

Krausz Industries Ltd

PRODUCT APPRAISAL REPORT No 1701

HYMAX[®] Unrestrained Mechanical Couplings and Flanged Adapters

AS/NZS 4998: 2009 Bolted unrestrained mechanical couplings

for waterworks purposes

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Overview of WSAA

The Water Services Association of Australia (WSAA) is the peak industry body representing the urban water industry. Our members provide water and sewerage services to over 20 million customers in Australia and New Zealand and many of Australia's largest industrial and commercial enterprises.

Based around our vision of 'customer driven, enriching life', WSAA facilitates collaboration, knowledge sharing, networking and cooperation within the urban water industry. We are proud of the collegiate attitude of our members which has led to industry-wide approaches to national water issues.

WSAA can demonstrate success in the standardisation of industry performance monitoring and benchmarking, as well as many research outcomes of national significance. The WSAA Executive retains strong links with policy makers and legislative bodies and their influencers, to monitor emerging issues of importance to the urban water industry.

WSAA was formed in 1995 as a non-profit organisation to foster the exchange of information between industry, government and the community, and to promote sustainable water resource management.

The urban water industry is committed to anchoring its services to customers' values, and to enrich communities where water services have broad economic, environmental and social values. In line with this our main activities focus on four areas:

- 1. influencing national and state policies on the provision of urban water services and sustainable water resource management
- 2. promoting debate on environmentally sustainable development and management of water resources and the community health requirements of public water supplies
- 3. improving industry performance and establishing benchmarks and industry leading practices for water service processes; and
- 4. fostering the exchange of information on education, training, research, water and wastewater management and treatment and other matters of common interest.

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1 EXECUTIVE SUMMARY

Krausz Industries Ltd has an operating history dating back to the 1920's when Armin Krausz commenced a machining company in what is now modern day Bratislavia in the Slovak Republic. The World War 2 disruption led to re-establishment of the company in Tel Aviv, Israel in 1942 and the company has now developed to be a leading manufacturer and marketer of products and services used in transmission, distribution and measurement of water. USA based Mueller Water Products purchased the business in 2018.

This appraisal is for a range of HYMAX unrestrained mechanical couplings and flanged adapters in sizes DN 80 to DN 600 complying with AS/NZS 4998:2009 *Bolted unrestrained mechanical coupling for waterworks purposes*.

HYMAX couplings are unrestrained mechanical couplings designed to suit a wide range of pipe outside diameters and are intended for jointing spigot ends of pipes, other than PE, in water and sewerage applications, in either above or below ground situations.

The coupling range includes long and short barrel couplings, reducing couplings and flanged adapters.

The innovative design features of the couplings include:

- top operated fasteners to affect activation of the sealing mechanism, one on each end for sizes up to DN 300 and 2 on each end for sizes above DN 300.
- two-layer detachable gaskets and gaskets with a flip feature that allows a wider pipe outside diameter range (reach) to be accommodated, when compared to traditional couplings.
- gaskets with dual mechanical and hydraulic operation.

The couplings and flanged adapters are supplied with polymeric coated carbon steel barrels and end rings and Grade 316 stainless steel fasteners with an anti-galling compound. The sealing gaskets are manufactured from EPDM rubber. The flanges are compatible with AS/NZS 4087 PN16.

Krausz Pty Ltd has a Quality Management System licence to ISO 9001:2015 and the products are covered by an ISO Type 5 OceanaMark product certification to AS/NZS 4998:2009 Bolted unrestrained mechanical coupling for waterworks purposes.

The HYMAX couplings described within this appraisal meet the requirements of WSA PS 270 – *Mechanical Couplings Non-End Thrust Restraint for Pressure Applications – Water Supply and Sewerage* and are therefore deemed as 'fit for purpose'.

1.1 Recommendation

It is recommended that WSAA members and associates, subject to any specific requirements of the member, accept or authorise the HYMAX range of unrestrained couplings and flange adapters, as detailed in this report, for use in water supply and sewerage pressure pipelines, provided they are installed in accordance with any relevant conditions relating to the design, installation, and acceptance testing provided in relevant standards, WSAA Codes and the manufacturer's requirements.

2 THE APPLICANT

The Applicant is Krausz Industries Limited.

2.1 The Manufacturer

Krausz Industries Ltd has an operating history dating back to the 1920's when Armin Krausz commenced a machining company in what is now modern day Bratislavia in the Slovak Republic. The World War 2 disruption led to re-establishment of the company in Tel Aviv, Israel in 1942 and the company has now developed to be a leading manufacturer and marketer of products and services used in transmission, distribution and measurement of

water. The HYMAX[®] range of unrestrained couplings was introduced to the market in 1999 and the HYMAX GRIP[®] range of couplings was launched in 2014. USA based Mueller Water Products purchased the business in 2018.

3 THE PRODUCT

HYMAX unrestrained mechanical couplings and flanged adapters are designed to suit a wide range of pipe OD's and are suitable for joining spigot ends of pipe manufactured from grey or ductile cast iron, steel, PVC-U, PVC-M, PVC-O and asbestos cement. The coupling is suitable for use in contact with drinking water and neutral fluids (sewage) to a maximum temperature of 40°C.

The PN16 coupling range includes long and short barrel couplings, reducing couplings and flanged adapters in sizes from DN 80 to DN 600. See Figure 1.









Short Coupling

Long Coupling

Reducing Coupling

Flanged Adapter

FIGURE 1 HYMAX COUPLING RANGE

The couplings and flanged adapters are supplied with polymeric coated carbon steel barrels and end rings with Grade 316 stainless steel fasteners coated with an anti-galling compound. The sealing gaskets are manufactured from EPDM rubber. The flanges are compatible with with AS/NZS 4087 PN16.

The maximum allowable deflection at each end of the coupling is nominated as 4 degrees for all pipe OD's within the reach.

The innovative design features of the couplings include:

- top operated fasteners to affect activation of the sealing mechanism, one on each end for sizes up to DN 300 and 2 on each end for sizes above DN 300.
- a flip feature on gasket sizes from DN 80 to DN 300 and two-layer detachable gaskets for sizes DN 300 to DN 600. These designs allow a wider pipe outside diameter range (reach) to be accommodated, when compared to traditional couplings.
 - Krausz literature provides a dual range of pipe OD's for each coupling. For the larger nominated range, the inner layer of the gasket can either be flipped toward the entry prior to installation (DN 80 to DN 300) or be removed using a screw driver (DN 300 to DN 600).
- gaskets with a dual sealing mechanism. The mechanical seal is activated by tightening the fasteners and the enhanced sealing feature is due to hydraulic action of the medium.

Details of the product range are given in Table 1, 2 and 3.

TABLE 1 HYMAX COUPLINGS

5 11	Barrel Le	ngth mm	Reach	(mm)	No of
DN	Short	Long	Min	Max	Fasteners
80	158	300	88	108	2
100	158	300	108	143	2
125	213	410	130	162	2
150	213	410	158	190	2
150	213	410	163	195	2
200	213	410	190	222	2
200	213	410	217	250	2
200	213	410	222	252	2
250	213	410	272	305	2
250	213	410	278	311	2
300	213	410	315	347	2
300	213	410	334	366	2
375	216	382	375	431	4
375	216	382	378	434	4
450	216	382	434	488	4
450	216	382	488	542	4
500	216*	382	540	594	4
600	216*	382	606	660	4
600	216*	382	624	678	4

^{*}Note: AS/NZS 4998 does not specify a minimum barrel length for short barrel couplings for sizes above DN 450, however the length nominated for the HYMAX short barrel couplings exceeds the specified minimum length for long barrel couplings.

TABLE 2 HYMAX REDUCING COUPLINGS

DN	Barrel Length mm	Reach	mm	No of Fasteners
80-100	154	88-108	108-143	2
100-125	182	108-143	130-162	2
100-150	182	108-143	158-190	2
125-150	210	130-162	158-190	2
150-200	210	158-190	217-250	2
150-200	210	163-195	190-222	2
150-200	210	163-195	217-250	2
200-200	210	190-222	217-250	2
200-250	210	217-250	272-305	2
200-250	210	222-252	272-305	2
250-300	210	272-305	315-347	2
250-300	210	278-311	315-347	2
300-300	210	315-347	334-366	2

DN	Barrel Length mm	Reach	mm	No of Fasteners
300-375	443	315-347	375-431	3
300-375	443	315-347	378-434	3
300-375	443	334-366	375-431	3
375-450	443	334-366	378-434	3
375-450	525	375-431	434-488	4
375-450	525	378-434	434-488	4
450-450	525	434-488	488-542	4
450-500	525	488-542	540-594	4
500-600	525	540-594	624-678	4

TABLE 3 HYMAX FLANGED ADAPTERS

	Barrel	Reach	(mm)	No of
Flange DN	Length mm	Min	Max	Fasteners
80	150	88	108	1
100	150	108	143	1
125	205	130	162	1
150	205	158	190	1
150	205	163	195	1
200	205	190	222	1
200	205	217	250	1
250	205	272	305	1
250	205	278	311	1
300	205	315	347	1
300	205	334	366	1
375	312	375	431	2
375	312	378	434	2
450	312	434	488	2
450	312	488	542	2
500	312	540	594	2
600	312	606	660	2
600	312	624	678	2

4 SCOPE OF THE APPRAISAL

The scope of this appraisal covers PN16 HYMAX unrestrained mechanical couplings and flanged adapters in sizes from DN 80 to DN 600.

5 APPRAISAL CRITERIA

5.1 Quality Assurance Requirements

The WSAA Product Appraisal Technical Advisory Group accepts unrestrained mechanical couplings and flanged adapters manufactured in compliance with AS/NZS 4998:2009 *Bolted unrestrained mechanical coupling for waterworks purposes* and duly certified by means of an ISO Type 5 product certification scheme undertaken by a JAS-ANZ accredited Conformity

Assessment Body (CAB) or by an international accreditation system recognised by JAS-ANZ.

The manufacturer is generally expected to have a production management and control system that has been duly accredited in accordance with AS/NZS ISO 9001 as a prerequisite to undergoing a product certification audit.

The ISO Type 5 Product Certification Scheme shall meet the criteria described in WSA TN-08.

5.2 Performance Requirements

HYMAX couplings and flanged adapters have been appraised for compliance with AS/NZS 4998:2009 *Bolted unrestrained mechanical couplings for waterworks purposes*.

Appraisal criteria are also determined by the WSAA Product Appraisal Technical Advisory Group and regularly reviewed to ensure that the criteria reflect the requirements of WSAA members.

The following Product Specification is relevant to this application:

WSA PS 270 – Mechanical Couplings Non-end Thrust Restraint for Pressure Applications – Water Supply and Sewerage.

A copy of the above Product Specification can be found in Appendix C or downloaded from the WSAA website.

6 COMPLIANCE WITH APPRAISAL CRITERIA

6.1 Compliance with Quality Assurance Requirements

Krausz has submitted the following quality certificates:

- ISO 9001:2015 Certificate of Registration No 90452 issued to Krausz Industries Ltd by The Standards Institute of Israel (SII).
- AS 4998:2009 StandardsMark ISO Type 5 OceanaMark product certification licence No OMK 30069 issued to Krausz Industries Ltd by IAPMO R&T Oceana.
- ISO 9001:2015 Certificate of Registration No IL 103803 issued to Ein Shemer Rubber Industries Ltd by The Standards Institution of Israel.

Copies of the primary Quality Assurance and Product Certification licences have been included in Appendix B and other copies are available from WSAA.

6.2 Compliance with Performance Requirements

6.2.1 Material Requirements

6.2.1.1 End rings and Barrel

AS/NZS 4998 specifies allowable material requirements for the coupling components which allows end rings and barrels manufactured from carbon steel to minimum Grade HU 250 to AS/NZS 1594.

Test reports have been supplied by Krausz to demonstrate equivalence with the material requirements.

6.2.1.2 Elastomeric seals

AS/NZS 4998 allows for EPDM, NBR or SBR elastomeric joint seals in compliance with AS 1646 and AS 681.1.

HYMAX coupling seals are manufactured from EPDM. Test reports have been supplied to demonstrate compliance with the performance requirements of AS 1646 and AS 681.1.

6.2.1.3 Stainless Steel Fasteners

The HYMAX couplings utilise Grade 316 stainless steel fasteners.

An anti-galling compound is applied to the fastener threads.

6.2.1.4 Polymeric Coatings

AS/NZS 4998 specifies that steel components shall be coated with a thermal bonded polymeric coating in accordance with AS/NZS 4158.

The components of the HYMAX couplings and flanged adapters are fully coated with Akzo Nobel Resicoat R4-FB, a fusion bonded epoxy powder coating. The coating is StandardsMark product certified by SAI-Global and a copy is retained on file by WSAA.

The coating is applied in house by Krausz utilising the fluidized bed technique to the thickness, continuity, adhesion and cure requirements of AS/NZS 4158.

A type test was conducted by Prove Standards and Engineering, a NATA certified laboratory (Accreditation No.18640) based in Melbourne, on a HYMAX coupling sample to demonstrate AS/NZS 4158 compliance.

It should be noted that the batch release procedures are in accordance with EN 14901 which have less stringent testing frequencies compared to AS/NZS 4158.

