

A.B.N. 41 009 668 179

HORNICK CONSTRUCTIONS PTY. LTD.

**Bracken Ridge Road Sewage
Pump Station**

SP 211

Contract BW 300077 – 02/03

***OPERATIONS
and
MAINTENANCE MANUAL***

COMPLETED MAY 2004

HORNICK CONSTRUCTIONS PTY LTD

67 Holdsworth Street, Coorparoo Qld 4151

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A.B.N. 41 009 668 179

HORNICK CONSTRUCTIONS PTY LTD.

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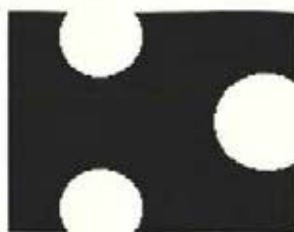
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GENERAL



A.B.N. 41 009 668 179

HORNICK CONSTRUCTIONS PTY LTD.

GENERAL



COMPANY PROFILE

HORNICK CONSTRUCTIONS PTY LTD

Cyril Hornick, 'CP' commenced business in Queensland in 1937 as a Contractor and Designer Builder of homes. Throughout the 1940's, 50's and 60's, the business developed into the largest privately owned construction company in Queensland, and in 1965 CP Hornick & Son Pty Ltd was formed. Over the years CP Hornick & Son constructed some notable Brisbane landmarks, including the Main Roads Building in Boundary Street.

In 1971 Hornick Constructions Pty Ltd was formed and is today the main trading arm of the Hornick group of companies. The group comprises CP Hornick & Son Pty Ltd, Hornick Constructions Pty Ltd, Hornick Developments Pty Ltd, CPH Transport Pty Ltd, Hornick Plumbing, and JM Glassell (Qld) Pty Ltd.

The business is managed and operated from the company head office in Holdsworth Street, Coorparoo, ten minutes from Brisbane's CBD. Hornick Constructions currently operates throughout Queensland and New South Wales and is involved in General and Commercial Construction as well as Civil Engineering infrastructure projects.

Over the last fifteen years Hornick Constructions have specialised in the design and construction of civil concrete structures and elements. Such structures would predominantly include water storage reservoirs, sewerage and water treatment plant structures, and associated buildings and pipeworks. Current construction trends incorporated into the designs may include in-situ or precast post-tensioned concrete elements. The recently completed Fifty Megalitre water storage reservoir for ColAqua on Queensland's Sunshine Coast is the largest circular water storage facility constructed by the company to date.

Hornick Constructions is justifiably proud of the consistent high quality of concrete finish achieved on their projects. Third party certification to AS/NZS ISO 9001-2000 has helped to ensure that the high level of customer satisfaction the company has provided in the past will continue to be maintained.

We look forward to being of service in the best tradition of building practice.



PROJECT HISTORY

The following compilation is a record of Concrete Storage Reservoirs and Pumping Stations constructed by Hornick Constructions within the last 8 years. Whilst numerous Elevated Storage Reservoirs, Treatment Plant Facilities, Water and Sewer Mains, Swimming Pools and the like have also been completed by the company in this same period, those projects are not listed here.

CURRENTLY UNDER CONSTRUCTION 3

RECENTLY COMPLETED PROJECTS - 2001 to 2003 3

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RESERVOIRS - 1999 4

RESERVOIRS - 1998 4

RESERVOIRS - 1997 4

RESERVOIRS - 1996 5

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PUMPING STATIONS - 1995 to 1999 6



Currently Under Construction

Forest Lake 33ML Reservoir	Delfin Forest Lake Pty Ltd
Top Camp 1ML Reservoir	Cambooya Shire Council
Highfields WTP 3ML Reservoir	Crows Nest Shire Council
Bracken Ridge Pumping Stations	Brisbane Water
Nambucca Heads 690KL Reservoir (D&C)	Property & Reclamation Pty Ltd
Gordonvale 20ML Reservoir (D&C)	Cairns Water
Bewong 20ML Reservoir (D&C)	Shoalhaven City Council

Recently Completed Projects - 2001 to 2003

West Wyalong 1.5ML Reservoir (D&C)	Goldenfields Water County Council
Morgans Rd 5ML Reservoir (D&C)	Coffs Harbour City Council
Glenreagh Booster Pumping Station (D&C)	DPWS - Coffs Harbour
Agnes Water 4ML Reservoir (D&C)	Miriam Vale Shire Council
Mooloolah Pump Station & Rising Main (Part D&C)	Caloundra City Council
Yeppoon 2 x 4.2ML Water Reservoirs (D&C)	Livingstone Shire Council
Withcott 2.6ML Reservoir (D&C)	Gatton Shire Council
Orange 20ML Reservoir (D&C)	Orange City Council
Herring Lagoon WTP - 4ML Reservoir & Pump Station	Redland Shire Council
Inverell East 2.4ML Reservoir (D&C)	Inverell Shire Council
Cowarra Dam 8.5ML Balance Tank & Telemetry Building	DPWS - Pt Macquarie
Caloundra 50ML Reservoir & Chlorination Building (D&C)	Caloundra City Council



Certified AS/NZS ISO 9001-2000

SGS International Cert. No: 658/96

Reservoirs - 2000

Murroon 15ML Reservoir (D&C)	Tamworth City Council
Hills Plain 5ML Reservoir (D&C)	Tamworth City Council
North Young 7.7ML Reservoir (D&C)	DPWS - Wagga Wagga
Underwood 8.5ML Reservoir & Pump Station (D&C)	Logan City Council
Narangba 32ML Reservoir & Chlorination Bldg (Part D&C)	Pine Rivers Shire Council

