16 BENDS

Art N°
817

Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015

Standard beschichtung: Pulverbeschichtet min. 250 mic RAL 5015

Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015

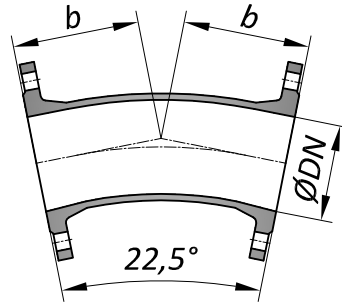
Prirubnice prema EN 1092-2 ili na zahtjev prema ostalim standardima.
Einbaufansche nach EN 1092-2 oder auf Anfrage nach andere Standard.
Flanges according to EN 1092-2 or on request according to other standard.



EN 545



RAL GSK
 GSK-ID: 1238



| Nazivni promjer Nennweite Nominal size DN | b | Masa Gewicht Weight (kg) | |
|--------------------------------------------------------|-----|---------------------------------------|-------|
| | | PN 10 | PN 16 |
| 50 | 150 | 9 | |
| 65 | 165 | 12 | |
| 80 | 130 | 9,5 | |
| 100 | 140 | 12 | |
| 125 | 150 | 15,5 | |
| 150 | 160 | 20 | |
| 200 | 180 | 29 | 27,5 |
| 250 | 210 | 41,5 | 41 |
| 300 | 255 | 60 | 59 |
| 350 | 140 | 58 | 64 |
| 400 | 153 | 67 | 75,5 |
| 500 | 185 | 99 | 127 |
| 600 | 254 | 182 | 227 |
| 700 | 284 | 313 | 339 |
| 800 | 314 | 428 | 464 |

LUČNI KOMAD 1/32 S PRIRUBNICAMA
FLANSCHBOGENSTÜCKE 1/32
DOUBLE FLANGED 1/32 BENDS

FFK 111/4°

Art N°
818

Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015

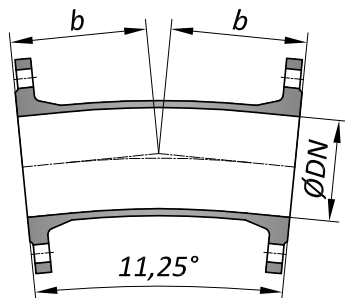
Standard beschichtung: Pulverbeschichted min. 250 mic RAL 5015

Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015

Prirubnice prema EN 1092-2 ili na zahtjev prema ostalim standardima.

Einbaufansche nach EN 1092-2 oder auf Anfrage nach andere Standard.

Flanges according to EN 1092-2 or on request according to other standard.



EN 545



RAL GSK
GSK-ID: 1238



| Nazivni promjer Nennweite Nominal size DN | b | Masa Gewicht Weight (kg) | |
|--------------------------------------------------------|-----|---------------------------------------|-------|
| | | N 10 | PN 16 |
| 50 | 150 | 9 | |
| 65 | 165 | 12 | |
| 80 | 130 | 9,5 | |
| 100 | 140 | 12 | |
| 125 | 150 | 15,5 | |
| 150 | 160 | 20 | |
| 200 | 180 | 26 | 25 |
| 250 | 210 | 41,5 | 41 |
| 300 | 255 | 60 | 59,5 |
| 350 | 105 | 56 | 61,5 |
| 400 | 113 | 58 | 67,5 |
| 500 | 135 | 85 | 113 |
| 600 | 174 | 157 | 202 |
| 700 | 194 | 243 | 269 |
| 800 | 213 | 330 | 366 |

T

OTCJEPNI KOMAD S PRIRUBNICAMA

T-STÜCKE

ALL FLANGED TEES

Art N°
719

Standardna površinska zaščita: plastificirano min. 250 mic RAL 5015
Standard beschichtung: Pulverbeschichted min. 250 mic RAL 5015
Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015

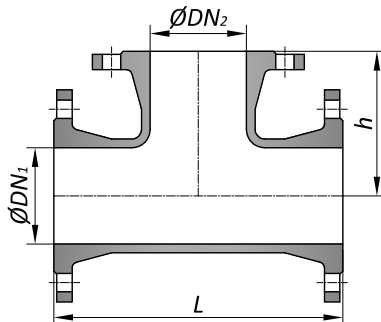
Prirubnice prema EN 1092-2 ili na zahtjev prema ostalim standardima.
Einbaufansche nach EN 1092-2 oder auf Anfrage nach andere Standard.
Flanges according to EN 1092-2 or on request according to other standard.



EN 545



RAL GSK
GSK-ID: 1238



| Nazivni promjer Nennweite Nominal size | | L | h | Masa Gewicht Weight (kg) | |
|----------------------------------------------|-----------------|-----|-----|-----------------------------------|-------|
| DN ₁ | DN ₂ | | | PN 10 | PN 16 |
| 50 | 50 | 300 | 150 | 10,4 | |
| 60 | 50 | 320 | 150 | 10,6 | |
| | 60 | 320 | 160 | 11,5 | |
| 65 | 65 | 330 | 165 | 13,3 | |
| 80 | 50 | 330 | 160 | 13,6 | |
| | 60 | 330 | 160 | 14,6 | |
| | 65 | 330 | 160 | 15 | |
| | 80 | 330 | 165 | 15,4 | |
| 100 | 50 | 360 | 170 | 16,6 | |
| | 60 | 360 | 170 | 17,6 | |
| | 65 | 360 | 170 | 17,9 | |
| | 80 | 360 | 175 | 18,4 | |
| | 100 | 360 | 180 | 19,4 | |
| 125 | 50 | 400 | 185 | 20,6 | |
| | 60 | 400 | 185 | 21 | |
| | 80 | 400 | 190 | 23 | |
| | 100 | 400 | 195 | 24 | |
| | 125 | 400 | 200 | 25,5 | |

OTCJEPNI KOMAD S PRIRUBNICAMA
T-STÜCKE
ALL FLANGED TEES

T

Art N°
719



EN 545



RAL GSK
 GSK-ID: 1238



| Nazivni promjer Nennweite Nominal size | | L | h | Masa Gewicht Weight | |
|----------------------------------------------|-----------------|------|-----|---------------------------|-------|
| | | | | (kg) | |
| DN ₁ | DN ₂ | | | PN 10 | PN 16 |
| 150 | 50 | 440 | 200 | 27,5 | |
| | 60 | 440 | 200 | 29 | |
| | 80 | 440 | 205 | 28,5 | |
| | 100 | 440 | 210 | 29,5 | |
| | 125 | 440 | 215 | 31,0 | |
| | 150 | 440 | 220 | 32,0 | |
| 200 | 50 | 520 | 230 | 40,7 | |
| | 60 | 520 | 235 | 41,5 | |
| | 80 | 520 | 235 | 42,0 | |
| | 100 | 520 | 240 | 43,0 | |
| | 150 | 520 | 250 | 46,5 | |
| | 200 | 520 | 260 | 50,0 | |
| 250 | 80 | 700 | 265 | 67,5 | |
| | 100 | 700 | 275 | 68,0 | |
| | 150 | 700 | 300 | 81,0 | |
| | 200 | 700 | 325 | 76,5 | 75,5 |
| | 250 | 700 | 350 | 83,0 | 82,0 |
| 300 | 80 | 800 | 290 | 93,5 | 92,5 |
| | 100 | 800 | 300 | 94,0 | 93 |
| | 150 | 800 | 325 | 101 | 100 |
| | 200 | 800 | 350 | 102 | 101 |
| | 250 | 800 | 375 | 114 | 103 |
| | 300 | 800 | 400 | 117 | 115 |
| 350 | 100 | 850 | 325 | 117 | 122 |
| | 200 | 850 | 325 | 122 | 128 |
| | 350 | 850 | 425 | 144 | 152 |
| 400 | 100 | 900 | 350 | 144 | 154 |
| | 200 | 900 | 350 | 150 | 159 |
| | 400 | 900 | 450 | 177 | 191 |
| 500 | 100 | 1000 | 400 | 213 | 242 |
| | 200 | 1000 | 400 | 218 | 247 |
| | 300 | 1000 | 500 | 227 | 265 |
| | 400 | 1000 | 500 | 244 | 277 |
| | 500 | 1000 | 500 | 256 | 298 |

T

OTCJEPNI KOMAD S PRIRUBNICAMA
T-STÜCKE
ALL FLANGED TEES

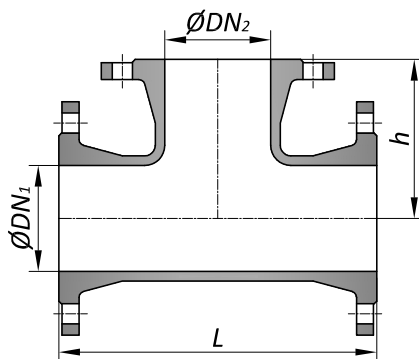
Art N°
719



EN 545



RAI GSK
GSK-ID: 1238



| Nazivni promjer Nennweite Nominal size | | L | h | Masa Gewicht Weight (kg) | |
|----------------------------------------------|-----------------|------|-----|-----------------------------------|-------|
| DN ₁ | DN ₂ | | | PN 10 | PN 16 |
| 600 | 200 | 1100 | 450 | 309 | 359 |
| | 300 | 1100 | 550 | 321 | 375 |
| | 400 | 1100 | 550 | 334 | 389 |
| | 500 | 1100 | 550 | 351 | 412 |
| | 600 | 1100 | 550 | 361 | 435 |
| 700 | 200 | 650 | 525 | 285 | 462 |
| | 400 | 870 | 555 | 366 | 492 |
| | 700 | 1200 | 600 | 510 | 601 |
| 800 | 200 | 690 | 585 | 370 | 408 |
| | 400 | 910 | 615 | 461 | 505 |
| | 600 | 1350 | 645 | 610 | 670 |
| | 800 | 1350 | 675 | 671 | 729 |
| 900 | 200 | 730 | 645 | 432 | 477 |
| | 400 | 950 | 675 | 564 | 617 |
| | 600 | 1500 | 705 | 798 | 866 |
| | 900 | 1500 | 750 | 867 | 939 |
| 1000 | 200 | 770 | 705 | 568 | 651 |
| | 400 | 990 | 735 | 694 | 782 |
| | 600 | 1650 | 765 | 1050 | 1159 |
| | 1000 | 1650 | 825 | 1110 | 1243 |
| 1200 | 600 | 1240 | 885 | 1124 | 1242 |
| | 1000 | 1700 | 945 | 1674 | 1779 |

ZAVRŠNICI ZA PRIRUBNICU
BLINDFLANSCH
BLANK FLANGES

X

Art N°
720

Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015

Standard beschichtung: Pulverbeschichted min. 250 mic RAL 5015

Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015

Prirubnice prema EN 1092-2 ili na zahtjev prema ostalim standardima.

Einbauf lansche nach EN 1092-2 oder auf Anfrage nach andere Standard.

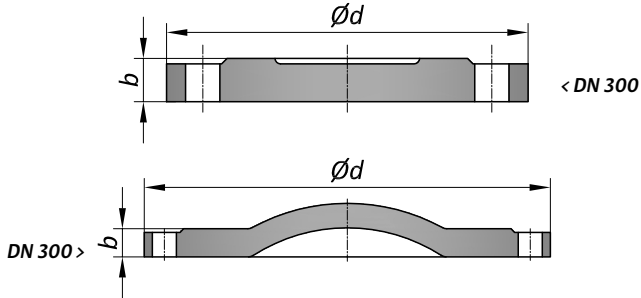
Flanges according to EN 1092-2 or on request according to other standard.

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EN 545



RAL GSK
GSK-ID: 1238



| Nazivni promjer Nennweite Nominal size Nominal size | b | | d | | Masa Gewicht Weight (kg) | |
|--------------------------------------------------------------|-------|-------|-------|-------|-----------------------------------|-------|
| | PN 10 | PN 16 | PN 10 | PN 16 | PN 10 | PN 16 |
| 60 | 19 | | 175 | | 2,7 | |
| 80 | 19 | | 200 | | 3,6 | |
| 100 | 19 | | 220 | | 4,3 | |
| 125 | 19 | | 250 | | 5,6 | |
| 150 | 19 | | 285 | | 7,2 | |
| 200 | 20 | | 340 | | 11,4 | 11,2 |
| 250 | 22 | | 400 | | 16,9 | 16,6 |
| 300 | 24,5 | | 455 | | 26 | 25,5 |
| 350 | 24,5 | 26,5 | 505 | 520 | 30,5 | 34,5 |
| 400 | 24,5 | 28 | 565 | 580 | 38 | 46 |
| 450 | 25,5 | 30 | 615 | 640 | 54 | 64 |
| 500 | 26,5 | 31,5 | 670 | 715 | 56 | 79 |
| 600 | 30 | 36 | 780 | 840 | 86 | 123 |
| 700 | 32,5 | 39,5 | 895 | 910 | 147 | 179 |
| 800 | 35 | 43 | 1015 | 1025 | 207 | 252 |
| 900 | 37,5 | 46,5 | 1115 | 1125 | 273 | 335 |
| 1000 | 40 | 50 | 1230 | 1255 | 302 | 437 |
| 1200 | 45 | 57 | 1455 | 1485 | 476 | 709 |

TT

KRIŽNI KOMAD S PRIRUBNICAMA KREUZFLANSCHENSTÜCKE ALL FLANGED CROSSES

Art №
721

Standardna površinska zaščita: plastificirano min. 250 mic RAL 5015
Standard beschichtung: Pulverbeschichted min. 250 mic RAL 5015
Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015

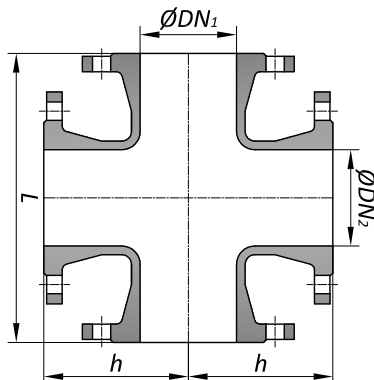
Prirubnice prema EN 1092-2 ili na zahtjev prema ostalim standardima.
Einbauf lansche nach EN 1092-2 oder auf Anfrage nach andere Standard.
Flanges according to EN 1092-2 or on request according to other standard.



EN 545



RAL GSK
GSK-ID: 1238



| Nazivni promjer Nennweite Nominal size | | L | h | Masa Gewicht Weight (kg) | |
|----------------------------------------------|-----------------|------|-----|-----------------------------------|-------|
| DN ₁ | DN ₂ | | | PN 10 | PN 16 |
| 80 | 80 | 7 | 165 | 20 | |
| 100 | 100 | 7,2 | 180 | 25 | |
| 150 | 150 | 7,8 | 220 | 41,5 | |
| 200 | 200 | 8,4 | 260 | 62,5 | 62 |
| 250 | 250 | 9 | 350 | 104 | 102 |
| 300 | 300 | 9,6 | 400 | 145 | 148 |
| 350 | 350 | 10,2 | 425 | 167 | 172 |
| 400 | 400 | 10,8 | 450 | 187 | 210 |
| 500 | 500 | 14,2 | 500 | 470 | 485 |
| 600 | 600 | 15,4 | 550 | 693 | 715 |
| 700 | 700 | 16,8 | 600 | 567 | 619 |

REDUCIRANI KOMAD S PRIRUBNICAMA FLANSCHENÜBERGANGSTÜCKE DOUBLE SOCKET TAPERS

FFR

Art N°
722

Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015

Standard beschütung: Pulverbeschited min. 250 mic RAL 5015

Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015

Prirubnice prema EN 1092-2 ili na zahtjev prema ostalim standardima.

Einbaufansche nach EN 1092-2 oder auf Anfrage nach andere Standard.

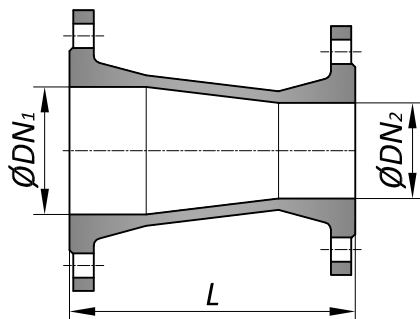
Flanges according to EN 1092-2 or on request according to other standard.



EN 545



RAL GSK
GSK-ID: 1238



| Nazivni promjer Nennweite Nominal size | | L | Masa Gewicht Weight (kg) | |
|----------------------------------------------|-----------------|-----|-----------------------------------|-------|
| DN ₁ | DN ₂ | | PN 10 | PN 16 |
| 50 | 40 | 200 | 7 | |
| 60 | 50 | 160 | 7 | |
| | 50 | 200 | 7,5 | |
| 65 | 40 | 200 | 8 | |
| | 50 | 200 | 9 | |
| 80 | 40 | 200 | 6,7 | |
| | 50 | 200 | 7,2 | |
| | 60 | 200 | 7,5 | |
| | 65 | 200 | 8,2 | |
| 100 | 50 | 200 | 8,1 | |
| | 60 | 200 | 9,2 | |
| | 65 | 200 | 8,8 | |
| | 80 | 200 | 9,3 | |
| 125 | 50 | 200 | 9,5 | |
| | 60 | 200 | 10 | |
| | 80 | 200 | 10,5 | |
| | 100 | 200 | 11,4 | |

FFR

REDUCIRANI KOMAD S PRIRUBNICAMA
 FLANSCHENÜBERGANGSTÜCKE
 DOUBLE SOCKET TAPERS

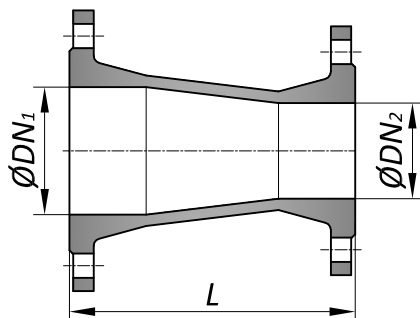
Art N°
722



EN 545



RAL GSK
GSK-ID: 1238

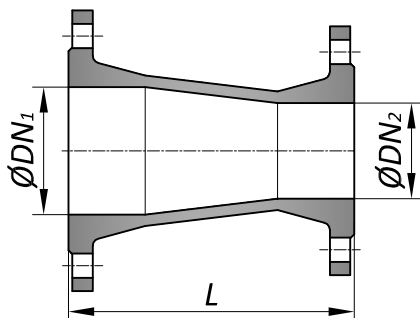


| Nazivni promjer Nennweite Nominal size | | L | Masa Gewicht Weight (kg) | |
|----------------------------------------------|-----------------|-----|-----------------------------------|-------|
| DN ₁ | DN ₂ | | PN 10 | PN 16 |
| 125 | 50 | 200 | 9,5 | |
| | 60 | 200 | 10 | |
| | 80 | 200 | 10,5 | |
| | 100 | 200 | 11,4 | |
| 150 | 50 | 200 | 11 | |
| | 60 | 200 | 11 | |
| | 80 | 200 | 12 | |
| | 100 | 200 | 12,8 | |
| 200 | 125 | 200 | 14,1 | |
| | 80 | 300 | 17,7 | |
| | 100 | 300 | 18,6 | |
| | 125 | 300 | 20 | |
| 250 | 150 | 300 | 22 | |
| | 100 | 300 | 24 | |
| | 125 | 300 | 26 | |
| | 150 | 300 | 27 | |
| 300 | 200 | 300 | 30,5 | |
| | 100 | 300 | 29,5 | |
| | 150 | 300 | 32,5 | |
| | 200 | 300 | 35,5 | |
| 350 | 250 | 300 | 41,0 | |
| | 200 | 300 | 45 | 47 |
| | 250 | 300 | 45 | 47,5 |
| | 300 | 300 | 50 | 52,5 |

REDUCIRANI KOMAD S PRIRUBNICAMA
 FLANSCHENÜBERGANGSTÜCKE
 DOUBLE SOCKET TAPERS

FFR

Art N°
 722



EN 545



RAL GSK
 GSK-ID: 1238



| Nazivni promjer Nennweite Nominal size | | L | Masa Gewicht Weight (kg) | |
|----------------------------------------------|-----------------|-----|-----------------------------------|-------|
| DN ₁ | DN ₂ | | PN 10 | PN 16 |
| 400 | 250 | 300 | 50,5 | 55 |
| | 300 | 300 | 55 | 59,5 |
| | 350 | 300 | 59,5 | 67 |
| 450 | 300 | 300 | 65 | 75 |
| | 350 | 300 | 71 | 82 |
| | 400 | 300 | 76 | 87 |
| 500 | 350 | 600 | 102 | 116 |
| | 400 | 600 | 110 | 130 |
| | 450 | 600 | 115 | 120 |
| 600 | 400 | 600 | 135 | 165 |
| | 450 | 600 | 143 | 173 |
| | 500 | 600 | 149 | 190 |
| 700 | 600 | 600 | 200 | 250 |

FFG

SPOJNI KOMAD S PRIRUBNICAMA FLANSCHSTÜCKE DOUBLE FLANGED COLLARS

Art №
727

Standardna površinska zaščita: plastificirano min. 250 mic RAL 5015

Standard beschichtung: Pulverbeschichtet min. 250 mic RAL 5015

Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015

Prirubnice prema EN 1092-2 ili na zahtjev prema ostalim standardima.

Einbauflange nach EN 1092-2 oder auf Anfrage nach andere Standard.

Flanges according to EN 1092-2 or on request according to other standard.



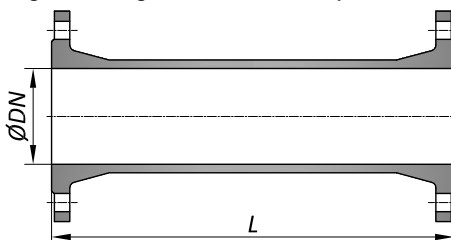
EN 545



RAL GSK
GSK-ID: 1238



PN 10



| Nazivni promjer Nennweite Nominal size | Masa Gewicht Weight | | | | | | | | |
|----------------------------------------------|---------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| | (kg) | | | | | | | | |
| | L | | | | | | | | |
| DN | 100 | 200 | 300 | 400 | 500 | 600 | 700 | 800 | 1000 |
| 40 | 4,2 | 5,0 | - | - | - | - | - | - | - |
| 50 | 5,2 | 6,1 | - | - | - | - | - | - | - |
| 65 | 6,2 | 7,4 | - | - | - | - | - | - | - |
| 80 | 7,4 | 9,1 | 10,6 | 12,3 | 13,9 | 15,5 | 17,1 | 18,7 | 21,9 |
| 100 | 8,7 | 10,7 | 12,7 | 14,8 | 16,8 | 18,9 | 20,9 | 23,0 | 27,0 |
| 125 | 10,7 | 13,3 | 15,9 | 18,6 | 21,2 | 23,9 | 26,5 | 29,1 | 34,4 |
| 150 | 13,1 | 16,3 | 19,5 | 22,8 | 26,0 | 29,3 | 32,5 | 35,7 | 42,2 |
| 200 | 18,2 | 22,8 | 27,5 | 32,1 | 36,7 | 41,3 | 45,9 | 50,5 | 59,7 |
| 250 | 26,4 | 31,5 | 37,6 | 43,7 | 49,9 | 56,0 | 62,1 | 68,3 | 80,5 |
| 300 | 33,8 | 41,6 | 49,5 | 57,3 | 65,1 | 72,9 | 80,7 | 88,5 | 104,1 |
| 350 | - | 47,3 | 57,0 | 66,6 | 76,3 | 85,9 | 95,6 | 105,2 | 124,5 |
| 400 | - | 54,3 | 65,5 | 76,6 | 87,7 | 98,9 | 110,0 | 121,1 | 143,4 |
| 450 | - | 61,3 | 72,9 | 84,5 | 96,1 | 107,7 | 119,4 | 131,0 | 154,2 |
| 500 | - | 78,1 | 94,2 | 100,3 | 126,3 | 142,4 | 148,5 | 174,5 | 206,6 |
| 600 | - | 104,3 | 125,4 | 146,6 | 167,7 | 188,8 | 209,9 | 231,1 | 273,3 |
| 700 | - | - | 158,5 | 184,3 | 210,1 | 235,9 | 261,7 | 287,6 | 339,2 |
| 800 | - | - | 206,3 | 238,4 | 270,4 | 302,5 | 334,6 | 366,7 | 430,8 |
| 900 | - | - | 235,6 | 271,1 | 306,6 | 342,1 | 377,7 | 413,2 | 484,2 |
| 1000 | - | - | 289,7 | 331,9 | 374,2 | 416,4 | 458,6 | 500,9 | 585,3 |
| 1200 | - | - | 404,1 | 458,2 | 512,2 | 566,3 | 620,3 | 674,3 | 782,4 |

SPOJNI KOMAD S PRIRUBNICAMA FLANSCHSTÜCKE DOUBLE FLANGED COLLARS

FFG

Art N°
728

Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015

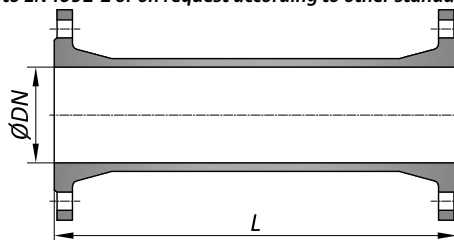
Standard beschütung: Pulverbeschited min. 250 mic RAL 5015

Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015

Prirubnice prema EN 1092-2 ili na zahtjev prema ostalim standardima.