The coating application process is audited as part of the product certification licensing procedures by IAPMO R&T Oceana.

6.2.1.5 Contamination of Drinking Water

The materials in contact with water are the polymeric coating and the EPDM seal. Akzo Nobel maintains AS/NZS 4020 certification as a component of their product certification and a test report is held on file by WSAA.

Krausz has supplied a copy of a test report from Australian Water Quality Centre dated May 2016 to demonstrate compliance of the EPDM material to AS/NZS 4020:2005.

6.2.2 Design, Manufacture and Operation

6.2.2.1 Design

The HYMAX coupling includes some innovative design features that differentiates it from traditional wide tolerance couplings. See section 3.

6.2.2.2 Barrel lengths

AS/NZS 4998 specifies minimum barrel lengths for couplings and flanged adapters.

The HYMAX barrel lengths for all products easily exceed the minimum requirements specified in AS/NZS 4998.

6.2.2.3 Nominated Joint Deflection

AS/NZS 4998 requires the manufacturer to nominate the maximum joint deflections allowable at each coupling end, for both minimum and maximum pipe outside diameters within the nominated coupling reach.

Krause advises that a minimum deflection of 4° can be achieved at each end of the coupling for both minimum and maximum pipe diameters within the reach of the coupling when installed using the recommended minimum insertion depth and pipe setting gap.

This information is included in Appendix A and also included on the markings for each coupling.

6.2.2.4 Minimum pipe setting gap and insertion depth

Krausz has nominated a minimum pipe setting gap and minimum pipe insertion depth for each coupling size to ensure the maximum nominated pipe deflection sealing security is achieved. See Appendix A.

6.2.2.5 Flanges

The flanges incorporated on the flanged adapters are manufactured from carbon steel with a flat face and drilled to match AS/NZS 4087 PN16 configuration. The thicknesses of the flanges are shown in Table 4 below and are compared to AS/NZS 4087 steel and DI PN16 flange thicknesses.

TABLE 4 COMPARISON OF FLANGE THICKNESSES

DN	HYMAX Steel Flange Thickness	AS/NZS 4087 PN 16 Steel Flange Thickness	AS/NZS 4087 PN16 DI Flange Thickness
80	14.3	11	18
100	17.5	13	20
125	17.5	-	-
150	17.5	13	23
200	19	19	23
250	19	19	24
300	23	23	30
375	30	30	33
450	30	30	33
500	38	38	35
600	48	48	42

The flanges on the HYMAX flanged adapters are equal to or thicker than the flange thicknesses specified in AS/NZS 4087 Table B7 for steel flanges and are therefore considered suitable for PN16 rating. However, when connecting the flanged adapters to AS/NZS 4087 Fig B5 PN16 DI flanges, the required bolt lengths should be checked to accommodate the difference in thickness between the mating flanges.

6.2.2.6 Welding carbon steel

Welding is required to be carried out in accordance with AS 4041, Category 2.

Krausz has declared that welding procedures comply with European Standards that are equivalent to AS 4041, Category 2.

6.2.3 Performance Tests

Krausz has submitted test reports to demonstrate conformance to the Type Test requirements of AS/NZS4998:2009.

Queensland Testing Laboratory (NATA Accreditation No: 14783) conducted the type tests on a coupling of each nominal size from DN 80 to DN 600.

The Type Tests were successfully completed for:

- Hydrostatic leak-tightness test
- · Joint infiltration test
- Assembly test

6.2.3.1 Hydrostatic leak-tightness test

These tests were carried out using pipe pieces equal to the minimum outside diameter of the nominated reach of the coupling. The test was undertaken at the nominated angular joint deflection of 4° and the recommended minimum pipe insertion depth with a test pressure of 2400 kPa for 2 hours.

The couplings displayed no leakage, seal cracking or other failure.

6.2.3.2 Joint infiltration test

These tests were carried out using pipe pieces with outside diameters equal to the minimum outside diameter of the nominated reach of the couplings. The test was undertaken at the nominated angular joint deflection of 4° and the recommended minimum pipe insertion depth with a test pressure of –80 to –85 kPa for 2 hours.

The couplings met the requirement of no greater than 10% increase in pressure over that period.

6.2.3.3 Assembly test

These tests were carried out on pipe pieces that have an outside diameter equal to the maximum outside diameter of the nominated reach of the coupling.

There was no interference observed between the coupling and the pipes.

7 FITTING INSTRUCTIONS, TRAINING AND INSTALLATION

A copy of HYMAX Installation Instructions is included in Appendix A. Additional training is available through the Australian agent. See Appendix D for contact details.

8 PRODUCT MARKING

The couplings are marked in accordance with AS/NZS 4998. A label is adhered to each product and contains the following minimum information:

Name of Manufacturer: Krausz

· Batch identification:

Bolt torque: e.g. 80Nm

Nominal diameter: e.g. DN150

The number of this standard: AS/NZS 4998

Reach in mm: e.g. 158-190

PN rating: 16 bar

Maximum angle of deflection: 4°

Product certification licence number: OMK 30069



FIGURE 2 EXAMPLE OF MARKING

9 PACKAGING AND TRANSPORTATION

The HYMAX couplings are packaged in cardboard cartons designed to prevent damage during handling or transport. Each product has its own cardboard carton.



FIGURE 3 PACKAGING

10 PRODUCT WARRANTY

The products are covered by the normal commercial and legal requirements of the Competition and Consumer Act 2010 (Cth), which covers manufacture to the relevant standard, and details of Krausz's warranty is included in their terms and conditions of sale.

11 WATER AGENCY EXPERIENCE WITH THE PRODUCT OR FIELD TESTING REPORT

Krausz couplings have been supplied extensively within Europe and USA since they were first introduced into the market in 1999. This Appraisal is a pre-requisite to obtain water agency approvals in Australia. Similar products have been in general use within the industry for many years and a field trial is not deemed necessary.

12 OUTCOMES OF EXPERT PANEL PRODUCT REVIEW

There were no issues raised.

13FUTURE WORKS

There are no outstanding future works items.

14 DISCLAIMER

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Any enquiries regarding this report should be directed to the Program Manager, Carl Radford, Phone: 03 8605 7601 email carl.radford@wsaa.asn.au.

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Recipients should seek independent evidence of any matter which is material to their decisions in connection with an assessment of the Product and consult their own advisers for any technical information required. Any decision to use the Product should take into account the reliability of that independent evidence obtained by the Recipient regarding the Product.

Recipients should also independently verify and assess the appropriateness of any recommendation in the Report, especially given that any recommendation will not take into account a Recipient's particular needs or circumstances.

WSAA has not evaluated the extent of the product liability and professional indemnify insurance that the provider of the product maintains. Recipients should ensure that they evaluate the allocation of liability for product defects and any professional advice obtained in relation to the product or its specification including the requirements for product liability and professional indemnity insurance.

15.3 No Updating

Neither the Publisher(s) nor any person involved in the preparation of this Report [has] [have] any obligation to notify you of any change in the information contained in this Report or of any new information concerning the Publisher(s) or the Product or any other matter.

15.4 No Warranty

The Publisher(s) do[es] not, in any way, warrant that steps have been taken to verify or audit the accuracy or completeness of the information in this Report, or the accuracy, completeness or reasonableness of any recommendation in this Report.

APPENDIX A - PRODUCT LITERATURE











- 4

HYMAX° Family Features

HYMAX, Wide-Range Coupling Solutions

Exact MWAN" ranging solutions behave advanced engineering and invanitive design, mobiling fact establistion, unitariting flexibility, and extreme durability or seried conditions. Here because the final product is a based assets of applications. A revelablishest product lose, that has set a new industry (canter), the HTMAN products have been field process in millions of architectures moved with.



East and easy installation

- Sdunard wide range coupling with a patented flip (paket (in sizes \$5-300 mm))
 climated gardet conserval metables and requirement installer work efficiency.
- . Stragge top-facing bolts enable outs enablation access.
- thody-to-see, that on design elements the tend for extensive under pipe digging and work.
- Installation by stabling elements the need for product discountedly before one

Multiple applications

- . Brand earnly of products, from couplings to flange adaptors and reducers.
- . Extensive portfulio of products with 40mm Hilliams record page size.
- All products work with a nativity of pipe statematic duction from year trees, etc.), Mr. PVC, AC, and GilP.



Flexible connection

- Ultistent mechanical pooling for line generator sanditions and hydraulic suffatable quotest for enhanced studing in precisional standitions.
- Through extallation, allows for up to 4° angular deflection on each and, as well as for modigned paper.
- . Adapts to not of cound pipe shape (up to Umon), for optimize hi on both ends.

High datability

- . Fusion-banded openy country enables an implated product and proventy to
- a Nicts, Softs and other components are ready of stateliess shoel.
- · merculine radial during design and scaling systems elemente activilation errors
- Osigon MAK treatment prevents; galling and enables repeated bulk tightnoing. If also elements the read for group, preventing dust and dirt halld up.



Cost-saving

- Ryman products sait a wide range of pipe diameters, replacing the need to use dedicated products and than reducing inventory costs and soving shall space.





HYMAX* Product Information *

KRAUSZ 90 Years of Innovation

HYMAX® Product Information *

Products must be record classicals MOT-CC MOT CTZ, MUNCS, AVM, DIG 275 and DX 1625.

Body:

m-1500mm Grade SZKIJIV Sheel, ER 10025-2

End flings:

- 40mm 1500mm: Grade 523586 Steel, 84 10025-2.
- Stören 200mm: Grade S205R Steet, EN 10005-2.
 (Or Duckle Iron Carring ASTR ASSS Grade 40-40-40.

Two types of sealing

- Officient mechanical scaling for low-pressure conditions and hydraulic inflatable gasket for enhanced scaling in pressurand conditions.
- SN ethem 100mm flaging gasket
 ON 350mm 1,100mm double layer detackable gasket
- Gasket

CPDA semponded for water and severage, means allocationed clandards for exetact with straking water. NO 4.5 GBA flastoner buddlike (KTM), WTM, SF P 11-20, AU/ATS, 400, au 58-470, Morn 189 in 451 t for water and flastoner applications.

Nuts & Bolts:

- Adi 1% Science, Steel Railed throad and MAX Southers.
 Top facing both for requirement installer safety.

Gasket Bridge:

Courtings

Dynamic Deflection

. Up to 4' per side (one side only for Flunge Adaptor).

Working Pressure:

Rated Pressure:

+ We to 24 flat.

Working Temperature:

+ -38°C signto +S8°C.

Vacuum Teit: . 0.530









KRAUSZ 90 Years of Innovation



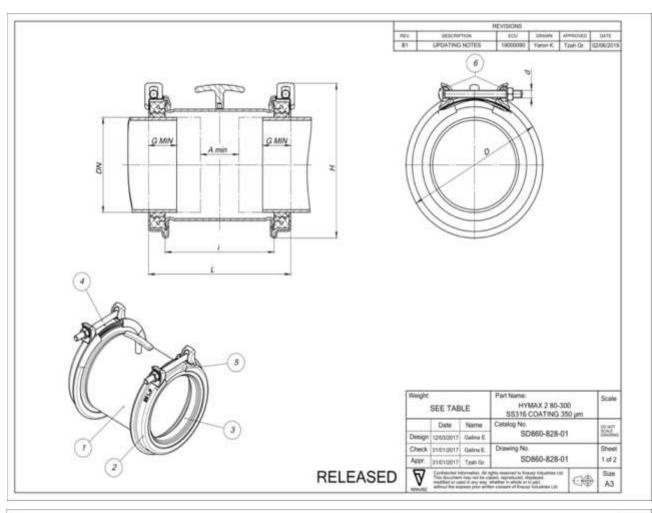
OF INNOVATIVE PIPE JOIN AND REPAIR SOLUTIONS

Krausz Industries develops, designs, and manufactures market-leading smart products for repairing and connecting different types of pipes for potable water and sewage.

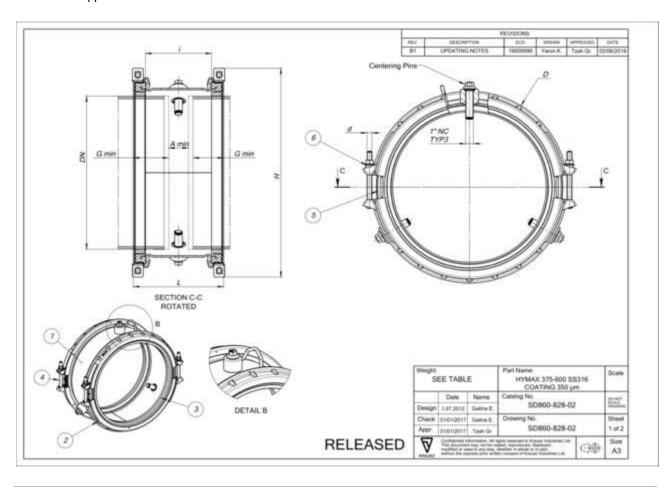
During more than 90 years of industry leadership, Krausr has earned a solid reputation for incovative, high-quality products that are exceptionally easy to use and are extremely durable; products that save significant time and cost in installation, inventory and maintenance.

