



E. Hawle Armaturenwerke GmbH

PRODUCT APPRAISAL REPORT 2304

System 2000 Restrained Joint Fittings for PE Pipe

EN 12842:2012 Ductile iron fittings for PVC-U or PE piping systems -Requirements and test methods.

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Product Appraisal Technical Advisory Group	WSAA	29 June 2023
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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

E. Hawle Armaturenwerke GmbH is a family-owned company based in Vöcklabruck, Austria and established in 1948. Hawle is a leading manufacturer of valves and pipeline fittings for the water and gas industries, with plants and subsidiary operations throughout Europe.

Hygrade Water Australia, a member of the Hynds Group, is a supplier of pipeline systems and related products to civil contractors and is the Australian agent for Hawle products.

This Appraisal is for a range of Hawle System 2000 ductile iron polymeric coated fittings with restrained joints for PE pipe, manufactured in conformity with EN 12842:2012 *Ductile iron fittings for PVC-U or PE piping systems – Requirements and test methods*.

Note: WSAA does not recommend the use of gripping mechanisms on PVC or GRP pipes, due to the known propensity of failure at points of induced scratches or scores in the pipe wall. Accordingly, the use of System 2000 products on PVC or GRP pipes is not endorsed in this Appraisal.

The PN16 fittings include couplers, flanged adaptors, bends and end caps in sizes DN 100 to DN 355. See Section 4 for details.

The mechanical restrained joint consists of an EPDM elastomeric lip seal and copper alloy gripper ring, which is secured by bolting a DI locking ring to the body of the fitting using Grade 316 fasteners.

Flanges incorporated on the fittings are compatible with AS4087 Fig B5 (PN16). See Section 6.2.5 for further details.

When using the fittings on PE pipes of \geq SDR 17 pipe, (PN10 or less) Hawle advise that a stainless-steel stiffener must be inserted into the end of the pipe prior to installation of the fitting.

E Hawle Armaturenwerke GmbH holds an ISO 9001:2015 Quality Management System licence.

The Hawle System 2000 fittings have ISO Type 5 StandardsMark Product Certification to EN 12842:2012.

The Hawle System 2000 fittings described within this appraisal meet the requirements of WSA PS 241 *Ductile iron fittings with restrained flexible joints for polyethylene pipe of nominal sizes 90 to 710 in pressure applications - Drinking water, non-drinking water supply and sewerage* and are therefore deemed as 'fit for purpose'.

1.1 Recommendations

It is recommended that WSAA members subject to any specific requirements of the member, accept or authorise Hawle System 2000 fittings, as listed 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 E. Hawle Armaturenwerke GmbH.

2.1 The Manufacturer

Hawle is a family-owned company based in Vöcklabruck, Austria. The Hawle Company (pronounced 'Havela') was founded by Engelbert Hawle in Vöcklabruck, Austria, in 1948. Hawle has a history of innovation and was the manufacturer of the first resilient seated gate valve in the world. Today Hawle is a leading manufacturer of valves and pipeline fittings for the water and gas industries with plants and subsidiary operations throughout Europe. Hawle products from Austria are exported to more than 60 countries world-wide. In addition, nine licensees currently manufacture Hawle products on all continents. More information is available at <https://www.hawle.com/en/company/hawle-austria-group>

2.2 The Supplier

Hygrade Water Australia was established in 2007 to supply a range of specialist products for the Australian plumbing and civil market segments. Hygrade Water is a registered Australian business, wholly owned by the Hynds Group.

Hynds Group, a privately owned and operated New Zealand company established in 1973, has become a leading supplier of pipeline systems and related products to civil contractors within Australasia.

Hygrade Water Australia is the Australian agent for Hawle products in Australasia.

3 THE PRODUCT

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4 SCOPE OF THE APPRAISAL

The scope of this appraisal includes a range of System 2000 fittings summarised below in Tables 1 and included in the ISO Type 5 StandardsMark Product Schedule included in Appendix B.

Hawle offers a comprehensive range of System 2000 fittings however the range included in the Scope of this Appraisal is limited to those products included in the ISO Type 5 StandardsMark Product Certification.