Einbauf lansche nach EN 1092-2 oder auf Anfrage nach andere Standard.

Flanges according to EN 1092-2 or on request according to other standard.



PN 16



EN 545



RAL GSK
GSK-ID: 1238



| Nazivni promjer Nennweite Nominal size | Masa Gewicht Weight | | | | | | | | |
|----------------------------------------------|---------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| | (kg) | | | | | | | | |
| | L | | | | | | | | |
| DN | 100 | 200 | 300 | 400 | 500 | 600 | 700 | 800 | 1000 |
| 40 | 4,2 | 5,0 | - | - | - | - | - | - | - |
| 50 | 5,2 | 6,1 | - | - | - | - | - | - | - |
| 65 | 6,2 | 7,4 | - | - | - | - | - | - | - |
| 80 | 7,4 | 9,1 | 10,6 | 12,3 | 13,9 | 15,5 | 17,1 | 18,7 | 21,9 |
| 100 | 8,7 | 10,7 | 12,7 | 14,8 | 16,8 | 18,9 | 20,9 | 23,0 | 27,0 |
| 125 | 10,7 | 13,3 | 15,9 | 18,6 | 21,2 | 23,9 | 26,5 | 29,1 | 34,4 |
| 150 | 13,1 | 16,3 | 19,5 | 22,8 | 26,0 | 29,3 | 32,5 | 35,7 | 42,2 |
| 200 | 17,8 | 22,4 | 27,1 | 31,7 | 36,3 | 40,9 | 45,5 | 50,1 | 59,3 |
| 250 | 25,6 | 30,7 | 36,8 | 42,9 | 49,1 | 55,2 | 61,3 | 67,5 | 79,7 |
| 300 | 31,8 | 39,6 | 47,5 | 55,3 | 63,1 | 70,9 | 78,7 | 86,5 | 102,1 |
| 350 | - | 53,3 | 63,0 | 72,6 | 82,3 | 91,9 | 101,6 | 111,2 | 130,5 |
| 400 | - | 66,3 | 77,5 | 88,6 | 99,7 | 110,9 | 122,0 | 133,1 | 155,4 |
| 450 | - | 79,3 | 90,9 | 102,5 | 114,1 | 125,7 | 137,4 | 149,0 | 172,2 |
| 500 | - | 106,1 | 122,2 | 128,3 | 154,3 | 170,4 | 186,5 | 202,5 | 234,6 |
| 600 | - | 156,3 | 177,4 | 198,6 | 219,7 | 240,8 | 261,9 | 283,1 | 325,3 |
| 700 | - | - | 195,5 | 221,3 | 247,1 | 272,9 | 298,7 | 324,6 | 376,2 |
| 800 | - | - | 244,3 | 276,4 | 308,4 | 340,5 | 372,6 | 404,7 | 468,8 |
| 900 | - | - | 282,6 | 318,1 | 353,6 | 389,1 | 424,7 | 460,2 | 431,2 |
| 1000 | - | - | 372,7 | 414,9 | 457,2 | 499,4 | 541,6 | 583,9 | 668,3 |
| 1200 | - | - | 532,1 | 586,2 | 640,2 | 694,3 | 748,3 | 802,3 | 910,4 |

XR

Art N°
731

PRELAZNA PRIRUBNICA REDUZIERFLANSCH TAPERS FLANGES

Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015

Standard beschütung: Pulverbeschited min. 250 mic RAL 5015

Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015

*Prirubnice prema EN 1092-2 ili na zahtjev prema ostalim standardima.
Einbauf lansche nach EN 1092-2 oder auf Anfrage nach andere Standard.
Flanges according to EN 1092-2 or on request according to other standard.*

PRELAZNA PRIRUBNICA XR

Materijal:

Od nodularnog lijeva EN-GJS – DIN 1693, bitumenizirana

Vijci: galvaniski pocinčani / A2

Prelazne prirubnice XR omogućuju redukciju sa zadanog nazivnog promjera cijevi na bitno manje promjere. Neznatna ugradbena duljina osigurava redukciju nazivnog promjera na najkraćem putu. FFR fazone s uobičajnim ugradbenim duljinama otpadaju.

REDUZIERFLANSCH XR

Werkstoff:

aus Sphäroguss EN-GJS – DIN 1693, bitumisiert

Schrauben: galvanisch verzinkt / A2

Reduzierflanschen Typ XR sind Reduzierung von gegebenen Rohrennweiten auf wesentlich kleinere möglich. Die geringe Baulänge sorgt auf kürzestem Weg für den Nennweitenübergang. FFR-Stücke mit herkömmlicher Baulänge und Bauart entfallen.

REDUCING FLANGE XR

Material:

of nodular grey iron EN-GJS – DIN 1693, bitumenized

Stud bolts: galvanically zinc coated / A2

The reducing flanges XR render it possible to reduce a given pipe nominal size to an essentially smaller value. Because of the very small overall length, the reduction takes place at the shortest distance. The FFR fittings with conventional overall lengths and designs are inapplicable.

EN 545



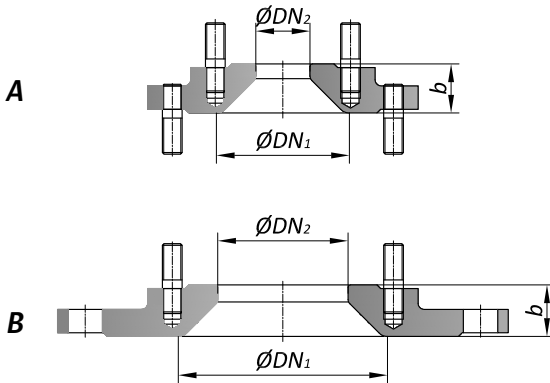
RAL GSK
GSK-ID: 1238



PRELAZNA PRIRUBNICA
REDUZIERFLANSCH
TAPERS FLANGES

XR

Art N°
731



EN 545



RAL GSK
GSK-ID: 1238



| Nazivni promjer Nennweite Nominal size DN_1 / DN_2 | Tip Typ Type | b | Masa Gewicht Weight (kg) | |
|---------------------------------------------------------------|--------------------|----|-----------------------------------|-------|
| | | | PN 10 | PN 16 |
| 60/40 | A | 46 | 5,7 | |
| 60/50 | A | 47 | 5,6 | |
| 65/50 | A | 47 | 5,6 | |
| 80/40 | A | 30 | 5,1 | |
| 80/50 | A | 28 | 5,6 | |
| 80/60 | A | 28 | 5,4 | |
| 80/65 | A | 28 | 5,4 | |
| 100/40 | A | 30 | 6,6 | |
| 100/50 | A | 27 | 6,3 | |
| 100/60 | A | 30 | 6,5 | |
| 100/65 | A | 30 | 6,5 | |
| 100/80 | A | 30 | 6,9 | |
| 125/40 | B | 30 | 8,4 | |
| 125/60 | A | 30 | 8,2 | |
| 125/65 | A | 30 | 8,2 | |
| 125/80 | A | 30 | 8,0 | |
| 125/100 | A | 30 | 7,6 | |
| 150/50 | B | 30 | 11,1 | |
| 150/60 | B | 30 | 10,8 | |
| 150/65 | B | 30 | 10,8 | |
| 150/80 | B | 30 | 10,7 | |
| 150/100 | A | 30 | 11,2 | |
| 150/125 | A | 30 | 11,2 | |

| Nazivni promjer Nennweite Nominal size DN_1 / DN_2 | Tip Typ Type | b | Masa Gewicht Weight (kg) | |
|---------------------------------------------------------------|--------------------|----|-----------------------------------|-------|
| | | | PN 10 | PN 16 |
| 200/50 | B | 30 | 14,9 | 14,8 |
| 200/60 | B | 30 | 14,8 | 14,7 |
| 200/65 | B | 30 | 14,8 | 14,7 |
| 200/80 | B | 40 | 14,7 | 14,5 |
| 200/100 | B | 40 | 15,0 | 14,9 |
| 200/125 | B | 40 | 13,7 | 13,6 |
| 200/150 | A | 32 | 16,5 | 16,6 |
| 250/50 | B | 31 | 22,3 | 22,5 |
| 250/65 | B | 31 | 22,2 | 22,4 |
| 250/80 | B | 31 | 22,1 | 22,3 |
| 250/100 | B | 31 | 21,9 | 22,2 |
| 250/125 | B | 31 | 21,5 | 22,1 |
| 250/150 | B | 31 | 20,0 | 20,7 |
| 250/200 | A | 32 | 21,3 | 21,6 |
| 300/100 | B | 31 | 27,0 | 30,0 |
| 300/150 | B | 38 | 33,0 | 36,0 |
| 300/200 | B | 32 | 25,0 | 28,0 |
| 300/250 | A | 33 | 28,0 | 31,0 |
| 350/250 | B | 48 | 38,0 | 43,0 |
| 400/200 | B | 38 | 41,0 | 42,0 |
| 400/250 | B | 48 | 45,0 | 48,0 |
| 400/300 | B | 49 | 42,0 | 45,0 |
| 600/450 | B | 56 | 72,0 | 86,0 |

E - BS

SYSTEM DELTA – BRZI SPOJ
SYSTEM DELTA –DIE SCHNELLE VERBINDUNG
SYSTEM DELTA – FAST CONNECTION

Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015

Standard beschitung: Pulverbeschited min. 250 mic RAL 5015

Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015

Prirubnice prema EN 1092-2 ili na zahtjev prema ostalim standardima.

Einbauf lansche nach EN 1092-2 oder auf Anfrage nach andere Standard.

Flanges according to EN 1092-2 or on request according to other standard.

System DELTA fazone s pokretljivim priključkom izrađene su od duktilnog lijevanog željeza za tlačne PVC cijevi, cijevi od lijevanog željeza, čelične cijevi i azbestcementne cijevi. Kod PE cijevi koristi se unutarnji zaštitni tuljak.

System DELTA fazone dozvoljavaju zmioljiko polaganje vodova sa zakretanjem osi do 8°. Gumeni prsteni od EPDM-a sadržani su u isporukama.

Stezni prsteni od nodularnog lijeva primjenjuju se za lijevano željezne, čelične, PVC/PHD, odn. azbestcementne cijevi.

System DELTA Formstücke mit beweglichem Anschluss sind aus duktilem Gusseisen für PVC-Druckrohre, Guss-, Stahl- und Asbestzementrohre lieferbar. Für PE-Rohre in Verbindung mit Innenstützhülsen. System DELTA Formstücke ermöglichen bis zu 8° abgewinkelte Rohrverlegungen.

Die Gummiringe aus EPDM sind von uns mitgeliefert. Die Pressringe aus duktilem Gusseisen sind für Guss-, Stahl-, oder PVC/PHD-rohre bzw.

Asbestzementrohre einsetzbar.

System DELTA fittings with movable joint of ductile cast iron are for PVC pressure pipes, cast iron, steel and asbestos cement pipes. For PE pipes the fittings receive an inside tube protector. System DELTA fittings allow snaked pipe laying with declination of axis up to 8°. Rubber gaskets made of EPDM are included in our delivery. Pressed gaskets of ductile cast iron are applicable for cast iron, steel, PVC/PHD or asbestos cement pipes.

EN 545



RAL GSK

GSK-ID: 1238

SYSTEM DELTA – BRZI SPOJ
 SYSTEM DELTA – DIE SCHNELLE VERBINDUNG
 SYSTEM DELTA – FAST CONNECTION

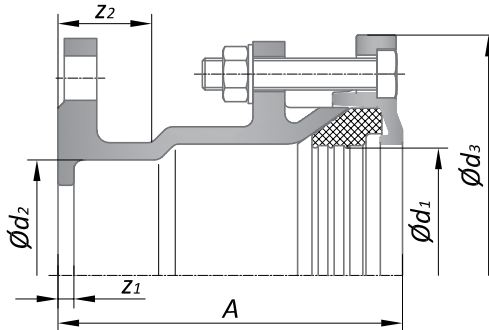
E - BS

Art N°
 740

EN 545



RAL GSK
 GSK-ID: 1238



| DN | d1 | d2 | d3 | A | z1 | z2 |
|------|-----------|-----|-----|-----|----|----|
| 50 | 59 - 72 | 55 | 184 | 160 | 8 | 45 |
| 65 | 72 - 85 | 70 | 197 | 160 | 8 | 45 |
| 80 | 82 - 107 | 104 | 224 | 165 | 8 | 45 |
| 100 | 107 - 133 | 124 | 256 | 180 | 8 | 45 |
| 125 | 132 - 153 | 149 | 278 | 200 | 8 | 60 |
| 150 | 158 - 192 | 175 | 318 | 220 | 8 | 65 |
| 200 | 218 - 252 | 228 | 378 | 240 | 8 | 65 |
| 250 | 266 - 300 | 283 | 431 | 240 | 8 | 70 |
| 300 | 315 - 349 | 332 | 480 | 245 | 10 | 70 |
| 350A | 352 - 374 | 360 | 505 | 250 | 10 | 70 |
| 350B | 378 - 400 | 383 | 531 | 250 | 10 | 70 |
| 400A | 400 - 430 | 410 | 561 | 250 | 10 | 70 |
| 400B | 425 - 442 | 432 | 573 | 250 | 10 | 70 |

Materijali:

Kučičšte: EN-GJS-400-15
 Pritežna prirubnica: EN-GJS-400-15
 Brtva: EPDM
 Vijci: A2 ISO 4017
 Matice: A2 ISO 4032

Material

Körper: EN-GJS-400-15
 Pressring: EN-GJS-400-15
 Dichtung: EPDM
 Schrauben: A2 ISO 4017
 Muttern: A2 ISO 4032

Material

Body: EN-GJS-400-15
 Shaping ring: EN-GJS-400-15
 Gasket: EPDM
 Screws: A2 ISO 4017
 Nuts: A2 ISO 4032

U - BS

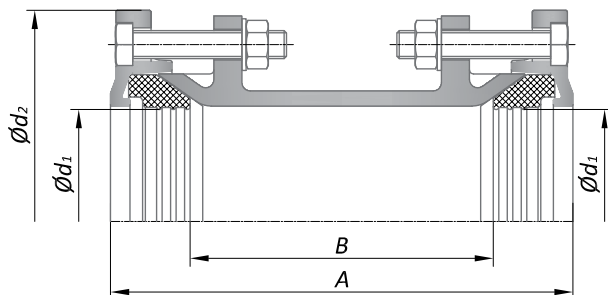
SYSTEM DELTA – BRZI SPOJ
SYSTEM DELTA – DIE SCHNELLE VERBINDUNG
SYSTEM DELTA – FAST CONNECTION

Art N°
742

EN 545



RAL GSK
GSK-ID: 1238



| DN | d1 | d2 | A | B |
|------|---------|-----|-----|-----|
| 50 | 59-72 | 184 | 240 | 140 |
| 65 | 72-85 | 197 | 240 | 140 |
| 80 | 82-107 | 224 | 240 | 140 |
| 100 | 107-133 | 256 | 270 | 156 |
| 125 | 132-153 | 278 | 290 | 176 |
| 150 | 158-192 | 318 | 310 | 196 |
| 200 | 218-252 | 378 | 330 | 216 |
| 250 | 266-300 | 431 | 345 | 231 |
| 300 | 315-349 | 480 | 350 | 236 |
| 350A | 352-374 | 505 | 360 | 246 |
| 350B | 378-400 | 531 | 360 | 246 |
| 400A | 400-430 | 561 | 360 | 246 |
| 400B | 425-442 | 573 | 360 | 246 |
| 500 | 524-536 | 730 | 553 | 420 |

Materijali:

Kućište: EN-GJS-400-15

Pritezna prirubnica: EN-GJS-400-15

Brtva: EPDM

Vijci: A2 ISO 4017

Matice: A2 ISO 4032

Material

Körper: EN-GJS-400-15

Pressring: EN-GJS-400-15

Dichtung: EPDM

Schrauben: A2 ISO 4017

Muttern: A2 ISO 4032

Material

Body: EN-GJS-400-15

Shaping ring: EN-GJS-400-15

Gasket: EPDM

Screws: A2 ISO 4017

Nuts: A2 ISO 4032

**PRELJEVNI KOMADI
ÜBERLAUFSTÜCKE
FLANGED BELIMOUTHS**

PR

**Art N°
844**

Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015

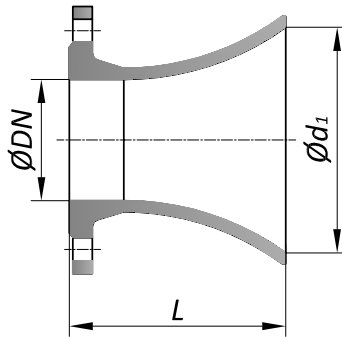
Standard beschichtung: Pulverbeschichted min. 250 mic RAL 5015

Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015

Prirubnice prema EN 1092-2 ili na zahtjev prema ostalim standardima.

Einbaufflansche nach EN 1092-2 oder auf Anfrage nach andere Standard.

Flanges according to EN 1092-2 or on request according to other standard.



EN 545



RAL GSK
GSK-ID: 1238



| Nazivni promjer Nennweite Nominal size DN | L | d_1 | Masa Gewicht Weight (kg) |
|----------------------------------------------------|-----|-------|-----------------------------------|
| 80 | 100 | 120 | 6,6 |
| 100 | 110 | 150 | 8 |
| 125 | 125 | 185 | 11,5 |
| 150 | 140 | 225 | 15 |
| 200 | 170 | 300 | 24 |
| 250 | 200 | 375 | 35 |
| 300 | 230 | 450 | 47 |
| 350 | 260 | 525 | 66 |
| 400 | 290 | 600 | 88 |
| 500 | 350 | 750 | 139 |
| 600 | 410 | 900 | 201 |

FFRE

Art N°
764

REDUCIRANI KOMAD SA PRIRUBNICAMA - EKSCENTRIČAN FLANSCH – ÜBERGANGS STÜCKE - EKSCENTRISCH DOULKE FLANGED FLAT TAPER

Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015

Standard beschichtung: Pulverbeschichted min. 250 mic RAL 5015

Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015

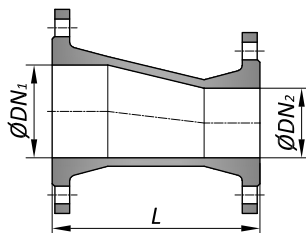
Prirubnice prema EN 1092-2 ili na zahtjev prema ostalim standardima.

Einbauf lansche nach EN 1092-2 oder auf Anfrage nach andere Standard.

Flanges according to EN 1092-2 or on request according to other standard.



| Nazivni promjer Nennweite Nominal size | | L | Masa Gewicht Weight (kg) | |
|----------------------------------------------|-----|-----|-----------------------------------|-------|
| DN1 | DN2 | | PN 10 | PN 16 |
| 125 | 50 | 200 | 14 | 14 |
| | 65 | | 15 | 15 |
| | 80 | | 16 | 16 |
| | 100 | | 17 | 17 |
| 150 | 50 | 300 | 21 | 21 |
| | 65 | | 22 | 22 |
| | 80 | | 23 | 23 |
| | 100 | | 24 | 24 |
| 200 | 125 | 300 | 25 | 25 |
| | 80 | | 27,5 | 27,5 |
| | 100 | | 24 | 24 |
| | 125 | | 26 | 26 |
| 250 | 150 | 300 | 28 | 28 |
| | 125 | | 37 | 36,5 |
| | 150 | | 34 | 33,5 |
| | 200 | | 30,5 | 30 |
| 300 | 150 | 300 | 55 | 54,5 |
| | 200 | | 58 | 57,5 |
| | 250 | | 59 | 58 |
| 350 | 200 | 500 | 88 | 91,5 |
| | 250 | | 90 | 92,5 |
| | 300 | | 97 | 100 |
| 400 | 150 | 500 | 91 | 97 |
| | 250 | | 135 | 140 |
| | 300 | | 120 | 125 |
| | 350 | | 125 | 134 |
| 500 | 350 | 500 | 170 | 188 |
| | 400 | | 174 | 195 |
| 600 | 400 | 500 | 226 | 258 |
| | | | | |



ODCJEPNI KOMAD SA DVOSTRUKIM KOLČAKOM I EKSCENTRIČNOM DOPPELMUFFEN STÜCKE MIT EKSCENTRISCH FLANSCHEDOUBLE FLANGE ON DOUBLE SOCKET LEVEL INVERT TEE

MMAT

Art N°
745

Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015

Standard beschichtung: Pulverbeschichted min. 250 mic RAL 5015

Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015

Prirubnice prema EN 1092-2 ili na zahtjev prema ostalim standardima.

Einbaufansche nach EN 1092-2 oder auf Anfrage nach andere Standard.

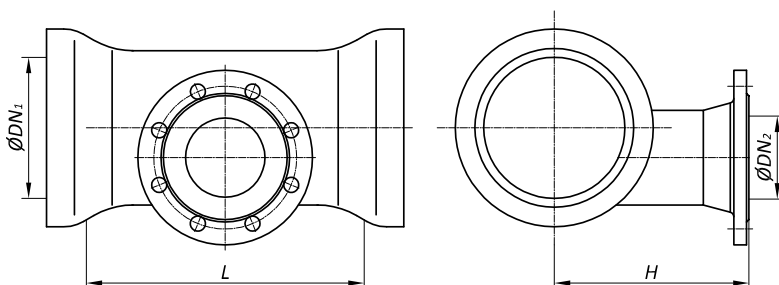
Flanges according to EN 1092-2 or on request according to other standard.



EN 545



RAL GSK
GSK-ID: 1238



| Nazivni promjer Nennweite Nominal size | | L | h | Masa Gewicht Weight (kg) | |
|----------------------------------------------|-----------------|-----|-----|-----------------------------------|-------|
| DN ₁ | DN ₂ | | | PN 10 | PN 16 |
| 200 | 80 | 175 | 235 | 27,5 | 27,5 |
| 250 | 80 | 180 | 265 | 38,0 | 38,0 |
| | 100 | 200 | 270 | 41,0 | 41,0 |
| 300 | 80 | 180 | 295 | 50,0 | 50,0 |
| | 100 | 205 | 300 | 51,0 | 51,0 |
| | 150 | 260 | 310 | 58,0 | 58,0 |
| | 200 | 320 | 320 | 68,0 | 68,0 |
| 400 | 100 | 210 | 360 | 75,0 | 75,0 |
| | 150 | 270 | 370 | 85,0 | 80,0 |
| 500 | 100 | 215 | 420 | 108,0 | 108,0 |
| | 150 | 260 | 430 | 130,0 | 130,0 |
| 600 | 200 | 340 | 500 | 178,0 | 178,0 |
| | 400 | 570 | 540 | 260,0 | 253,0 |

Te

T - KOMAD SA PRIRUBNICAMA EKSCENTRIČAN
T - FLANSCHSTÜCKE EKSCENTRISCH
T - FLANGED INVERT TEE

Art N°
764

Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015
Standard beschichtung: Pulverbeschichted min. 250 mic RAL 5015
Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015

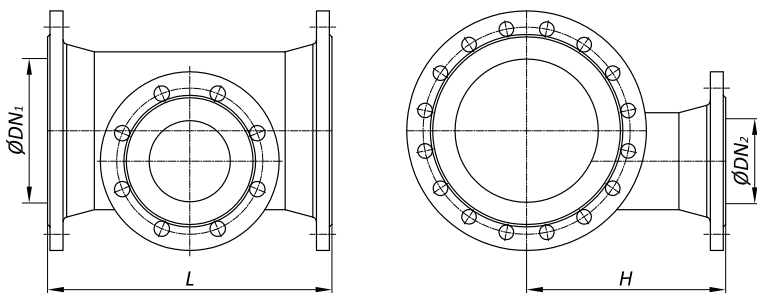
Prirubnice prema EN 1092-2 ili na zahtjev prema ostalim standardima.
Einbaufansche nach EN 1092-2 oder auf Anfrage nach andere Standard.
Flanges according to EN 1092-2 or on request according to other standard.