With millions of installations worldwide, Krausz products expertly meet immediate connection and repair needs and prevent future pipe damage, delivering long-lasting value

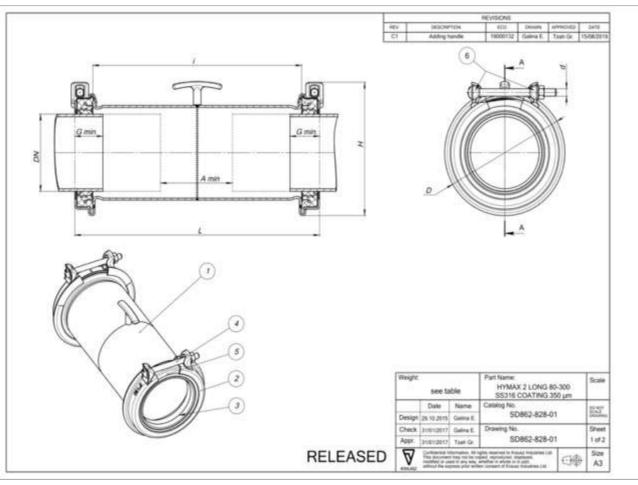




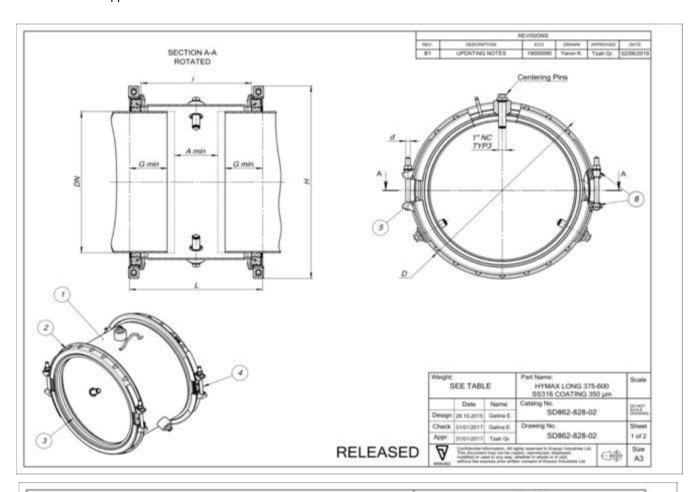
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							- 1	-		LIST PROF	WO I E.S.	10000000	Tarton K.	1200712	02/08/211
	Krausz Part Number	DN (mm)	Overall Range (mm)	Range Betire Flipping Glasket (mm)	Range After Flipping Gasket (into)	D (mm)	H (mm)	(mm)	L. (mm)	A min	Bobs Qty Size d(mm)	Torque (Nm)	Approx. Weight (Kg)		
	860-828-0088-16	80	88-108	88-99	96-108	@170	200	158	222	20	2-4/12	70	4.9		
	860-826-0106-16	100	108-143	108-126	125-143	£020	250	158	223	35	2 4/14	80	6.0	i	
	860-828-0130-16	125	130-162	130-146	145-162	(7240	270	213	275	85	2-4414	80	7.6	1	
	860-828-0158-16	150	158-190	158-174	173-190	Ø270	296	213	275	106	2-M14	80	9.3	i	
	860-829-0163-16	150	163-195	163-179	178-195	0273	298	213	275	105	2.4/14	80	9.3		
	860 628-0190-16	200	190-222	190-206	206-222	(2298	325	213	275	106	2-M14	80	11.5	1	
	860-828-0217-16	200	217-250	217-233	232-250	(2026	355	213	275	115	2-4/14	80	11.7		
	860-829-0222-16	200	222-252	222-236	237-252	(3328	355	213	275	115	2-4/14	80	11.7		
	860-828-0272-16	250	272-306	272-289	268-305	@382	408	213	275	115	2-M14	100	12.7		
	860-828-0278-16	250	279-311	278-296	294-311	Ø386	415	213	275	115	2-8114	100	12.7		
	860-826-0315-16	300	315-347	315-331	330-347	Ø422	445	213	275	105	2 4/14	110	14.0	i	
	860-628-0334-16	300	334-366	334-350	349-366	17440	465	213	275	85	2-M14	110	17.5	1	
Center Ring - EN 10025-2 gn according to Krausz spec MS (for ranges 1.5" and 2" withou	0781. It handle)						Dynami	c defect			formance	Tue	to 4"		
Center Ring - EN 10025-2 gn according to Krausz spec MS (for ranges 1.5" and 2" withou End Rings - EN 10025-2 gr according to Krausz spec MS	0781. if handle) rade \$235JR steel wi 50780.						G - Mn A - Mn	ppe inse gap (to e	on per s ertion mable m	ide ax dynan	nic deflection	95	to 4" mm table		
Gaskets - EPDM compounde and sewerage, meets interna	0781. If handle) rade S235JR steel wi 50780. Id for water ational				,		G - Mn A - Mn Maximu	ppe inse gap (to e	on per s ection matrie in for missi	ax dynan igned pig	nic deflection e DN 60 DN 10 DN 80	95 1 999 10 0-300 13 5	mm table mm mm		
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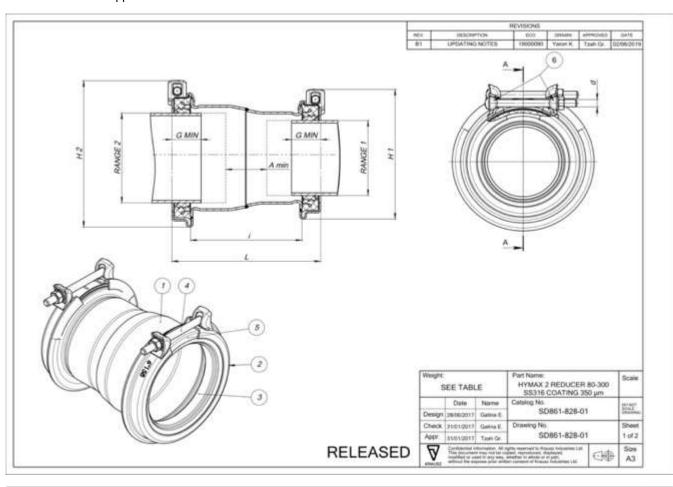
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								0.1	UPDATH	NO NOTES	190000	(NO Yaro	n K. Taen O	w. 02/06/2011
	Krausz Part Number	DN (mm)	Overall Range (mm)	Before removal the inner tayer (mm)	After removal the inner layer (mm)	D (mm)	H (mm)	i (men)	L (mm)	A min	Bolta QtySize (mm)	Torque (Nm)	Approx. Weight (Kg)	
	860-828-0375-16	375	375-431	375-405	403-431	Ø534	600	216	295	60	4-M16	200	35.5	
	860-828-0378-16	375	378-434	378-408	406-434	Ø534	600	216	295	60	4-M16	200	35.5	
	860-828-0434-16	450	434-488	434-462	460-488	Ø588	655	216	295	65	4-M16	200	40.0	
	860-828-0488-16	450	488-542	488-516	514-542	£3642	705	216	295	65	4-M16	200	43.0	
	860-828-0540-16	500	540-594	540-568	566-594	Ø694	760	216	295	75	4 -M16	200	46.0	
	860-828-0606-15	600	606-660	606-634	632-660	Ø760	825	216	295	75	4-4416	200	52.0	
	860-828-0624-16	600	624-678	624-652	650-678	Ø778	845	216	295	75	4-M16	200	52.0	
ccording to Ke nd Rings : 4*-24" - EN 10	N 10025-2 grade S235JR st ausz spec MS0780, 0025-2 grade S235JR steel ausz spec MS0780.						pipe Ins gap (to	tion per sertion enable	max dy	ynamic	ance deflection) see	mm table	
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								.01.		Aiding han	dw .	19000132	Galma E	Yash Or.	1508001
	Krausz Part Number	DN (mm)	Overall Range (mm)	Range Before Flipping Gasket (mm)	Range After Flipping Gasket (mm)	D (mm)	H (mm)	i (mm)	L	A min	Bolts City Siz	Torque	Approx Weight (Kg)		
	962-826-0088-16	80	88-108	88-99	98-108	Ø170	200	300	367	155	2-M12	70	6.4	+	
	862-828-0108-16	100	108-143	108-126	125-143	(2)220	250	300	365	175	2-M14	80	9.5	+	
	862-828-0130-16	125	130-162	130-146	145-162	20240	270	410	475	285	2-M14	80	12.5	1	
	862-828-0158-16	150	158-190	158-174	173-190	Ø270	295	410	475	305	2-M14	80	14.0	+	
	862-828-0163-16	150	163-195	163-179	178-195	@273	298	410	475	305	2-M14	80	14.7	+	
	862-828-0190-16	200	190-222	190-206	206-222	£2298	325	410	475	305	2-M14	80	16.4	+	
	862-826-0217-16	200	217-250	217-233	232-250	@328	355	410	475	315	2-M14	50	19.1	+	
	862-828-0272-16	250	272-305	272-299	288-305	(2382	408	410	475	315	2-M14	100	22.7	1	
	862-828-0278-16	250	278-311	278-296	294-311	£7388	415	410	475	315	2-M14	100	24.1	1	
	862-826-0315-16	300	315-347	315-331	330-347	Ø422	445	410	475	315	2-M14	110	24.5	+	
	962-828-0334-16	300	334-366	334-350	349-366	@440	465	410	475	265	2-M14		25.4	-	
Contac Bire	Management of the second of	and the second second													
		R steel with	Yield streng	th min. 290Mpa			Com	and the state			erformanc	e	Towas an]	
according to Kr End Rings +	rausz spec MS0781. EN 10025-2 grade S235.						A - N	An. gap (lection pe to enable	r side max dyr	erformano namic defie		up to 4"		
according to Ki End Rings + I according to Ki Gaskets - EPO	rausz spec MS0781. EN 10025-2 grade S235. (rausz spec MS0780. OM compounded for water	JR steel wit					G - 1	An. gap (Vin. pipe	lection pe to enable insertion	r side max dyr	namic defie	ction)	see table 55 mm 10 mm		
according to Ki End Rings - I according to K Gaskets - EPD and sewerage standards for	rausz spec MS0781. EN 10025-2 grade S235, trausz spec MS0780. 0M compounded for water , meets international contact with drinking water	JR steel wit					A - N G - N	An. gap (Vin. pipe mum off	lection pe to enable insertion	r side max dyr nsaligner	namic defie	ction) IN 80 IN 100-300 IN 80	55 mm 10 mm 13 mm 5 mm		
according to Ki End Rings - I according to K Gaskets - EPD and sewerage standards for Working Temp	rausz spec MS0781. EN 10025-2 grade S235. Grausz spec MS0780. MM compounded for water s, meets international contact with drinking water perature:	JR steel wit r er.					A - Mani Mani Wor	An gap (Mn pipe mum off mum out long Pres	to enable insertion set for m of round	r side max dyr nsaligner	namic defie	ction) IN 80 IN 100-300	55 mm 10 mm 13 mm 5 mm		
according to Ki End Rings - I according to Ki Gaskets - EPD and sewerage standards for Working Temp for continuous for short time	rausz spec MS0781. EN 10025-2 grade S235. (rausz spec MS0780. Mi compounded for water i, meets international contact with drinking water perature: c operations: -30°C up so- operations: up to +100°C	JR steel wit er. •85 °C					A - M G - M Maxi Wor Test	An. gap (Win. pipe mum off mum our long Pres Pressur	to enable insertion set for m t of round sture	r side max dyr nsaligner	namic defie	ction) IN 80 IN 100-300 IN 80	55 mm 10 mm 13 mm 5 mm 8 mm 16 atm 24 atm		
according to Ki End Rings - I according to K Gaskets - EPO and sewerage standards for Working Temp for continuous for short time is Bolts and Nuts	rausz spec MS0781. EN 10025-2 grade S235. (rausz spec MS0780.) Micompounded for water, meets international contact with drinking water perature: operations: -30°C up so operations: up to +100°C s - AISI 316 stainless steep.	JR steel wit er. •85 °C					A - M G - M Maxi Wor Test	An gap (Mn pipe mum off mum out long Pres	to enable insertion set for m t of round sture	r side max dyr nsaligner	namic defie	ction) IN 80 IN 100-300 IN 80	see table 55 mm 10 mm 13 mm 5 mm 8 mm 16 atm		
according to K. End Rings - I according to K. Gaskets - EPC and sewerage standards for Working Terng for continuous for short time - Boits and Nuts Ringe - ASS 3 Spherical spac	rausz spec MS0781. EN 10025-2 grade S235. (rausz spec MS0780.) M compounded for water, in meets international contact with drinking water perature: operations: -30°C up so operations: up to +100°C - AISI 316 stainless steel. cers - AISI 316 stainless steel.	JR steel wit er. +85°C.					A - M G - M Maxi Wor Test	An gap (Mn pipe mum off mum ou long Prei long Prei aum Test	lection per to enable insertion set for m t of round seure we t	r side max dyr nsaligner	pipe C	ction) IN-80 IN-100-300 IN-80 IN-100-300 IN-100-300 IN-100-300 IN-100-300	55 mm 10 mm 13 mm 5 mm 8 mm 16 atm 24 atm	0-300	Sale
according to K. End Rings - I according to K. Gaskets - EPO and sewerage standards for working for continuous for short time e Bolts and Nuts Rolled thread Bridge - ARSI 3 Spherical spac Coating - 100 ¹ for enthanced in	rausz spec MS0781. EN 10025-2 grade S235, Grausz spec MS0780. Micompounded for water I, meets international contract with drinking wate perature: operations: -30°C up to operations: up to +100°C I - AISI 316 staintess stee and anti-galling coating. 116 staintess steel. cers - AISI 318 staintess s in Fusion bonded epoxy corrosion protection.	JR steel wit er. +85°C.					A - M G - M Maxi Wor Test	An gap (Min pipe mum off mum our long Pressur Jum Teat	lection per to enable insertion set for m t of round sourse w t	r side i max dyr visalignec thesis see table	pipe C	ction) NN 80 NN 100-300 NN 100-300 NN 100-300 NN 100-300 Art Name HYMAX SS316 C emicg No.	55 mm 10 mm 13 mm 5 mm 5 mm 16 atm 24 atm 0.8 atm	0-300 50 µm	Scale
ecceding to K- End Rings - i according to K- Gaskets - EPD and sewerage standards for - Working Terrig for continuous for short time - Botts and Nuts Rolled thread. Bridge - AISI 3 Spherical spac Coating - 100° for einhanced Thickness acc Working Terrig	rausz spec MS0781. EN 10025-2 grade S235. Krausz spec MS0780. Mil compounded for water, meets international contact with drinking water perature: contact with drinking water perature: coperations: up to +100°C - AISI 316 stairless stee and anti-galling coating. 116 stairless steet. Sees - AISI 316 stairless steet. Sees - AISI 316 stairless steet. Sees - AISI 316 stairless specially corrosion protection, coording to AS/NZS 4158. perature:	JR steel wit r er. *85°C. il.					A - M G - M Maxi Wor Test	An gap (Min pipe mum off mum out long Pressur Jum Test	lection per to enable insertion set for m t of round seure e t	r side i max dyr visalignec thesis see table	Property Contract Con	ction) NN 80 NN 100-300 NN 100-300 NN 100-300 NN 100-300 Art Name HYMAX SS316 C emicg No.	960 table 55 mm 10 mm 13 mm 5 mm 8 mm 16 alm 24 atm 0.8 atm 2 LONG 8 OATING 3	0-300 50 µm	
according to Ki End Rings - i according to Ki Gaskets - EPD and sewerage standards for Working Temp for continuous for short time Bolts and Nuts Rolled thread Rolled thread Coating - 100° for enhanced Thickness acc Working Temp above ground	rausz spec MS0781. EN 10025-2 grade S235, (rausz spec MS0780.) M compounded for water, in meets international contact with drinking water perature: operations: -30°C up so operations: up to +100°C - AISI 316 staintiess stee and anti-galling coating. 116 staintiess steel, cers - AISI 318 staintiess s is Fusion bonded epoxy corrosion protection, cortoning to AS/NZS 4158.	JR steel wit for. *85°C. d. steet.					A - M G - M Maxi Wor Test	Min gap (Min pipe mum off mum out long Pressur Jum Test	lection particle to enable insertion set for met of round sisters we set for met of round sist	er side e max dyr essaligner sness see table base 1 102011 0	Proper Control	ction) IN 80 IN 100-300 IN 80 IN 100-300 IN 80 IN 100-300	960 table 55 mm 10 mm 13 mm 5 mm 8 mm 16 alm 24 atm 0.8 atm 2 LONG 8 OATING 3	0-300 560 µm	EST