Reservoirs - 1999

Wongarbon Elevated Reservoir (D&C)	2.4 Megalitres	DPWS - Dubbo
Lockhart River Reservoir (D&C)	1.5 Megalitres	IRS Golding Civil Pty Ltd
Goondiwindi Reservoir (D&C)	10 Megalitres	Goondiwindi Town Council
Nowra Reservoir (D&C)	10 Megalitres	DPWS - South Coast

Reservoirs - 1998

Gayndah Clearwater Reservoir	1 Megalitre	Gayndah Shire Council
Glenvale Reservoir (D&C)	3.2 Megalitres	Jondaryan Shire Council
D'Aguilar Reservoir	2 Megalitres	Caboolture Shire Council
Mt Alford Reservoir (D&C)	250 Kilolitres	Boonah Shire Council
Gatton Reservoir (D&C)	7 Megalitres	Gatton Shire Council
Helidon Reservoir (D&C)	1.5 Megalitres	Gatton Shire Council

Reservoirs - 1997

Mt Pleasant Reservoir (D&C)	18 Megalitres	Mackay City Council
Maleny Reservoir (D&C)	2 Megalitres	Caloundra City Council
Foster Rd Reservoir (D&C)	6 Megalitres	Cairns City Council
Satur Standpipe Reservoir (D&C)	2 Megalitres	DPWS - Western Region
Wooli Standpipe Reservoir	1.8 Megalitres	DPWS - Coffs Harbour



Certified AS/NZS ISO 9001-2000

SGS International Cert. No: 658/96

Reservoirs - 1997 continued

Broadwater Reservoir	600 Kilolitres	DPWS - North Coast Region
Boonah Reservoir (D&C)	2 Megalitres	Boonah Shire Council
Orange Balance Tank	3.3 Megalitres	DPWS - Riverina / Western
Orange Balance Tank	1.3 Megalitres	DPWS - Riverina / Western
Round Mountain Reservoir	16 Megalitres	Caboolture Shire Council

Reservoirs - 1996

Mullumbimby Reservoir (D&C)	1.5 Megalitres	DPWS - North Coast Region
Scone Reservoir (D&C)	4 Megalitres	DPWS - Western Region
Plainlands Reservoir	5 Megalitres	Laidley Shire Council
Park Ridge Reservoir	1.7 Megalitres	Cairns E'Moving Contractors
Woodford Reservoir	4.5 Megalitres	Caboolture Shire Council
Narangba Reservoir	14.5 Megalitres	Caboolture Shire Council
Springfield Reservoir	20 Megalitres	Ipswich City Council
Tura Beach Reservoir (D&C)	6.3 Megalitres	D.P.W.S.
Kalaru Reservoir (D&C)	1 Megalitre	D.P.W.S.

Reservoirs - 1995

Edmonton West Reservoir (D&C)	20 Megalitres	Cairns E'Moving Contractors
Samford Reservoir	4.2 Megalitres	Pine Rivers Shire Council
Buladelah Reservoir (D&C)	2.6 Megalitres	D.P.W.S.
Wonga Beach Reservoir	1.5 Megalitres	Douglas Shire Council
Illawarra Reservoirs (2No.) (D&C)	11.5 Megalitres	Concrete/Kinhill J.V.
Bathurst Reservoir (D&C)	13 Megalitres	D.P.W.S.
Ferny Hills Reservoir	4.6 Megalitres	Greenmore Pty Ltd
Robertson Reservoir	3.3 Megalitres	D.P.W.S.
Edmonton Reservoir	30 Megalitres	Mulgrave Shire Council



Pumping Stations - 1995 to 1999

Weyba Creek Booster Pump Station (Water)	Noosa Council
Orange Pumping Station (Water)	DPWS - Riverina / Western Region
Beaufort St Pump Station (Sewerage)	Pine Rivers Shire Council
Armstrong Beach Pump Station (Water)	Sarina Shire Council
Woodford Pumping Station (Water)	Caboolture Shire Council
Parkes Pump Station (Water)	North Parkes Mines



SGS International Certification Services Pty Ltd
ACN 060 156 014

REGISTRATION SCHEDULE

HORNICK CONSTRUCTIONS PTY LTD

67 Holdsworth Street, COORPAROO QLD 4151

Audit Standard

AS/NZS ISO 9001:2000

Scope of Registration

*Design and construct, project management, commercial and engineering structures,
provision of plumbing services.*

Certificate Number

658/96

Dates of Certification

21 May 1996

JAS-ANZ



Accreditation by the
Joint Accreditation
System of Australia
and New Zealand
Acc. No. S137079JAS

Signed by

A handwritten signature in black ink, appearing to read 'G. Morgan'.

Date of Issue

12 June 2002



SGS International Certification Services Pty Ltd
ACN 060 156 014

CERTIFICATE OF REGISTRATION

This Certificate is issued by
SGS International Certification Services Pty Ltd
which is accredited by JAS-ANZ.

This is to certify that the Quality Management System of

HORNICK CONSTRUCTIONS PTY LTD

has been assessed and registered as meeting the
requirements of AS/NZS ISO 9001.