EN 545



RAL GSK
 GSK-ID: 1238



| Nazivni promjer Nennweite Nominal size | | L | H | Masa Gewicht Weight (kg) | |
|----------------------------------------------|-----------------|------|-----|-----------------------------------|-------|
| DN ₁ | DN ₂ | | | PN 10 | PN 16 |
| 300 | 80 | 800 | 305 | 92,5 | 93,5 |
| | 100 | 800 | 305 | 93 | 94 |
| | 150 | 800 | 305 | 100 | 101 |
| 350 | 100 | 850 | 340 | 117 | 122 |
| 400 | 100 | 900 | 365 | 144 | 154 |
| | 200 | 900 | 365 | 150 | 159 |
| 500 | 100 | 1000 | 400 | 213 | 242 |
| | 200 | 1000 | 400 | 218 | 247 |
| 600 | 200 | 1000 | 435 | 309 | 359 |

PRIRUBNIČKI KOMADI SA ZIDNOM PRIRUBNICOM FLANSCHSTÜCKE MIT MAUERFLANSCHEN FITTING PIECE WITH WALL FLANGE

FFM

Art N°
747

Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015

Standard beschütung: Pulverbeschichtet min. 250 mic RAL 5015

Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015

Prirubnice prema EN 1092-2 ili na zahtjev prema ostalim standardima.

Einbaufansche nach EN 1092-2 oder auf Anfrage nach andere Standard.

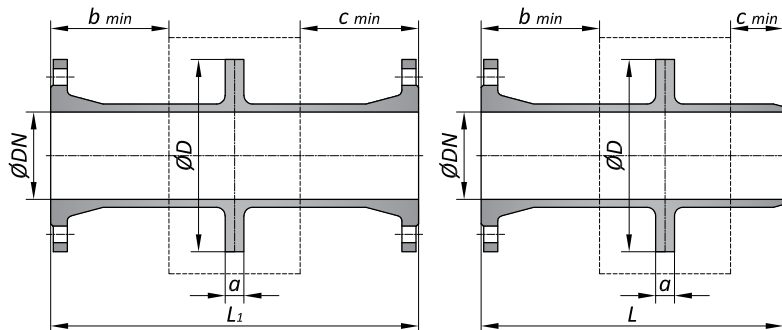
Flanges according to EN 1092-2 or on request according to other standard.



EN 545



RAL GSK
GSK-ID: 1238



TYP - A

TYP - B

| Nazivni promjer Nennweite Nominal size DN | L | L ₁ | D | a | b | c | Masa Gewicht Weight (kg) | | | |
|--------------------------------------------------------|------|----------------|-----|------|-----|-----|---------------------------------------|-------|-------|-------|
| | | | | | | | TYP A | | TYP B | |
| | | | | | | | PN 10 | PN 16 | PN 10 | PN 16 |
| 60 | 600 | 700 | 175 | 16,5 | 120 | 200 | 12 | 12 | 13 | 13 |
| 80 | 600 | 700 | 200 | 16 | 120 | 200 | 16 | 16 | 17 | 17 |
| 100 | 600 | 700 | 220 | 16 | 120 | 200 | 19 | 19 | 20 | 20 |
| 125 | 600 | 700 | 250 | 18 | 120 | 200 | 24 | 24 | 26 | 26 |
| 150 | 600 | 700 | 285 | 18 | 130 | 200 | 30 | 30 | 32 | 32 |
| 200 | 600 | 700 | 340 | 20 | 130 | 200 | 42 | 42 | 45 | 44 |
| 250 | 1000 | 1000 | 400 | 20 | 155 | 300 | 72 | 71 | 81 | 81 |
| 300 | 1000 | 1000 | 455 | 20,5 | 155 | 300 | 92 | 91 | 105 | 103 |
| 350 | 1000 | 1000 | 505 | 20,5 | 170 | 300 | 110 | 113 | 124 | 130 |
| 400 | 1000 | 1000 | 565 | 20,5 | 170 | 300 | 131 | 137 | 147 | 159 |
| 450 | 1000 | 1000 | 615 | 21,5 | 190 | 300 | 156 | 166 | 176 | 196 |
| 500 | 1000 | 1000 | 670 | 22,5 | 190 | 300 | 182 | 196 | 205 | 233 |
| 600 | 1000 | 1000 | 780 | 25 | 200 | 300 | 241 | 267 | 272 | 324 |

DVOKOMORNA SPECIJALNA PRIRUBNICA ZA SPAJANJE GGG CIJEVI
ZWEIKAMMER - SPECIALFLANSCH FÜR VERBINDEN GGG ROHRLEITUNGEN
PIPE CONNECTION DOUBLECHAMBER - SPECIAL FLANG

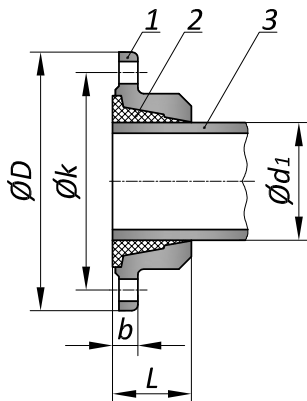
Art №
781

Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015

Standard beschichtung: Pulverbeschichted min. 250 mic RAL 5015

Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015

Prirubnice prema EN 1092-2 ili na zahtjev prema ostalim standardima.
Einbaufansche nach EN 1092-2 oder auf Anfrage nach andere Standard.
Flanges according to EN 1092-2 or on request according to other standard.



| POZ TEIL PART | MATERIJAL PO EN-u WERKSTOFF NACH EN MATERIAL ACC TO EN |
|---------------------|--------------------------------------------------------------|
| 1 | EN-GJS-400-15 |
| 2 | EPDM |
| 3 | EN-GJS-400-15 |

| Nazivni promjer Nennweite Nominal size | d_1 | D | k | | b | L |
|----------------------------------------------|-------|-----|-------|-------|------|-----|
| | | | PN 10 | PN 16 | | |
| DN | | | | | | |
| 50 | 66 | 165 | 125 | | 19 | 52 |
| 65 | 82 | 185 | 145 | | 19 | 55 |
| 80 | 98 | 200 | 160 | | 19 | 60 |
| 100 | 118 | 220 | 180 | | 19 | 60 |
| 125 | 144 | 250 | 210 | | 19 | 62 |
| 150 | 170 | 285 | 240 | | 19 | 64 |
| 200 | 222 | 340 | 295 | | 20 | 68 |
| 250 | 274 | 400 | 350 | 355 | 22 | 75 |
| 300 | 320 | 455 | 400 | 410 | 24,5 | 77 |

SKRETNICA ZA HIDRANT ANPASSUNGSFÄHIG BOGEN ADJUSTMENT BEND

SH

Art N°
784

Standardna površinska zaščita: plastificirano min. 250 mic RAL 5015

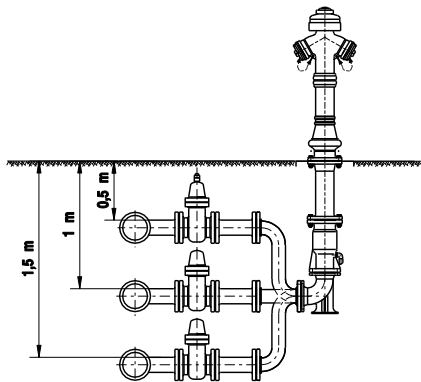
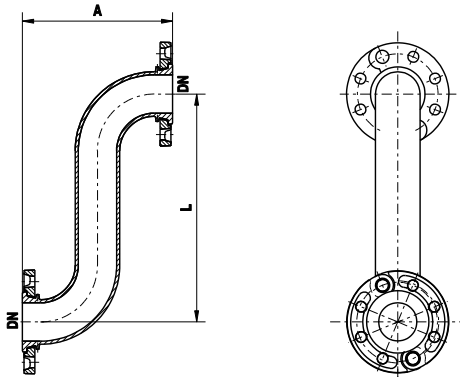
Standard beschichtung: Pulverbeschichted min. 250 mic RAL 5015

Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015

Prirubnice prema EN 1092-2 ili na zahtjev prema ostalim standardima.

Einbaufansche nach EN 1092-2 oder auf Anfrage nach andere Standard.

Flanges according to EN 1092-2 or on request according to other standard.



EN 545



RAL GSK
GSK-ID: 1238



| Nazivni promjer Nennweite Nominal size | Lw | A | kg | Oznaka Typ Type |
|----------------------------------------------|-----|-----|------|-----------------------|
| DN | | | | |
| 80 | 500 | 330 | 16 | SH 080 |
| 100 | 500 | 360 | 19,5 | SH 100 |





FAZONSKI KOMADI S TYTON KOLČAKOM
FORMSTÜCKE MIT TYTON MUFFEN
FITTINGS WITH TYTON SOCKETS



MIV



Metalska industrija Varaždin d.d.





KOMAD S PRIRUBNICOM I TJ-KOLČAKOM STÜCKE FLANSCHMUFFENSTÜCKE TJ-MUFFEN FLANGE AND TJ SOCKET PIECES

EU

Art N°
751

Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015

Standard beschichtung: Pulverbeschichtet min. 250 mic RAL 5015

Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015

Prirubnice prema EN 1092-2 ili na zahtjev prema ostalim standardima.

Einbauf lansche nach EN 1092-2 oder auf Anfrage nach andere Standard.

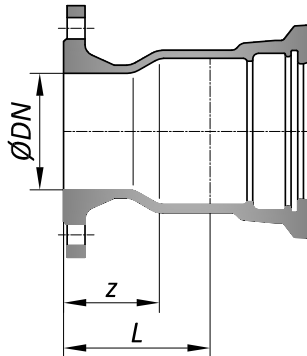
Flanges according to EN 1092-2 or on request according to other standard.



EN 545



RAL GSK
GSK-ID: 1238



| Nazivni promjer Nennweite Nominal size | L | z | Masa Gewicht Weight (kg) | Oznaka Typ Type |
|----------------------------------------------|-----|-----|-----------------------------------|-----------------------|
| DN | | | | |
| 60 | 125 | 81 | 6 | EU 060 TJ |
| 80 | 130 | 86 | 7,8 | EU 080 TJ |
| 100 | 130 | 87 | 9,4 | EU 100 TJ |
| 125 | 135 | 91 | 12 | EU 125 TJ |
| 150 | 135 | 92 | 15,1 | EU 150 TJ |
| 200 | 140 | 97 | 21,5 | EU 200 TJ |
| 250 | 145 | 102 | 29,5 | EU 250 TJ |
| 300 | 150 | 107 | 38,5 | EU 300 TJ |
| 350 | 155 | 112 | 49 | EU 350 TJ |
| 400 | 160 | 117 | 57 | EU 400 TJ |
| 450 | 165 | 122 | 71 | EU 450 TJ |
| 500 | 170 | 127 | 82 | EU 500 TJ |
| 600 | 180 | 137 | 112 | EU 600 TJ |
| 700 | 190 | 147 | 159 | EU 700 TJ |
| 800 | 200 | 157 | 205 | EU 800 TJ |
| 900 | 210 | 167 | 272 | EU 900 TJ |
| 1000 | 220 | 177 | 332 | EU 1000 TJ |
| 1200 | 240 | 197 | 465 | EU 1200 TJ |

EU-600

KOMAD S PRIRUBNICOM I TJ-KOLČAKOM
STÜCKE FLANSCHMUFFENSTÜCKE TJ-MUFFEN
FLANGE AND TJ SOCKET PIECES

Art N°
781



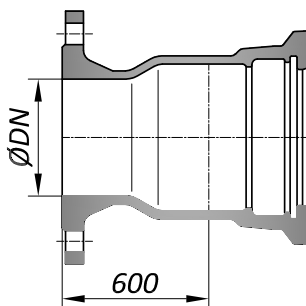
EN 545



RAL GSK
 GSK-ID: 1238

Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015
Standard beschütung: Pulverbeschited min. 250 mic RAL 5015
Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015

Prirubnice prema EN 1092-2 ili na zahtjev prema ostalim standardima.
Einbaufansche nach EN 1092-2 oder auf Anfrage nach andere Standard.
Flanges according to EN 1092-2 or on request according to other standard.



| Nazivni promjer Nennweite Nominal size | L | Masa Gewicht Weight | Oznaka Typ Type |
|----------------------------------------------|-----|---------------------------|-----------------------|
| DN | | (kg) | |
| 60 | 600 | 18 | E-600 060 |
| 80 | 600 | 18,5 | E-600 080 |
| 100 | 600 | 19,5 | E-600 100 |
| 125 | 600 | 23 | E-600 125 |
| 150 | 600 | 29 | E-600 150 |
| 200 | 600 | 40 | E-600 200 |
| 250 | 600 | 54,5 | E-600 250 |
| 300 | 600 | 70 | E-600 300 |
| 400 | 600 | 113 | E-600 400 |
| 500 | 600 | 154 | E-600 500 |

LUČNI KOMAD S DVOSTRUKIM TJ-KOLČAKOM 11 1/4°
 DOPPELMUFFENBOGEN MIT TJ-MUFFEN 11 1/4°
 TJ 11 1/4° BENDS

MMK 11

Art N°
752

Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015

Standard beschichtung: Pulverbeschichted min. 250 mic RAL 5015

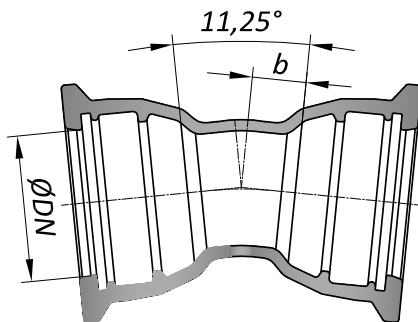
Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015



EN 545



RAL GSK
GSK-ID: 1238



| Nazivni promjer Nennweite Nominal size | b | Masa Gewicht Weight | Oznaka Typ Type |
|----------------------------------------------|-----|---------------------------|-----------------------|
| DN | | (kg) | |
| 60 | 25 | 6 | MMK11 060 TJ |
| 80 | 30 | 7 | MMK11 080 TJ |
| 100 | 35 | 8 | MMK11 100 TJ |
| 125 | 35 | 11 | MMK11 125 TJ |
| 150 | 40 | 14 | MMK11 150 TJ |
| 200 | 45 | 20 | MMK11 200 TJ |
| 250 | 50 | 28 | MMK11 250 TJ |
| 300 | 60 | 37 | MMK11 300 TJ |
| 350 | 65 | 45 | MMK11 350 TJ |
| 400 | 70 | 56 | MMK11 400 TJ |
| 450 | 70 | 70 | MMK11 450 TJ |
| 500 | 85 | 87 | MMK11 500 TJ |
| 600 | 95 | 120 | MMK11 600 TJ |
| 700 | 95 | 198 | MMK11 700 TJ |
| 800 | 110 | 257 | MMK11 800 TJ |
| 900 | 120 | 394 | MMK11 900 TJ |
| 1000 | 130 | 422 | MMK11 1000 TJ |
| 1200 | 150 | 769 | MMK11 1200 TJ |

MMK 22

LUČNI KOMAD S DVOSTRUKIM TJ-KOLČAKOM 22 1/2°
DOPPELMUFFENBOGEN MIT TJ-MUFFEN 22 1/2°
TJ 22 1/2° BENDS

Art N°
753

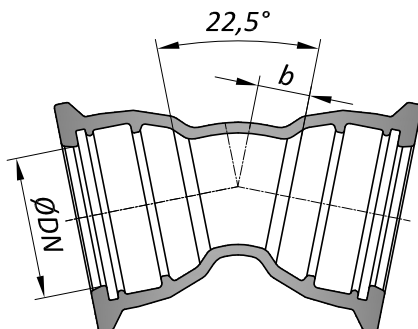
Standardna površinska zaščita: plastificirano min. 250 mic RAL 5015
Standard beschichtung: Pulverbeschichted min. 250 mic RAL 5015
Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015



EN 545



RAL GSK
 GSK-ID: 1238



| Nazivni promjer Nennweite Nominal size | b | Masa Gewicht Weight | Oznaka Typ Type |
|----------------------------------------------|-----|---------------------------|-----------------------|
| DN | | (kg) | |
| 60 | 35 | 6 | MMK22 060 TJ |
| 80 | 40 | 6,7 | MMK22 080 TJ |
| 100 | 45 | 8,1 | MMK22 100 TJ |
| 125 | 50 | 11,2 | MMK22 125 TJ |
| 150 | 55 | 14,2 | MMK22 150 TJ |
| 200 | 65 | 21 | MMK22 200 TJ |
| 250 | 75 | 30,5 | MMK22 250 TJ |
| 300 | 90 | 40,5 | MMK22 300 TJ |
| 350 | 100 | 50,5 | MMK22 350 TJ |
| 400 | 110 | 63,5 | MMK22 400 TJ |
| 450 | 120 | 82 | MMK22 450 TJ |
| 500 | 135 | 100 | MMK22 500 TJ |
| 600 | 155 | 141 | MMK22 600 TJ |
| 700 | 175 | 232 | MMK22 700 TJ |
| 800 | 195 | 305 | MMK22 800 TJ |
| 900 | 220 | 456 | MMK22 900 TJ |
| 1000 | 240 | 510 | MMK22 1000 TJ |
| 1200 | 285 | 900 | MMK22 1200 TJ |

LUČNI KOMAD S DVOSTRUKIM TJ-KOLČAKOM 30°
 DOPPELMUFFENBOGEN MIT TJ-MUFFEN 30°
 TJ 30° BENDS

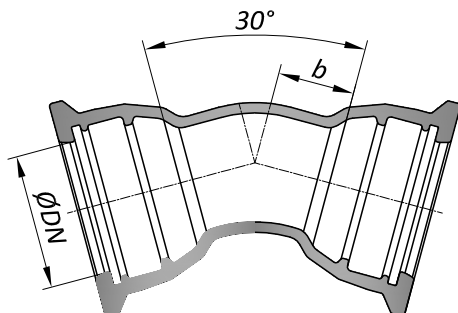
MMK 30

Art N°
 754

Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015

Standard beschitung: Pulverbeschited min. 250 mic RAL 5015

Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015



EN 545



RAL GSK
 GSK-ID: 1238

| Nazivni promjer Nennweite Nominal size | b | Masa Gewicht Weight | Oznaka Typ Type |
|----------------------------------------------|-----|---------------------------|-----------------------|
| DN | | (kg) | |
| 80 | 45 | 6,8 | MMK30 080 TJ |
| 100 | 50 | 8,3 | MMK30 100 TJ |
| 125 | 55 | 11,6 | MMK30 125 TJ |
| 150 | 65 | 14,8 | MMK30 150 TJ |
| 200 | 80 | 22 | MMK30 200 TJ |
| 250 | 95 | 32 | MMK30 250 TJ |
| 300 | 110 | 43 | MMK30 300 TJ |
| 350 | 125 | 54,5 | MMK30 350 TJ |
| 400 | 140 | 69 | MMK30 400 TJ |
| 500 | 170 | 109 | MMK30 500 TJ |
| 600 | 200 | 156 | MMK30 600 TJ |
| 700 | 230 | 254 | MMK30 700 TJ |
| 800 | 260 | 350 | MMK30 800 TJ |
| 900 | 290 | 470 | MMK30 900 TJ |
| 1000 | 330 | 578 | MMK30 1000 TJ |
| 1200 | 330 | 988 | MMK30 1200 TJ |

MMK 45

LUČNI KOMAD S DVOSTRUKIM TJ-KOLČAKOM 45°
DOPPELMUFFENBOGEN MIT TJ-MUFFEN 45°
TJ 45° BENDS

Art N°
755

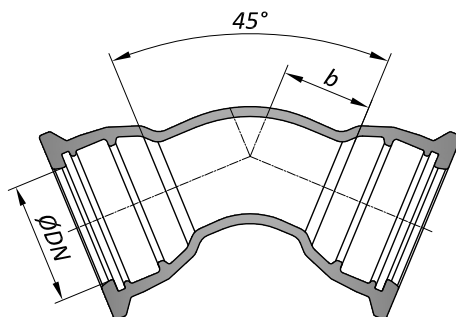
Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015
Standard beschichtung: Pulverbeschichted min. 250 mic RAL 5015
Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015



EN 545



RAL GSK
GSK-ID: 1238



| Nazivni promjer Nennweite Nominal size | b | Masa Gewicht Weight | Oznaka Typ Type |
|----------------------------------------------|-----|---------------------------|-----------------------|
| DN | | (kg) | |
| 60 | 45 | 6 | MMK45 060 TJ |
| 80 | 55 | 8 | MMK45 080 TJ |
| 100 | 65 | 10 | MMK45 100 TJ |
| 125 | 75 | 13 | MMK45 125 TJ |
| 150 | 85 | 17 | MMK45 150 TJ |
| 200 | 110 | 26 | MMK45 200 TJ |
| 250 | 130 | 36 | MMK45 250 TJ |
| 300 | 155 | 50 | MMK45 300 TJ |
| 350 | 175 | 65 | MMK45 350 TJ |
| 400 | 200 | 83 | MMK45 400 TJ |
| 450 | 220 | 107 | MMK45 450 TJ |
| 500 | 240 | 132 | MMK45 500 TJ |
| 600 | 285 | 191 | MMK45 600 TJ |
| 700 | 330 | 312 | MMK45 700 TJ |
| 800 | 370 | 420 | MMK45 800 TJ |
| 900 | 415 | 578 | MMK45 900 TJ |
| 1000 | 460 | 665 | MMK45 1000 TJ |
| 1200 | 550 | 1164 | MMK45 1200 TJ |

LUČNI KOMAD S DVOSTRUKIM TJ-KOLČAKOM 90°
 DOPPELMUFFENBOGEN MIT TJ-MUFFEN 90°
 TJ 90° BENDS

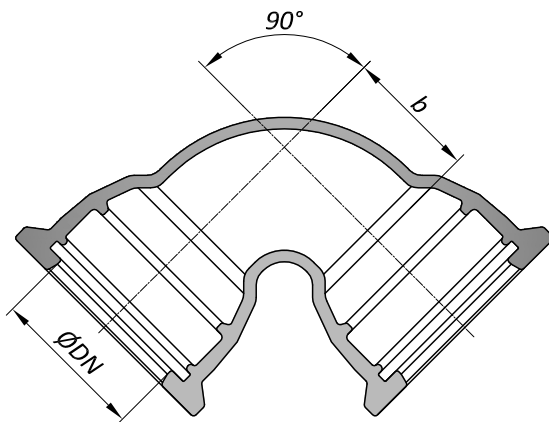
MMQ

Art N°
756

Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015

Standard beschichtung: Pulverbeschichtet min. 250 mic RAL 5015

Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015



EN 545



RAL GSK
GSK-ID: 1238

| Nazivni promjer Nennweite Nominal size | b | Masa Gewicht Weight (kg) | Oznaka Typ Type |
|----------------------------------------------|------|-----------------------------------|-----------------------|
| DN | | | |
| 60 | 80 | 6,5 | MMQ 060 TJ |
| 80 | 100 | 9 | MMQ 080 TJ |
| 100 | 125 | 12 | MMQ 100 TJ |
| 125 | 150 | 16 | MMQ 125 TJ |
| 150 | 175 | 20 | MMQ 150 TJ |
| 200 | 225 | 32 | MMQ 200 TJ |
| 250 | 280 | 49 | MMQ 250 TJ |
| 300 | 330 | 66,5 | MMQ 300 TJ |
| 350 | 350 | 95 | MMQ 350 TJ |
| 400 | 400 | 130 | MMQ 400 TJ |
| 450 | 450 | 170 | MMQ 450 TJ |
| 500 | 500 | 220 | MMQ 500 TJ |
| 600 | 600 | 312 | MMQ 600 TJ |
| 700 | 741 | 415 | MMQ 700 TJ |
| 800 | 844 | 575 | MMQ 800 TJ |
| 900 | 947 | 822 | MMQ 900 TJ |
| 1000 | 1050 | 1060 | MMQ 1000 TJ |

EN

LUČNI KOMAD S PRIRUBNICOM I TJ-KOLČAKOM 90°
 STÜCKE FLANSCHMUFFENSTÜCKE MIT TJ-MUFFEN 90°
 FLANGE AND TJ SOCKET 90° BENDS

Art №
757

Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015

Standard beschütung: Pulverbeschited min. 250 mic RAL 5015

Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015

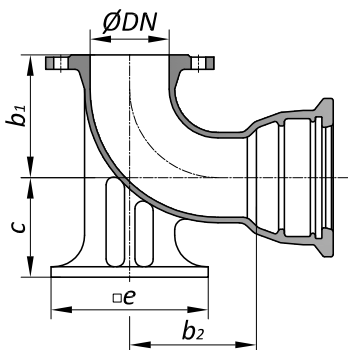


Prirubnice prema EN 1092-2 ili na zahtjev prema ostalim standardima.
 Einbaufansche nach EN 1092-2 oder auf Anfrage nach andere Standard.
 Flanges according to EN 1092-2 or on request according to other standard.