Krausz Part Number	DN (mm)	Overall Range (mm)	Before removal the inner layer (mm)	After removal the inner layer (mm)	D (mm)	H (mm)	i (mm)	L (mm)	A min (mm)	Bolts Qty Size (mm)	Torque (Nm)	Approx. Weight (Kg)		
862-828-0375-16	375	375-431	375-405	403-431	Ø534	600	382	460	160	4 -M16	200	48.5	1	
862-828-0378-16	375	378-434	378-408	406-434	Ø534	600	382	460	160	4 -M16	200	48.5	1	
862-828-0434-16	450	434-488	434-462	460-488	Ø588	655	382	460	160	4 -M16	200	56.0	1	
862-828-0488-16	450	488-542	488-516	514-542	Ø642	705	382	460	150	4M16	200	60.0	1	
862-828-0540-16	500	540-594	540-568	566-594	Ø694	760	382	460	150	4 -M16	200	64.0	1	
862-828-0606-16	600	606-660	606-634	632-660	Ø760	825	382	460	150	4 -M16	200	72.0	1	
862-828-0624-16	600	624-678	624-652	650-678	Ø778	845	382	460	150	4 -M16	200	74.0	1	
Center Ring - EN 10025-2 according to Krausz spec End Rings : 14"-24" - EN 10025-2 gra according to Krausz spec Gaskets - EPDM compoun	MS0780. de S235JR st MS0780.	teel with Yield s	500000	2242	G - Min A - Min Maximi Maximi	gap (to um offse um out o	sertion per sertion enable et for mi of roundr	side max dyr saligned		effection)	up to 4° 140 mm see table 13 mm 13 mm			
according to Krausz spec End Rings: 14*-24* - EN 10025-2 gra according to Krausz spec Gaskets - EPDM compoun and sewerage, meets inte standards for contact with Working Temperature:	MS0780. de S235JR st MS0780. ided for water mational drinking water	teef with Yield s	500000	2242	G - Min A - Min Maximu Maximu Workin	pipe In gap (to um offse um out o g Press Pressur	sertion per sertion enable et for mi of roundr ure	side max dyr saligned	amic de		140 mm see table 13 mm			
according to Krausz spec End Rings: 14*-24* - EN 10025-2 gra according to Krausz spec Gaskets - EPDM compoun and sewerage, meets inte standards for contact with Working Temperature: for continuous operations: for short time operations: 8 bolts and Nuts - AISI 316 r Rolled thread and anti gall Bridge - AISI 316 stanless Spherical spacers - AISI 3 Coating - 100% Fusion bor	MS0780. de S235JR st MS0780. ded for water mational drinking wate -30°C up to up to +100°C stainless steel ing costing, steel. 16 stainless s nded epoxy	teel with Yield s sr. +85°C.	500000	2242	G - Min A - Min Maximu Maximu Workin Rated	pipe In gap (to um offse um out o g Press Pressur	sertion per sertion enable et for mi of roundr ure	max dyr saligned ness	namic de pipe	effection)	140 mm see table 13 mm 13 mm 16 atm 24 atm 0.8 atm	ONG 375-6 ATING 350		Scale
according to Krausz spec End Rings: 14*-24* - EN 10025-2 gra according to Krausz spec Gaskets - EPDM compoun and sewerage, meets inte standards for contact with Working Temperature: for continuous operations: for short time operations: Bolts and Nuts - AISI 316 s Rolled thread and anti gall Bridge - AISI 316 stainless Spherical spacers - AISI 3 Coating - 100% Fusion bo for enhanced corrosion pr Thickness according to AS	MS0780. de S235JR st MS0780. ided for water mational drinking wate -30°C up to up to +100°C stainless stee ling coasing, a steel. 16 stainless s inded epoxy otection.	teel with Yield s sr. +85°C.	500000	2242	G - Min A - Min Maximu Maximu Workin Rated	pipe In gap (to um offse um out o g Press Pressur	sertion per sertion enable et for mi of roundr ure	max dyr saligned ness	samic del pipe SEE TABL Date 29 10,2016	E Po	140 mm see table 13 mm 13 mm 16 atm 24 atm 0.8 atm	ONG 375-6		SECOND SE
according to Krausz spec End Rings: 14*-24* - EN 10025-2 gra according to Krausz spec Gaskets - EPDM compoun and sewerage, meets inte standards for contact with Working Temperature: for continuous operations: of Bolts and Nuts - AISI 316 + Rolled thread and anti-gall Bridge - AISI 316 staintess Spherical spacers - AISI 3 Coating - 100% Fusion bot for enhanced corrosson pri	MS0780. de S235JR st MS0780. ded for water mational drinking wate -30°C up to up to +100°C stainless stee ing coating, a steel. 16 stainless s nded epoxy otection. S/NZS 4158. x: up to +50°C	teel with Yield s or. HS5 °C.	500000	2242	G - Min A - Min Maximu Maximu Workin Rated	pipe In gap (to um offse um out o g Press Pressur	sertion per sertion enable et for mi of roundr ure	max dyr saligned ress	Date 29 12 2	E Programme Communication Comm	140 mm see table 13 mm 13 mm 16 atm 24 atm 0.8 atm 0.8 atm wind No. SS316 CO Notice No. SD86	ONG 375-6 AATING 350 52-828-02		



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										UPDATE	NG NOTES		19000000	Taron K.	Tash Gr.	1200020
Krausz Part Number	(mm)	Overall Range 1 (mm)	Range Before Flipping Gasket 1 (nm)	Range After Flipping Gasket 1 (mm)	H T (mm)	Overall Range 2 (mm)	Rango Betire Flipping Gasket 2 (nm)	Hange After Filipping Gasket 2 (mm)	H 2 (mm)	(mm)	A min	L (mm)	Bots Oty-Size d (mm)	Torque Side 1 (Nm)	Torque Side 2 (70m)	Approx Weight (Kg)
8618250088010816	80 x 100	88-106	88-99	98-108	200	106-143	106-126	125-143	250	154	60	224	2-M14	70	80	5.0
8618280108013016	100 x 125	108-143	106-126	125-143	250	130-102	130-146	145-162	270	182	70	250	2-8614	80	80	7.4
8618280108015816	100 s 150	108-143	108-126	125-143	250	158-190	158-174	173-190	295	182	70	250	2-4414	80	80	8.3
8618290130015816	125 x 150	130-162	130-146	145-162	270	158-190	158-174	173-190	295	210	75	275	2-8/14	80	80	9.0
8618290158021716	150 x 200	158-190	158-174	173-190	295	217-250	217-233	232-250	355	210	110	275	2.4814	80	80	11.0
8618280163019016	150 x 200	103-195	163-179	178-195	290	190-222	190-206	205-222	325	210	110	275	2-8/14	80	80	10.3
8618290163021716	150 x 200	103-195	163-179	178-195	290	217-250	217-233	232-250	355	210	110	275	2 4/14	80	80	11.5
8618290190021716	200 ± 200	190-222	190 206	205-222	325	217-250	217-233	732-250	355	210	115	275	2-8214	80	80	12.0
8618280217027216	200 x 250	217-250	217-233	232-250	355	272-305	272-209	288-305	406	210	115	275	2-8614	80	100	13.2
8618200222027216	200 s 250	222-252	222-238	237-252	365	272-305	272-209	268-305	400	210	110	275	2.8514	80	100	13.2
8618260272031516	250 x 300	272-305	272-289	288-305	400	315-347	315-331	330-347	445	210	110	275	2-4614	100	110	10.1
8618280278031516	250 r. 300	275-311	278-295	294-311	415	315-347	315-331	330-347	445	210	110	275	2 4/14	100	110	16.1
8618290315033416	300 x 300	315-347	315-331	330-347	445	334-366	334-350	349-306	-465	210	110	275	2.4/14	110	110	16.6

Material information:

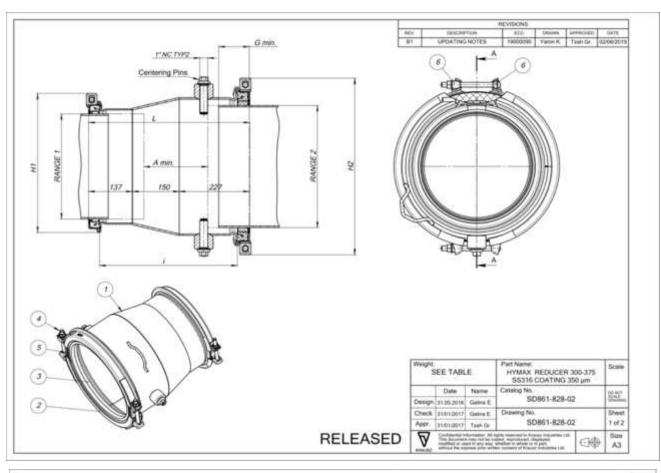
- Center Ring EN 10025-2 grade S235JR steel with Yield strength min. 290Mpa according to Krausz spec MS0781.
 End Rings EN 10025-2 grade S235JR with Yield strength min. 250Mps steel according to Krausz spec MS0780.
- 3) Gaskets EPDM compounded for water and sewerage, meets international standards for contact with drinking water. Working Temperature: for continuous operations: -30°C up to +85°C. for short time operations: up to +100°C.
- Bolts and Nuts AISI 316 stainless steel. Rolled thread and anti galling coating.

- Bridge AISI 316 stainless steet.
 Spherical spacers AISI 316 stainless steet.
 Coating 100% Fusion bonded epoxy. for enhanced corrosion protection. Thickness according to AS/NZS 4158. Working Temperature: above ground applications: up to +50°C, under ground applications: up to +65°C.