The scope of registration is detailed on the
Registration Schedule bearing this certificate number

658/96

Dates of Certification

21 May 1996



SGS International Certification Services Pty Ltd

Signed by

JAS-ANZ



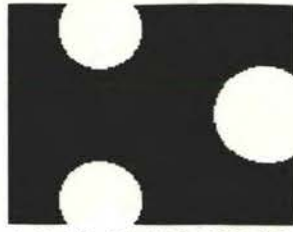
ISSUING OFFICE
SGS International Certification Services Pty Ltd
74 McEvoy Street
Alexandria NSW 2015

Accreditation by the
Joint Accreditation
System of Australia
and New Zealand,
Acc. No. S13/0793AS

While all due care and skill was exercised in carrying out this assessment, SGS International Certification Services Pty Ltd accepts responsibility only for proven gross negligence. This is not a legal document and cannot be used as such. This certificate remains the property of SGS International Services Pty Ltd to whom it must be returned.



MISCELLANEOUS



A.B.N. 41 009 668 179

HORNICK CONSTRUCTIONS PTY LTD.

MISCELLANEOUS

2.1

MANILLA
BRIGHT
DIVIDERS
5 TAB A4



Ref. No. 37100
Made in China



9 312311 371009

Quick-Connects



QC, QF, QM, and QTM Series

- No twisting, turning, or wrenching necessary
- Single-end shutoff, double-end shutoff, and full-flow models

Swagelok

2 Quick-Connects

Contents

Instrumentation Quick-Connects

QC Series 3



PTFE-Sealed Quick-Connects

QTM Series 9



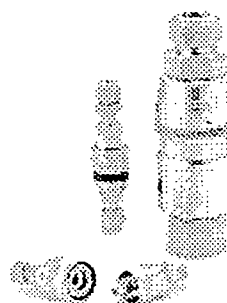
Full-Flow Quick-Connects

QF Series 6



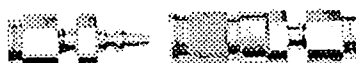
Options

Keyed Quick-Connects 12



Miniature Quick-Connects

QM Series 8



General Information

Spillage

Spillage is the amount of system fluid that escapes when a quick-connect is uncoupled (double-end shutoff [DESO] only).

Air Inclusion

Air inclusion is the amount of air trapped between the body and stem that enters the system when a quick-connect is coupled (DESO only).

Flow Coefficient (C_v)

C_v is an average value and may vary $\pm 10\%$. C_v is based on like end connections on stem and body. For unlike end connections, average the two C_v values.

Coupling

Any quick-connect stem will fit any quick-connect body of the same series and size.

Examples: Any QC4 stem will fit any QC4 body.
Any QC8 stem will fit any QC8 body.

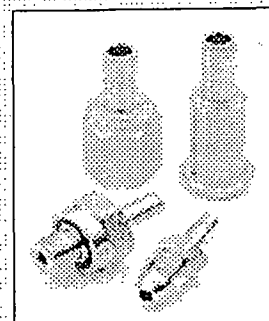
Overall Length

- To calculate overall length in the coupled position, subtract the insertion depth from any overall stem and body combination length.
- Dimensions are shown with Swagelok tube fitting nuts finger-tight.

End Connections

Additional end connections—such as ISO parallel and tapered thread, AN thread, pipe weld—are available.

Where these end connections are not listed, a tube adapter can be used to create a two-piece assembly. For more information on tube adapters, see the *Gaugeable Tube Fittings and Adapter Fittings* catalog.

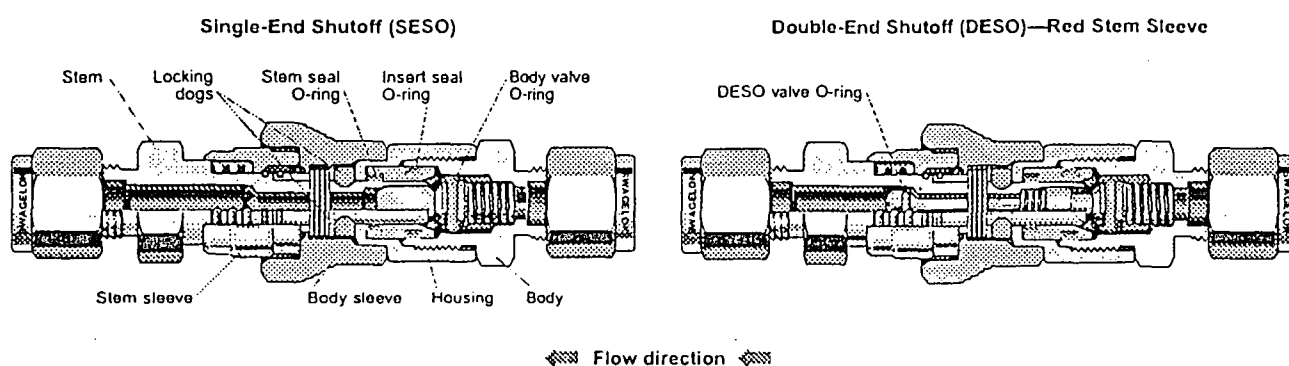
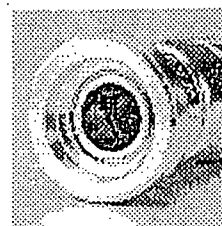


Swagelok

Instrumentation Quick-Connects QC Series

Features

- Redesigned stem insert requires just one O-ring seal, yet improves O-ring containment.
- New-design stems and bodies interchange with old-design stems and bodies.
- Locking dog mechanism with large contact area retains stem.
- Push-to-connect coupling enables quick, easy operation.
- Wide variety of options, including keyed quick-connects, are available.
- Heavy-duty sleeve shields open end of body.