FIGURE 1 SYSTEM 2000 FITTINGS

TABLE 1 SYSTEM 2000 FITTINGS RANGE

DN	Couplings	Flanged Adaptors	45° Bends	90° Bends	End Caps Plain	End Caps with 2" Side Outlet
125		✓ (DN 100 FI)				
180		✓ (DN 150 FI)				
225		✓ (DN 200 FI)				
250	✓		✓	✓		✓
280	✓		✓	✓	✓	✓
315	✓		✓	✓	✓	✓
355	✓					

5 APPRAISAL CRITERIA

5.1 Quality Assurance Requirements

The WSAA Product Appraisal Technical Advisory Group accepts ductile iron restrained joint fittings for PE pipe manufactured in compliance with EN 12842:2012 *Ductile iron fittings for PVC-U or PE piping systems – Requirements and test methods* and duly certified by means of an ISO Type 5 product certification scheme undertaken by a JAS-ANZ accredited Certification Assessment Body (CAB) or by a CAB accredited 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

The range of Hawle System 2000 restrained joint fittings for PE pipe has been appraised for compliance to EN 12842:2012.

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 241 *Ductile iron fittings with restrained flexible joints for polyethylene pipe of nominal sizes 90 to 710 in pressure applications - Drinking water, non-drinking water supply and sewerage*

A copy of the Product Specification is available at the following link:

<https://www.wsaa.asn.au/shop/product/60961>

6 COMPLIANCE WITH APPRAISAL CRITERIA

6.1 Compliance with Quality Assurance Requirements

Hawle has submitted the following quality certificates:

- ISO 9001:2015 Certificate of Registration No. Q 1531395 issued to E Hawle Armaturenwerke GmbH by TUV SUD.

- EN 14525:2004 ISO Type 5 StandardsMark Product Certification Licence No SMK40252 issue to E Hawle Armaturenwerke GmbH by SAI-Global.

Copies of the Quality Assurance and Product Certification licences have been included in Appendix B and are also available for downloading from the WSAA members website.

6.2 Compliance with Performance Requirements

6.2.1 Components

6.2.1.1 Ductile iron body and locking ring

EN12842 specifies that DI components shall have a minimum tensile strength of 420 MPa and a minimum elongation of 5%.

Hawle has submitted material test certificates to demonstrate compliance with this requirement.

6.2.1.2 Copper alloy gripper ring

The gripper rings are manufactured from EN 12165 CW 617N (CuZn40Pb2) and a material test report has been submitted to verify compliance. Whilst the copper alloy is not Dezincification Resistant the gripper ring is not in contact with the medium or surrounding soils. The material is therefore deemed as fit for purpose.

6.2.1.3 Elastomeric seal

The EPDM elastomeric lip seals are supplied by Trelleborg and are manufactured to EN681.1 under cover of an ISO Type 5 Product Certification issued by Kiwa Nederland BV.

6.2.1.4 Polymeric coating

Hawle System 2000 fittings are coated with Akzo Nobel, Resicoat R4 FBE powder coating, applied by the fluidised bed process in accordance with AS/NZS 4158:2003. The Resicoat R4 powder has a product certification StandardsMark licence issued by SAI Global and a copy of the certificate is held on file by WSAA.

SAI Global also undertakes audits of the coating application system in accordance with the terms of the various StandardsMark licences held by Hawle.

A type test report (No.528) undertaken by Akzo Nobel has also been submitted to demonstrate compliance with the process verification tests of AS/NZS 4158.

6.2.2 Wall thickness

The minimum wall thicknesses are specified in EN 14525 as 4mm for fittings less than or equal to DN 225, 5mm for fittings greater than DN 225 and less than or equal to DN 315 and 6mm for fittings greater than DN 315. Hawle has confirmed that the fittings exceed these minimum requirements.

6.2.3 Type tests

EN 12842 nominates that type testing carried out on at least one joint in the range from DN 63 to DN 140, DN 160 to DN 315 and DN 355 to DN 710 will qualify all sizes in the applicable range, where the design is based on the same design parameters.

Hawle has submitted copies of type test reports for DN 110, DN 225 and DN 355 System 2000 joints with PE100 pipes, conducted by OFI Technologie and Innovation GmbH (Accreditation Austria Certification No. 0090), to demonstrate compliance to the PN16 requirements of EN 12842.

The performance tests include positive leak tightness test, negative pressure test, dynamic pressure test with 24,000 cycles, long term hydrostatic strength test and pull-out test.

6.2.4 Angular deflection

Hawle has advised that the System 2000 joints are not designed for joint angular deflection.

6.2.5 Flanges

The flanges incorporated on the System 2000 flanged adaptors comply with the physical dimensions of EN 1092-2 (PN16) and are drilled to match AS/NZS 4087 Fig B5 (PN16).

EN 1092-2 flanges have minor differences in outside diameter and raised face diameter compared to the AS/NZS flanges, however these differences do not prevent compatibility.