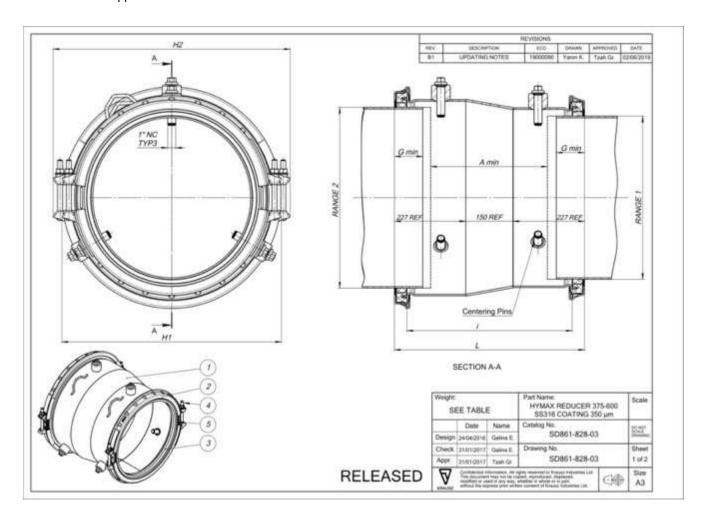
Product perform	wince	
Dynamic deflection per side		up to 4"
A - Min. gap (to enable max dynamic	deflection)	see table
G - Min. pipe Insertion		55 mm
Maximum offset for misaligned pipe	DN 80	10 mm
	DN 100-300	13 mm
Marian and advantages	DN 80	5 mm
Maximum out of roundness	DN 100-300	8 mm
Working Pressure		16 atm
Test Pressure		24 atm
Vacuum Test		0.8 atm

Weight:	SEE TABL	E	Part Name: HYMAX 2 REDUCER I \$5316 COATING 35		Scale
	Date	Name	Catalog No.		10.90
Design	28/06/2017	Oalvo E.	SD861-828-01		Street
Check	31/91/2017	Gerne E.	Drawing No.		Sheet
Appr.	31/01/2017	Tesh Gr	SD861-828-01		2012
\triangle	Confidential to Title discorbed	Armation, 60 o	lights recovery to Known Industries Life.	r tata	Size

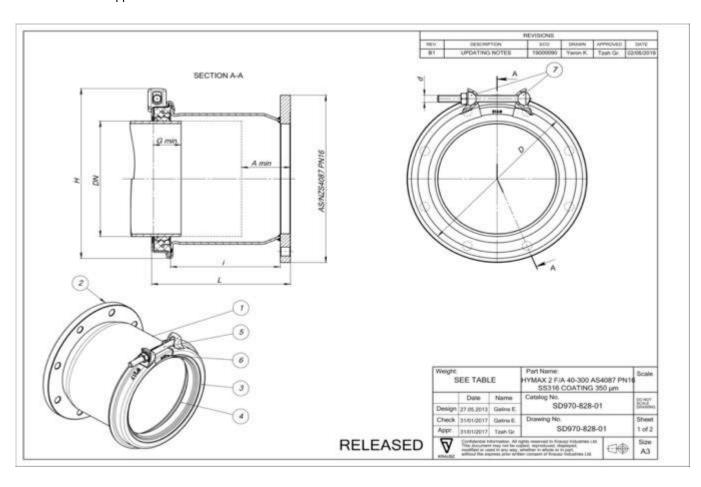
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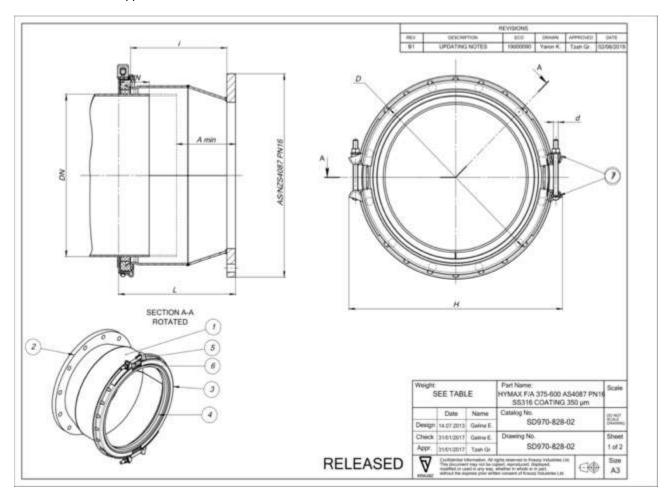
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									PEN		1930%		10			PROVES	OATE
									- 81	1	FOATING	MOTES	1900	0080 Yan	ne. T	tah Gr. Itt	966/2019
evi (28-1707.55 h) 2 Nico	DN	Oeal	Betze removal	After	нт	Oversalt	Beter	After	11.2	E.		Amin	Butts	Torque	Yorpu	Approx	1
Knusz Part Number	(mm)	Hange 1 (mm)	(fipping) the inter- layer t	(Ripping) the inner layer 1	(mm)	Range 2 (mm)	(flipping) the inner tayer 2	(Ripping) the inner layer 2	(mm)	(mm)	(rem)	(mm)	City - Siza	100000000	Side 2 (Nm)	11555000	
8018290315037510	300 x 375	315-347	315-331	330-347	445	375-431	376-405	403-431	600	515	443	297	3-M/14 2-M/16	110	200	32	
8618280334037516	300 x 375	334-366	334-350	349-366	405	375-431	375-405	403-431	600	515	443	297	14614 24616	110	200	36	
8618290315007816	300 v 375	315-347	315-331	330-347	445	378-434	378-406	406-434	600	515	443	297	14614 24616	110	200	32	
8618290334037816	300 x 375	334-366	334-350	349-306	465	378-434	378-606	406-434	800	516	443	297	1.8614 2.8616	110	200	36	
Material inform	ation:											20001111					
1) Center Ring:										Produ	ct per	forman	ice				
12" - EN 10025-2			Yield streng	th min. 290	Mpa			Dynamic d	deflectio	n per s	ide			up to	4"		
according to Krau								G - Mn. pip						100 m	TITLE		
14" - EN 10025-2			Yield streng	gth min. 250	Mpa			Maximum						13 m	m		
according to Krau	sz spec MS0	780.						A - Mn. ga	the same of the same	ANNERSON	-	amic di	effection)	see ta	and the same of		
() End Rings :	er ver room en en en		COMPANIA A POS		anner.			Maximum -	State of the later		55			8 mr	_		
12"-14" - EN 1002	The second second		with-Yield s	rength min.	250Mp	B.		Working P		1				16 at	m		
according to Krau								Test Press	sure					24 at	m		
 Gaskets - EPDM and sewerage, m standards for con 	eets international tact with drink	onal						Vacuum T	est					0.8 at	m		
Working Tempers for continuous op for short time ope - for DN 300 with	erations: -30° rations: up to flipping inner removal inner	+100°C. layer. layer.	s·c.											4.51.79			
- for DN 350 with									1	Weight. SE	E TABL	LE		MAX REDI			Scale
- for DN 350 with 4) Bolts and Nuts - A Rolled thread and 5) Bridge - AJSI 316	l anti galling o stainless stee	d.											- 100	SELECT SECURITY		N/ BRITE	
- for DN 350 with 4) Bolts and Nuts - A Rolled thread and 5) Bridge - AISI 316 5) Spherical spacers 7) Coating - 100% F	antigalling of stainless stee - AISI 316 st usion bonded	il. ainless stee epoxy	d.							Devskon	Date Los Inte	Name Gains I	Catalog				12.2
for DN 350 with Boits and Nuts - A Rolled thread and Bridge - AISI 316 Spherical spacers Coating - 100% Fi for enhanced con-	anti galling o stainless stee - AISI 316 st usion bonded osion protect	il. ainless stee epoxy ion.	6						- 1	Design 3	1.05.3016	Geirus I	Catalog	No SD861			
- for DN 350 with 4) Bolts and Nuts - A Rolled thread and 5) Bridge - AISI 316 5) Spherical spacers 7) Coating - 100% F	anti gatting of stainless stee - AISI 316 st usion bonded osion protect ing to AS/NZ	il. ainless stee epoxy ion.								Check 3	1.85,3016	A COLUMN	Catalog	No SD861	828-02	5	Sheet 2 of 2