Materials of Construction

Component	Material	
	316 SS	Brass
Body, housing, stem	316 SS	Brass C36000
Body valve, body insert, DESO valve, DESO retainer		Brass C36000
SESO stem insert		Brass C26000
O-rings		Buna N
Springs	316 SS	
Snap rings	316 SS	
Body sleeve	316 SS powdered metal	Brass C36000
DESO stem sleeve	Polyurethane enamel-coated 316 SS	Polyurethane enamel-coated brass C36000
SESO stem sleeve	316 SS	Brass C36000
Locking dogs	Xylan®-coated 316 SS powdered metal	
Lubricants	Silicone- and PTFE-based	

Wetted components listed in *italics*.
Other lubricants available.

Pressure-Temperature Ratings

Temperature °F (°C)	316 SS with Fluorocarbon FKM O-rings			Brass with Buna N O-rings		
	QC4	QC6	QC8	QC4	QC6	QC8
	Pressure Rating, coupled, psig (bar)					
70 (20)	3000 (206)	1500 (103)	750 (51.6)	2000 (137)	1000 (68.9)	500 (34.4)
250 (121) ^① 400 (204) ^②	250 (17.2)					
Pressure Rating, uncoupled, psig (bar)						
70 (20)	250 (17.2)					
Pressure Rating, when coupling and uncoupling, psig (bar)						
70 (20)	250 (17.2)					

① For brass with Buna N O-rings.

② For 316 SS with fluorocarbon FKM O-rings.

Spillage and Air Inclusion

Series	Spillage	Air Inclusion
QC4	0.3 cm ³	0.3 cm ³
QC6	1.0 cm ³	1.0 cm ³
QC8	3.0 cm ³	3.0 cm ³

Maximum Flow Rate

U.S. gal/min (L/min) water at 70°F (20°C)

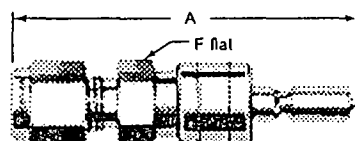
QC4	QC6	QC8
4 (15)	6 (22)	10 (37)



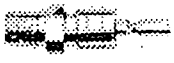
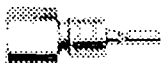
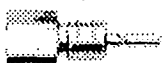
Swagelok

4 Quick-Connects

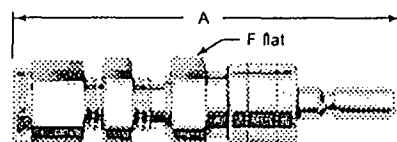
Ordering Information and Dimensions, QC Series

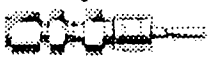
Stems



End Connection		Basic Ordering Number		C _v			A		
Type	Size in.	SESO (Stem has no valve; remains open when uncoupled)	DESO (Stem has valve; shuts off when uncoupled)	SESO	DESO	Full Flow	SESO in. (mm)	DESO in. (mm)	F in.
Swagelok tube fitting 	1/8	-QC4-S-200	-QC4-D-200 ^①	0.08	0.08	0.08	2.32 (58.9)	2.77 (70.4)	5/8 ^①
	1/4	-QC4-S-400	-QC4-D-400	0.3	0.2	0.4	2.36 (59.9)	2.42 (61.5)	5/8
	3/8	-QC6-S-600	-QC6-D-600	1.0	0.5	1.5	2.52 (64.0)	2.64 (67.1)	3/4
	1/2	-QC8-S-810	-QC8-D-810	2.4	1.5	3.3	2.96 (75.2)	3.16 (80.3)	15/16
	6 mm	-QC4-S-6M0	-QC4-D-6M0	0.3	0.2	0.4	2.36 (59.9)	2.42 (61.5)	5/8
	10 mm	-QC6-S-10M0	-QC6-D-10M0	1.0	0.5	1.5	2.65 (67.3)	2.77 (70.4)	3/4
	12 mm	-QC8-S-12M0	-QC8-D-12M0	2.4	1.5	3.3	2.96 (75.2)	3.16 (80.3)	15/16
Male NPT 	1/8	-QC4-S-2PM	-QC4-D-2PM	0.3	0.2	0.4	2.07 (52.6)	2.13 (54.1)	5/8
	1/4	-QC4-S-4PM	-QC4-D-4PM	0.3	0.2	0.4	2.22 (56.4)	2.28 (57.9)	5/8
	1/4	-QC6-S-4PM	-QC6-D-4PM	0.9	0.5	1.5	2.32 (58.9)	2.44 (61.9)	3/4
	3/8	-QC6-S-6PM	-QC6-D-6PM	0.8	0.5	1.6	2.35 (59.7)	2.47 (62.7)	3/4
	1/2	-QC8-S-8PM	-QC8-D-8PM	2.0	1.3	3.1	2.84 (72.1)	3.04 (77.2)	15/16
Male ISO tapered 	1/4	-QC4-S-4MT	-QC4-D-4MT	0.3	0.2	0.4	2.22 (56.4)	2.28 (57.9)	5/8
	3/8	-QC6-S-6MT	-QC6-D-6MT	0.8	0.5	1.6	2.35 (59.7)	2.47 (62.7)	3/4
	1/2	-QC8-S-8MT	-QC8-D-8MT	2.0	1.3	3.1	2.84 (72.1)	3.04 (77.2)	15/16
Female NPT 	1/8	-QC4-S-2PF	-QC4-D-2PF	0.3	0.2	0.4	2.01 (51.1)	2.07 (52.6)	5/8
	1/4	-QC4-S-4PF	-QC4-D-4PF	0.3	0.2	0.4	2.26 (57.4)	2.32 (58.9)	3/4
	1/4	-QC6-S-4PF	-QC6-D-4PF	0.9	0.5	1.5	2.35 (59.7)	2.47 (62.7)	3/4
	3/8	-QC6-S-6PF	-QC6-D-6PF	0.8	0.5	1.6	2.35 (59.7)	2.47 (62.7)	7/8
	1/2	-QC8-S-8PF	-QC8-D-8PF	2.0	1.3	3.1	2.82 (71.6)	3.02 (76.7)	1 1/16
Female ISO tapered 	1/4	-QC4-S-4FT	-QC4-D-4FT	0.3	0.2	0.4	2.26 (57.4)	2.32 (58.9)	3/4
	3/8	-QC6-S-6FT	-QC6-D-6FT	0.8	0.5	1.6	2.35 (59.7)	2.47 (62.7)	7/8
	1/2	-QC8-S-8FT	-QC8-D-8FT	2.0	1.3	3.1	2.82 (71.6)	3.02 (76.7)	1 1/16