EN 1092-2 flanges generally incorporate additional or/and larger bolts than AS/NZS bolting configurations, which facilitates thinner flanges for some sizes. The effect on the pressure rating of the thinner flanges cannot be quantified from a desktop analysis.

EN flanges drilled to AS/NZS configurations are known to have been commonly supplied within Australia for many years in sizes up to DN 200 without any adverse reports. It is also known that the thicknesses of AS/NZS 4087 Fig B5 flanges were originally determined on the basis of a PN20 rating and are therefore overdesigned.

Flanged adaptors in sizes up to DN 200 are deemed acceptable, however larger sizes have not been included in the scope of this Appraisal, despite being included in the ISO Type 5 Product Schedule.

A comparison of flange thicknesses is provided in Table 3.

TABLE 3 FLANGE THICKNESSES

DN	Hawle Nominal Thickness	EN1092-2 PN16 +4, -3	AS/NZS4087 Min
100	19	19	20
150	19	19	23
200	20	20	23
250	22	22	24
300	25	24.5	30

6.2.8 Contact with drinking water

Hawle has submitted a test report from Eurofins ams (NATA Accreditation No. 15773) for a DN 65 System 2000 flanged adapter dated 13 October 2020 to demonstrate compliance with AS/NZS 4020:2018.

An AS/NZS 4020:2018 Certificate of Conformity No. PST20165 for Akzo Nobel Resicoat R4 FBE issued by SAI Global with an expiry date of 4 August 2025 is also held on file by WSAA.

7 FITTING INSTRUCTIONS, TRAINING AND INSTALLATION

Hawle maintains an extensive library of literature, covering all aspects of the products submitted for this appraisal, including installation instructions. Installation Instructions are included in Appendix A.

More information is available at the following links:

<https://www.hygradewater.com.au/product/hawle-system-2000-fittings/>

<https://www.hawle.com/en/hawle-knowledge/systems-solutions/hawle-system-2000>

On-site training is also available by arrangement.

8 PRODUCT MARKING

Marking requirements as specified in EN 12842 are cast on the fittings as follows:

- a) Manufacturer's name or mark: Hawle
- b) Year of manufacture: Casting date
- c) "Ductile" or "D.I.": GJS
- d) DN
- e) PN
- f) EN12842 and StandardsMark Logo

9 PACKAGING AND TRANSPORTATION

Hawle System 2000 fittings are wrapped separately before being packed into wooden crates for despatch. Cardboard liners separate each layer to prevent damage to coatings during transport.

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 Hygrade Water's warranty is included in their terms and conditions of sale.

11 WATER AGENCY EXPERIENCE WITH THE PRODUCT OR FIELD-TESTING REPORT

The Hawle System 2000 range of products have a long history of use within Europe and have been used within Australia for at least since 2015 with no known complaints.

12 OUTCOMES OF EXPERT PANEL PRODUCT REVIEW

No issues were raised.

13 FUTURE WORKS

There are no future work items.

14 DISCLAIMERS

This Product Appraisal Report (Report) is issued by the Water Services Association of Australia Limited on the understanding that:

This Report applies to the product(s) as submitted. Any changes to the product(s) either minor or major shall void this Report.

To maintain the recommendations of this Report any such changes shall be detailed and notified to the Product Appraisal Manager for consideration and review of the Report and appropriate action. Appraisals and their recommendations will be the subject of continuous review dependent upon the satisfactory performance of products.

WSAA reserves the right to undertake random audits of product manufacture and installation. Where products fail to maintain appraised performance requirements the appraisal and its recommendations may be modified and reissued. Appraisal reports will be reviewed and reissued at regular intervals not exceeding five (5) years.

The following information explains a number of very important limits on your ability to rely on the information in this Report. Please read it carefully and take it into account when considering the contents of this Report.

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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The Report has been prepared for use within Australia only by technical specialists that have expertise in the function of products such as those appraised in the Report (the Recipients).

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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

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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.

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APPENDIX A – PRODUCT LITERATURE



System 2000 Couplers and Flange Adaptors

Total restraint for PE pipes.



TECHNICAL GUIDE: **APF2.1**

Applications

- ____ Potable water
- ____ Irrigation
- ____ Wastewater
- ____ Specialist applications

Product Attributes

- ____ Remove and refit without replacing any parts
- ____ Offer total restraint for PE
- ____ Do not require support liners
- ____ All weather installation
- ____ Thrust blocks not required

Approvals/Standards

- ____ Flanges drilled to table D

Total restraint for PE (PE 80/100) and PVC* pipes up to PN 16

Minimal pipe insertion force is required for pushing the pipe end into the seal with an appropriate chamfer. The pipe restraining system is separate from the sealing system and is activated by tightening the lock ring.