													REVIS	Parket.			
									nev		Descr			(0)	DHAWN :	PhaseCA4()	-
									81		UPDATIN	S NOTES	190	000000	Yaron K.	Tasin Or.	113/06/201
Krausz Part Number	DN	Overall Range 1	thefore removal the inter	After removal the inner	нт	Overall Range 2	Before removal the inner	After removal the inner	H 2	L	1	A mm	Botts Gry - Su	Torqu Side			
	(min)	(mm)	Jayer 1	tayer t	(mm)	(mvn.)	Sayer 2	tayes 2	(mm)	(Jesm)	(mm)	(mm)	(mm)	Oke) (Non) (K	3)
8618280375043416	375 x 450	375.431	375-405	403-431	600	434-488	434-402	400-406	655	605	525	375	4-3410	200	200	53	5
8618280378043416	375 x 450	376-434	378-408	405-404	600	434-468	434-462	460.488	655	605	525	375	4.M16	200	200		_
9518280434048815	450 s 450	434-488	434-402	450-488	655	488-542	488-516	514-542	7.05	605	525	375	4 -0010	200	200	- P	
8518280488054016	450 ± 500	488-547	488-516	514-542	705	540-594	540-568	586-594	760	605	525	385	4 3816	200	200	7	
8018260540062416	500 ± 600	540-594	540-568	566-594	760	624-678	624-652	650-678	845	605	525	385	4 4416	200	200	- 8	3
2) End Rings :	(44) ((C))((C))									flection	per si	-	ormance		up to	-	
according to h	Crausz spec !												ormance				
	out ages	W3078U.								flection	per si	-	ormance		up to	4"	
	(44) ((C))((C))		steel with Y	ield strengtt	min. 25	50Mpa		G-M	In. pipe	flection Inserti	per si	fe			100 n	nm	
2) End Rings : 14"-24" - EN according to b	10025-2 grac Krausz spec I	de 5235JR MS0780.		ield strengtt	min. 25	50Мра		G - M Maxin	in pipe num of	flection Inserti fset fo	per sit ion r misal	te igned p	ipe		100 m	m	
2) End Rings : 14"-24" - EN according to 1 3) Gaskets - EPI	10025-2 grad Krausz spec 1 OM compoun	de 5235JR MS0780. ded for wat		ield strengtt	min. 25	50Мра		G - M Maxin A - M	In pipe num of in gap	flection Insert fset fo (to ena	per siden on r misal ible ma	gned p			100 m 13 m see ta	m ble	
2) End Rings : 14"-24" - EN according to I 3) Gaskets - EPI and sewerage	10025-2 grac Grausz spec I DM compoun I, meets inter	de S235JR MS0780. ded for wat mational	er	ield strengtl	min. 25	50Mpa		G - M Maxim A - M Maxim	In pipe num of in gap num ou	flection Insert fiset fo (to ena ut of roo	per sit ion r misal	gned p	ipe		100 m 13 m see ta 13 m	m ble	
2) End Rings : 14"-24" - EN according to I 3) Gaskets - EPI and sewerage standards for	10025-2 grac Krausz spec 1 OM compoun s, meets inter contact with	de S235JR MS0780. ded for wat mational	er	ield strength	min. 25	50Mpa		G - M Maxin A - M Maxin Work	in pipe num of in gap num ou ing Pre	flection Insertifiset fo (to enaut of roomssure	per siden on r misal ible ma	gned p	ipe		100 m 13 m see ta 13 m 16 at	nm m ble m	
2) End Rings: 14"-24" - EN according to 1 3) Gaskets - EPI and sewerage standards for Working Tem	10025-2 grad Krausz spec I DM compoun s, meets inter contact with perature:	de S235JR MS0780 ded for wat mational drinking wa	or der.	ield strength	min. 25	50Mpa		G - M Maxin A - M Maxin Work Test f	in pipe num of n. gap num ou ing Pre Pressu	flection Insert fiset fo (to ena ut of rou essure ire	per siden on r misal ible ma	gned p	ipe		100 m 13 m see ta 13 m 16 at 24 at	nm m ble m m	
2) End Rings: 14"-24" - EN according to I 3) Gaskets - EPI and sewerage standards for Working Tem for continuous	10025-2 grac Krausz spec I OM compoun s, meets inter contact with perature: s operations:	de 5235JR MS0780. ded for wat mational drinking wa -30°C up to	er der. o +85°C.	ield strengt	min. 25	50Mpa		G - M Maxin A - M Maxin Work Test f	in pipe num of in gap num ou ing Pre	flection Insert fiset fo (to ena ut of rou essure ire	per siden on r misal ible ma	gned p	ipe		100 m 13 m see ta 13 m 16 at	nm m ble m m	
2) End Rings: 14"-24" - EN according to 1 3) Gaskets - EPI and sewerage standards for Working Term for continuour for short time 4) Botts and Nut- Rolled thread 5) Bridge - AUSt 3	10025-2 grad Krausz spec I OM compoun p, meets inter- contact with perature: a operations: u perations: u s - AISI 316 a and and gall 816 stainless	de S235JR MS0780. ded for wat mational drinking wa -30°C up to up to +100° stainless ste ing coating.	er ster. o +85°C. C. sel.	ield strengt	o min. 25	50Mpa		G - M Maxin A - M Maxin Work Test f	in pipe num of n. gap num ou ing Pre Pressu	flection Insert fiset fo (to ena ut of rou essure ire	per siden on r misal ible ma	gned p	ipe		100 m 13 m see ta 13 m 16 at 24 at	nm m ble m m	
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								-	81	UPSAI	MES INCT. SEE	1 1900009	Y Tamin K.	Tash tar.	125,440-501
Krausz Part Number	DN (mm)	Flange PN-16 (mm)	Overall Range (mm)	Range Before Flipping Gasket (mm)	Range After Flipping Gasket (mm)	D (mm)	H (mm)	i (mm)	L (mm)	A min	Bolts Qty Size d(mm)		Approx. Weight (Kg)		
970-828-03008816	80	80	88-108	88-99	98-108	Ø170	200	150	227	120	1-4/12	70	6.4		
970-828-04010816	100	100	108-143	108-126	125-143	Ø220	250	150	230	135	1-6614	80	9.6		
970-828-06013016	125	150	130-162	130-146	145-162	Ø240	270	205	257	160	1-M14	80	12.8		
970-828-06015816	150	150	158-190	158-174	173-190	Ø270	295	205	258	175	1 -M14	80	13.5		
970-828-06016316	150	150	163-195	163-179	178-195	0273	298	205	258	175	1-M14	80	13.5		
970-828-08019016	200	200	190-222	190-206	205-222	Ø296	325	205	260	175	1-4/14	80	16.8		
970-828-08021716	200	200	217-250	217-233	232-250	Ø328	355	205	260	180	1-6614	80	17.6		
970-828-10027216	250	250	272-305	272-289	288-305	Ø382	408	205	260	180	1-4614	100	22.0		
970-828-10027816	250	250	278-311	278-295	294-311	Ø388	415	205	260	180	1-6614	100	22.2		
970-828-12031516	300	300	315-347	315-331	330-347	Ø422	445	205	263	185	1-4/14	110	25.0		
				2011 250	349-366	Ø440	465	205	263	160	1-M14	110	25.6		
870-828-12033416 terial information; center Ring - EN 10025-2 g coording to Krausz spec M lange - meets AS/NZ5408	S0781.	JR steel w	334-366 ith Yield st	334-350 rength min. 290f	No. Alex		ynamic o	CHINA			ormance				
870-828-12033416 terial information; center Ring - EN 10025-2 g coording to Krausz spec M lange - meets AS/NZ5408 ind Rings - EN 10025-2 s coording to Krausz spec N	rade S235. S0781. 7 PN16. grade S235 IS0780.	JR steel w	ith Yield st	rength min. 290f	Мра	0	ynamic (seflectio pe Inser	n per sid	See .		9 5	p to 4° 5 mm e table		
970-828-12033416 terial information; tenter Ring - EN 10025-2 g coording to Krausz spec M lange - meets AS/NZS408 nd Rings - EN 10025-2 ccoording to Krausz spec N isskets - EPDM compound nd sewerage, meets intern	rade S235. S0781. 7 PN16. grade S235 IS0780. led for water	JR steel w JR steel v	ith Yield st	rength min. 290f	Мра	OOA	ynamic (seflectio pe Inser sp (to en	n per sid tion able ma	ie x dynami	ormance c deflection) e DN 80 DN 100	5 56 56	p to 4° 5 mm se table 5 mm 5 mm		
970-828-12033416 terial information; tenter Ring - EN 10025-2 g toording to Krausz spec M lange - meets AS/NZ5408 and Rings - EN 10025-2 ccording to Krausz spec N laskets - EPDM compound and sewerage, meets internal sewerage, meets with of	rade S235. S0781. 7 PN16. grade S235 IS0780. led for water	JR steel w JR steel v	ith Yield st	rength min. 290f	Мра	DOAN	ynamic o i - Mn. pi	seflectio pe Inser ip (to en offset fi	n per sid tion able ma or misal	k dynami gned pip	c deflection) b DN 100 DN 80	0 5 56 56	p to 4° \$ mm le table 5 mm 5 mm		
970-828-12033416 terial information; tenter Ring - EN 10025-2 is coording to Krausz spec M lange - meets AS/NZS408 nd Rings - EN 10025-2 is coording to Krausz spec M laskets - EPDM compound ind sewerage, meets inter tandards for contact with o Vorking Temperature.	rade S235. S0781. 7 PN16. grade S235 tS0780. led for wate national trinking wat	JR steel w JR steel v	ith Yield st	rength min. 290f	Мра	G A N	ynamic o i - Min. pi i - Min. ga Naximum	deflection of the service of the ser	n per sid tion able ma or misali oundnes	k dynami gned pip	ormance c deflection) e DN 80 DN 100	-300 E	p to 4° 5 mm se table 5 mm 5 mm		
970-828-12033416 terial information; center Ring - EN 10025-2 g coording to Krausz spec M lange - meets AS/NZ5408 and Rings - EN 10025-2 cocording to Krausz spec N iaskets - EPDM compound ind sewerage, meets intertandards for contact with o Vorking Temperature: or continuous operations: or or short time operations: up	grade S235. S0781. 7 PN16. grade S235 tS0780. led for water national irinking water 30°C up to p to +100°C	JR steel w JR steel v er er. +85°C	ith Yield st	rength min. 290f	Мра	C G A N N V T	Synamic of Min. pi - Min. ga Maximum Maximum Vorking F est Pres	deflection per insering (to en offset front of ro	n per sid tion able ma or misali oundnes	k dynami gned pip	c deflection) b DN 100 DN 80	-300 (1)	p to 4° 5 mm le table 5 mm 6 mm 8 mm 8 mm 6 atm 4 atm		
970-828-12033416 terial information; tenter Ring - EN 10025-2 gooding to Krausz spec Malange - meets AS/NZ5408 and Rings - EN 10025-2 occording to Krausz spec Naskets - EPDM compound and sewerage, meets internandards for contact with of Vorking Temperature, or continuous operations: - or short time operations: upoits and Nuts - AISI 316 st	rade S235. S0781. 7 PN16. grade S235 tS0780. led for wate national irinking wat 30 °C up to p to +100 °C ainless ster	JR steel w JR steel v er er. +85°C	ith Yield st	rength min. 290f	Мра	C G A N N V T	Synamic of Min. pi - Min. gi - Maximum Maximum Vorking F	deflection per insering (to en offset front of ro	n per sid tion able ma or misali oundnes	k dynami gned pip	c deflection) b DN 100 DN 80	-300 (1)	p to 4" \$ mm in table 5 mm 5 mm 6 mm 6 mm 6 mm		
970-828-12033416 terial information; center Ring - EN 10025-2 g coording to Krausz spec M lange - meets AS/NZ5408 and Rings - EN 10025-2 coording to Krausz spec N iaskets - EPDM compound ind sewerage, meets intertandards for contact with o vorking Temperature; or continuous operations: u or short time operations: u oits and Nuts - AISI 316 st tolled thread and anti galli indige - AISI 316 stainless i pherical spacers - AISI 311	grade \$235. \$0781. 7 PN16. grade \$235 \$50780. led for wate actional irinking wat 30°C up to 5 to +150°C aimless ster g coating, steet. 5 stainless	JR steel w JJR steel w H H H +85°C	ith Yield st	rength min. 290f	Мра	C G A N N V T	Synamic of Min. pi - Min. ga Maximum Maximum Vorking F est Pres	deflection per insering (to en offset front of ro	n per sid tion able ma or misali oundnes	ie x dynami gned pip s	c deflection) b DN 80 DN 100 DN 100	U 5 5 5 5 5 5 5 5 5	p to 4° 5 mm e table 5 mm 6 mm 6 mm 6 mm 6 mm 6 mm 6 mm 8 mm 6 atm 4 atm	AS4087 PM	Scale (16
970-828-12033416 erial information; enter Ring - EN 10025-2 g coording to Krausz spec M lange - meets AS/NZ5408 nd Rings - EN 10025-2 c coording to Krausz spec N lange - EN 10025-2 c coording to Krausz spec N lange - EN 10025-2 c coording to Krausz spec N lange - EN 10025-2 c or short time operations: up offs and Nuts - AISI 316 st olded thread and anti-galli- ridge - AISI 316 stainless i pherical spacers - AISI 316 auting - 100% Fusion bon or enhanced corrosion pro- hickness according to ASI	yrade \$235. \$0781. 7 PN16. grade \$235. \$0780. led for water national rinking wat 30°C up to 5 to +100°C ainless ster g coating. steel. 6 stainless ded epoxy tection.	JR steel w JJR steel w H H H +85°C	ith Yield st	rength min. 290f	Мра	C G A N N V T	Synamic of Min. pi - Min. ga Maximum Maximum Vorking F est Pres	deflection per insering (to en offset front of ro	n per sid tion able ma or misal oundnes	x dynami gned pip s	c deflection) DN 80 DN 100 DN 100 DN 100 DN 100	9-300 (p to 4° 5 mm e table 5 mm 6 mm 6 mm 6 mm 6 atm 4 atm 8 atm	G 350 µm	
970-828-12033416 serial information; senter Ring - EN 10025-2 g coording to Krausz spec M lange - meets AS/NZS408 and Rings - EN 10025-2 coording to Krausz spec M sakets - EPDM compound askets - EPDM compound and select interest and action of the compound and select interest askets and Nuts - AISI 316 st action of the compound and and and and agailit addge - AISI 316 staintees i	yrade S235. S0781. 7 PN16. grade S235 S0780. led for water sational rinking wat 30°C up to 5 to +100°C ag coating steel. 5 stainless ded epoxy tection. NZS 4158. up to +50°C	JR steel w UR steel w H H H H H H H H H H H H H H H H H H H	ith Yield st	rength min. 290f	Мра	C G A N N V T	Synamic of Min. pi - Min. ga Maximum Maximum Vorking F est Pres	deflection per insering (to en offset front of ro	n per sid tion able ma or misal oundnes	s SEE TA Date pp 27.05.26	c deflection) b DN 80 DN 100	9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	p to 4° 5 mm e table 5 mm 6 mm 5 mm 6 mm 6 mm 6 mm 8 mm 6 atm 4 atm 8 atm 6 continu	G 350 µm 8-01	(16



							8		POATING N	otes	19000090 X	HON K Tall	Gr. 02/06/2019
Krausz Part Number	DN (mm)	Flange BSTD (mm)	Overall Range (mm)	Before removal the inner layer (mm)	After removal the inner layer (mm)	D (mm)	H (mm)	i (mm)	L (mm)	A min	Bolts Qty Size (mm)	Torque (Nm)	Approx. Weight (Kg)
970-828-14037516	375	350	375-431	375-405	403-431	Ø534	600	312	380	265	2 -M16	200	53.4
070 070 14077040	3.90	250	220 424	020 400	400 404	men.	200	240	250	non et	0 1110	200	20 A

Mause Part William	(mm)	BSTD (mm)	Range (mm)	the inner layer (mm)	the inner layer (mm)	(mm)	(mm)	(mm)	(mm)	(mm)	Qty Size (mm)	(Nm)	Weight (Kg)
970-828-14037516	375	350	375-431	375-405	403-431	Ø534	600	312	380	265	2 -M16	200	53.4
970-828-14037816	375	350	378-434	378-408	406-434	Ø534	600	312	380	265	2 -M16	200	53.4
970-828-16043416	450	400	434-488	434-462	460-488	Ø588	655	312	380	265	2-M16	200	59.7
970-828-18048816	450	450	488-542	488-516	514-542	Ø642	705	312	385	270	2-M16	200	71.0
970-828-20054016	500	500	540-594	540-568	566-594	Ø694	760	312	390	285	2 -M16	200	83.3
970-828-24060616	600	600	606-660	606-634	632-660	Ø760	825	312	395	300	2 -M16	200	106.0
970-828-24062416	600	600	624-678	624-652	650-678	Ø778	845	312	395	300	2 -M16	200	107.0

Material information:

- 1) Flanged Body EN 10025-2 grade S235JR steel with Yield strength min. 250Mpa according to Krausz spec MS0780.
- 2) Flange meets AS/NZS4087 PN16.
- 3) End Rings:

14"-24" - EN 10025-2 grade S235JR steel with Yield strength min. 250Mpa according to Krausz spec MS0780.

- 4) Gaskets EPDM compounded for water and sewerage, meets international standards for contact with drinking water. Working Temperature: for continuous operations: -30°C up to +85°C. for short time operations: up to +100°C.
- 5) Bolts and Nuts AISI 316 stainless steel Rolled thread and anti-galling coating. 6) Bridge - AISI 316 stainless steel.
- 7) Spherical spacers AISI 316 stainless steel.
- 8) Coating 100% Fusion bonded epoxy for enhanced corrosion protection Thickness according to AS/NZS 4158. Working Temperature: above ground applications: up to +50°C.

under ground applications: up to +65°C.