① The -QC4-D-200 is a two-piece assembly.



End Connection		Basic Ordering Number		A			Max Panel Thickness	Min Panel Hole Dia
Type	Size in.	SESO (Stem has no valve; remains open when uncoupled)	DESO (Stem has valve; shuts off when uncoupled)	SESO in. (mm)	DESO in. (mm)	F in.	in. (mm)	in. (mm)
Swagelok bulkhead tube fitting 	1/4	-QC4-S1-400	-QC4-D1-400	2.74 (69.6)	2.80 (71.1)	5/8	0.25 (6.4)	15/32 (11.9)
	3/8	-QC6-S1-600	-QC6-D1-600	2.92 (74.2)	3.07 (78.0)	3/4	0.27 (6.9)	19/32 (15.1)
	1/2	-QC8-S1-810	-QC8-D1-810	3.43 (87.1)	3.63 (92.2)	15/16	0.26 (6.6)	25/32 (19.8)
	6 mm	-QC4-S1-6M0	-QC4-D1-6M0	2.74 (69.6)	2.80 (71.1)	16 mm	0.25 (6.4)	29/64 (11.5)
	10 mm	-QC6-S1-10M0	-QC6-D1-10M0	3.06 (77.7)	3.10 (78.7)	22 mm	0.27 (6.9)	21/32 (16.7)
	12 mm	-QC8-S1-12M0	-QC8-D1-12M0	3.43 (87.1)	3.63 (92.2)	24 mm	0.26 (6.6)	49/64 (19.4)

How to Order

Select a basic ordering number and add a material designator.

Material	Designator
316 SS	SS
Brass	B

Example: SS-QC4-S-200

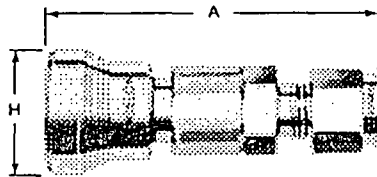
Other end connections may be available from the factory as two-piece components. Contact your independent Swagelok sales and service representative for information.


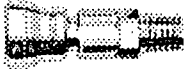
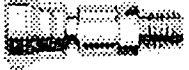

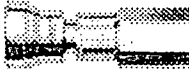
Insertion Depth

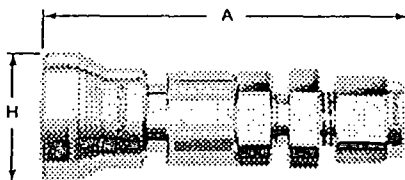
Series	Depth, in. (mm)	
	SESO	DESO
QC4	1.09 (27.7)	1.15 (29.2)
QC6	1.18 (30.0)	1.30 (33.0)
QC8	1.48 (37.6)	1.68 (42.7)

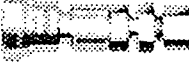
Dimensions are for reference only and are subject to change.

Swagelok

Bodies

End Connection		Basic Ordering Number	A		H
Type	Size in.		in. (mm)	in. (mm)	
Swagelok tube fitting 	1/8	-QC4-B-200	2.26 (57.4)	0.91 (23.1)	
	1/4	-QC4-B-400	2.30 (58.4)	0.91 (23.1)	
	3/8	-QC6-B-600	2.58 (65.5)	1.03 (26.2)	
	1/2	-QC8-B-810	3.09 (78.5)	1.21 (30.7)	
	6 mm	-QC4-B-6M0	2.30 (58.4)	0.91 (23.1)	
	10 mm	-QC6-B-10M0	2.68 (68.1)	1.03 (26.2)	
Male NPT 	1/8	-QC4-B-2PM	2.01 (51.1)	0.91 (23.1)	
	1/4	-QC4-B-4PM	2.16 (54.9)	0.91 (23.1)	
	3/8	-QC6-B-4PM	2.38 (60.5)	1.03 (26.2)	
	1/2	-QC6-B-6PM	2.38 (60.5)	1.03 (26.2)	
	1/2	-QC8-B-8PM	2.97 (75.4)	1.21 (30.7)	
Male ISO tapered 	1/4	-QC4-B-4MT	2.16 (54.9)	0.91 (23.1)	
	3/8	-QC6-B-6MT	2.38 (60.5)	1.03 (26.2)	
	1/2	-QC8-B-8MT	2.97 (75.4)	1.21 (30.7)	
Female NPT 	1/8	-QC4-B-2PF	2.16 (54.9)	0.91 (23.1)	
	1/4	-QC4-B-4PF	2.42 (61.5)	0.91 (23.1)	
	3/8	-QC6-B-4PF	2.54 (64.5)	1.03 (26.2)	
	1/2	-QC6-B-6PF	2.57 (65.3)	1.03 (26.2)	
	1/2	-QC8-B-8PF	3.22 (81.8)	1.21 (30.7)	
Female ISO tapered 	1/4	-QC4-B-4FT	2.42 (61.5)	0.91 (23.1)	
	3/8	-QC6-B-6FT	2.57 (65.3)	1.03 (26.2)	
	1/2	-QC8-B-8FT	3.22 (81.8)	1.21 (30.7)	