System 2000 Flange Adaptor, PE (PE 80/100) pipes up to PN 16

Material

- Flange and locking ring: ductile iron, epoxy powder coated
- Lip seal: Elastomer, suitable for potable water
- Flat gasket: Elastomer
- Grip ring: Ms 58 (up to DN 300 Rg7)
- Hexagonal bolts: A2 stainless
- For thin walled pipes and low internal pressure we recommend using a support liner

The use of lip seals enables the pipe to be pushed in with minimal force. The flange to flange seal is incorporated onto the flange. The pipe restraining system is effective separated from the sealing system and is activated by tightening the locking ring.

Full assembly instructions and witness mark guide supplied with every fitting.

Note: *Where PVC OD matches PE OD dimensions



FIG. 1

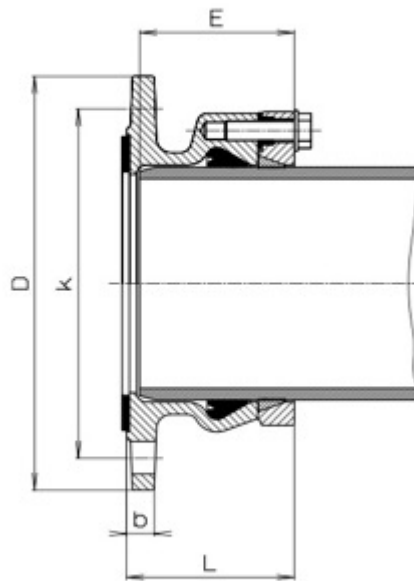


FIG. 2

TABLE 1

Flange DN	Pipe Ø (mm)	D	k	b	L (assembled)	E	Bolts		Weight
							Qty.	Thread	
40	50	150	98				4	M12	
50	63	165	114	1'9	90	80	4	M16	3.6
65	63	185	127	19	90	80	4	M16	4.3
65	75	185	127	19	92	82	4	M16	4.3
80	63	200	146	19	90	80	4	M16	4.7
80	75	200	146	19	92	82	4	M16	5.0
80	90	200	146	19	95	85	4	M16	5.5
100	90	220	178	19	95	85	4	M16	6.8
100	110	220	178	19	95	85	4	M16	6.2
100	125	220	178	19	97	87	4	M16	7.0
125	110	250	210	19	95	85	8	M16	7.8
125	125	250	210	19	97	87	8	M16	8.2
125	140	250	210	19	103	93	8	M16	8.5
125	160	250	210	19	145	110	8	M16	11.5
150	140	285	235	19	103	93	8	M16	11.3
150	160	285	235	19	115	105	8	M16	10.5
150	180	285	235	19	125	115	8	M16	11.6
200	200	340	292	20	135	125	8	M16	18.0
200	225	340	292	20	138	128	8	M16	16.0
200	250	340	292	20	225	145	8	M16	27.0
250	250	400	356	22	155	145	8	M20	22.0
250	280	400	356	22	158	148	8	M20	29.0
300	315	455	406	25	184	174	12	M20	44.0
300	355	455	406	25	277	237	12	M20	61.0
400	400	565	521	25	242	230	12	M24	97.0
400	450	565	521	25	302	260	12	M24	81.0
500	500	715	641	32	365	346	16	M24	144.0
500	560	715	641	32	450	372	16	M24	167.0
600	630	760	756	36	459	399	16	M27	260.0