Product performance						
Dynamic deflection	up to 4°					
G - Min. pipe Insertion	100 mm					
Maximum offset for misaligned pipe	6 mm					
Maximum out of roundness	13 mm					
Working Pressure	12.5 atm					
Test Pressure	18 atm					
Vacuum Test	0.8 atm					

Weight	EE TABL	E	Part Name: HYMAX F/A 375-600 AS4087 PN16 SS316 COAYING 350 µm	Scale
	Date	Name	Catalog No.	00.907
Design	14 07 2013	Galley E.	SD970-828-02	Dharms
Check	31/01/2017	Getro E.	Drawing No.	Sheet
Appr.	31/01/2017	Taub Co.	SD970-828-02	2 of 2
A	Contravenario The shourses	domination. All I may not be a	Appli meanwrite Kipaus Frequence (M. 1994) mondowel deployed.	Size

RELEASED

APPENDIX B - QUALITY ASSURANCE CERTIFICATES AND SCHEDULES

Copies of the following Quality Certification Certificates are also available for downloading from the WSAA members website.

TABLE B1 KRAUSZ INDUSTRIES LTD - MANAGEMENT SYSTEMS

1, Hapatish St, Tel Aviv, Israel						
Quality Systems Standard	ISO 9001:2015					
Certificate licence no.	90452					
Certifying agency	The Standards Institute of Israel					
First date of certification	17 October 1996					
Current date of certification	8 January 2018					
Expiry date of certification	22 November 2019					

TABLE B2 KRAUSZ INDUSTRIES LTD - PRODUCT CERTIFICATION

	1, Hapatish St, Tel Aviv, Israel
Product Standard/Spec.	AS/NZS 4998:2009
Certificate No.	OMK30069
Issuing certification body	IAPMO R&T OCEANA
First date of certification	11 July 2019
Current date of certification	11 July 2019
Expiry date of certification	10 July 2024



CERTIFICATE

This is to certify that the Quality Management System of

KRAUSZ INDUSTRIES LTD.

1, Hapatish St., Tel Aviv, Israel

Has been audited and registered by SII-QCD as conforming to the requirements of :

ISO 9001:2015

This Certificate is Applicable to

Develop, manufacture and sales of pipe joints and plastic forming of metal.





Certificate No.: Initial Certification Date:

90452 17/10/1996 Certificate Issue Date: 08/01/2018 Certification Expiry Date: 22/11/2019

SII-QCD assumes no liability to any party other than the client, and then only in accordance with the agreed upon Certification Agreement.

This certificate's validity is subject to the organization maintaining their system in accordance with SiI-QCD requirements for system certification. The continued validity may be verified via scanning the code with a smartphone, or via website www.tii.org.ii. This certificate remains the property of SiI-QCD.



Ilan Carmit Acting Director General



Eli Cohen-Kagan Director, Quality & Certification Division

Page 1 of 2

Our Vision: To Enhance Both Global Competitiveness of our Services, with our Uncompromised Quality and Integrity

IAPMO R&T OCEANA

1040 Dandenong Road, Carnegie VIC 3163 AUSTRALIA







APMO RST Oxease is a product certification body which inspects and arranges for the independent laboratory testing of samples taken from the manufacturer's stock or from the market or a combination of both, to verify compliance of the requirements of applicable Standards and Specifications. This activity is coupled with periodic surveillance of the certified product taken from the market place or the manufacturer's factory. This certification is subject to the conditions set forth in the characteristics below and is not to be constitued as any recommendation, assurance or guarantee by IAPMO RST Oceans of the product acceptance by Authorities Having Jurisdiction. The IAPMO RST Oceans "OceanaMark" Product Certification Scheme is a IAS-ANZ acceptance (ISO Guide 67 Type 5 Product Certification Scheme).

OCEANAMARK CERTIFICATE

IAPMO R&T Oceana hereby grants to:

Krausz Industries Ltd.

6 Hapatish Street, Tel-Aviv, Israel, 6105301

the right to use the OceanaMark in accordance with IAPMO Oceana Pty Ltd 'Mark Rules' on the product as described in the attached OceanaMark Schedule. The Certificate is granted subject to IAPMO Oceana Pty Ltd 'Governance Rules'.

Evaluated to:

AS/NZS 4998:2009

Bolted unrestrained mechanical couplings for waterworks purposes

Manufacturer:

Krausz Industries Ltd.

Certificate No.: OMK30069 Certified 11 July 2019

Date:

Issue Date: 11 July 2019 Expiry Date: 10 July 2024

Chief Executive Officer of the IAPMO Group

Run Chaney

This OceanaMark certification is for the period indicated herein and is void after the date shown above. Any change in material, manufacturing process, marking or design without having first obtained the approval of NPMO RAT Oceana, or any evidence of non-compliance with applicable Standards. Specifications or of interior workmanship, may be deemed sufficient cause for revocation of this certification. Reproduction of or reference to this certificate for advertising purposes may be made only by specific written permission of IAPMO RAT Oceana. Any attention of this certificate could be grounds for revocation of this certification.



OCEANAMARK SCHEDULE





Certificate Holder: Krausz Industries Ltd.

Address: 6 Hapatish Street

Tel-Aviv, 6105301 ISRAEL

A.B.N.: N/A

Manufacturer: Krausz Industries Ltd.

Certificate No.: OMK30069 Issue Date: 11-Jul-19 Expiry Date: 10-Jul-24 First Certified: 11-Jul-19

Standards: AS/NZS 4998-2009

Bolted unrestrained mechanical couplings for waterworks purposes

	Std/S _j	pec: AS/NZS 4998-2009		Ce	rtificate No.: OMK30069			
Brand Name	Model Name	Model ID	Product Type	Product Description	Nominal Size	Nominal Pressure	Material	Additional Product Information
Krausz	HYMAX 2 ®	860-828-0088-16	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 3*(88-108) SS316 fasteners	DN80	PN16	FBE coated + EPDM gaskets	88-108mm
Krausz	HYMAX 2 ®	860-828-0108-16	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 4*(108-143) SS316 fasteners	DN100	PN16	FBE coated + EPOM gaskets	108-143mm
Krausz	HYMAX 2⊗	860-828-0130-16	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 5*(130-162) SS316 fasteners	DN125	PN16	FBE coated + EPDM gaskets	130-162mm
Krausz	HYMAX 2 ®	860-828-0158-16	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 6*(158-190) SS316 fasteners	DN150	PN16	FBE coated + EPDM gaskets	158-190mm
Krausz	HYMAX 2 ®	860-828-0163-16	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 6*(163-195) SS316 fasteners	DN150	PN16	FBE coated + EPDM gaskets	163-195mm
Krausz	HYMAX 2 ®	860-828-0190-16	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 7*(190-222) SS316 fasteners	DN200	PN16	FBE coated + EPDM gaskets	190-222mm
Krausz	HYMAX 2 ®	860-828-0217-16	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 8*(217-250) SS316 fasteners	DN200	PN16	FBE coated + EPDM gaskets	217-250mm
Krausz	HYMAX 2 ®	860-828-0222-16	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 8*(222-252) \$\$316 fasteners	DN200	PN16	FBE coated + EPDM gaskets	222-252mm
Krausz	HYMAX 2 ⊗	860-828-0272-16	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 10"(272-305) \$\$316 fasteners	DN250	PN16	FBE coated + EPOM gaskets	272-305mm

Issue Date: 11 Jul 2019

This OceanaMark Schedule supersedes all previously issued Schedules

	Std/Sp	Dec: AS/NZS 4998-2009		Certifica	Certificate No.: OMK30069				
	22-2-22	22.77.00	1200002000		2011213213	Nominal	22.0000	Additional Product	
Brand Name		Model ID	Product Type	Product Description	Nominal Size	Pressure	Material	Information	
Crausz	HYMAX 2 ®	860-828-0278-16	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 10*(278-311) SS316 fasteners	DN250	PN16	FBE coated + EPDM gaskets	278-311mm	
Crausz	HYMAX 2 ®	860-828-0315-16	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 12*(315-347) \$\$316 fasteners	DN300	PN16	FBE coated + EPDM gaskets	315-347mm	
Krausz	HYMAX 2®	860-828-0334-16	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 12*(334-366) SS316 fasteners	DN300	PN16	FBE coated + EPDM gaskets	334-366mm	
Krausz	HYMAX ®	860-828-0375-16	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 14"(375-431) with pins SS316 fasteners	DN375	PN16	FBE coated + EPDM gaskets	375-431mm	
Krausz	HYMAX ®	860-828-0378-16	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 14*(378-434) with pins SS316 fasteners	DN375	PN16	FBE coated + EPDM gaskets	378-434mm	
Krausz	HYMAX ⊕	860-828-0434-16	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 16"(434-488) with pins SS316 fasteners	DN450	PN16	FBE coated + EPDM gaskets	434-488mm	
Krausz	HYMAX ®	860-828-0488-16	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 18*(488-542) with pins SS316 fasteners	DN450	PN16	FBE coated + EPDM gaskets	488-542mm	
Krausz	HYMAX ®	860-828-0540-16	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 20"(540-594) with pins \$S316 fasteners	DN500	PN16	FBE coated + EPDM gaskets	540-594mm	
Krausz	HYMAX ⊗	860-828-0606-16	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 24"(606-660) with pins SS316 fasteners	DN600	PN16	FBE coated + EPDM gaskets	606-660mm	
Krausz	HYMAX ®	860-828-0624-16	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 24*(624-678) with pins SS316 fasteners	DN600	PN16	FBE coated + EPDM gaskets	624-678mm	
Krausz	HYMAX 2 ®	862-828-0088-16	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 LONG 3"(88-108) SS316 fasteners	DN80	PN16	FBE coated + EPDM gaskets	88-108mm	
Krausz	HYMAX 2 ®	862-828-0108-16	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 LONG 4"(108-143) SS316 fasteners	DN100	PN16	FBE coated + EPDM gaskets	108-143mm	
Krausz	HYMAX 2 ®	862-828-0130-16	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 LONG 5"(130-162) SS316 fasteners	DN125	PN16	FBE coated + EPDM gaskets	130-162mm	
Krausz	HYMAX 2 ®	862-828-0158-16	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 LONG 6"(158-190) SS316 fasteners	DN150	PN16	FBE coated + EPDM gaskets	158-190mm	
Krausz	HYMAX 2®	862-828-0163-16	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 LONG 6"(163-195) SS316 fasteners	DN150	PN16	FBE coated + EPDM gaskets	163-195mm	

Issue Date: 11 Jul 2019

This OceansMark Schedule supersedes all previously issued Schedules

	Std/St	pec: AS/NZS 4998-2009		Certificate No.: OMK30069					
Brand Name	Model Name	Model ID	Product Type	Product Description	Nominal Size	Nominal Pressure	Material	Additional Product Information	
Krausz	HYMAX 2®	862-828-0190-16	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 LONG ₹*(190-222) SS316 fasteners	DN200	PN16	FBE coated + EPDM gaskets	190-222mm	
Crausz	HYMAX 2®	862-828-0217-16	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 LONG 8"(217-250) SS316 fasteners	DN200	PN16	FBE coated + EPDM gaskets	217-250mm	
Crausz	HYMAX 2®	862-828-0222-16	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 LONG 8"(222-252) SS316 fasteners	DN200	PN16	FBE coated + EPDM gaskets	222-252mm	
Krausz	HYMAX 2®	862-828-0272-16	Boited unrestrained mechanical couplings for waterworks purposes	HYMAX 2 LONG 10*(272-305) \$\$316 fasteners	DN250	PN16	FBE coated + EPOM gaskets	272-305mm	
Krausz	HYMAX 2 ®	862-828-0278-16	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 LONG 10"(278-311) \$\$316 fasteners	DN250	PN16	FBE coated + EPDM gaskets	278-311mm	
Krausz	HYMAX 2®	862-828-0315-16	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 LONG 12*(315-347) \$\$316 fasteners	DN300	PN16	FBE coated + EPOM gaskets	315-347mm	
Krausz	HYMAX 2®	862-828-0334-16	Boited unrestrained mechanical couplings for waterworks purposes	HYMAX 2 LONG 12"(334-366) SS316 fasteners	DN300	PN16	FBE coated + EPDM gaskets	334-366mm	
Krausz	HYMAX ®	862-828-0375-16	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX LONG 14*(375-431) with pins SS316 fasteners	DN375	PN16	FBE coated + EPDM gaskets	375-431mm	
Krausz	HYMAX ®	862-828-0378-16	Boited unrestrained mechanical couplings for waterworks purposes	HYMAX LONG 14"(378-434) with pins SS316 fasteners	DN375	PN16	FBE coated + EPDM gaskets	378-434mm	
Krausz	HYMAX ⊗	862-828-0434-16	Boited unrestrained mechanical couplings for waterworks purposes	HYMAX LONG 16"(434-488) with pins SS316 fasteners	DN450	PN16	FBE coated + EPDM gaskets	434-488mm	
Krausz	HYMAX ⊗	862-828-0488-16	Boited unrestrained mechanical couplings for waterworks purposes	HYMAX LONG 18"(488-542) with pins SS316 fasteners	DN450	PN16	FBE coated + EPOM gaskets	488-542mm	
Crausz	HYMAX ®	862-828-0540-16	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX LONG 20"(540-594) with pins SS316 fasteners	DN500	PN16	FBE coated + EPDM gaskets	540-594mm	
Krausz	HYMAX ®	862-828-0606-16	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX LONG 24"(606-660) with pins SS316 fasteners	DN600	PN16	FBE coated + EPDM gaskets	606-660mm	
Crausz	HYMAX ⊚	862-828-0624-16	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX LONG 24"(624-678) with pins SS316 fasteners	DN600	PN16	FBE coated + EPDM gaskets	624-678mm	
Krausz	HYMAX 2®	970-828-03008816	Boited unrestrained mechanical couplings for waterworks purposes	HYMAX 2 F/A 3" (88-108)F3" ASINZS4087 PN16 SS316 fasteners	DN80	PN16	FBE coated + EPDM gaskets	88-108mm	