End Connection		Basic Ordering Number	A		Max Panel Thickness	Min Panel Hole Dia
Type	Size in.		in. (mm)	in. (mm)	in. (mm)	in. (mm)
Swagelok bulkhead tube fitting 	1/4	-QC4-B1-400	2.67 (67.8)	0.91 (23.1)	0.25 (6.4)	15/32 (11.9)
	3/8	-QC6-B1-600	2.98 (75.7)	1.03 (26.2)	0.27 (6.9)	19/32 (15.1)
	1/2	-QC8-B1-810	3.56 (90.4)	1.21 (30.7)	0.26 (6.6)	25/32 (19.8)
	6 mm	-QC4-B1-6M0	2.67 (67.8)	0.91 (23.1)	0.25 (6.4)	15/32 (11.9)
	10 mm	-QC6-B1-10M0	2.99 (75.9)	1.03 (26.2)	0.27 (6.9)	21/32 (16.7)
	12 mm	-QC8-B1-12M0	3.56 (90.4)	1.21 (30.7)	0.26 (6.6)	49/64 (19.4)

How to Order a Full-Flow Quick-Connect

A full-flow QC series quick-connect consists of a SESO stem and a full-flow body.

To order a SESO stem, select a basic ordering number and add a material designator.

Example: SS-QC4-S-200

To order a full-flow body, select a basic ordering number and add a material designator and MB.

Example: SS-QC4-B-200MB

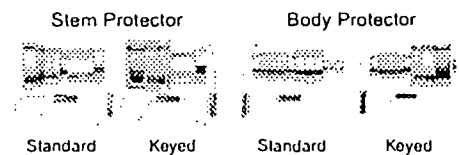
Dimensions are for reference only and are subject to change.

Options

For keyed combinations see page 12.

Stem and Body Protectors

Stem and body protectors guard against damage and contaminants when bodies and stems are uncoupled. Protectors are not pressure-containing devices; for pressure-retaining protectors, contact your independent Swagelok representative.

**Materials**

Component	Material
Protector	316 SS or plated brass C36000
Lanyard	302 SS
Lanyard clamps	303 SS

Series	Basic Ordering Number	
	Stem Protector	Body Protector
QC4	-QC4-SP	-QC4-BP
QC6	-QC6-SP	-QC6-BP
QC8	-QC8-SP	-QC8-BP

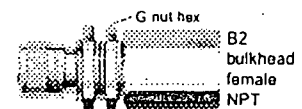
To order, select a basic ordering number and add SS for stainless steel or B for brass.

Example: SS-QC4-SP

Keyed Protectors

To order a keyed protector, add a key designator from the table on page 12 to the ordering number.

Example: SS-QC4-SPK1

Bulkhead Bodies with Two Panel Nuts**Dimensions**

Series	G in.	Max Panel Thickness in. (mm)	Min Panel Hole Dia in. (mm)
QC4	7/8	0.20 (5.1)	23/32 (18.3)
QC6	15/16	0.25 (6.4)	27/32 (21.4)
QC8	1 1/8	0.31 (7.9)	1 1/32 (26.2)

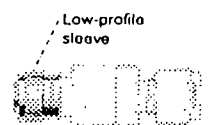
To order, insert B2 in place of B in the ordering number. Example: SS-QC4-B2-400

B2 style bulkhead body is available only with low-profile IS sleeve.

Low-Profile Sleeve

This option is available for use in areas where space is limited. To order, add IS to the ordering number.

Example: SS-QC4-B-400IS



Swagelok

6 Quick-Connects

Full Flow Quick-Connects
QF Series

Features

- Compact coupling offers full flow without orifice restrictions.
- O-ring is easily replaced without disassembling body.



◄ Bidirectional flow ►

Materials of Construction

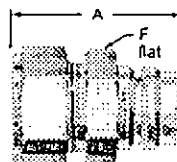
Component	Material	
	316 SS	Brass
Body, stem	316 SS	Brass C36000
Spring, snap ring, locking balls	316 SS	
Sleeve	316 SS	Brass C36000
O-ring	Fluorocarbon FKM	Buna N
Lubricants	Silicone- and PTFE-based	

Wetted components listed in *italics*.

Other O-ring materials and lubricants available.

Ordering Information and Dimensions

Stems










How to Order

Select a basic ordering number and add a material designator.