EN 545



GSK-ID: 1238



| Nazivni promjer Nennweite Nominal size | b_1 | b_2 | c | e | Masa Gewicht Weight (kg) | Oznaka Typ Type |
|----------------------------------------------|-------|-------|-----|-----|-----------------------------------|-----------------------|
| DN | | | | | | |
| 80 | 165 | 145 | 110 | 180 | 13,2 | EN 080 TJ |
| 100 | 180 | 158 | 125 | 200 | 17 | EN 100 TJ |

REDUKCIJSKI KOMAD S DVOSTRUKIM TJ-KOLČAKOM DOPPELMUFFEN ÜBERGANGESSTÜCKE TJ CONCENTRIC TAPERS

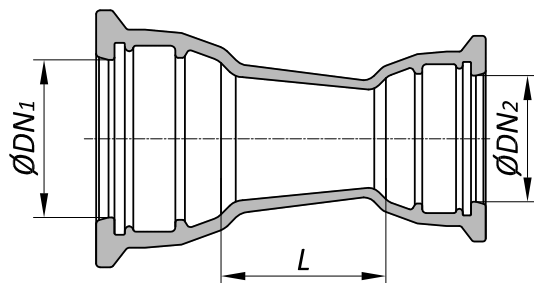
MMR

Art No
758

Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015

Standard beschütung: Pulverbeschited min. 250 mic RAL 5015

Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015



EN 545



RAL GSK
GSK-ID: 1238

| Nazivni promjer Nennweite Nominal size | | L | Masa Gewicht Weight (kg) | Oznaka Typ Type |
|----------------------------------------------|-----------------|-----|-----------------------------------|-----------------------|
| DN ₁ | DN ₂ | | | |
| 80 | 60 | 90 | 7 | MMR 080060 TJ |
| 100 | 60 | 130 | 8,3 | MMR 100060 TJ |
| | 80 | 90 | 8,4 | MMR 100080 TJ |
| 125 | 60 | 150 | 9,5 | MMR 125060 TJ |
| | 80 | 140 | 10,6 | MMR 125080 TJ |
| | 100 | 100 | 10,5 | MMR 125100 TJ |
| 150 | 60 | 200 | 13 | MMR 150060 TJ |
| | 80 | 190 | 13,5 | MMR 150080 TJ |
| | 100 | 150 | 13,4 | MMR 150100 TJ |
| | 125 | 100 | 13,1 | MMR 150125 TJ |
| 200 | 100 | 250 | 20 | MMR 200100 TJ |
| | 125 | 200 | 20 | MMR 200125 TJ |
| | 150 | 150 | 19 | MMR 200150 TJ |
| 250 | 125 | 300 | 27 | MMR 250125 TJ |
| | 150 | 250 | 29 | MMR 250150 TJ |
| | 200 | 150 | 27 | MMR 250200 TJ |
| | 150 | 350 | 38 | MMR 300150 TJ |
| 300 | 200 | 250 | 27 | MMR 300200 TJ |
| | 250 | 150 | 34 | MMR 300250 TJ |

| Nazivni promjer Nennweite Nominal size | | L | Masa Gewicht Weight (kg) | Oznaka Typ Type |
|----------------------------------------------|-----------------|-----|-----------------------------------|-----------------------|
| DN ₁ | DN ₂ | | | |
| 350 | 200 | 360 | 48 | MMR 350200 TJ |
| | 250 | 260 | 47 | MMR 350250 TJ |
| | 300 | 160 | 45 | MMR 350300 TJ |
| 400 | 250 | 360 | 60,5 | MMR 400250 TJ |
| | 300 | 260 | 58 | MMR 400300 TJ |
| | 350 | 160 | 56 | MMR 400350 TJ |
| 450 | 300 | 260 | 75 | MMR 450300 TJ |
| | 350 | 260 | 69 | MMR 450350 TJ |
| | 400 | 160 | 64 | MMR 450400 TJ |
| | 350 | 360 | 98 | MMR 500350 TJ |
| 500 | 400 | 260 | 84 | MMR 500400 TJ |
| | 450 | 160 | 78 | MMR 500450 TJ |
| | 400 | 460 | 128 | MMR 600400 TJ |
| 600 | 450 | 360 | 120 | MMR 600450 TJ |
| | 500 | 260 | 114 | MMR 600500 TJ |
| | 500 | 480 | 189 | MMR 700500 TJ |
| 700 | 600 | 280 | 166 | MMR 700600 TJ |
| | 600 | 480 | 237 | MMR 800600 TJ |
| 800 | 700 | 280 | 220 | MMR 800700 TJ |

MMB

ODCJEPNI KOMAD S TJ KOLČACIMA DOPPELMUFFE MIT TJ MUFFENSTUTZEN TJ TEES

Art №
759

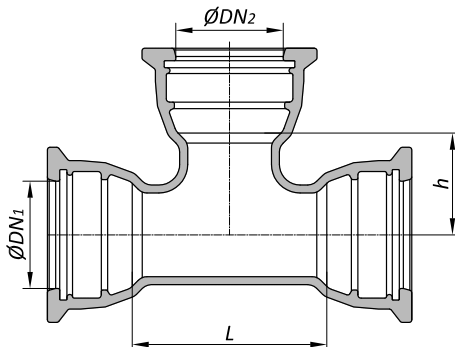
Standardna površinska zaščita: plastificirano min. 250 mic RAL 5015
Standard beschichtung: Pulverbeschichtet min. 250 mic RAL 5015
Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015



EN 545



RAL GSK
GSK-ID: 1238



| Nazivni promjer Nennweite Nominal size | | L | h | Masa Gewicht Weight (kg) | Oznaka Typ Type |
|----------------------------------------------|-----------------|-----|-----|-----------------------------------|-----------------------|
| DN ₁ | DN ₂ | | | | |
| 60 | 60 | 145 | 70 | 10 | MMB 060060 TJ |
| 80 | 60 | 170 | 70 | 11 | MMB 080060 TJ |
| | 80 | 170 | 85 | 11,5 | MMB 080080 TJ |
| 100 | 60 | 170 | 90 | 13 | MMB 100060 TJ |
| | 80 | 170 | 95 | 13,2 | MMB 100080 TJ |
| | 100 | 190 | 95 | 14,2 | MMB 100100 TJ |
| 125 | 80 | 170 | 105 | 16,6 | MMB 125080 TJ |
| | 100 | 195 | 110 | 17,9 | MMB 125100 TJ |
| | 125 | 225 | 110 | 19,9 | MMB 125125 TJ |
| 150 | 60 | 170 | 120 | 19 | MMB 150060 TJ |
| | 80 | 170 | 120 | 19,8 | MMB 150080 TJ |
| | 100 | 195 | 120 | 21 | MMB 150100 TJ |
| | 150 | 255 | 125 | 25,5 | MMB 150150 TJ |
| 200 | 60 | 175 | 145 | 17 | MMB 200060 TJ |
| | 80 | 175 | 145 | 25,5 | MMB 200080 TJ |
| | 100 | 200 | 145 | 29 | MMB 200100 TJ |
| | 150 | 255 | 150 | 33,5 | MMB 200150 TJ |
| | 200 | 315 | 155 | 39 | MMB 200200 TJ |
| 300 | 80 | 180 | 195 | 45,5 | MMB 300080 TJ |
| | 100 | 205 | 195 | 48 | MMB 300100 TJ |
| | 150 | 260 | 200 | 54,5 | MMB 300150 TJ |
| | 200 | 320 | 205 | 61,5 | MMB 300200 TJ |
| | 300 | 435 | 220 | 78 | MMB 300300 TJ |

ODCJEPNI KOMAD S DVOSTRUKIM TJ KOLČAKOM I PRIRUBNICOM DOPPELMUFFENSTÜCKE MIT FLANSCHSTUTZEN FLANGE ON TJ TEES

MMA

Art N°
760

Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015

Standard beschütung: Pulverbeschited min. 250 mic RAL 5015

Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015

Prirubnice prema EN 1092-2 ili na zahtjev prema ostalim standardima.

Einbaufansche nach EN 1092-2 oder auf Anfrage nach andere Standard.

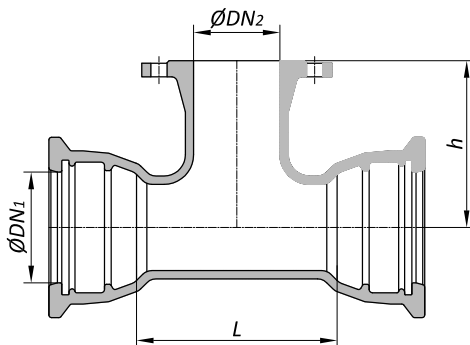
Flanges according to EN 1092-2 or on request according to other standard.



EN 545



RAL GSK
GSK-ID: 1238



| Nazivni promjer Nennweite Nominal size | | L | h | Masa Gewicht Weight (kg) | Oznaka Typ Type |
|----------------------------------------------|-----------------|-----|-----|-----------------------------------|-----------------------|
| DN ₁ | DN ₂ | | | | |
| 60 | 50 | 145 | 160 | 10 | MMA 060050 TJ |
| | 60 | 145 | 160 | 10,3 | MMA 060060 TJ |
| 80 | 40 | 170 | 155 | 9,7 | MMA 080040 TJ |
| | 50 | 170 | 160 | 11,4 | MMA 080050 TJ |
| | 60 | 170 | 155 | 12,2 | MMA 080050 TJ |
| | 80 | 170 | 165 | 13,7 | MMA 080080 TJ |
| 100 | 40 | 170 | 170 | 11,3 | MMA 100040 TJ |
| | 50 | 170 | 170 | 13,1 | MMA 100050 TJ |
| | 60 | 170 | 170 | 14,2 | MMA 100060 TJ |
| | 80 | 170 | 175 | 15,8 | MMA 100080 TJ |
| | 100 | 190 | 180 | 17,3 | MMA 100100 TJ |
| 125 | 40 | 170 | 185 | 14,5 | MMA 125040 TJ |
| | 50 | 170 | 185 | 16 | MMA 125050 TJ |
| | 60 | 170 | 185 | 17 | MMA 125060 TJ |
| | 80 | 170 | 190 | 18,5 | MMA 125080 TJ |
| | 100 | 195 | 195 | 20,5 | MMA 125100 TJ |
| | 125 | 225 | 200 | 23,0 | MMA 125125 TJ |

MMA

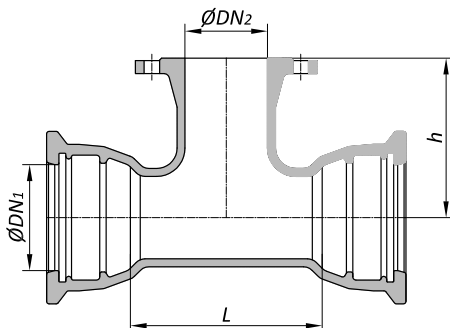
Art N°
760

EN 545



GSK-ID: 1238

ODCJEPNI KOMAD S DVOSTRUKIM TJ KOLČAKOM I PRIRUBNICOM
DOPPELMUFFENSTÜCKE MIT FLANSCHSTUTZEN
FLANGE ON TJ TEES



| Nazivni promjer Nennweite Nominal size | | L | h | Masa Gewicht Weight (kg) | Oznaka Typ Type |
|----------------------------------------------|-----------------|-----|-----|-----------------------------------|-----------------------|
| DN ₁ | DN ₂ | | | | |
| 150 | 40 | 170 | 195 | 19,0 | MMA 150040 TJ |
| | 50 | 170 | 200 | 20,0 | MMA 150050 TJ |
| | 60 | 170 | 200 | 20,2 | MMA 150060 TJ |
| | 80 | 170 | 205 | 22,0 | MMA 150080 TJ |
| | 100 | 195 | 210 | 24,0 | MMA 150100 TJ |
| | 150 | 255 | 220 | 30,0 | MMA 150150 TJ |
| 200 | 40 | 175 | 230 | 27,8 | MMA 200040 TJ |
| | 50 | 175 | 230 | 26,5 | MMA 200050 TJ |
| | 60 | 175 | 230 | 27,5 | MMA 200060 TJ |
| | 80 | 175 | 235 | 29,5 | MMA 200080 TJ |
| | 100 | 200 | 240 | 31,5 | MMA 200100 TJ |
| | 150 | 255 | 250 | 38,0 | MMA 200150 TJ |
| | 200 | 315 | 260 | 45,0 | MMA 200200 TJ |
| 250 | 80 | 180 | 265 | 38,0 | MMA 250080 TJ |
| | 100 | 200 | 270 | 40,5 | MMA 250100 TJ |
| | 150 | 260 | 280 | 48,0 | MMA 250150 TJ |
| | 200 | 315 | 290 | 56,0 | MMA 250200 TJ |
| | 250 | 375 | 300 | 65,0 | MMA 250250 TJ |
| 300 | 80 | 180 | 295 | 48,5 | MMA 300080 TJ |
| | 100 | 205 | 300 | 50,0 | MMA 300100 TJ |
| | 150 | 260 | 310 | 59,0 | MMA 300150 TJ |
| | 200 | 320 | 320 | 67,0 | MMA 300200 TJ |
| | 300 | 435 | 340 | 88,0 | MMA 300300 TJ |
| 350 | 100 | 205 | 330 | 61,0 | MMA 350100 TJ |
| | 150 | 250 | 340 | 72,0 | MMA 350150 TJ |
| | 200 | 325 | 350 | 81,0 | MMA 350200 TJ |
| | 350 | 495 | 380 | 125 | MMA 350350 TJ |

**ODCJEPNI KOMAD S DVOSTRUKIM TJ KOLČAKOM I PRIRUBNICOM
DOPPELMUFFENSTÜCKE MIT FLANSCHSTUTZEN
FLANGE ON TJ TEES**

MMA

**Art N°
760**



EN 545



RAL GSK
GSK-ID: 1238

| Nazivni promjer Nennweite Nominal size | | L | h | Masa Gewicht Weight (kg) | Oznaka Typ Type |
|----------------------------------------------|-----------------|------|-----|-----------------------------------|-----------------------|
| DN ₁ | DN ₂ | | | | |
| 400 | 80 | 185 | 355 | 68 | MMA 400080 TJ |
| | 100 | 210 | 360 | 75 | MMA 400100 TJ |
| | 150 | 270 | 370 | 85 | MMA 400150 TJ |
| | 200 | 325 | 380 | 94 | MMA 400200 TJ |
| | 300 | 440 | 380 | 116 | MMA 400300 TJ |
| 450 | 400 | 560 | 420 | 160 | MMA 400400 TJ |
| | 100 | 195 | 390 | 90 | MMA 450100 TJ |
| | 200 | 315 | 410 | 114 | MMA 450200 TJ |
| 500 | 450 | 600 | 465 | 188 | MMA 450450 TJ |
| | 100 | 215 | 420 | 104 | MMA 500100 TJ |
| | 150 | 260 | 430 | 119 | MMA 500150 TJ |
| | 200 | 330 | 440 | 134 | MMA 500200 TJ |
| | 300 | 450 | 460 | 156 | MMA 500300 TJ |
| 600 | 400 | 565 | 480 | 198 | MMA 500400 TJ |
| | 500 | 680 | 500 | 233 | MMA 500500 TJ |
| | 200 | 340 | 500 | 175 | MMA 600200 TJ |
| 700 | 400 | 570 | 540 | 260 | MMA 600400 TJ |
| | 600 | 800 | 580 | 355 | MMA 600600 TJ |
| | 200 | 345 | 525 | 266 | MMA 700200 TJ |
| 800 | 400 | 575 | 555 | 347 | MMA 700400 TJ |
| | 700 | 925 | 600 | 491 | MMA 700700 TJ |
| | 200 | 350 | 585 | 333 | MMA 800200 TJ |
| 900 | 400 | 580 | 615 | 429 | MMA 800400 TJ |
| | 600 | 1045 | 645 | 615 | MMA 800600 TJ |
| | 800 | 1045 | 675 | 661 | MMA 800800 TJ |
| | 200 | 355 | 645 | 466 | MMA 900200 TJ |
| 1000 | 400 | 590 | 675 | 585 | MMA 900400 TJ |
| | 600 | 1170 | 705 | 877 | MMA 900600 TJ |
| | 900 | 1170 | 750 | 919 | MMA 900900 TJ |
| 1200 | 200 | 360 | 705 | 569 | MMA 1000200 TJ |
| | 400 | 595 | 735 | 709 | MMA 1000400 TJ |
| | 600 | 1290 | 765 | 1103 | MMA 1000600 TJ |
| | 1000 | 1290 | 825 | 1186 | MMA 10001000 TJ |
| 1200 | 600 | 840 | 885 | 1044 | MMA 1200600 TJ |
| | 1000 | 1300 | 945 | 1448 | MMA 12001000 TJ |

U

SPOJNI KOMADI S NAGLAVKOM
ÜBERSCHIEBMUFFEN
DOUBLE SOCKET COLLARS

Art №
761

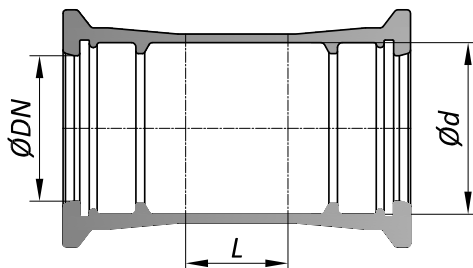
Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015
Standard beschichtung: Pulverbeschichted min. 250 mic RAL 5015
Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015



EN 545



RAL GSK
 GSK-ID: 1238



| Nazivni promjer Nennweite Nominal size | L | d | Masa Gewicht Weight | Oznaka Typ Type |
|----------------------------------------------|-----|------|---------------------------|-----------------------|
| DN | | | (kg) | |
| 60 | 155 | 88 | 6,9 | U 060 TJ |
| 80 | 160 | 109 | 8,9 | U 080 TJ |
| 100 | 160 | 130 | 10,8 | U 100 TJ |
| 125 | 165 | 156 | 13,6 | U 125 TJ |
| 150 | 165 | 183 | 16,7 | U 150 TJ |
| 200 | 170 | 235 | 23,0 | U 200 TJ |
| 250 | 175 | 288 | 31,5 | U 250 TJ |
| 300 | 180 | 340 | 40,5 | U 300 TJ |
| 350 | 185 | 393 | 52,0 | U 350 TJ |
| 400 | 190 | 445 | 62,5 | U 400 TJ |
| 450 | 195 | 498 | 77 | U 450 TJ |
| 500 | 200 | 550 | 90 | U 500 TJ |
| 600 | 210 | 655 | 120 | U 600 TJ |
| 700 | 220 | 760 | 183 | U 700 TJ |
| 800 | 230 | 865 | 241 | U 800 TJ |
| 900 | 240 | 970 | 305 | U 900 TJ |
| 1000 | 250 | 1075 | 386 | U 1000 TJ |
| 1200 | 270 | 1285 | 552 | U 1200 TJ |

LUČNI KOMAD S TYTON-KOLČAKOM 11 1/4°
 MUFFENBOGEN MIT TYTON-MUFFEN 11 1/4°
 SOCKET BEND 11 1/4° WITH TYTON-SOCKETS

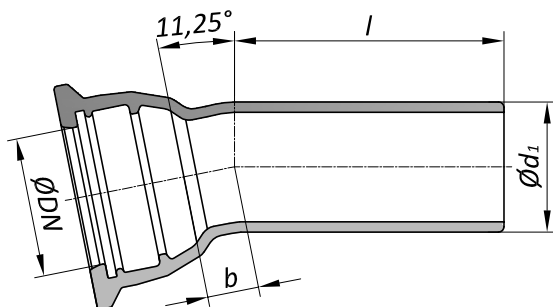
MK 11

Art N°
 762

Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015

Standard beschütung: Pulverbeschited min. 250 mic RAL 5015

Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015



EN 545



RAL GSK
 GSK-ID: 1238

| Nazivni promjer Nennweite Nominal size | b | l | d ₁ | Masa Gewicht Weight | Oznaka Typ Type |
|----------------------------------------------|----|-----|----------------|---------------------------|-----------------------|
| DN | | | | (kg) | |
| 80 | 30 | 240 | 98 | 7,1 | MK 11 080 TY |
| 100 | 33 | 243 | 118 | 8,8 | MK 11 100 TY |
| 150 | 40 | 284 | 170 | 15,7 | MK 11 150 TY |
| 200 | 46 | 311 | 222 | 24 | MK 11 200 TY |
| 250 | 50 | 346 | 274 | 36 | MK 11 250 TY |
| 300 | 58 | 404 | 326 | 49 | MK 11 300 TY |

MK 22

LUČNI KOMAD S TYTON-KOLČAKOM 22 1/2°
MUFFENBOGEN MIT TYTON-MUFFEN 22 1/2°
OCKET BEND 22 1/2° WITH TYTON-SOCKETS

Art N°
763

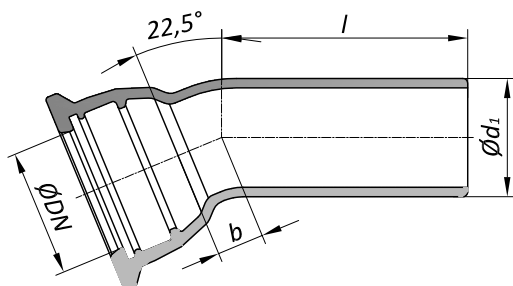
Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015
Standard beschitung: Pulverbeschited min. 250 mic RAL 5015
Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015



EN 545



RAL GSK
GSK-ID: 1238



| Nazivni promjer Nennweite Nominal size | b | l | d ₁ | Masa Gewicht Weight (kg) | Oznaka Typ Type |
|----------------------------------------------|----|-----|----------------|-----------------------------------|-----------------------|
| DN | | | | | |
| 80 | 38 | 248 | 98 | 7,3 | MK 22 080 TY |
| 100 | 43 | 253 | 118 | 9,2 | MK 22 100 TY |
| 150 | 55 | 299 | 170 | 16,7 | MK 22 150 TY |
| 200 | 66 | 331 | 222 | 25,5 | MK 22 200 TY |
| 250 | 75 | 371 | 274 | 39,5 | MK 22 250 TY |
| 300 | 89 | 433 | 326 | 53,5 | MK 22 300 TY |