APF 21 HAWLE SYSTEM 2000 COUPLERS AND FLANGE ADAPTORS | VALVES & HYDRANTS | PG 3

System 2000 Coupler, restraint for PE (PE 80/100) pipes up to PN 16



FIG. 3

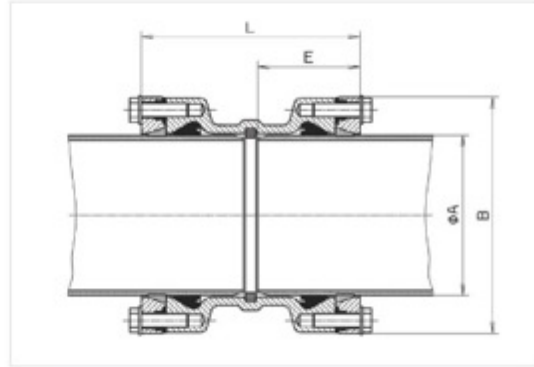


FIG. 4

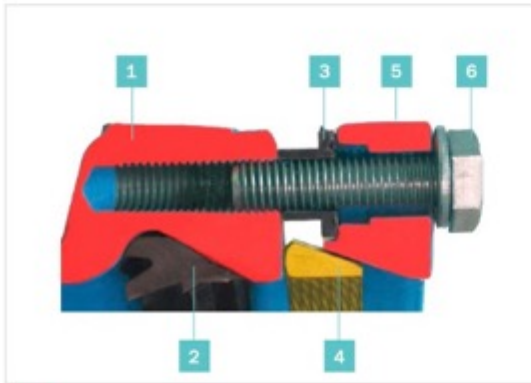


FIG. 5

Material

1. Body
2. Lip seal of elastomer, suitable for potable water
3. Spacer bushes of PE
4. Grip ring Ms 58 (from DN 300 Rg7)
5. Lock ring of ductile iron EN-GJS-400-18 according to EN 1563 (GGG 400 - DIN 1693), epoxy powder coated
6. Bolts A 2 (stainless)

TABLE 2

Pipe Ø A (mm)	L	E	B	Weight (kg)
63	171	80	124	3.2
75	175	82	138	4.0
90	181	85	152	5.4
110	181	85	172	6.4
125	185	87	193	7.8
140	197	93	210	9.0
160	221	105	236	12.0
180	241	113	258	14.5
200	261	125	284	21.5
225	265	128	314	26.0
250	300	145	347	33.0
280	306	148	376	38.5
315	358	174	422	58.5
355	464	237	472	96.0
400	506	237	520	112.0
450	544	262	566	142.0
500	720	350	675	216.0
560	770	375	730	273.0
630	823	400	820	358.0

APP2.1 HAWLE SYSTEM 2000 COUPLERS AND FLANGE ADAPTORS | DRAINAGE CHANNEL | PG.4



Scan for more information

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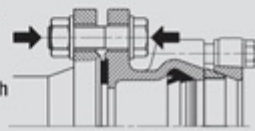




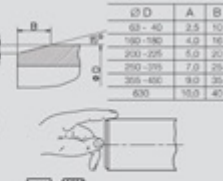
HAWLE-SYSTEM 2000

MONTAGEANLEITUNG / ASSEMBLY INSTRUCTIONS

Bei Verwendung von Flansch:
1 Zuerst Flansch am Gegenflansch festschrauben
Flange adaptor: first bolt the adaptor to the mating flange before tightening lock ring bolts

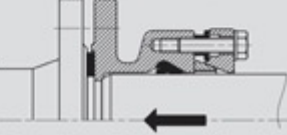


Rohr anschrägen - Schmiermittel verwenden (Hawle Schmiermittel Nr. 3443 oder 3444) KEIN ÖL!
2
Chamfer pipe - use lubricants (Hawle No. 3443 or 3444) Note: Do not use oil!

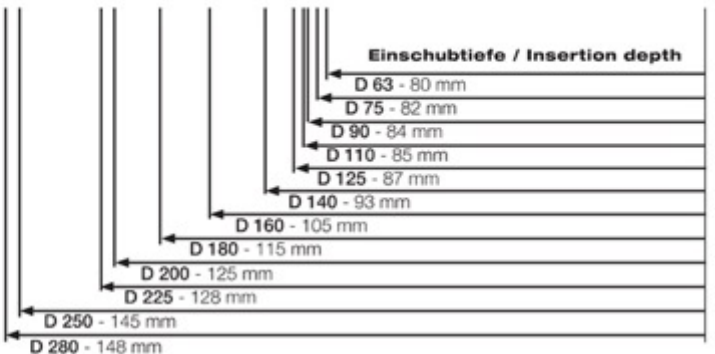
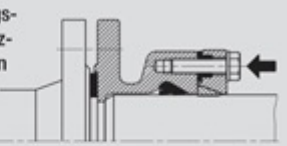


Ø D	A	B
63 - 80	2,5	10
85 - 110	4,0	15
125 - 150	5,0	20
175 - 200	7,0	25
225 - 250	9,0	30
300	10,0	40

Rohr bis Anschlag in Muffe einschieben
3
Push the pipe to the end of socket

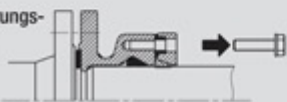


Schubsicherungsschrauben kreuzweise festziehen bis Spannring am Gehäuse ansteht
4
Tighten lock ring bolts crosswise until lock ring is tight on bushes

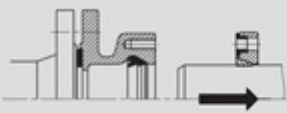


DEMONTAGE / DISMANTLING INSTRUCTIONS

Schubsicherungsschrauben lösen und entfernen
1
Loosen and remove lock ring bolts



Rohr drehend herausziehen
2
To withdraw: turn pipe while extracting from socket



HAWLE. MADE FOR GENERATIONS.