Material	Designator
316 SS	SS
Brass	B

Example: SS-QF4-S-400

End Connection		Basic Ordering Number	C _v	A in. (mm)	F in.	Min Orifice in. (mm)
Type	Size, in.					
Swagelok tube fitting 	1/4	-QF4-S-400	2.2	1.77 (45.0)	9/16	0.19 (4.8)
	3/8	-QF4-S-600	2.8	1.77 (45.0)	11/16	0.24 (6.1)
	3/8	-QF8-S-600	2.9	1.88 (47.8)	7/8	0.28 (7.1)
	1/2	-QF8-S-810	13.0	1.99 (50.5)	7/8	0.41 (10.4)
	3/4	-QF12-S-1210	26.0	2.15 (54.6)	1 1/16	0.62 (15.7)
	1	-QF16-S-1610	45.0	2.45 (62.2)	1 3/8	0.88 (22.4)
	6 mm	-QF4-S-6M0	2.2	1.77 (45.0)	9/16	0.19 (4.8)
Male NPT 	1/4	-QF4-S-4PM	1.7	1.59 (40.4)	9/16	0.24 (6.1)
	3/8	-QF4-S-6PM	1.7	1.59 (40.4)	11/16	0.24 (6.1)
	3/8	-QF8-S-6PM	7.1	1.59 (40.4)	7/8	0.41 (10.4)
	1/2	-QF8-S-8PM	11.5	1.84 (46.7)	7/8	0.50 (12.7)
	3/4	-QF12-S-12PM	23.6	2.03 (51.6)	1 1/16	0.72 (18.3)
	1	-QF16-S-16PM	39.0	2.35 (59.7)	1 3/8	0.88 (22.4)
Male ISO tapered 	1/4	-QF4-S-4MT	1.7	1.59 (40.4)	9/16	0.24 (6.1)
	1/2	-QF8-S-8MT	11.5	1.84 (46.7)	7/8	0.50 (12.7)
	1	-QF16-S-16MT	39.0	2.35 (59.7)	1 3/8	0.88 (22.4)
Male ISO parallel ⁽¹⁾ 	1/4	-QF4-S-4MS	1.7	1.60 (40.6)	3/4	0.24 (6.1)
	1/2	-QF8-S-8MS	11.5	1.82 (46.2)	1 1/16	0.50 (12.7)
Female NPT 	1/4	-QF4-S-4PF	1.7	1.60 (40.6)	3/4	0.24 (6.1)
	3/8	-QF4-S-6PF	1.7	1.67 (42.4)	7/8	0.24 (6.1)
	3/8	-QF8-S-6PF	7.1	1.59 (40.4)	1 1/16	0.47 (11.9)
	1/2	-QF8-S-8PF	11.5	1.82 (46.2)	1 1/16	0.50 (12.7)
	3/4	-QF12-S-12PF	23.6	2.08 (52.8)	1 5/16	0.72 (18.3)
	1	-QF16-S-16PF	39.0	2.49 (63.2)	1 5/8	0.88 (22.4)
Female ISO parallel 	1/4	-QF4-S-4FS	1.7	1.60 (40.6)	3/4	0.24 (6.1)
	1/2	-QF8-S-8FS	11.5	1.82 (46.2)	1 1/16	0.50 (12.7)
Female ISO tapered 	1/4	-QF4-S-4FT	1.7	1.60 (40.6)	3/4	0.24 (6.1)
	1/2	-QF8-S-8FT	11.5	1.82 (46.2)	1 1/16	0.50 (12.7)

Dimensions are for reference only and are subject to change.

⁽¹⁾ Include a female 60° cone profile. They accept a 60° male cone with female swivel nut.

Swagelok

Pressure-Temperature Ratings

Temperature °F (°C)	316 SS with Fluorocarbon FKM O-rings				Brass with Buna N O-rings			
	QF4	QF8	QF12	QF16	QF4	QF8	QF12	QF16
	Pressure Rating, coupled, psig (bar)							
70 (20)	6000 (413)		4000 (275)		4000 (275)	3000 (206)	2000 (137)	
250 (121) ^① 400 (204) ^②				100 (6.8)				

① For brass with Buna A O-rings.

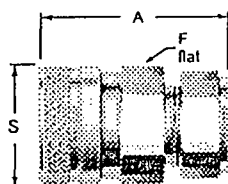
② For 316 SS with fluorocarbon FKM O-rings.



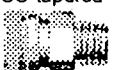




Insertion Depth

Series	Depth, in. (mm)
QF4	0.78 (19.8)
QF8	0.81 (20.6)
QF12	0.90 (22.9)
QF16	0.94 (23.9)

⚠ Warning: Do not uncouple under pressure.