	Std/Sp	Dec: AS/NZS 4998-2009		Certificate No.	OMK30069			
Brand Name	Model Name	Model ID	Product Type	Product Description	Nominal Size	Nominal Pressure	Material	Additional Product Information
Krausz	HYMAX 2 ®	970-828-04010816	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 F/A 4" (108-143)F4" AS/NZS4087 PN16 SS316 fasteners	DN100	PN16	FBE coated + EPDM gaskets	108-143mm
(rausz	HYMAX 2 ®	970-828-06013016	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 F/A 5" (130-162)F6" AS/NZS4087 PN16 SS316 fasteners	DN125	PN16	FBE coated + EPDM gaskets	130-162mm
Krausz	HYMAX 2 ®	970-828-06015816	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 F/A 6" (158-190)F6" AS/NZS4087 PN16 SS316 fasteners	DN150	PN16	FBE coated + EPOM gaskets	158-190mm
Krausz	HYMAX 2 ®	970-828-06016316	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 F/A 6" (163-195)F6" AS/NZS4087 PN16 SS316 fasteners	DN150	PN16	FBE coated + EPDM gaskets	163-195mm
Krausz	HYMAX 2®	970-828-08019016	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 F/A 7" (190-222)F8" AS/NZS4087 PN16 SS316 fasteners	DN200	PN16	FBE coated + EPDM gaskets	190-222mm
Krausz	HYMAX 2 ®	970-828-08021716	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 F/A 8" (217-250)F8" AS/NZS4087 PN 16 SS316 fasteners	DN200	PN16	FBE coated + EPDM gaskets	217-250mm
Krausz	HYMAX 2 ®	970-828-10027216	Botted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 F/A 10"(272-305)F10" AS/NZS4087 PN16 SS316 fasteners	DN200	PN16	FBE coated + EPDM gaskets	272-305mm
Krausz	HYMAX 2 ®	970-828-10027816	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 F/A 10°(278-311)F10° AS/NZS4087 PN16 SS316 fasteners	DN250	PN16	FBE coated + EPDM gaskets	278-311mm
Krausz	HYMAX 2 ®	970-828-12031516	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 F/A 12*(315-347)F12* AS/NZS4087 PN16 SS316 fasteners	DN300	PN16	FBE coated + EPOM gaskets	315-347mm
Krausz	HYMAX 2 ®	970-828-12033416	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 F/A 12"(334-366)F12" AS/NZS4087 PN16 SS316 fasteners	DN300	PN16	FBE coated + EPDM gaskets	334-366mm
Krausz	HYMAX ⊗	970-828-14037516	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX F/A 14*(375-431)F14* AS/NZS4087 PN16 SS316 fasteners	DN375	PN16	FBE coated + EPDM gaskets	375-431mm
Krausz	HYMAX ®	970-828-14037816	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX F/A 14*(378-434)F14* AS/NZS4087 PN16 SS316 fasteners	DN375	PN16	FBE coated + EPDM gaskets	378-434mm
Crausz	HYMAX ®	970-828-16043416	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX F/A 16"(434-488)F16" AS/NZS4087 PN16 SS316 tasteners	DN450	PN16	FBE coated + EPDM gaskets	434-488mm
Crausz	HYMAX ⊚	970-828-18048816	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX F/A 18"(488-542)F18" AS/NZS4087 PN16 SS316 tasteners	DN450	PN16	FBE coated + EPDM gaskets	488-542mm
Krausz	HYMAX ®	970-828-20054016	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX F/A 20*(540-594)F20* AS/NZS4087 PN16 SS316 fasteners	DN500	PN16	FBE coated + EPDM gaskets	540-594mm

	Std/S _j	Dec: AS/NZS 4998-2009		Certificate No.:	OMK30069			
Brand Name	Model Name	Model ID	Product Type	Product Description	Nominal Size	Nominal Pressure	Material	Additional Product Information
Krausz	HYMAX ®	970-828-24060616	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX F/A 24"(606-660)F24" AS/NZS4087 PN16 SS316 fasteners	DN600	PN16	FBE coated + EPDM gaskets	606-660mm
Krausz	HYMAX ®	970-828-24062416	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX F/A 24"(624-678)F24" AS/NZS4087 PN16 SS318 fasteners	DN600	PN16	FBE coaled + EPDM gaskets	624-678mm
Krausz	HYMAX 2 ®	8618280088010816	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 Reducer 3*(88-108)x4*(108-143)SS316 fasteners	DN80 x DN100	PN16	FBE coated + EPDM gaskets	88-108mm x 100 143mm
Krausz	HYMAX 2 ®	8618280108013016	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 Reducer 4"(108-143)x5"(130-162)SS316 fasteners	DN100 x DN125	PN16	FBE coated + EPDM gaskets	108-143mm x 130-162mm
Krausz	HYMAX 2 ®	8618280108015816	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 Reducer 4*(108-143)x6*(158-190)SS316 fasteners	DN100 x DN150	PN16	FBE coated + EPDM gaskets	108-143mm x 158-190mm
Krausz	HYMAX 2 ®	8618280130015816	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 Reducer 5*(130-162)x6*(158-190)SS316 fasteners	DN125 x DN150	PN16	FBE coated + EPDM gaskets	130-162mm x 158-190mm
Krausz	HYMAX 2 ®	8618280158021716	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 Reducer 6"(158-190)x8"(217-250)SS316 fasteners	DN150 x DN200	PN16	FBE coated + EPDM gaskets	158-190mm x 217-250mm
Krausz	HYMAX 2 ®	8618280163019016	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 Reducer 6"+(163-195)x7"(190-222)SS316 fasteners	DN150 x DN200	PN16	FBE coated + EPDM gaskets	163-195mm x 190-222mm
Krausz	HYMAX 2 ®	8618280163021716	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 Reducer 6"+(163-195)x8"(217-250)SS316 fasteners	DN150 x DN200	PN16	FBE coated + EPDM gaskets	163-195mm x 217-250mm
Krausz	HYMAX 2®	8618280190021716	Bolled unrestrained mechanical couplings for waterworks purposes	HYMAX 2 Reducer 7*(190-222)x8*(217-250)\$\$316 fasteners	DN200 x DN200	PN16	FBE coated + EPOM gaskets	190-222mm x 217-250mm
Krausz	HYMAX 2 ®	8618280217027216	Botted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 Reducer 8"(217-250)x10"(272-305)SS316 fasteners	DN200 x DN250	PN16	FBE coated + EPOM gaskets	217-250mm x 272-305mm
Krausz	HYMAX 2 ®	8618280222027216	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 Reducer 8"(222-252)x10"(272-305)SS316 fasteners	DN200 x DN250	PN16	FBE coated + EPDM gaskets	222-252mm x 272-305mm
Krausz	HYMAX 2 ®	8618280272031516	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 Reducer 10"(272-305)x12"(315-347)SS316 fasteners	DN250 x DN300	PN16	FBE coaled + EPDM gaskets	272-305mm x 315-347mm
Krausz	HYMAX 2 ®	8618280278031516	Botted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 Reducer 10"(278-311)x12"(315-347)SS316 fasteners	DN250 x DN300	PN16	FBE coated + EPDM gaskets	278-311mm x 315-347mm
Krausz	HYMAX 2 ®	8618280315033416	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX 2 Reducer 12"(315-347)x12"(334-366)SS316 fasteners	DN300 x DN300	PN16	FBE coated + EPDM gaskets	315-347mm x 334-366mm

	Std/Sp	MC: AS/NZS 4998-2009		Certificate	Certificate No.: OMK30069				
Brand Name	Model Name	Model ID	Product Type	Product Description	Nominal Size	Nominal Pressure	Material	Additional Product Information	
Krausz	HYMAX ®	8618280315037516	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX Reducer 12*(315-347)x14*(375-431)SS316 fasteners	DN300 x DN375	PN16	FBE coated + EPDM gaskets	315-347mm x 375-431mm	
Krausz	HYMAX ®	8618280315037816	Botted unrestrained mechanical couplings for waterworks purposes	HYMAX Reducer 12*(315-347)x14*(378-434)SS316 fasteners	DN300 x DN375	PN16	FBE coated + EPDM gaskets	315-347mm x 378-434mm	
Krausz	HYMAX ®	8618280334037516	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX Reducer 12*(334-366)x14*(375-431)SS316 fasteners	DN300 x DN375	PN16	FBE coated + EPDM gaskets	334-366mm x 375-431mm	
Krausz	HYMAX ®	8618280334037816	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX Reducer 12*(334-366)x14*(378-431)SS316 fasteners	DN300 x DN375	PN16	FBE coated + EPDM gaskets	334-366mm x 378-434mm	
Krausz	HYMAX ®	8618280375043416	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX Reducer 14*(375-431)x16*(434-488)SS316 fasteners	DN375 x DN450	PN16	FBE coated + EPDM gaskets	375-431mm x 434-488mm	
Krausz	HYMAX ®	8618280378043416	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX Reducer 14*(378-434)x16*(434-488)SS316 fasteners	DN375 x DN450	PN16	FBE coated + EPDM gaskets	378-434mm x 434-488mm	
Krausz	HYMAX ⊗	8618280434048816	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX Reducer 16"(434-488)x18"(488-542)SS316 fasteners	DN450 x DN450	PN16	FBE coated + EPOM gaskets	434-488mm x 488-542mm	
Krausz	HYMAX ®	8618280488054016	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX Reducer 18"(488-542)x20"(540-594)SS316 fasteners	DN450 x DN500	PN16	FBE coated + EPDM gaskets	488-542mm x 540-600mm	
Krausz	HYMAX ⊗	8618280540062416	Bolted unrestrained mechanical couplings for waterworks purposes	HYMAX Reducer 20*(540-600)x24*(624-678)SS316 fasteners	DN500 x DN600	PN16	FBE coated + EPDM gaskets	540-600mm x 624-678mm	

END RECORD

Chief Executive Officer of the IAPMO Group

This OceanaMark Schedule supersedes all previously issued Schedules

APPENDIX C - WSA PRODUCT SPECIFICATION

WATER SERVICES ASSOCIATION of Australia

PRODUCT SPECIFICATION

WSA PS - 270 MECHANICAL COUPLINGS, NON-END THRUST RESTRAINT FOR PRESSURE APPLICATIONS - WATER SUPPLY AND SEWERAGE

270.1 SCOPE

This specification covers non-end thrust restraint mechanical couplings for use with PVC and ductile iron pipes having "cast iron outside diameters" (CIOD) in pressure applications in water supply¹ and sewerage.

270.2 REQUIREMENTS

- (a) Couplings for pipelines other than PE shall comply with AS/NZS 4998:2009.
- (b) Couplings for PE pipelines shall comply with AS/NZS 4129:2008/Amdt 1:2013.
- (c) Elastomeric joint seals shall be EPDM complying with AS 1646:2007 and AS 681.1:2008 (EN 681-1:1996).
- (d) Flange adaptor connections shall comply with AS/NZS 4087:2011/Amdt 1:2012.
- (e) For flanged adaptor end connections, full face and integral gaskets and O-rings shall comply with WSA 109:2011.
- (f) Jointing lubricants shall comply with AS/NZS 4020:2005.

270.3 QUALITY ASSURANCE

- (a) Couplings shall have product certification (ISO Type 5) to AS/NZS 4998:2009.
- (b) Polymeric coatings shall have product certification (ISO Type 5) to AS/NZS 4158:2003/Amdt 1:2005.
- (c) Elastomeric joint seals shall have product certification to AS 1646:2007 and AS 681.1:2008 (EN 681-1:1996).
- (d) For flanged adaptor end connections, full face and integral gaskets and O-rings shall have a certificate of compliance to WSA 109:2011.
- (e) Jointing lubricants shall have a certificate of compliance to AS/NZS 4020:2018.
- (f) All products shall be marked in accordance with the conformity assessment body's requirements.

270.4 AGENCY OR PROJECT SPECIFIC REQUIREMENTS

Pressure Class, PN	
Pipe material(s) to be joined	
Coupling length i.e. short series or long series	
Coupling type e.g. straight, stepped, flange adaptor	
For stepped couplings nominate the range of outside diameters to be joined	
For flange adaptors nominate the flange drilling Figure from AS/NZS 4087:2011/Amdt 1:2012 or other nominated flange Standard	
Alternative elastomeric material for joint seals	

NOTE:

1 Includes drinking water and recycled water supply. Colour differentiation is not required.

UNCONTROLLED IF PRINTED

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APPENDIX D - SUPPLIER CONTACTS

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