E. Hawle Armaturenwerke GmbH

A-4840 Vöcklabruck - AUSTRIA
 Wagrainstraße 13
 www.hawle.at
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 Telefax: +43 (0)7672 - 784 64

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APPENDIX B - QUALITY CERTIFICATIONS

Copies of the following Quality Certificates are available from WSAA.

TABLE B1

E. HAWLE ARMATURENWERKE GMBH - MANAGEMENT SYSTEMS

Wagrainer Strasse 13 A-4840 Vocklabruk	
Quality Systems Standard	ISO 9001:2015
Certification licence no.	Q1531395
Certifying agency	TUV SUD
First date of certification	21 August 1995
Current date of certification	6 April 2021
Expiry date of certification	31 March 2024

TABLE B2

E. HAWLE ARMATURENWERKE GMBH - PRODUCT CERTIFICATION

Wagrainer Strasse 13 A-4840 Vocklabruk	
Product Standard/Spec	EN 12842:2012
Certificate No.	SMK41117
Certifying agency	SAI-Global
First date of certification	19 January 2023
Current date of certification	27 January 2023
Expiry date of certification	18 January 2028

ZERTIFIKAT ♦ CERTIFICATE ♦ 認証書 ♦ CERTIFICADO ♦ CERTIFICAT



Landesgesellschaft
Österreich

CERTIFICATE

The Certification Body
of TÜV SÜD Landesgesellschaft Österreich GmbH
certifies that



E. Hawle Armaturenwerke GmbH

Wagrainer Straße 13
A-4840 Vöcklabruck

Hawle Straße 1
A-4890 Frankenmarkt

has established and applies
a Management System for

Development, production and sales of valves and fittings

An audit was performed and proof has been furnished that the requirements
according to

ISO 9001 : 2015

are fulfilled. The certificate is valid until **2024-03-31**

Certificate Registration No. **Q1531395**

A. Ranzger
Vienna, 2021-04-06



Certification Body
of TÜV SÜD Landesgesellschaft Österreich GmbH
Franz-Grill-Straße 1 · Arsenal, Objekt 207, 1030 Vienna, Austria





STANDARDSMARK LICENCE

SAI Global hereby grants:

E. Hawle Armaturenwerke GmbH

Wagrainer Strabe 13, A-4840 Voecklabruck, Austria

StandardsMark Licence

Manufactured to:

EN 12842:2012 - Ductile iron fittings for PVC-U or PE piping systems - Requirements and test methods

"the StandardsMark Licensee" the right to use the STANDARDSMARK as shown below only in respect of the goods described and detailed in the Schedule which are produced by the Licensee or on behalf of the Licensee* and which comply with the appropriate Standard referred to above as from time to time amended. The Licence is granted subject to the rules governing the use of the STANDARDSMARK and the Terms and Conditions for certification and licence. The Licensee covenants to comply with all the Rules and Terms and Conditions.

Licence No: SMK41117

Issued : 27 January 2023

Expires : 18 January 2028

Originally Certified : 19 January 2023

Current Certification : 27 January 2023

Calin Moldovean
President, Business Assurance
SAI Global Assurance



* For details of manufacture, refer to the licensee

The STANDARDSMARK is a registered certification trademark of SAI Global Pty Limited (A.C.N. 050 644 642) and is issued under licence by SAI Global Certification Services Pty Limited (ACN 108 716 669) ("SAI Global") 650 Lorimer Street, Port Melbourne VIC 3207, GPO Box 5420 Sydney NSW 2001. This certificate remains the property of SAI Global and must be returned to SAI Global upon its request. Refer to www.saiglobal.com, for the list of product models.