LUČNI KOMAD S TYTON-KOLČAKOM 30°
 MUFFENBOGEN MIT TYTON-MUFFEN 30°
 SOCKET BEND 30° WITH TYTON-SOCKETS

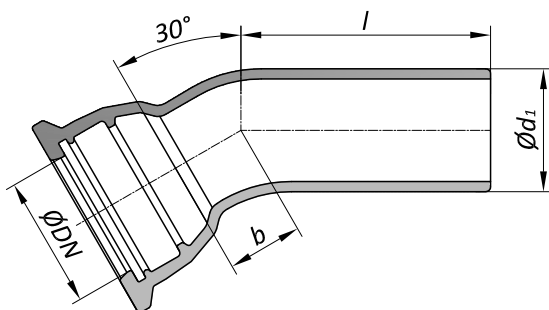
Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015

Standard beschütung: Pulverbeschited min. 250 mic RAL 5015

Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015

MK 30

Art N°
764



EN 545



GSK-ID: 1238

| Nazivni promjer Nennweite Nominal size | b | l | d ₁ | Masa Gewicht Weight (kg) | Oznaka Typ Type |
|----------------------------------------------|-----|-----|----------------|-----------------------------------|-----------------------|
| DN | | | | | |
| 80 | 44 | 253 | 98 | 7,4 | MK 30 080 TY |
| 100 | 50 | 260 | 118 | 9,4 | MK 30 100 TY |
| 150 | 65 | 309 | 170 | 17,2 | MK 30 150 TY |
| 200 | 80 | 345 | 222 | 26,5 | MK 30 200 TY |
| 250 | 95 | 388 | 274 | 40,5 | MK 30 250 TY |
| 300 | 109 | 454 | 326 | 56 | MK 30 300 TY |

MK 45

LUČNI KOMAD S TYTON-KOLČAKOM 45°
MUFFENBOGEN MIT TYTON-MUFFEN 45°
OCKET BEND 45° WITH TYTON-SOCKETS

Art N°
765

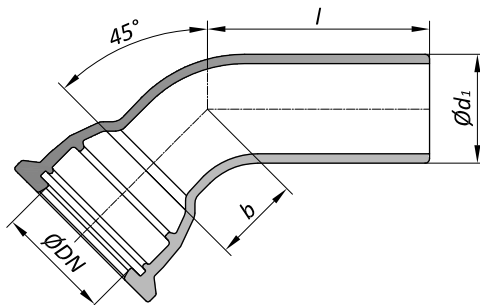
Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015
Standard beschichtung: Pulverbeschichted min. 250 mic RAL 5015
Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015



EN 545



RAI GSK
GSK-ID: 1238



| Nazivni promjer Nennweite Nominal size | b | l | d ₁ | Masa Gewicht Weight (kg) | Oznaka Typ Type |
|----------------------------------------------|-----|-----|----------------|-----------------------------------|-----------------------|
| DN | | | | | |
| 80 | 55 | 265 | 98 | 7,7 | MK 45 080 TY |
| 100 | 65 | 274 | 118 | 9,8 | MK 45 100 TY |
| 150 | 87 | 331 | 170 | 18,3 | MK 45 150 TY |
| 200 | 109 | 374 | 222 | 28,5 | MK 45 200 TY |
| 250 | 130 | 425 | 274 | 42,5 | MK 45 250 TY |
| 300 | 153 | 498 | 326 | 61,5 | MK 45 300 TY |

LUČNI KOMAD S TYTON-KOLČAKOM 90°
 MUFFENBOGEN MIT TYTON-MUFFEN 90°
 OCKET BEND 90° WITH TYTON-SOCKETS

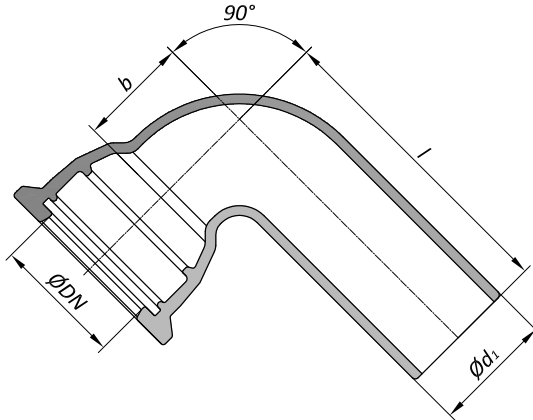
MQ

Art N°
 766

Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015

Standard beschichtung: Pulverbeschichtet min. 250 mic RAL 5015

Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015



EN 545



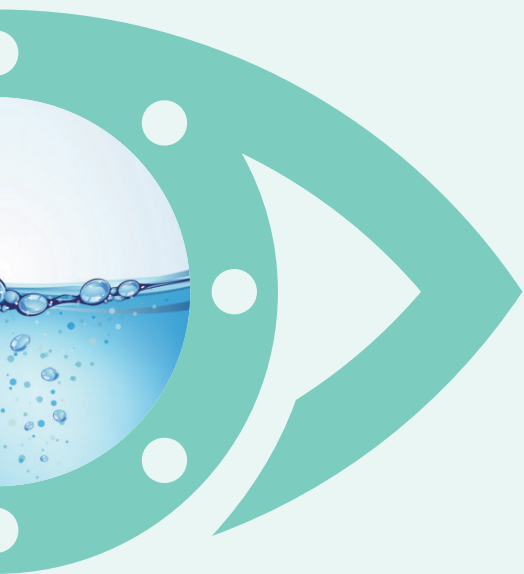
RAL GSK
 GSK-ID: 1238

| Nazivni promjer Nennweite Nominal size | b | l | d ₁ | Masa Gewicht Weight (kg) | Oznaka Typ Type |
|----------------------------------------------|-----|-----|----------------|-----------------------------------|-----------------------|
| DN | | | | | |
| 100 | 123 | 333 | 118 | 12 | MQ 100 TY |
| 125 | 150 | 374 | 144 | 16 | MQ 125 TY |
| 150 | 175 | 419 | 170 | 23,5 | MQ 150 TY |
| 200 | 226 | 491 | 222 | 38 | MQ 200 TY |
| 300 | 505 | 660 | 326 | 95 | MQ 300 TY |
| 400 | 610 | 780 | 429 | 120 | MQ 400 TY |





FAZONSKI KOMADI ZA PLASTIČNE CIJEVI
FORMSTÜCKE FÜR KUNSTSTOFFROHRE
FITTINGS FOR PLASTIC PIPES



Metalska industrija Varaždin d.d.



SPOJNI KOMADI S KOLČAKOM I PRIRUBNICOM STÜCKE (MUFFE / FLANSCH) FLANGED SOCKET PIECES

E - KS

Art N°
P - 951

Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015

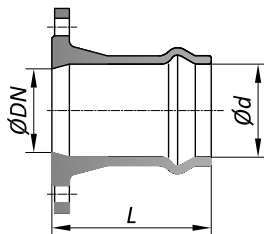
Standard beschichtung: Pulverbeschichtet min. 250 mic RAL 5015

Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015

Prirubnice prema EN 1092-2 ili na zahtjev prema ostalim standardima.

Einbaufansche nach EN 1092-2 oder auf Anfrage nach andere Standard.

Flanges according to EN 1092-2 or on request according to other standard.



EN 545



RAL GSK
GSK-ID: 1238

| Nazivni promjer Nennweite Nominal size | d | L | Masa Gewicht Weight (kg) | Oznaka Typ Type |
|----------------------------------------------|-----|-------|-----------------------------------|-----------------------|
| DN | | | | |
| 50 | 63 | 100 | 3,1 | EKS 050063 |
| 60 | 63 | 100 | 3,3 | EKS 060063 |
| 60 | 75 | 100 | 3,5 | EKS 060075 |
| 65 | 63 | 117,5 | 4,0 | EKS 065063 |
| 65 | 75 | 117,5 | 4,0 | EKS 065075 |
| 80 | 75 | 117,5 | 5,2 | EKS 080075 |
| 80 | 90 | 117,5 | 5,9 | EKS 080090 |
| 100 | 90 | 135 | 7,0 | EKS 100090 |
| 100 | 110 | 135 | 7,2 | EKS 100110 |
| 100 | 125 | 135 | 7,5 | EKS 100125 |
| 125 | 110 | 145 | 8,2 | EKS 125110 |
| 125 | 125 | 145 | 8,7 | EKS 125125 |
| 125 | 140 | 145 | 9,8 | EKS 125140 |
| 150 | 140 | 155 | 12,9 | EKS 150140 |
| 150 | 160 | 155 | 12,7 | EKS 150160 |
| 150 | 180 | 155 | 13,3 | EKS 150180 |
| 200 | 200 | 195 | 22,1 | EKS 200200 |
| 200 | 225 | 195 | 21,2 | EKS 200225 |
| 250 | 250 | 215 | 23,5 | EKS 250250 |
| 250 | 280 | 215 | 29,2 | EKS 250280 |
| 300 | 315 | 235 | 42,9 | EKS 300315 |
| 400 | 400 | 390 | 100,0 | EKS 400400 |
| 500 | 500 | 415 | 125,5 | EKS 500500 |

F - KS

SPOJNI KOMADI S PRIRUBNICOM
STÜCKE (FLANSCH)
FLANGED SPIGOT PIECES

Art N°
P - 952

Standardna površinska zaščita: plastificirano min. 250 mic RAL 5015

Standard beschichtung: Pulverbeschichtet min. 250 mic RAL 5015

Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015

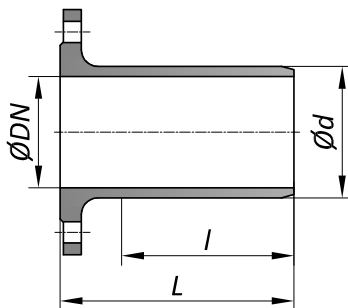
Prirubnice prema EN 1092-2 ili na zahtjev prema ostalim standardima.
Einbauf lansche nach EN 1092-2 oder auf Anfrage nach andere Standard.
Flanges according to EN 1092-2 or on request according to other standard.



EN 545



RAL GSK
 GSK-ID: 1238



| Nazivni promjer Nennweite Nominal size | d | L | l | Masa Gewicht Weight (kg) | Oznaka Typ Type |
|----------------------------------------------|-----|-----|-----|-----------------------------------|-----------------------|
| DN | | | | | |
| 50 | 63 | 110 | 85 | 3,3 | FKS 050 |
| 65 | 75 | 117 | 92 | 4,5 | FKS 065 |
| 80 | 90 | 128 | 101 | 6,5 | FKS 080 |
| 100 | 110 | 141 | 114 | 8,0 | FKS 100 |
| 125 | 140 | 159 | 130 | 9,1 | FKS 125 |
| 150 | 160 | 171 | 142 | 12,6 | FKS 150 |
| 200 | 225 | 192 | 160 | 19,1 | FKS 200 |
| 250 | 280 | 230 | 199 | 27,7 | FKS 250 |
| 300 | 315 | 267 | 232 | 34,8 | FKS 300 |
| 400 | 400 | 294 | 261 | 46,2 | FKS 400 |
| 500 | 500 | 315 | 276 | 65,0 | FKS 500 |

SPOJNI KOMAD S KOLČACIMA I PRIRUBNICOM STÜCKE (DOPPELMUFFE/ABZW. FLANSCH) DOUBLE SOCKET TEES WITH FLANGED BRANCH

MMA - KS

Art N°
P - 953

Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015

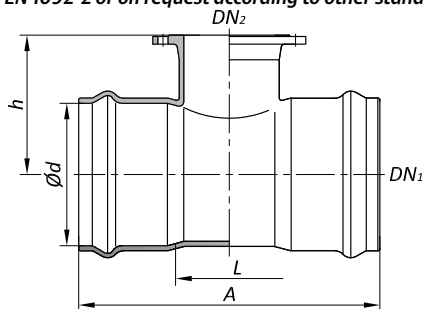
Standard beschütung: Pulverbeschited min. 250 mic RAL 5015

Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015

Prirubnice prema EN 1092-2 ili na zahtjev prema ostalim standardima.

Einbauflansche nach EN 1092-2 oder auf Anfrage nach andere Standard.

Flanges according to EN 1092-2 or on request according to other standard.



EN 545



GSK-ID: 1238

| Nazivni promjer Nennweite Nominal size | | d | A | L | h | Masa Gewicht Weight (kg) | Oznaka Typ Type |
|----------------------------------------------|-----------------|-----|-----|-----|-----|-----------------------------------|-----------------------|
| DN ₁ | DN ₂ | | | | | | |
| 50 | 50 | 63 | 250 | 63 | 140 | 6,8 | MMA 050050 |
| 65 | 50 | 75 | 265 | 66 | 150 | 7,8 | MMA 065050 |
| | 65 | 75 | 280 | 66 | 150 | 9,4 | MMA 065065 |
| 80 | 50 | 90 | 285 | 69 | 160 | 9,2 | MMA 080050 |
| | 65 | 90 | 300 | 84 | 160 | 10,4 | MMA 080065 |
| | 80 | 90 | 315 | 99 | 165 | 11,4 | MMA 080080 |
| 100 | 50 | 110 | 310 | 74 | 170 | 10,9 | MMA 100050 |
| | 65 | 110 | 325 | 89 | 175 | 11,9 | MMA 100065 |
| | 80 | 110 | 340 | 104 | 175 | 15,0 | MMA 100080 |
| | 100 | 110 | 360 | 124 | 180 | 15,8 | MMA 100100 |
| 125 | 50 | 140 | 335 | 80 | 185 | 15,9 | MMA 125050 |
| | 65 | 140 | 350 | 95 | 185 | 17,2 | MMA 125065 |
| | 80 | 140 | 365 | 110 | 190 | 18,5 | MMA 125080 |
| | 100 | 140 | 385 | 130 | 195 | 19,5 | MMA 125100 |
| | 125 | 140 | 410 | 135 | 200 | 23,1 | MMA 125125 |
| 150 | 50 | 160 | 360 | 98 | 205 | 19,2 | MMA 150050 |
| | 65 | 160 | 375 | 98 | 210 | 21,0 | MMA 150065 |
| | 80 | 160 | 390 | 116 | 205 | 20,8 | MMA 150080 |
| | 100 | 160 | 410 | 136 | 210 | 24,2 | MMA 150100 |
| | 125 | 160 | 435 | 161 | 215 | 26,5 | MMA 150125 |
| | 150 | 160 | 460 | 186 | 220 | 29,7 | MMA 150150 |

MMA - KS

SPOJNI KOMAD S KOLČACIMA I PRIRUBNICOM
STÜCKE (DOPPELMUFFE/ABZW. FLANSCH)
DOUBLE SOCKET TEES WITH FLANGED BRANCH

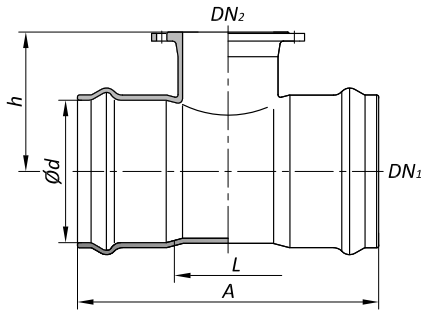
Art №
P - 953



EN 545



GSK-ID: 1238



| Nazivni promjer Nennweite Nominal size | | d | A | L | h | Masa Gewicht Weight (kg) | Oznaka Typ Type |
|----------------------------------------------|-----------------|-----|-----|-----|-----|-----------------------------------|-----------------------|
| DN ₁ | DN ₂ | | | | | | |
| 200 | 80 | 200 | 458 | 128 | 223 | 26,9 | MMA 200080 A |
| | 100 | 200 | 465 | 150 | 240 | 28,9 | MMA 200100 A |
| | 125 | 200 | 505 | 173 | 233 | 30,9 | MMA 200125 A |
| | 150 | 200 | 550 | 243 | 273 | 33,9 | MMA 200150 A |
| | 200 | 200 | 547 | 240 | 280 | 40,9 | MMA 200200 A |
| 200 | 80 | 225 | 455 | 128 | 235 | 34,9 | MMA 200080 B |
| | 100 | 225 | 475 | 148 | 240 | 37,6 | MMA 200100 B |
| | 125 | 225 | 500 | 173 | 245 | 39,8 | MMA 200125 B |
| | 150 | 225 | 525 | 198 | 250 | 44,7 | MMA 200150 B |
| | 200 | 225 | 575 | 248 | 260 | 51,4 | MMA 200200 B |
| 250 | 80 | 250 | 515 | 140 | 250 | 36 | MMA 250080 A |
| | 100 | 250 | 535 | 160 | 255 | 38 | MMA 250100 A |
| | 150 | 250 | 585 | 210 | 265 | 43 | MMA 250150 A |
| | 200 | 250 | 635 | 260 | 275 | 50 | MMA 250200 A |
| | 250 | 250 | 685 | 310 | 285 | 68 | MMA 250250 A |
| 250 | 80 | 280 | 501 | 140 | 282 | 40,5 | MMA 250080 B |
| | 100 | 280 | 521 | 160 | 288 | 49,4 | MMA 250100 B |
| | 150 | 280 | 573 | 210 | 288 | 49,4 | MMA 250150 B |
| | 200 | 280 | 687 | 260 | 285 | 69,9 | MMA 250200 B |
| | 250 | 280 | 673 | 310 | 287 | 69,3 | MMA 250250 B |
| 300 | 80 | 315 | 550 | 152 | 295 | 58,9 | MMA 300080 |
| | 100 | 315 | 570 | 172 | 300 | 61,6 | MMA 300100 |
| | 150 | 315 | 620 | 222 | 310 | 70,1 | MMA 300150 |
| | 200 | 315 | 670 | 272 | 320 | 79,4 | MMA 300200 |
| | 250 | 315 | 720 | 322 | 330 | 89,2 | MMA 300250 |
| | | 315 | 770 | 372 | 340 | 93,2 | MMA 300300 |

LUČNI KOMAD SA STOPALOM
MUFFENFUSSKRÜMMER
FLANGED SOCKET 90° DUCKFOOT BEND

EN - KS

Art N°
P - 961

Standardna površinska zaštita: plastificirano min. 250 mic RAL 5015

Standard beschichtung: Pulverbeschichted min. 250 mic RAL 5015

Standard coating: Fusion bonded epoxy powder min. 250 mic RAL 5015

Prirubnice prema EN 1092-2 ili na zahtjev prema ostalim standardima.

Einbauflansche nach EN 1092-2 oder auf Anfrage nach andere Standard.

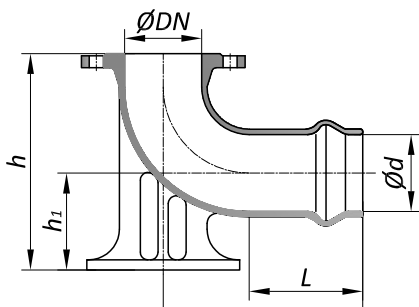
Flanges according to EN 1092-2 or on request according to other standard.



EN 545



GSK-ID: 1238

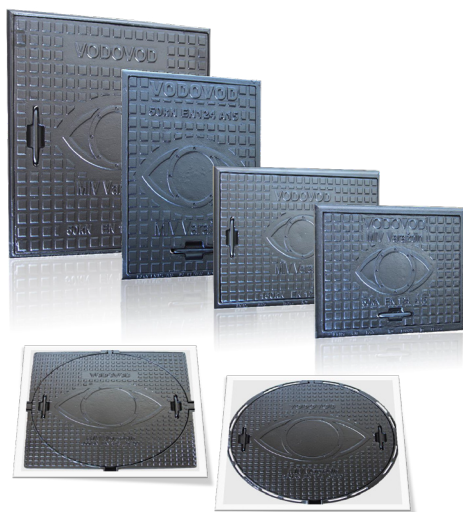
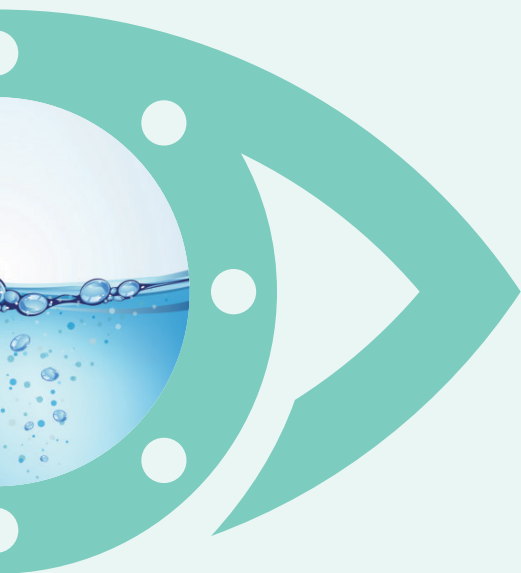


| Nazivni promjer Nennweite Nominal size | d | A | h | L | h1 | Masa Gewicht Weight (kg) | Oznaka Typ Type |
|----------------------------------------------|-----|-----|-----|-----|-----|-----------------------------------|-----------------------|
| DN | | | | | | | |
| 80 | 90 | 260 | 288 | 140 | 108 | 15,2 | EN 080A |
| 80 | 110 | 260 | 300 | 165 | 120 | 13,6 | EN 080B |
| 100 | 110 | 295 | 320 | 160 | 120 | 20,5 | EN 100 |





KANALSKA ARMATURA
KANALARMATUREN
SEWER CASTINGS

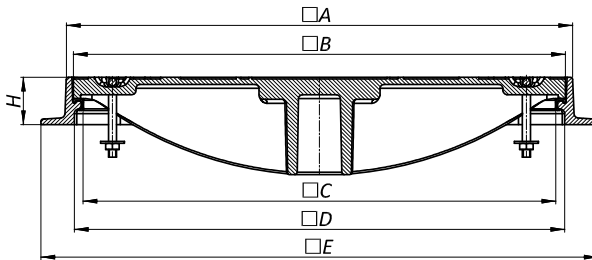


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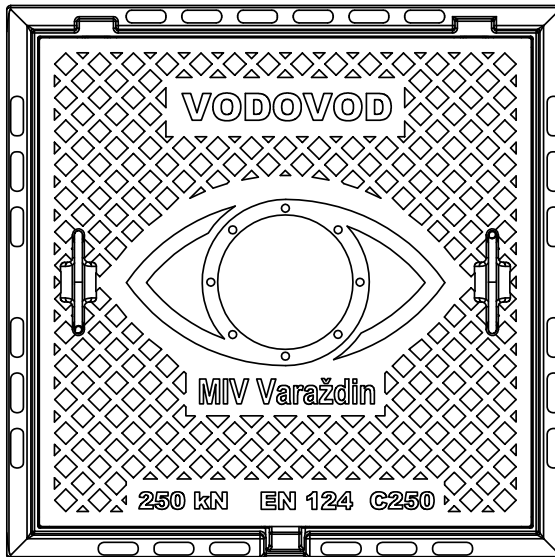
KANALSKI POKLOPAC 600 x 600
 KANALDECKEL 600 x 600
 SQUARE COVERS 600 x 600

Art N°
 K - 2001



ISPITNO OPTEREĆENJE
 PRÜFBELASTUNG
 SAFE LOADING

5 - 40 t



| Tip Typ Type | A | B | C | D | E | H | Masa Gewicht Weight (kg) |
|--------------------|-----|-----|-----|-----|-----|-----|-----------------------------------|
| 600x600/5 | 603 | 586 | 564 | 591 | 628 | 35 | 36 |
| 600x600/15 | 601 | 583 | 559 | 587 | 640 | 40 | 41,5 |
| 600x600/25 | 636 | 618 | 594 | 616 | 700 | 60 | 56,5 |
| 600x600/40 | 634 | 616 | 594 | 637 | 700 | 100 | 61,5 |

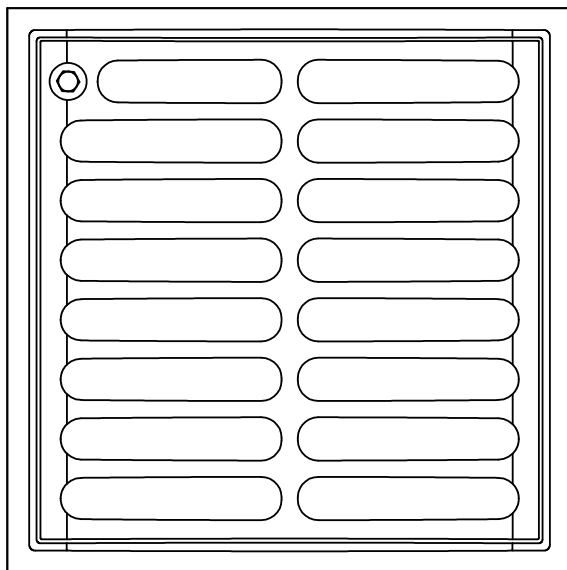
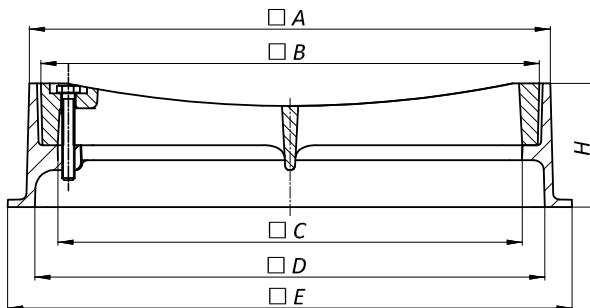
Svi tipovi kanalskih poklopaca imaju automatsko zaključavanje.
 Alle Typen sind Ausführungen mit automatische Schlüssel.
 All types are available with automatic locking system.