SCHEDULE TO STANDARDSMARK LICENCE

SAI Global hereby grants:

E. Hawle Armaturenwerke GmbH

Wagrainer Strabe 13, A-4840 Voecklabruck, Austria

StandardsMark Licence

Manufactured to:

EN 12842:2012 - Ductile iron fittings for PVC-U or PE piping systems - Requirements and test methods

Model identification of the goods on which the STANDARDSMARK may be used:

Model Identification	Model Name	Brand Name	Product Description	Product Type	Product Application	Size Classification (DN)	Pressure Classification	Joint Type	Colour	Material Designation	Date Endorsed
5005143	0400	E. Hawle Armaturenwerke GmbH	Flange Adaptor S2000	Ductile Iron Fitting for PVC-U and PE pipe	PVC-U and PE	DN100/D125	PN16	Plain end mechanical joint	Blue	Ductile Cast Iron	27 Jan 2023
5005147	0400	E. Hawle Armaturenwerke GmbH	Flange Adaptor S2000	Ductile Iron Fitting for PVC-U and PE pipe	PVC-U and PE	DN150/D180	PN16	Plain end mechanical joint	Blue	Ductile Cast Iron	27 Jan 2023
5005148	0400	E. Hawle Armaturenwerke GmbH	Flange Adaptor S2000	Ductile Iron Fitting for PVC-U and PE pipe	PVC-U and PE	DN200/D225	PN16	Plain end mechanical joint	Blue	Ductile Cast Iron	27 Jan 2023
5005149	0400	E. Hawle Armaturenwerke GmbH	Flange Adaptor S2000	Ductile Iron Fitting for PVC-U and PE pipe	PVC-U and PE	DN200/D200	PN16	Plain end mechanical joint	Blue	Ductile Cast Iron	27 Jan 2023
5005151	0400	E. Hawle Armaturenwerke GmbH	Flange Adaptor S2000	Ductile Iron Fitting for PVC-U and PE pipe	PVC-U and PE	DN200/D250	PN16	Plain end mechanical joint	Blue	Ductile Cast Iron	27 Jan 2023
5005153	0400	E. Hawle Armaturenwerke GmbH	Flange Adaptor S2000	Ductile Iron Fitting for PVC-U and PE pipe	PVC-U and PE	DN250/D250	PN16	Plain end mechanical joint	Blue	Ductile Cast Iron	27 Jan 2023

Licence No: SMK41117

Issued Date: 27 January 2023

This schedule supersedes all previously issued schedules



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SCHEDULE TO STANDARDSMARK LICENCE

Model Identification	Model Name	Brand Name	Product Description	Product Type	Product Application	Size Classification (DN)	Pressure Classification	Joint Type	Colour	Material Designation	Date Endorsed
5005155	0400	E. Hawle Armaturenwerke GmbH	Flange Adaptor S2000	Ductile Iron Fitting for PVC-U and PE pipe	PVC-U and PE	DN300/D315	PN16	Plain end mechanical joint	Blue	Ductile Cast Iron	27 Jan 2023
5005157	0400	E. Hawle Armaturenwerke GmbH	Flange Adaptor S2000	Ductile Iron Fitting for PVC-U and PE pipe	PVC-U and PE	DN300/D355	PN16	Plain end mechanical joint	Blue	Ductile Cast Iron	27 Jan 2023
5005159	0400	E. Hawle Armaturenwerke GmbH	Flange Adaptor S2000	Ductile Iron Fitting for PVC-U and PE pipe	PVC-U and PE	DN400/D400	PN16	Plain end mechanical joint	Blue	Ductile Cast Iron	27 Jan 2023
5005161	0400	E. Hawle Armaturenwerke GmbH	Flange Adaptor S2000	Ductile Iron Fitting for PVC-U and PE pipe	PVC-U and PE	DN500/D500	PN16	Plain end mechanical joint	Blue	Ductile Cast Iron	27 Jan 2023
5005163	0400	E. Hawle Armaturenwerke GmbH	Flange Adaptor S2000	Ductile Iron Fitting for PVC-U and PE pipe	PVC-U and PE	DN500/D560	PN16	Plain end mechanical joint	Blue	Ductile Cast Iron	27 Jan 2023
5005165	0400	E. Hawle Armaturenwerke GmbH	Flange Adaptor S2000	Ductile Iron Fitting for PVC-U and PE pipe	PVC-U and PE	DN600/D630	PN16	Plain end mechanical joint	Blue	Ductile Cast Iron	27 Jan 2023
5008000	8075	E. Hawle Armaturenwerke GmbH	end cap S2000 with 2" radial threaded outlet	Ductile Iron Fitting for PVC-U and PE pipe	PVC-U and PE	D250	PN16	Plain end mechanical joint	Blue	Ductile Cast Iron	17 Jan 2023
5008001	8075	E. Hawle Armaturenwerke GmbH	end cap S2000 without threaded outlets	Ductile Iron Fitting for PVC-U and PE pipe	PVC-U and PE	D280	PN16	Plain end mechanical joint	Blue	Ductile Cast Iron	17 Jan 2023
5008004	8075	E. Hawle Armaturenwerke GmbH	end cap S2000 with 2" radial threaded outlet	Ductile Iron Fitting for PVC-U and PE pipe	PVC-U and PE	D280	PN16	Plain end mechanical joint	Blue	Ductile Cast Iron	17 Jan 2023
5008005	8075	E. Hawle Armaturenwerke GmbH	end cap S2000 without threaded outlets	Ductile Iron Fitting for PVC-U and PE pipe	PVC-U and PE	D315	PN16	Plain end mechanical joint	Blue	Ductile Cast Iron	17 Jan 2023