KANALSKE REŠETKE
KANALGITTER
SEWER GRATINGS

Art N°
K - 2002

ISPITNO OPTEREĆENJE
PRÜFBELASTUNG
SAFE LOADING

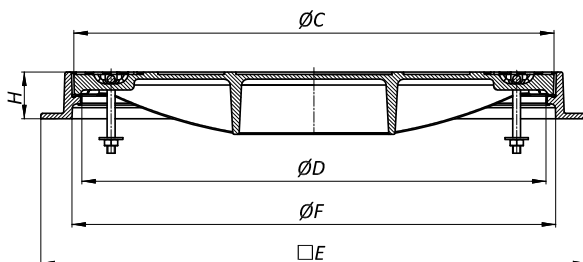
25 - 40 t



| Tip Typ Type | A | B | C | D | E | H | Masa Gewicht Weight (kg) |
|--------------------|-----|-----|-----|-----|-----|-----|---------------------------------------|
| 400x400/25 | 420 | 400 | 375 | 410 | 455 | 100 | 26 |
| 400x400/40 | 420 | 400 | 375 | 410 | 455 | 60 | 33 |

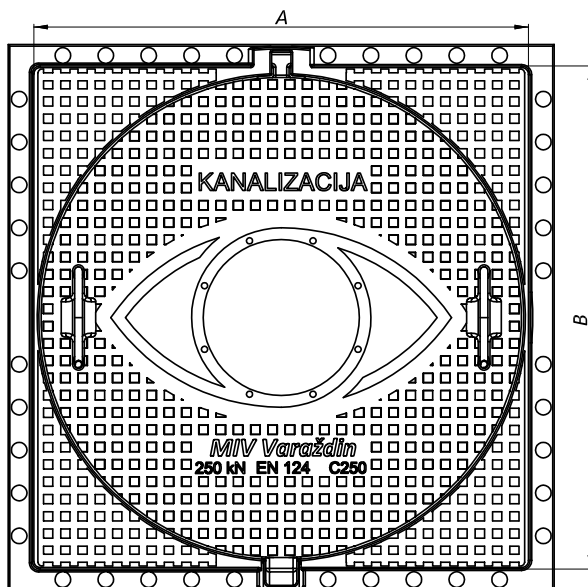
KANALSKI POKLOPAC S ČETVRTASTIM OKVIROM $\Phi 600$
 KANALDECKEL MIT VIERCKIGEM RAHMEN $\Phi 600$
 ROUND COVERS WITH SQUARE FRAMES $\Phi 600$

Art N°
 K - 2003



ISPITNO OPTEREĆENJE
 PRÜFBELASTUNG
 SAFE LOADING

25 - 40 t



| Tip Typ Type | A | B | C | D | E | F | H | Masa Gewicht Weight (kg) |
|--------------------|-----|-----|-----|-----|-----|-----|-----|---------------------------------------|
| 600/25 | 640 | 645 | 616 | 595 | 700 | 620 | 60 | 59 |
| 600/40 | 645 | 645 | 616 | 595 | 700 | 623 | 100 | 78 |

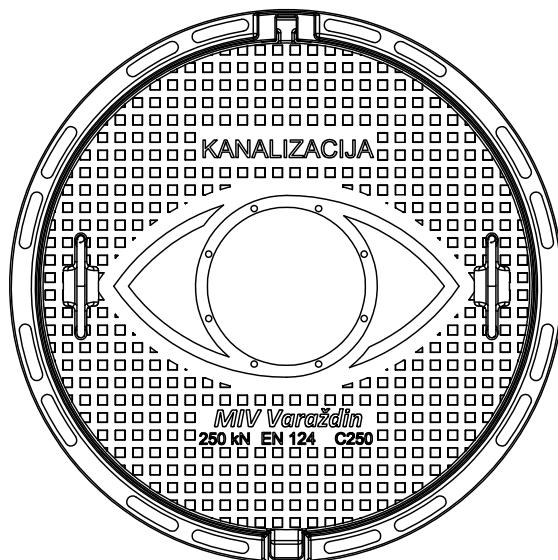
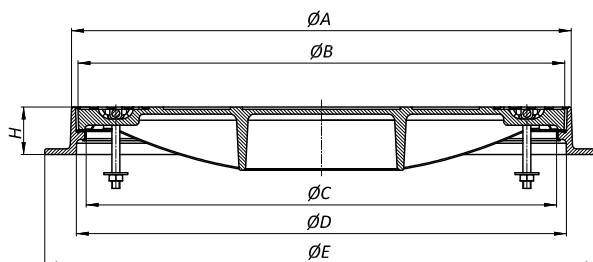
Svi tipovi kanalskih poklopaca imaju automatsko zaključavanje.
 Alle Typen sind Ausführungen mit automatische Schlüssel.
 All types are available with automatic locking system.

KANALSKI POKLOPAC $\Phi 600$
 KANALDECKEL $\Phi 600$
 ROUND COVERS $\Phi 600$

Art N°
 K - 2004

ISPITNO OPTEREĆENJE
 PRÜFBELASTUNG
 SAFE LOADING

25 - 40 t

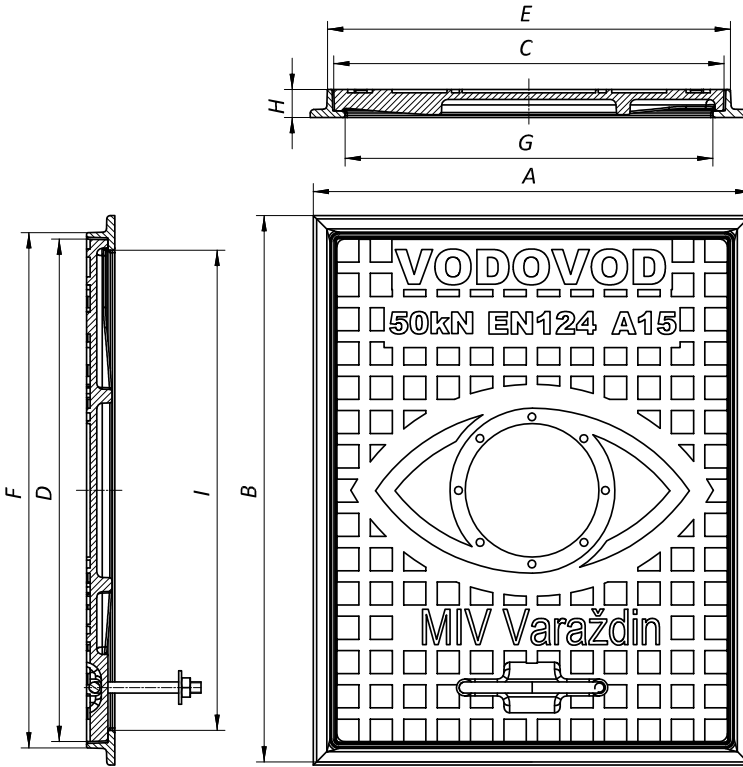


| Tip Typ Type | A | B | C | D | E | H | Masa Gewicht Weight (kg) |
|--------------------|-----|-----|-----|-----|-----|-----|-----------------------------------|
| 600/25 | 632 | 616 | 595 | 620 | 700 | 60 | 41 |
| 600/40 | 632 | 616 | 595 | 623 | 700 | 100 | 52 |

Svi tipovi kanalskih poklopaca imaju automatsko zaključavanje.
 Alle Typen sind Ausführungen mit automatische Schlüssel.
 All types are available with automatic locking system.

KANALSKI POKLOPAC 450 x 350
 KANALDECKEL 450 x 350
 SQUARE COVERS 450 x 350

Art N°
 K - 2005



ISPITNO OPTEREĆENJE
 PRÜFBELASTUNG
 SAFE LOADING

5 t

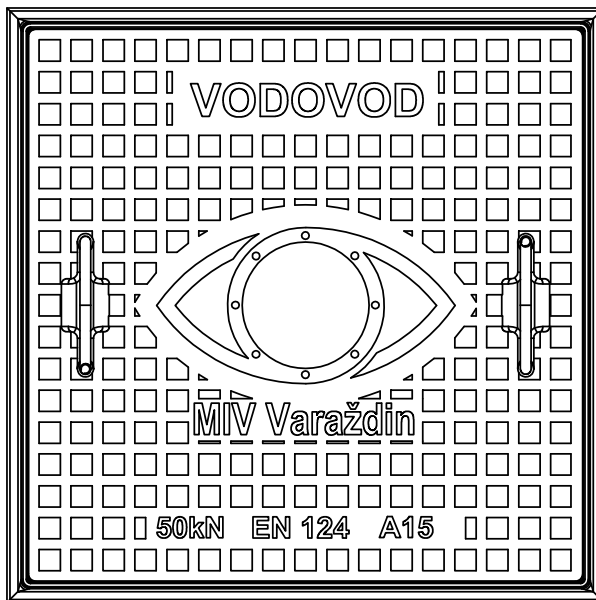
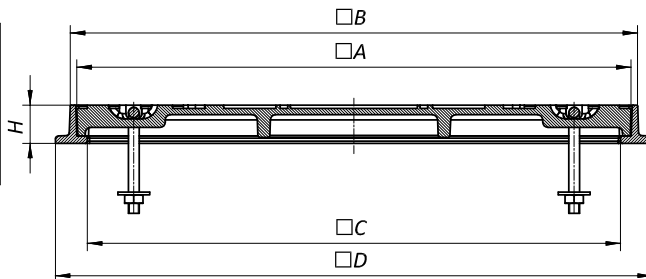
| Tip Typ Type | A | B | C | D | E | F | G | I | H | Masa Gewicht Weight (kg) |
|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|----|---------------------------------------|
| 350X450/5 | 390 | 490 | 348 | 448 | 360 | 460 | 328 | 428 | 25 | 14,5 |

KANALSKI POKLOPAC 500 x 500
 KANALDECKEL 500 x 500
 SQUARE COVERS 500 x 500

Art N°
 K - 2006

ISPITNO OPTEREĆENJE
 PRÜFBELASTUNG
 SAFE LOADING

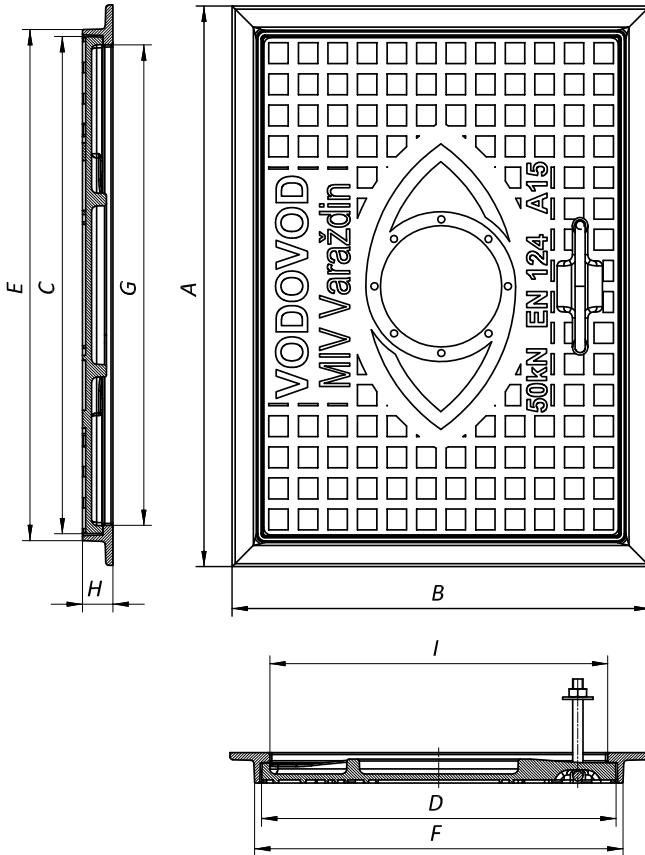
5 t



| Tip Typ Type | A | B | C | D | H | Masa Gewicht Weight (kg) |
|--------------------|-----|-----|-----|-----|----|---------------------------------------|
| 500x500/5 | 520 | 532 | 500 | 560 | 36 | 27 |

KANALSKI POKLOPAC 520 x 370
 KANALDECKEL 520 x 370
 SQUARE COVERS 520 x 370

Art N°
 K - 2007



ISPITNO OPTEREĆENJE
 PRÜFBELASTUNG
 SAFE LOADING

5 t

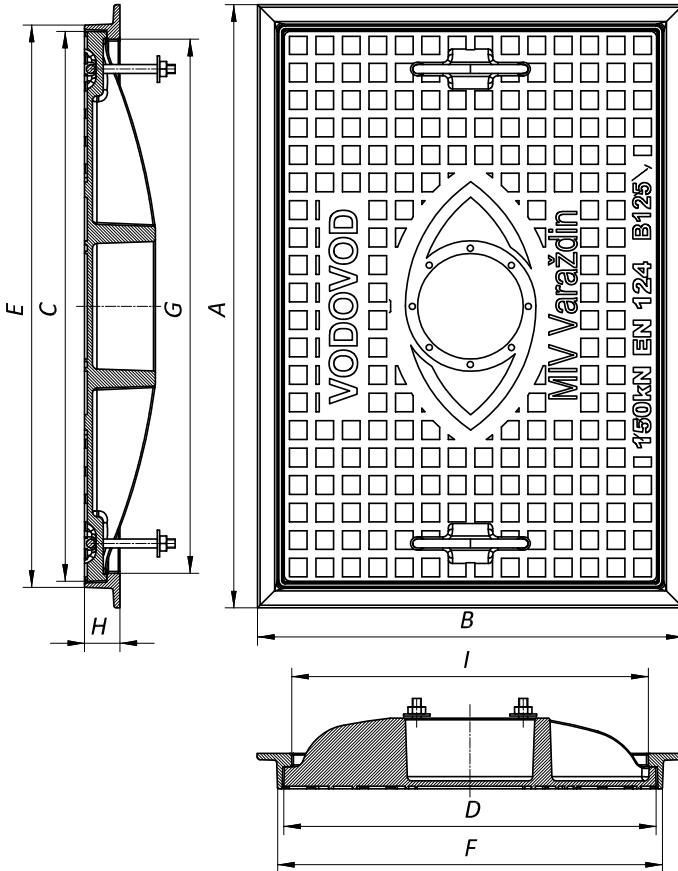
| Tip Typ Type | A | B | C | D | E | F | G | I | H | Masa Gewicht Weight (kg) |
|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|----|---------------------------------------|
| 520x370/5 | 550 | 410 | 488 | 348 | 502 | 362 | 472 | 332 | 30 | 17 |

KANALSKI POKLOPAC 400 x 600
 KANALDECKEL 400 x 600
 SQUARE COVERS 400 x 600

Art N°
 K - 2008

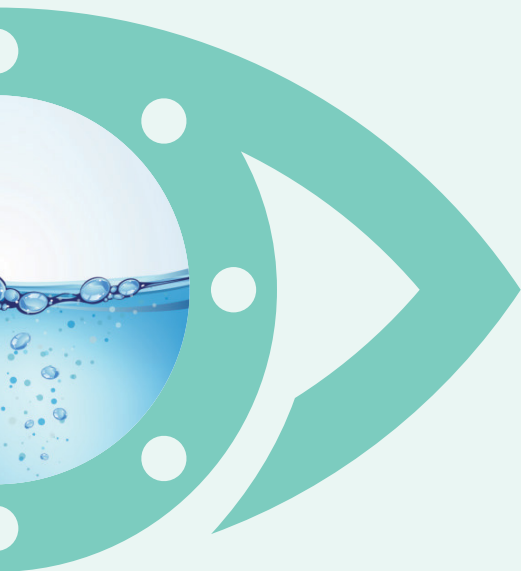
ISPITNO OPTEREĆENJE
 PRÜFBELASTUNG
 SAFE LOADING

15 t

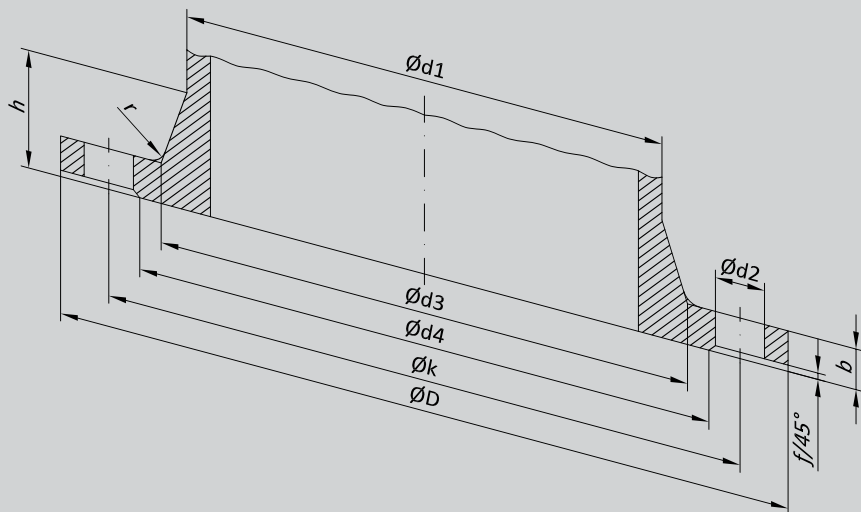


| Tip Type Typ | A | B | C | D | E | F | G | I | H | Masa Gewicht Weight (kg) |
|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|----|---------------------------------------|
| 400x600/15 | 680 | 480 | 620 | 420 | 634 | 434 | 602 | 402 | 40 | 36 |





**DODATAK
ANHANG I
APPENDIX I**





TEHNIČKI UVJETI ISPORUKE ZA TLAČNE CIJEVI I FAZONE OD NODULARNOG LIJEVA ZA PLINOVODE I VODOVODE PREMA EN-u 545

1. PODRUČJE ZA KOJE NORMA VRIJEDI

Ova norma određuje zahtjeve za materijale, mjerenja i dozvoljena odstupanja, mehaničke karakteristike i standardne prevlake cijevi i fazona od nodularnog lijeva.

Norma vrijedi za cijevi, fazone i pribor koji se proizvode postupkom lijevanja po želji ili od pojedinačnih lijevanih dijelova, kao i za odgovarajuće spojeve za nazivne promjere DN 40 do zaključno DN 2000.

Norma vrijedi za cijevi, fazone i pribor, koji

- imaju kolčake, prirubnice ili utične krajeve, s različitim vrstama brtvila, koja nisu sastavni dio ove norme;
- se obično isporučuju s unutarnjom i vanjskom zaštitom;
- se primjenjuju za transport tekućih medija na temperaturama od 0°C do 50°C, van područja smrzavanja.

2. TEHNIČKI ZAHTJEVI

2.1 SASTAV POVRŠINE I POBOLJŠANJA

Cijevi, fazone i pribor moraju biti bez grešaka i površinski potpune.

Ukoliko je potrebno, cijevi i fazone se smiju popravljati zavarivanjem da se otklone površinske greške i mjestimični nedostaci koji ne zahvaćaju cijelu debljinu stijenke, pod uvjetom da se popravci odvijaju u skladu s postupcima, pismeno definiranim sustavom osiguranja kvalitete proizvođača, te da popravljene cijevi i fazone ispunjavaju sve zahtjeve koje propisuje ova norma.

2.2 VRSTE SPOJEVA

2.2.1 Spojevi s prirubnicom

Mjere i tolerancije prirubnica na cijevima i fazonama moraju odgovarati mjerama prema EN 1092-2, a brtve za prirubnice mjerama prema ISO 7483.

2.2.2 Pokretljivi spojevi

Vanjski promjeri i tolerancije utičnih krajeva cijevi i fazona s pokretnim spojem opisani su u poglavlju 2.4.2.

2.3 MATERIJALI U DODIRU S PITKOM VODOM

Ukoliko se cijevi, fazone i spojevi od nodularnog lijeva koriste u uvjetima za koje su namijenjeni, te ukoliko se nalaze u trajnom ili privremenom kontaktu s pitkom vodom namijenjenoj ljudskoj upotrebi, isti ne smiju promijeniti kvalitetu vode u toj mjeri da kod krajnjeg korisnika više ne odgovara zahtjevima EG- ili odgovarajućih EFTA-naputaka.

2.4 MJERNI ZAHTJEVI

2.4.1 Debljina stijenke

Nazivna debljina stijenke e od nodularnog lijeva računa se, ovisno o nazivnom promjeru DN, prema formuli, s minimumom od 6 mm za cijevi i 7 mm za fazone:

$$e = K(0,5 + 0,001 \text{ DN}),$$

gdje je:

K – faktor za određivanje klase debljine stijenke. Odabire se iz reda cijelih brojeva: 8, 9, 10, 11, 12...
Tolerancije nazivne debljine stijenke cijevi i fazona moraju biti prema tabeli.

Tabela 1

| Vrste lijevanih komada | e , mm | Tolerancija %, mm |
|--------------------------------------------|----------|-------------------|
| centrifugirane cijevi | 6,0 | -1,3 |
| | > 6,0 | -(1,3+0,001 DN) |
| Cijevi i fazone od necentrifugalnog lijeva | 7,0 | -2,3 |
| | > 7,0 | -(2,3+0,001 DN) |

* Navedene su samo negativne tolerancije, da se osigura dovoljan otpor unutarnjem tlaku.

2.4.2 Vanjski promjer

Za DN ≤ 300 mora vanjski promjer cijevnog otvora, mjeran cirkometrom, biti takav da se na dužini od najmanje dvije trećine cijevi, mjereno od utičnog kraja može izvesti spoj.

Za DN > 300 vrijedi prema dogovoru proizvođača i naručitelja isto, ukoliko se cijevi moraju skraćivati na gradilištu. Osim toga, mora i ovalitet na utičnim krajevima cijevi i fazona:

- ostati unutar tolerancije prikazanih u tabeli na strani 18
- ne smije prijeći 1% za DN 250 do DN 600, odnosno 2% za DN > 600

2.4.3 Vanjski promjer

Dopuštena odstupanja od normiranih dužina fazona prikazana su u tabeli 2.

Tabela 2

| Vrsta fazone | DN | Odstupanje, mm |
|--------------------------------|--------------|----------------|
| Komad s prirubnicom i kolčakom | 40 do 1200 | ±25 |
| Spojni komad s prirubnicom | 1400 do 2000 | ±35 |
| Spojni komad s kolčakom | | |
| Redukcioni komad | | |
| Odcjepni komadi | 40 do 1200 | + 50/ - 25 |
| | 1400 do 2000 | + 75/ - 35 |
| Lučni komad 90° | 40 do 2000 | ±(15+0,03 DN) |
| Lučni komad 45° | 40 do 2000 | ±(10+0,025 DN) |
| Lučni komad 22°30' i 11°15' | 40 do 1200 | ±(10+0,02 DN) |
| | 1400 do 2000 | ±(10+0,025 DN) |

2.4.3 Tolerancije dužina

Tolerancije dužina navedene su u tabeli 3.

Tabela 3

| Vrsta komada | Tolerancija (mm) |
|---------------------------------------------------------------------------------------------------------------------------------|------------------|
| Cijevi s kolčakom | ± 30 |
| Fazone za spajanje s kolčakom | ± 20 |
| Cijevi i fazone za spajanje s prirubnicama | ± 10* |
| *Manje tolerancije su dogovorom između proizvođača i naručitelja moguće, ali ne manje od ± 3mm za DN ≤ 600 i ± 4mm za DN > 600. | |

2.5 KARAKTERISTIČNE VRIJEDNOSTI MATERIJALA

2.5.1 Karakteristike čvrstoće

Cijevi, fazone i pribor od nodularnog lijeva moraju imati vrijednosti čvrstoće kako je navedeno u tabeli 4.

Tabela 4

| Vrsta komada | Najniža vlačna čvrstoća R_m MPa | Najniža istezljivost A (%) | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|------------------------------|--------------------|
| | DN 40 do DN 2000 | DN 40 do DN 1000 | DN 1100 do DN 2000 |
| Centrifugalno lijevane cijevi | 420 | 10 | 7 |
| Necentrifugalno lijevane cijevi, fazone i pribor | 420 | 5 | 5 |
| Napomena: Dogovorom između proizvođača i naručitelja može se odrediti granica tečenja Rp0,2. Ona ne smije biti manja od 270 Mpa, ako je A≥12% za DN 40 do DN 1000 ili A≥10% za DN > 1000, te 300 MPa u drugim slučajevima. | | | |

2.5.2 Tvrdoća

Tvrdoća po Brinellu ne smije prekoračiti 250 HB za fazone i pribor. Pri sastavnim elementima koji su međusobno zavareni, je na područjima izloženim toplinskim utjecajima dozvoljena veća tvrdoća po Brinell-u.

2.6 PREVLAKE I OBLOGE ZA FAZONE I PRIBOR

2.6.1 Općenito

Prevlake

- cinčana prevlaka s pokrovnim premazom
- polietilena folija (dodatak bitumen premazu ili cinčanoj prevlaci s pokrovnim premazom)
- epoxy
- zaštitni ovoji

Obloge

- poliuretan
- epoxy
- deblja obloga od cementnog morta
- obloga od cementnog morta s pečatnim slojem

Ove prevlake i obloge moraju biti u skladu s odgovarajućim EN-normama ili, gdje one ne postoje, odgovarajućim normama ili dogovorenim uvjetima isporuke.

Nazivna debljina sloja obloge od cementnog morta i njena tolerancija moraju biti navedene kao u tabeli 5.

Tabela 5

| DN | Debljina sloja (mm) | | Maksimalne širine napuklina i maksimalni radijalni pomak |
|--------------|---------------------|--------------|----------------------------------------------------------|
| | Nazivna vrijednost | Tolerancija* | |
| 40 do 300 | 3,5 | -1,5 | 0,8 |
| 350 do 600 | 5 | -2 | 1,0 |
| 700 do 1200 | 6 | -2,5 | 1,2 |
| 1400 do 2000 | 9 | -3 | 1,5 |

*Dana je samo negativna tolerancija.
Napomena: Krajevi cijevi mogu imati zakrivljenje od maksimalno 50 mm dužine.

2.6.2 Premazi

Materijal za premaze mora se sastojati od bitumenskog materijala ili od sintetičke smole. Odgovarajući dodaci (otapala, anorganske ispune itd.) su dozvoljeni da bi se postiglo lako nanošenje i sušenje.

Prije nanošenja premaza površina lijeva mora biti suha, bez hrđe ili slobodnih dijelica, te bez ulja ili masti.

Premaz se mora nanijeti uranjanjem, špricanjem ili kistom.

Premaz mora cijelu površinu jednoliko prekriti, mora biti gladak i homogen. Mora se dobro osušiti da se komadi ne bi međusobno sljepili.

Ukoliko se debljina premaza mjeri (direktno na komadu, npr. magnetskim uređajem ili indirektno na uzorku, npr. mikrometrom ili vaganjem) srednja debljina sloja ne smije biti manja od 70µm, a mjestimično ne smije biti manja od 50µm.

2.7 OZNAČAVANJE FAZONA

Sve fazone moraju imati trajne i čitke oznake i sadržavati minimalno sljedeće podatke

- oznaku proizvođača
- godinu proizvodnje
- vrstu nodularnog lijeva
- nazivni promjer DN
- nazivni tlak za prirubnice
- uputu za ovu normu
- Oznaku ureda za certifikaciju ukoliko je posjeduje
- klasu debljine stijenke za centrifugalno proizvedene cijevi, ukoliko odstupaju od K9.

Prvih pet podataka mora biti navedeno na kalupu ili naknadno otisnuto na odljevak.

2.8 NEPROPUSNOST

2.8.1 Cijevi i fazone

Cijevi i fazone moraju biti tako izvedeni da su pri ispitnom tlaku nepropusne, a kod ispitivanja ne smiju pokazati vidljivu propusnost, znojenje ili bilo koji drugi znak zakazivanja.

2.8.2 Spojevi

Spojevi moraju

- trajno, bez propusnosti odoljevati pogonskom tlaku za sastavne dijelove (PMA) za odgovarajuće cijevi i fazone ili vlastitom PMA, kako je navedeno u proizvođačkim katalogima, već prema tome koji je od njih najniži
- biti nepropusni pri negativnom unutarnjem tlaku, koji može nastupiti zbog tlačnih udara
- biti vodonepropusni pri hidrostatičkom tlaku od 2 bara, ukoliko su predviđeni za upotrebu na dubini većoj od 5 m ispod razine vode

Svipokretni cijevni spojevi moraju biti tako izvedeni da se mogu zakretati, pa od strane proizvođača navedeno kutno zakretanje ne smije biti manje od

- 3°30' za DN 40 do DN 300
- 2°30' za DN 350 do DN 600
- 1°30' za DN 700 do DN 2000

Osim toga moraju biti izvedena tako da posjeduju dovoljnu pomičnost po duljini, što proizvođač mora navesti.

3. TESTIRANJA

Kvaliteta cijevi i fazona te njihove dimenzije ispituju se vizuelno, mjerenjima, te uzimanjem probnih uzoraka. Za ispitivanje rastezanjem koriste se uzorci čije su dimenzije navedene u tabeli 6.

Tabela 6

| Vrsta lijevanog elementa | Ispitni uzorak Postupak A | Ispitni uzorak Postupak B | | |
|--------------------------------------------------------------------|------------------------------|----------------------------------------------------|--------------------------|-------------------------------|
| | Nazivni promjer mm | Presjek nazivne površine S ₀ , mm | Nazivni promjer mm | Tolerancija promjera mm |
| <i>Centrifugalno lijevane cijevi s debljinom stijenke e u mm:</i> | | | | |
| <i>e < 6</i> | 2,5 | 5,0 | 2,52 | ± 0,01 |
| <i>6 ≤ e < 8</i> | 3,5 | 10,0 | 3,57 | ± 0,02 |
| <i>8 ≤ e < 12</i> | 5,0 | 20,0 | 5,05 | ± 0,02 |
| <i>e ≥ 12</i> | 6,0 | 30,0 | 6,18 | ± 0,03 |
| <i>Necentrifugalno lijevane cijevi, fazone i pribor:</i> | | | | |
| <i>nalijevani uzorci</i> | 5,0 | 20,0 | 5,05 | ± 0,02 |
| <i>odvojeno lijevani uzorci:</i> | | | | |
| <i>debljina uzorka 12,5 mm za debljinu odljevka manju od 12 mm</i> | 6,0 | 30,0 | 6,18 | ± 0,03 |
| <i>debljina uzorka 25 mm za debljinu odljevka 12 mm i više</i> | 12,0 ili 14,0 | - | - | |

4. ISPITIVANJE NEPROPUSNOSTI

Cijevni spojevi se ispituju na nepropusnost prema pozitivnom i negativnom unutarnjem tlaku, pozitivnom vanjskom tlaku, te dinamičkom unutarnjem tlaku na za to propisanim uređajima i u propisanom vremenskom trajanju.

5. OSIGURANJE KVALITETE

Proizvođač mora dokazati da su njegovi proizvodi u skladu s ovom normom putem obavljanja tipičkih funkcijskih ispitivanja i nadziranja procesa proizvodnje.

Ispitivanja mora provesti sam proizvođač ili priznati institut za provođenje ispitivanja u ime proizvođača. Proizvođač mora potpuno izvještaje pohraniti.

Proizvođač mora nadzirati kvalitetu svojih proizvoda putem sustava nadziranja, kako bi ispunio tehničke zahtjeve ove norme.

Stoga mora sustav osiguranja kvalitete proizvođača biti u skladu s zahtjevima EN 29002. Sustav osiguranja kvalitete proizvođača mora biti proveden od strane ureda za certifikaciju, koji je sa svoje strane akreditiran u skladu s EN 45012.



TEHNISCHE LIEFERBEDINGUNEN FÜR DRUCKRÖHRE UND FORMSTÜCKE AUS DUKTILEM GUSSEISEN FÜR GAS- UND WASSERLEITUNGEN NACH EN 545

1. ANWENDUNGSBEREICH

Diese Norm legt die Anforderungen an die Werkstoffe, die Abmessungen und zulässigen Abweichungen, die mechanischen Eigenschaften und die Standardüberzüge duktiler Gussrohre und Formstücke fest.

Diese Norm gilt für Rohre, Formstücke und Zubehörteile, die nach einem beliebigen Giessverfahren oder aus gegossenen Einzelteilen hergestellt werden, ebenso wie für die entsprechenden Verbindungen für den Nennweitenbereich von DN 40 bis einschliesslich DN 2000.

Diese Norm gilt für Rohre, Formstücke und Zubehörteile, die

- mit Muffen, Flanschen oder Einsteckenden zur Verbindung mit unterschiedlichen Arten von Dichtungen versehen sind, die nicht Bestandteil dieser Norm sind;
- üblicherweise mit einem Innen- und Aussenschutz geliefert werden;
- zum Transport flüssiger Medien zwischen 0°C und 50°C geeignet sind, jedoch ausserhalb des Frostbereiches.

2. TEHNISCHE ANFORDERUNGEN

2.1 OBERFLÄCHENBESCHAFFENHEIT UND AUSBESSERUNGEN

Rohre, Formstücke und Zubehörteile müssen frei von Fehler und Oberflächenunregelmäßigkeiten sein. Wenn erforderlich, dürfen Rohre und Formstücke z. B. durch Schweißen ausgebessert werden, um Oberflächenunregelmäßigkeiten und örtliche Fehlstellen, die nicht die ganze Wanddicke betreffen, zu beseitigen, unter der Voraussetzung, dass die Ausbesserungen gemäss einer im Qualitätssicherungssystem des Herstellers schriftlich festgelegten Verfahrensweise erfolgen und die ausgebesserten Rohre und Formstücke alle Anforderungen dieser Norm erfüllen.

2.2 VERBINDUNGSARTEN

2.2.1 Flanschverbindungen

Die Masse und Toleranzen der Flansche von Rohren und Formstücken müssen mit prEN 1092-2 übereinstimmen und die Flanschdichtungen mit ISO 7483.

2.2.2 Bewegliche Verbindungen

Rohre und Formstücke mit beweglichen Verbindungen müssen bezüglich ihrer Aussendurchmesser DE und deren Toleranzen im Bereich der Einsteckenden mit 2.4.2. übereinstimmen.

2.3 STOFFE IN KONTAKT MIT TRINKWASSER

Wenn sie unter den Bedingungen eingesetzt werden, für die sie ausgelegt sind, dürfen duktile Gussrohre, Formstücke und deren Verbindungen, wenn sie in dauerndem oder zeitweisem Kontakt mit Wasser, das für den menschlichen Gebrauch bestimmt ist, stehen, die Güte dieses Wassers nicht soweit verändern, dass sie beim Endverbraucher mit den Anforderungen der EG-Richtlinien oder der entsprechenden EFTA-Richtlinien nicht mehr übereinstimmen.

2.4 MASSANFORDERUNGEN

2.4.1 Wanddicke

Die Nenngusswanddicke der Rohre und Formstücke muss in Abhängigkeit von der Nennweite nach der folgenden Formel errechnet werden, mit einem Minimum von 6 mm für Rohre und 7 mm für Formstücke:

$$e = K(0,5 + 0,001 \text{ DN}),$$

Dabei ist:

K ein Faktor zur Bestimmung der Wanddickenklasse.

Er ist aus einer Reihe ganzer Zahlen ausgewählt: ...8, 9, 10, 11

Die Toleranzen für Nennwanddicken der Rohre und Formstücke müssen wie in Tabelle 1 angegeben sein.

Tabelle 1

| Art des Gussstückes | e, mm | Toleranz*, mm |
|-----------------------------------------|-------|-----------------|
| Schleudergussrohre | 6,0 | -1,3 |
| | > 6,0 | -(1,3+0,001 DN) |
| Nichtgeschleuderte Rohre und Formstücke | 7,0 | -2,3 |
| | > 7,0 | -(2,3+0,001 DN) |

* Es ist nur eine Minustoleranz angegeben, um einen genügenden Widerstand gegen Innendruck sicherzustellen.

2.4.2 Aussendurchmesser

Für DN ≤ 300 muss der Aussendurchmesser des Rohrschaftes, gemessen mittels Circometer, so sein, dass über mindestens zwei Drittel der Rohrlänge, gemessen von Einsteckende, eine Verbindung hergestellt werden kann.

Für DN > 300 gilt nach Vereinbarung zwischen Hersteller und Besteller das gleiche, wenn sie an der Baustelle gekürzt werden müssen.

Osim toga, mora i ovalitet na utičnim krajevima cijevi i fazona:

- innerhalb der Toleranzen von DE bleiben für DN 40 bis DN 200 (Seite 18) und darf
- 1% nicht überschreiten für DN 250 bis DN 600 oder 2% für DN > 600.

2.4.3 Genormte Längen von Formstücken

Die zulässigen Abweichungen von den genormten Längen der Formstücke müssen wie in Tabelle 2 angegeben sein.

Tabelle 2

| Formstück-Typ | DN | Abweichung (mm) |
|----------------------------------------------------------------------------------------|------------------------------|---------------------------------|
| Flansch-Muffenstücke Einflansch-Stücke Überschiebmuffenstücke Übergangsstücke | 40 bis 1200 1400 bis 2000 | ±25 ±35 |
| Abzweigstücke | 40 bis 1200 1400 bis 2000 | + 50/ - 25 + 75/ - 35 |
| Bögen 90° | 40 bis 2000 | ±(15+0,03 DN) |
| Bögen 45° | 40 bis 2000 | ±(10+0,025 DN) |
| Bögen 22°30' und 11°15' | 40 bis 1200 1400 bis 2000 | ±(10+0,02 DN) ±(10+0,025 DN) |

2.4.3 Längentoleranzen

Die Längentoleranzen müssen wie in Tabelle 3 angegeben sein.

Tabelle 3

| Art der Stücke | Toleranz (mm) |
|----------------------------------------------|---------------|
| Muffenrohre | ± 30 |
| Formstücke für Muffenverbindungen | ± 20 |
| Rohre und Formstücke für Flanschverbindungen | ± 10° |

*Kleinere Toleranzen sind auf Vereinbarung zwischen Hersteller und Besteller möglich, jedoch nicht kleiner als ±3 mm für DN ≤ 600 und ±4 mm für DN > 600.

2.5 WERKSTOFFKENNWERTE

2.5.1 Festigkeitseigenschaften

Rohre, Formstücke und Zubehörteile aus duktilem Gusseisen müssen die Festigkeitswerte, wie in Tabelle 4 angegeben, besitzen.

Tabelle 4

| Art der Stücke | Mindest-Zugfestigkeit Rm MPa | Mindest-Bruchdehnung A (%) | |
|-------------------------------------------------------|---------------------------------|------------------------------|---------------------|
| | DN 40 bis DN 2000 | DN 40 bis DN 1000 | DN 1100 bis DN 2000 |
| Schleudergussrohre | 420 | 10 | 7 |
| Nichtgeschleuderte Rohre, Formstücke und Zubehörteile | 420 | 5 | 5 |

Anmerkung: Auf Vereinbarung zwischen Hersteller und Besteller kann die 0,2%-Dehngrenze (Rp0,2) bestimmt werden. Sie darf nicht kleiner sein als 270 MPa, wenn A₂12% bei DN 40 bis DN 1000, oder A₂10% bei DN 1000 und 300 MPa in anderen Fällen.

Während der Fertigung muss der Hersteller geeignete Prüfungen durchführen:

- entweder ein Los-Prüfungs-System, Probestäbe werden aus diesen Probestücken herausgearbeitet und geprüft;
- ein Prozessüberwachungssystem z. B. durch zerstörungsfreie Prüfung, es muss durch Zugprüfung unterstützt werden.

2.5.2 Härte

Die Brinellhärte darf bei Rohren 230 HB und bei Formstücken und Zubehörteilen 250 HB nicht überschreiten. Bei den durch Schweißen hergestellten Bauteilen ist in der Wärmeinflusszone der Schweissnaht eine höhere Brinellhärte zulässig.

2.6 ÜBERZÜGE UND AUSKLEIDUNGEN FÜR FORMSTÜCKE UND ZUBEHÖRTEILE

2.6.1 Allgemeines

Überzüge:

- Zinküberzug
- Polyethylen-Folie (zusätzlich zum Bitumenanstrich oder zum Zinküberzug mit Deckbeschichtung)
- Epoxy
- Schutzbinden

Auskleidungen:

- Polyurethan
- Epoxy
- dickere Zementmörtelauskleidung
- Zementmörtelauskleidung mit seal coat

Diese Überzüge und Auskleidungen müssen mit den entsprechenden EN-Normen übereinstimmen oder, wo keine EN-Normen existieren, müssen sie mit ISO-Normen oder mit nationalen Normen oder mit einer vereinbarten technischen Lieferbedingung übereinstimmen.

Die Nennschichtdicke der Zementmörtelauskleidung und ihre Tolleranz müssen so sein wie in Tabelle 5 angegeben.

Tabelle 5

| DN | Schichtdicke (mm) | | Maximale Rissbreite und maximaler radialer Versatz |
|--------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------|----------------------------------------------------|
| | Nennwert | Toleranz* | |
| 40 do 300 | 3,5 | -1,5 | 0,8 |
| 350 do 600 | 5 | -2 | 1,0 |
| 700 do 1200 | 6 | -2,5 | 1,2 |
| 1400 do 2000 | 9 | -3 | 1,5 |
| <p>*Es ist nur eine Minustoleranz gegeben. Anmerkung: Rohrenden können eine Abschrägung von maximal 50 mm Länge haben.</p> | | | |

2.6.2 Beschichtungen

Das Beschichtungsmaterial muss aus einem bituminösen Stoff oder aus Kunstharz bestehen; geeignete Zusätze (wie Lösungsmittel, anorganische Füllstoffe usw.) sind erlaubt, um ein leichtes Aufbringen und Trocknen zu erreichen.

Von dem Aufbringen der Beschichtung muss die Gussoberfläche trocken, frei von Rost oder losen Teilchen sowie von Öl oder Fett sein.

Die Beschichtung muss werksseitig durch Tauchen, Spritzen oder Bürsten aufgebracht werden.

Die Beschichtung muss die gesamte Oberfläche des Gussstückes gleichmässig bedecken und muss ein glattes und homogenes Erscheinungsbild zeigen. Sie muss ausreichend trocken sein, um sicherzustellen, dass die beschichteten Teile nicht aneinanderkleben.

Wenn die Schichtdicke gemessen wird (direkt am Gussstück mit z. B. magnetisch oder mit einem Nassschichtdickenmessgerät, oder indirekt auf einem Probenträger mit z. B. Mikrometer oder nach einem Wägevorgang), darf die mittlere Schichtdicke nicht weniger als 70 µm und die örtliche Mindestschichtdicke nicht weniger als 50 µm betragen.

2.7 KENNZEICHNUNG DER ROHRE UND FORMSTÜCKE

Alle Rohre und Formstücke müssen leserlich und dauerhaft gekennzeichnet sein und mindestens die folgenden Informationen tragen:

- Kennzeichen des Herstellers
- Kennzeichen des Herstelljahres
- Kennzeichen für duktilen Gusseisen
- die DN
- Nenndruck PN bei Flanschen, wenn zutreffend
- Hinweis auf diese Norm
- Kennzeichen der Zertifizierungsstelle, wenn zutreffend
- Wanddickenklasse der Schleudergussrohre, wenn abweichend von K9.

Die ersten fünf Informationen müssen eingegossen oder eingeschlagen sein.

2.8 DICHTHEIT

2.8.1 Rohre und Formstücke

Rohre und Formstücke müssen so ausgelegt sein, dass sie bei ihrem zulässigen Bauprüfdruck (PEA) wasserdicht sind und dürfen keine sichtbare Undichtheit, kein Schwitzen oder irgendein anderes Anzeichen für ein Versagen zeigen.

2.8.2 Verbindungen

Verbindungen müssen:

- ohne Undichtheit dauerhaft dem höchsten zulässigen Bauteilbetriebsdruck (PMA) der entsprechenden Rohre und Formstücke oder ihrem eigenen PMA, wie in den Herstellerkatalogen angegeben, dicht bei negativem Innendruck, der unter Druckstoss-Bedingungen auftreten kann
- ohne Wassereintritt einem hydrostatischen Aussendruck von 2 bar widerstehen, wenn sie für einen Einsatz tiefer als 5 m unter Wasserspiegel vorgesehen sind (z. B. Fluss, See, Grundwasser)

Alle Verbindungen müssen so ausgelegt sein, dass sie voll abwinkelbar sind; folglich darf die vom Hersteller anzugebende zulässige Abwinkelbarkeit nicht geringer sein als

- 3°30' für DN 40 bis DN 300
- 2°30' für DN 350 bis DN 600
- 1°30' für DN 700 bis DN 2000

Alle Verbindungen müssen so ausgelegt sein, dass sie eine ausreichend grosse Längsbeweglichkeit besitzen; die zulässige Längsverschiebung muss vom Hersteller genannt werden

3. PRÜFVERFAHREN

Qualität und Masse der Rohre und der Formstücke müssen visuell prüfen und gemessen werden und auch muss man eine Probestabes entnommen werden.

Die Dicke der Probe und der Durchmesser des Probestabes für den Zugversuch müssen wie in Tabelle 6 angegeben sein.

Tabelle 6

| Art der Gussstück | Probestab Verfahren A | Probestab Verfahren B | | |
|----------------------------------------------------------------|--------------------------|--------------------------------------|-----------------------|----------------------------|
| | Nenndurchmesser mm | Nennquerschnitts fläche 50, mm | Nenndurchmesser mm | Durchmesser toleranz mm |
| Schleudergussrohre mit Wanddicken in mm: | | | | |
| $e < 6$ | 2,5 | 5,0 | 2,52 | $\pm 0,01$ |
| $6 \leq e < 8$ | 3,5 | 10,0 | 3,57 | $\pm 0,02$ |
| $8 \leq e < 12$ | 5,0 | 20,0 | 5,05 | $\pm 0,02$ |
| $e \geq 12$ | 6,0 | 30,0 | 6,18 | $\pm 0,03$ |
| Nichtgeschleuderte Rohre, Formstücke und Zubehörtteile: | | | | |
| angegossene Proben | 5,0 | 20,0 | 5,05 | $\pm 0,02$ |
| getrennt gegossene Proben | | | | |
| Probendicke 12,5 mm für Gussstückdicke kleiner 12 mm | 6,0 | 30,0 | 6,18 | $\pm 0,03$ |
| Probendicke 12,5 mm für Gussstückdicke 12 mm und grösser | 12,0 ili 14,0 | - | - | |

4. DICHTHEITSPRÜFUNG

Die Dichtheit der Verbindungen müssen gegen positiven und negativen Innendruck, positiven Aussendruck und dynamischen Innendruck geprüft werden und es muss mit dieser Norm nachweisen sein.