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SCHEDULE TO STANDARDSMARK LICENCE

Model Identification	Model Name	Brand Name	Product Description	Product Type	Product Application	Size Classification (DN)	Pressure Classification	Joint Type	Colour	Material Designation	Date Endorsed
5008008	8075	E. Hawle Armaturenwerke GmbH	end cap S2000 with 2" radial threaded outlet	Ductile Iron Fitting for PVC-U and PE pipe	PVC-U and PE	D315	PN16	Plain end mechanical joint	Blue	Ductile Cast Iron	17 Jan 2023
5013047	0430	E. Hawle Armaturenwerke GmbH	connector S2000	Ductile Iron Fitting for PVC-U and PE pipe	PVC-U and PE	D250	PN16	Plain end mechanical joint	Blue	Ductile Cast Iron	17 Jan 2023
5013050	0430	E. Hawle Armaturenwerke GmbH	connector S2000	Ductile Iron Fitting for PVC-U and PE pipe	PVC-U and PE	D280	PN16	Plain end mechanical joint	Blue	Ductile Cast Iron	17 Jan 2023
5013052	0430	E. Hawle Armaturenwerke GmbH	connector S2000	Ductile Iron Fitting for PVC-U and PE pipe	PVC-U and PE	D315	PN16	Plain end mechanical joint	Blue	Ductile Cast Iron	17 Jan 2023
5013055	0430	E. Hawle Armaturenwerke GmbH	connector S2000	Ductile Iron Fitting for PVC-U and PE pipe	PVC-U and PE	D355	PN16	Plain end mechanical joint	Blue	Ductile Cast Iron	17 Jan 2023
5013189	8545	E. Hawle Armaturenwerke GmbH	bend 45° S2000	Ductile Iron Fitting for PVC-U and PE pipe	PVC-U and PE	D250	PN16	Plain end mechanical joint	Blue	Ductile Cast Iron	17 Jan 2023
5013191	8545	E. Hawle Armaturenwerke GmbH	bend 45° S2000	Ductile Iron Fitting for PVC-U and PE pipe	PVC-U and PE	D280	PN16	Plain end mechanical joint	Blue	Ductile Cast Iron	17 Jan 2023
5013193	8545	E. Hawle Armaturenwerke GmbH	bend 45° S2000	Ductile Iron Fitting for PVC-U and PE pipe	PVC-U and PE	D315	PN16	Plain end mechanical joint	Blue	Ductile Cast Iron	17 Jan 2023
5013235	8535	E. Hawle Armaturenwerke GmbH	bend 90° S2000	Ductile Iron Fitting for PVC-U and PE pipe	PVC-U and PE	D250	PN16	Plain end mechanical joint	Blue	Ductile Cast Iron	17 Jan 2023
5013237	8535	E. Hawle Armaturenwerke GmbH	bend 90° S2000	Ductile Iron Fitting for PVC-U and PE pipe	PVC-U and PE	D280	PN16	Plain end mechanical joint	Blue	Ductile Cast Iron	17 Jan 2023

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Issued Date: 27 January 2023

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SCHEDULE TO STANDARDSMARK LICENCE

Model Identification	Model Name	Brand Name	Product Description	Product Type	Product Application	Size Classification (DN)	Pressure Classification	Joint Type	Colour	Material Designation	Date Endorsed
5013239	8535	E. Hawle Armaturenwerke GmbH	bend 90° S2000	Ductile Iron Fitting for PVC-U and PE pipe	PVC-U and PE	D315	PN16	Plain end mechanical joint	Blue	Ductile Cast Iron	17 Jan 2023

End of Record

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APPENDIX D - SUPPLIER CONTACTS

Hygrade Water Australia Limited

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Website: www.hygradewater.com.au



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P +61 (0) 3 8605 7666
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