5. QUALITÄTSSICHERUNG

Der Hersteller muss die Übereinstimmung seiner Erzeugnisse mit dieser Norm nachweisen durch Ausführen von Funktions-Typprüfungen und Überwachendes Fertigungsprozesses.

Typprüfungen müssen entweder vom Hersteller selbst oder von einem anerkannten Prüfinstitut in seinem Namen durchgeführt werden.

Die vollständigen Berichte dieser Typprüfungen müssen vom Hersteller für den Nachweis der Konformität aufbewahrt werden.

Der Hersteller muss die Qualität seiner Produkte während der Fertigung durch ein Fertigungsüberwachungssystem überwachen, um die technischen Anforderungen dieser Norm zu erfüllen.

Folglich muss das Qualitätssicherungssystem des Herstellers mit den Anforderungen der EN 29002 übereinstimmen. Das Qualitätssicherungssystem des Herstellers sollte von einer Zertifizierungsstelle, die ihrerseits in Übereinstimmung mit EN 45012 akkreditiert ist, überprüft sein.





ENGINEERING TERMS OF DELIVERY FOR PRESSURE PIPES AND FITTINGS OF DUCTILE CAST IRON FOR GAS AND WATER PIPE LINES ACCORDING TO EN-u 545

1. SCOPE

This standard specifies requirements for materials, dimensions and tolerances, mechanical properties and standard coatings of ductile iron pipes and fittings.

This standard covers pipes, fittings and accessories cast by any type of foundry process or manufactured by fabrication of cast components, as well as corresponding joints, in a size range extending from DN 40 to DN 2000, inclusive.

This standard applies to pipes, fittings and accessories which are:

- manufactured with socketed, flanged or spigot ends for jointing by means of various types of gaskets which are not within the scope of this standard;
- normally delivered externally and internally coated;
- suitable for fluid temperatures between 0°C and 50°C, excluding frost.

2. TECHNICAL REQUIREMENTS

2.1 SURFACE CONDITION AND REPAIRS

Pipes, fittings and accessories shall be free from defects and surface imperfections. When necessary, pipes and fittings may be repaired, for example by welding, in order to remove surface imperfections and localized defects which do not affect the entire wall thickness, provided that the repairs are carried out according to a written procedure included in the manufacturer's quality assurance system, and the repaired pipes and fittings comply with all the requirements of this standard.

2.2 TYPES OF JOINTS

2.2.1 Flanged joints

The dimension and tolerances of the flanges of pipes and fittings shall comply with prEN 1092-2 and flange gaskets with ISO 7483.

2.2.2 Flexible joints

Pipes and fitting with flexible joints shall comply with 2.4.2. for their spigot external diameters DE and their tolerances.

2.3 MATERIALS IN CONTACT WITH POTABLE WATER

When used under the conditions for which they are designed, in permanent or in temporary contact with water intended for human consumption, ductile iron pipes, fittings and their joints shall not change the quality of that water to such an extent that it fails to comply with the requirements of EU and EFTA regulations at the end user.

2.4 DIMENSIONAL REQUIREMENTS

2.4.1 Wall thickness

The nominal iron wall thickness of pipes and fittings shall be calculated as a function of the nominal size, DN by the following formula, with a minimum of 6 mm for pipes and 7 mm for fittings:

$$e=K(0,5+0,001 DN),$$

where: K is a coefficient used for determination of thickness class.

It is selected from a series of whole numbers: ...8, 9, 10...

The tolerances on nominal wall thickness of pipes and fittings shall be given in table 1.

Table 1

| Type of casting | e, mm | Tolerance %, mm |
|---------------------------------------------------------------------------------------------------|-------|-----------------|
| Pipes centrifugally cast | 6,0 | -1,3 |
| | > 6,0 | -(1,3+0,001 DN) |
| Pipes not centrifugally cast and fittings | 7,0 | -2,3 |
| | > 7,0 | -(2,3+0,001 DN) |
| * A negative tolerance only is given, so as to ensure sufficient resistance to internal pressure. | | |

2.4.2 **External diameter**

For $DN \leq 300$, the external diameter of the pipe barrel measured with a circumferential tape shall be such as to allow the assembly of the joint over at least two thirds of the pipe length from the spigot end when the pipe needs to be cut on site.

For $DN > 300$, the same applies to a percentage of the pipes, after agreement between manufacturer and purchaser.

In addition, the ovality of the spigot end of pipes and fittings shall:

- remain within the tolerance on page 18 for $DN 40$ to $DN 200$
- not exceed 1% for $DN 250$ to $DN 600$ or 2% for $DN > 600$.

2.4.3 **Standardized lengths of fittings**

The permissible deviations on the standardized length shall be as given in table 2.

Table 2

| Type of fitting | DN | Deviation (mm) |
|-------------------------|--------------|--------------------|
| Flanged sockets | 40 to 1200 | ± 25 |
| Flanged spigots | 1400 to 2000 | ± 35 |
| Collars | | |
| Tapers | | |
| Tees | 40 to 1200 | + 50/ - 25 |
| | 1400 to 2000 | + 75/ - 35 |
| Bends 90° | 40 to 2000 | $\pm(15+0,03 DN)$ |
| Bends 45° | 40 to 2000 | $\pm(10+0,025 DN)$ |
| Bends 22°30' und 11°15' | 40 to 1200 | $\pm(10+0,02 DN)$ |
| | 1400 to 2000 | $\pm(10+0,025 DN)$ |

2.4.3 **Tolerance on lengths**

The tolerances on lengths shall be as given in table 3.

Tabelle 3

| Type of casting | Tolerance (mm) |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| Socket and spigots pipes | ± 30 |
| Fittings for socketed joints | ± 20 |
| Pipes and fittings for flanged joints | $\pm 10^{\circ}$ |
| By agreement between manufacturer and purchaser, smaller tolerances are possible, but not less than $\pm 3\text{mm}$ for $DN \leq 600$ and $\pm 4\text{mm}$ for $DN > 600$. | |

2.5 MATERIAL CHARACTERISTICS

2.5.1 **Tensile properties**

Pipes, fittings and accessories of ductile iron shall have the tensile properties given in table 4.

Tabelle 4

| Type of casting | Minimum tensile strength R_m MPa | Minimum elongation after fracture A % | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|------------------------------------------|---------------------|
| | DN 40 bis DN 2000 | DN 40 bis DN 1000 | DN 1100 bis DN 2000 |
| Pipes centrifugally cast | 420 | 10 | 7 |
| Pipes not centrifugally cast, fittings and accessories | 420 | 5 | 5 |
| Note. By agreement between manufacturer and purchaser, the $R_{p0,2}$ may be measured. It shall not be less than 270 Mpa when $A \geq 12\%$ for $DN 40$ to $DN 1000$ or $A \geq 10\%$ for $DN > 1000$, and 300 Mpa in other cases. | | | |

2.5.2 Hardness

The Brinell hardness shall not exceed 230 HB for pipes and 250 HB for fittings and accessories. For components manufactured by welding, a higher Brinell hardness is allowed in the heat affected zone of the weld.

2.6 COATINGS FOR FITTINGS AND ACCESSORIES

2.6.1 General

External coatings:

- zinc coating with finishing layer
- polyethylene sleeving (as a supplement to the bituminous paint or to the zinc coating with finishing layer)
- epoxy
- adhesive tapes.

Internal coatings (linings)

- polyurethane
- epoxy
- thicker cement mortar lining
- cement mortar lining with seal coat

These external and internal coatings shall comply with the corresponding EN standards, or where no EN standard exist, they shall comply with ISO standards or with national standards, or with an agreed technical specification.

The nominal thickness of the cement mortar lining and its tolerance shall be as given in table 5.

Tabela 5

| DN | Thickness (mm) | | Maximum crack width and radial displacement |
|--------------|----------------|------------|---------------------------------------------|
| | Nominal value | Tolerance* | |
| 40 to 300 | 3,5 | -1,5 | 0,8 |
| 350 to 600 | 5 | -2 | 1,0 |
| 700 to 1200 | 6 | -2,5 | 1,2 |
| 1400 to 2000 | 9 | -3 | 1,5 |

*A negative tolerance only is given.
Note: Pipe ends may have a chamfer of maximum length 50 mm.

2.6.2 Paint coatings

The coating material shall be of a bitumen or synthetic resin base; appropriate additives (such as solvents, inorganic fillers,...) to allow easy application and drying are permitted. Prior to application of the coating, the casting surface shall be dry, free from rust or non adhering particles of foreign matter such as oil or grease. The coating shall be works-applied by dipping, by spraying or by brush. The coating shall uniformly cover the whole surface of the casting and have a smooth regular appearance. Drying shall be sufficient to ensure that it will not stick to adjacent coated pieces. When measured (directly on the casting by e.g. magnetic, or indirectly on a token by e.g. micrometer, or by a weight method), the mean thickness of the coating shall be not less than 70 µm and the local minimum thickness shall be not less than 50 µm.

2.7 MARKING OF PIPES AND FITTINGS

All pipes and fittings shall be legibly and durably marked and shall bear at least the following information:

- the manufacturer's name or mark
- the identification of the year of manufacture
- the identification as ductile iron
- the DN
- the PN rating of flanges when applicable
- the reference to this standard
- the identification of third party certification when applicable
- the class designation of centrifugally cast pipes when other than K9.

The first five markings given above shall be cast-on or cold stamped.

2.8 LEAKTIGHTNESS

2.8.1 Pipes and fittings

Pipes and fittings shall be designed to be watertight at their allowable test pressure, and shall exhibit no visible leakage, sweating or any other sign of failure.

2.8.2 Joints

Joints shall be designed:

- to durably withstand without leakage the allowable maximum operating pressure (PMA) of corresponding pipes and fittings, or their own PMA as given in the manufacturer's catalogues, whichever is the lowest
-
- to be leaktight under negative internal pressure, which may occur under surge conditions
- to withstand without any ingress of water an external hydrostatic pressure of 2 bar, when they are intended for use deeper than 5 m below the water level

All joints shall be designed to be fully flexible; consequently, the allowable angular deflection declared by the manufacturer shall be not less than:

- 3°30' for DN 40 to DN 300
- 2°30' for DN 350 to DN 600
- 1°30' for DN 700 to DN 2000

All joints shall be designed to provide sufficient axial movement; the allowable withdrawal shall be declared by the manufacturer.

3. TEST METHODS

The quality and dimensions of pipes and fittings shall be visually inspected, measured and taken samples. The thickness of the sample and the diameter of the test bar shall be as given in table 6.

Table 6

| Type of casting | Test bar method A | Test bar method B | | |
|----------------------------------------------------------------|---------------------|----------------------------------|---------------------|--------------------------|
| | Nominal diameter mm | Nominal area S ₀ , mm | Nominal diameter mm | Tolerance on diameter mm |
| Centrifugally cast pipes with wall thickness <i>e</i> in mm: | | | | |
| <i>e</i> < 6 | 2,5 | 5,0 | 2,52 | ± 0,01 |
| 6 ≤ <i>e</i> < 8 | 3,5 | 10,0 | 3,57 | ± 0,02 |
| 8 ≤ <i>e</i> < 12 | 5,0 | 20,0 | 5,05 | ± 0,02 |
| <i>e</i> ≥ 12 | 6,0 | 30,0 | 6,18 | ± 0,03 |
| Pipes not centrifugally cast, fittings and accessories: | | | | |
| integrally cast samples | 5,0 | 20,0 | 5,05 | ± 0,02 |
| separately cast samples: | | | | |
| sample thickness 12,5 mm for casting thickness less than 12 mm | 6,0 | 30,0 | 6,18 | ± 0,03 |
| sample thickness 25 mm for casting thickness 12 mm and over | 12,0 or 14,0 | - | - | |

4. WORK LEAKTIGHTNESS TEST

Joints shall be tested to positive and negative internal pressure, to positive external pressure and to dynamic internal pressure on test assemblies and time in accordance with this standard.

5. QUALITY ASSURANCE

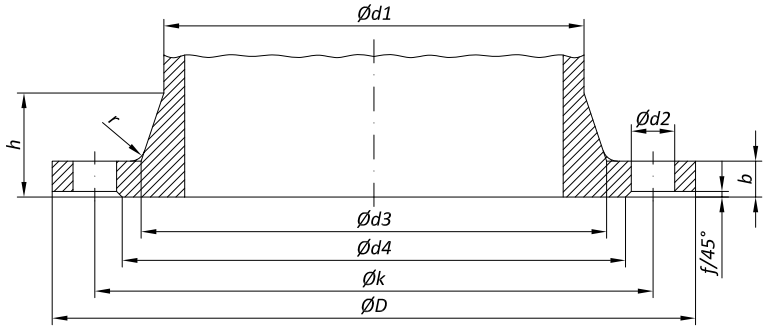
The manufacturer shall demonstrate the conformity of his products with this standard by carrying out performance type tests and controlling the manufacturing process.

The type test shall be carried out either by the manufacturer or at his request by a competent testing institute in order to demonstrate compliance with the requirements of this standard. Full reports of these type tests shall be retained by the manufacturer as evidence of compliance.

The manufacturer shall control the quality of his products during their manufacture by a system of process control in order to comply with the technical requirements of this standard. Consequently, the manufacturer's quality assurance system shall comply with the requirements of EN 29002. The manufacturer's quality assurance system should be approved by a third party certification body who is accredited in accordance with EN 45012.

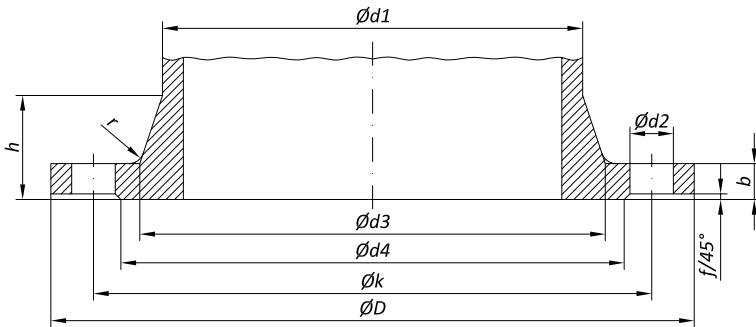


MJERE PRIRUBNICA IZ NODULARNOG LIJEVA - PN10
MAßE, FLANSCH AUS DUKTILEM GUSSEISEN - PN10
MEASURES OF FLANGES OF DUCTILE CAST IRON - PN10



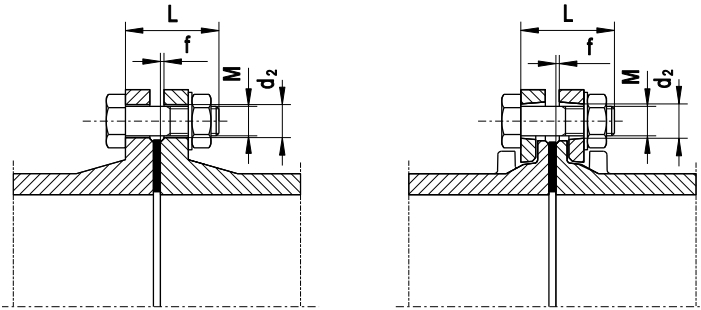
| Nazivni promjer Nennweite Nominal size | d_1 | D | b | k | n | d_2 | d_3 | h | d_4 | f | r | kg |
|----------------------------------------------|-------|------|------|------|-----|-------|-------|------|-------|-----|-----|------|
| DN | | | | | | | | | | | | |
| 40 | 56 | 150 | 19 | 110 | 4 | 19 | 73 | 39 | 84 | 3 | 5 | 1,7 |
| 50 | 66 | 165 | 19 | 125 | 4 | 19 | 83 | 40 | 99 | 3 | 5 | 2,1 |
| 60 | 77 | 175 | 19 | 135 | 4 | 19 | 94 | 40 | 108 | 3 | 6 | 2,3 |
| 65 | 82 | 185 | 19 | 145 | 4 | 19 | 99 | 41,5 | 118 | 3 | 6 | 2,5 |
| 80 | 98 | 200 | 19 | 160 | 8 | 19 | 115 | 43 | 132 | 3 | 6 | 2,9 |
| 100 | 118 | 220 | 19 | 180 | 8 | 19 | 134 | 45 | 156 | 3 | 6 | 3,3 |
| 125 | 144 | 250 | 19 | 210 | 8 | 19 | 160 | 47,5 | 184 | 3 | 6 | 4 |
| 150 | 170 | 285 | 19 | 240 | 8 | 23 | 185 | 50 | 211 | 3 | 8 | 4,9 |
| 200 | 222 | 340 | 20 | 295 | 8 | 23 | 237 | 55 | 266 | 3 | 8 | 6,8 |
| 250 | 274 | 400 | 22 | 350 | 12 | 23 | 291 | 60 | 319 | 3 | 10 | 9,6 |
| 300 | 326 | 455 | 24,5 | 400 | 12 | 23 | 346 | 65 | 370 | 4 | 10 | 13 |
| 350 | 378 | 505 | 24,5 | 460 | 16 | 23 | 397 | 70 | 429 | 4 | 10 | 14 |
| 400 | 429 | 565 | 24,5 | 515 | 16 | 28 | 447 | 75 | 480 | 4 | 10 | 16 |
| 450 | 480 | 615 | 25,5 | 565 | 20 | 28 | 499 | 80 | 530 | 4 | 12 | 19 |
| 500 | 532 | 670 | 26,5 | 620 | 20 | 28 | 551 | 85 | 582 | 4 | 12 | 23 |
| 600 | 635 | 780 | 30 | 725 | 20 | 31 | 657 | 95 | 682 | 5 | 12 | 31 |
| 700 | 738 | 895 | 32,5 | 840 | 24 | 31 | 755 | 105 | 794 | 5 | 12 | 40,5 |
| 800 | 842 | 1015 | 35 | 950 | 24 | 34 | 860 | 115 | 901 | 5 | 12 | 55 |
| 900 | 945 | 1115 | 37,5 | 1050 | 28 | 34 | 964 | 125 | 1001 | 5 | 12 | 64,5 |
| 1000 | 1048 | 1230 | 40 | 1160 | 28 | 37 | 1068 | 135 | 1112 | 5 | 12 | 81,5 |
| 1200 | 1255 | 1455 | 45 | 1380 | 32 | 41 | 1281 | 155 | 1328 | 5 | 12 | 121 |

MJERE PRIRUBNICA IZ NODULARNOG LIJEVA - PN16
MAßE, FLANSCH AUS DUKTILEM GUSSEISEN - PN16
MEASURES OF FLANGES OF DUCTILE CAST IRON - PN16



| Nazivni promjer Nennweite Nominal size DN | d_1 | D | b | k | n | d_2 | d_3 | h | d_4 | f | r | kg |
|--------------------------------------------------------|-------|------|------|------|-----|-------|-------|------|-------|-----|-----|-----|
| 40 | 56 | 150 | 19 | 110 | 4 | 19 | 70 | 39 | 84 | 3 | 5 | 1,7 |
| 50 | 66 | 165 | 19 | 125 | 4 | 19 | 84 | 40 | 99 | 3 | 5 | 2,1 |
| 60 | 77 | 175 | 19 | 135 | 4 | 19 | 94 | 40 | 108 | 3 | 6 | 2,3 |
| 65 | 82 | 185 | 19 | 145 | 4* | 19 | 104 | 41,5 | 118 | 3 | 6 | 2,5 |
| 80 | 98 | 200 | 19 | 160 | 8 | 19 | 120 | 43 | 132 | 3 | 6 | 2,9 |
| 100 | 118 | 220 | 19 | 180 | 8 | 19 | 140 | 45 | 156 | 3 | 6 | 3,3 |
| 125 | 144 | 250 | 19 | 210 | 8 | 19 | 170 | 47,5 | 184 | 3 | 6 | 4 |
| 150 | 170 | 285 | 19 | 240 | 8 | 23 | 190 | 50 | 211 | 3 | 8 | 4,9 |
| 200 | 222 | 340 | 20 | 295 | 12 | 23 | 246 | 55 | 266 | 3 | 8 | 6,6 |
| 250 | 274 | 400 | 22 | 355 | 12 | 28 | 296 | 60 | 319 | 3 | 10 | 9,2 |
| 300 | 326 | 455 | 24,5 | 410 | 12 | 28 | 350 | 65 | 370 | 4 | 10 | 12 |
| 350 | 378 | 520 | 26,5 | 470 | 16 | 28 | 410 | 70 | 429 | 4 | 10 | 17 |
| 400 | 429 | 580 | 28 | 525 | 16 | 31 | 458 | 75 | 480 | 4 | 10 | 22 |
| 450 | 480 | 640 | 30 | 585 | 20 | 31 | 516 | 80 | 548 | 4 | 12 | 28 |
| 500 | 532 | 715 | 31,5 | 650 | 20 | 34 | 576 | 85 | 609 | 4 | 12 | 37 |
| 600 | 635 | 840 | 36 | 770 | 20 | 37 | 690 | 95 | 720 | 5 | 12 | 57 |
| 700 | 738 | 910 | 39,5 | 840 | 24 | 37 | 760 | 105 | 794 | 5 | 12 | 59 |
| 800 | 842 | 1025 | 43 | 950 | 24 | 41 | 862 | 115 | 901 | 5 | 12 | 74 |
| 900 | 945 | 1125 | 46,5 | 1050 | 28 | 41 | 962 | 125 | 1001 | 5 | 12 | 88 |
| 1000 | 1048 | 1255 | 50 | 1270 | 28 | 44 | 1076 | 135 | 1112 | 5 | 12 | 123 |
| 1200 | 1255 | 1485 | 57 | 1390 | 32 | 50 | 1282 | 155 | 1328 | 5 | 12 | 185 |

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BOLTS



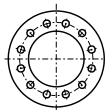
| Nazivni promjer Nennweite Nominal size | PN10 | | | PN16 | | |
|----------------------------------------------|------|-----|------------------------|------|-----|------------------------|
| | M | L | kom Stück pieces | M | L | kom Stück pieces |
| 40 | M16 | 65 | 4 | M16 | 65 | 4 |
| 50 | M16 | 70 | 4 | M16 | 70 | 4 |
| 60 | M16 | 70 | 4 | M16 | 70 | 4 |
| 65 | M16 | 70 | 4 | M16 | 70 | 4 |
| 80 | M16 | 70 | 8 | M16 | 70 | 8 |
| 100 | M16 | 70 | 8 | M16 | 70 | 8 |
| 125 | M16 | 70 | 8 | M16 | 70 | 8 |
| 150 | M20 | 80 | 8 | M20 | 80 | 8 |
| 200 | M20 | 80 | 8 | M20 | 80 | 12 |
| 250 | M20 | 80 | 12 | M24 | 90 | 12 |
| 300 | M20 | 90 | 12 | M24 | 90 | 12 |
| 350 | M20 | 90 | 16 | M24 | 90 | 16 |
| 400 | M24 | 90 | 16 | M27 | 100 | 16 |
| 450 | M24 | 90 | 20 | M27 | 100 | 20 |
| 500 | M24 | 90 | 20 | M30 | 110 | 20 |
| 600 | M27 | 100 | 20 | M33 | 120 | 20 |
| 700 | M27 | 110 | 24 | M33 | 120 | 24 |
| 800 | M30 | 110 | 24 | M36 | 130 | 24 |



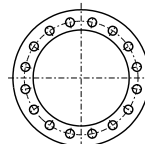
4 provrta
4 Löcher
4 holes



8 provrta
8 Löcher
8 holes



12 provrta
12 Löcher
12 holes



16 provrta
16 Löcher
16 holes