Bodies



End Connection		Basic Ordering Number	A		F		S		Min Orifice
Type	Size, in.		in. (mm)		in.		in. (mm)		
Swagelok tube fitting 	1/4	-QF4-B-400	1.80 (45.7)		11/16		0.87 (22.1)		0.19 (4.8)
	3/8	-QF4-B-600	1.81 (46.0)		11/16		0.87 (22.1)		0.28 (7.1)
	3/8	-QF8-B-600	2.17 (55.1)		1 1/16		1.30 (33.0)		0.28 (7.1)
	1/2	-QF8-B-810	2.23 (56.6)		1 1/16		1.30 (33.0)		0.47 (11.9)
	3/4	-QF12-B-1210	2.45 (62.2)		1 1/2		1.66 (42.2)		0.62 (15.7)
	1	-QF16-B-1610	2.75 (69.9)		1 11/16		1.88 (47.8)		0.88 (22.4)
	6 mm	-QF4-B-6M0	1.80 (45.7)		11/16		0.87 (22.1)		0.19 (4.8)
Male NPT 	1/4	-QF4-B-4PM	1.57 (39.9)		11/16		0.87 (22.1)		0.25 (6.4)
	3/8	-QF4-B-6PM	1.57 (39.9)		11/16		0.87 (22.1)		0.37 (9.4)
	3/8	-QF8-B-6PM	1.83 (46.5)		1 1/16		1.30 (33.0)		0.41 (10.4)
	1/2	-QF8-B-8PM	2.08 (52.8)		1 1/16		1.30 (33.0)		0.50 (12.7)
	3/4	-QF12-B-12PM	2.33 (59.2)		1 1/2		1.66 (42.2)		0.72 (18.3)
	1	-QF16-B-16PM	2.65 (67.3)		1 11/16		1.88 (47.8)		0.88 (22.4)
Male ISO tapered 	1/4	-QF4-B-4MT	1.57 (39.9)		11/16		0.87 (22.1)		0.24 (6.1)
	1/2	-QF8-B-8MT	2.08 (52.8)		1 1/16		1.30 (33.0)		0.50 (12.7)
	1	-QF16-B-16MT	2.65 (67.3)		1 11/16		1.88 (47.8)		0.88 (22.4)
Male ISO parallel ^① 	1/4	-QF4-B-4MS	1.80 (45.7)		3/4		0.87 (22.1)		0.24 (6.1)
	1/2	-QF8-B-8MS	2.08 (52.8)		1 11/16		1.30 (33.0)		0.50 (12.7)
Female NPT 	1/4	-QF4-B-4PF	1.50 (38.1)		3/4		0.87 (22.1)		0.38 (9.7)
	3/8	-QF4-B-6PF	1.63 (41.4)		7/8		0.87 (22.1)		0.38 (9.7)
	3/8	-QF8-B-6PF	1.73 (43.9)		1 1/16		1.30 (33.0)		0.59 (15.0)
	1/2	-QF8-B-8PF	1.73 (43.9)		1 1/16		1.30 (33.0)		0.63 (16.0)
	3/4	-QF12-B-12PF	1.89 (48.0)		1 1/2		1.66 (42.2)		0.88 (22.4)
	1	-QF16-B-16PF	2.12 (53.8)		1 11/16		1.88 (47.8)		1.06 (26.9)
Female ISO parallel 	1/4	-QF4-B-4FS	1.50 (38.1)		3/4		0.87 (22.1)		0.38 (9.7)
	1/2	-QF8-B-8FS	1.73 (43.9)		1 11/16		1.30 (33.0)		0.63 (16.0)
Female ISO tapered 	1/4	-QF4-B-4FT	1.50 (38.1)		3/4		0.87 (22.1)		0.38 (9.7)
	1/2	-QF8-B-8FT	1.73 (43.9)		1 11/16		1.30 (33.0)		0.63 (16.0)

① Include a female 60° cone profile. They accept a 60° male cone with female swivel nut.

Options

Stem and Body Protectors

Stem and body protectors guard against damage and contaminants when bodies and stems are uncoupled. Protectors are not pressure-containing devices; for pressure-retaining protectors, contact your independent Swagelok representative.

Stem Protector Body Protector



Materials

Component	Material
Protector	316 SS or plated brass C36000
Lanyard	302 SS
Lanyard clamps	303 SS

Series	Basic Ordering Number	
	Stem Protector	Body Protector
QF4	-QF4-SP	-QF4-BP
QF8	-QF8-SP	-QF8-BP
QF12	-QF12-SP	-QF12-BP
QF16	-QF16-SP	-QF16-BP

To order, select a basic ordering number and add SS for 316 stainless steel or B for brass.

Example: SS-QF4-SP

Dimensions are for reference only and are subject to change.

Swagelok

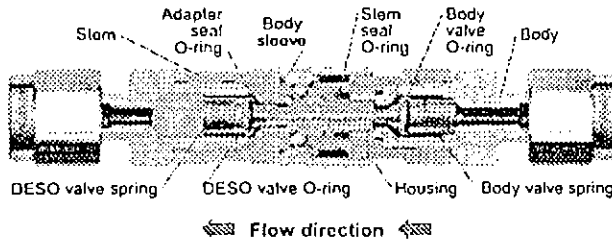
8 Quick-Connects

Miniature Quick-Connects

QM Series

Features

- Lightweight, compact design offers fingertip operation.
- Low dead volume reduces spillage and air inclusion.



Spillage and Air Inclusion

0.1 cm³

Maximum Flow Rate

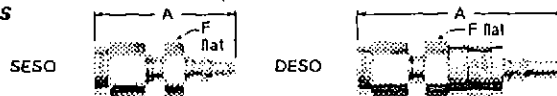
1 U.S. gal/min
(3.8 L/min) water
at 70°F (20°C)

Insertion Depth

Depth, in. (mm)	
SESO	DESO
0.47 (11.9)	0.53 (13.5)

Ordering Information and Dimensions

Stems



End Connection		Basic Ordering Number		C _v			A		
Type	Size, in.	SESO (Stem has no valve; remains closed when uncoupled)	DESO (Stem has valve; shuts off flow when uncoupled)	SESO	DESO	Full Flow	SESO in. (mm)	DESO in. (mm)	F in.
Swagelok tube fitting (SESO)	1/16	-QM2-S-100	-QM2-D-100	0.06	0.05	0.06	1.18 (30.0)	1.76 (44.7)	7/16
	1/8	-QM2-S-200	-QM2-D-200	0.06	0.05	0.06	1.29 (32.8)	1.87 (47.5)	7/16
Male NPT (SESO)	1/16	-QM2-S-1PM	-QM2-D-1PM	0.06	0.05	0.06	1.03 (26.2)	1.61 (40.9)	7/16
	1/8	-QM2-S-2PM	-QM2-D-2PM	0.06	0.05	0.06	1.03 (26.2)	1.61 (40.9)	7/16
Female NPT (SESO)	1/16	-QM2-S-1PF	-QM2-D-1PF	0.06	0.05	0.06	1.03 (26.2)	1.61 (40.9)	7/16
	1/8	-QM2-S-2PF	-QM2-D-2PF	0.06	0.05	0.06	1.03 (26.2)	1.81 (46.0)	9/16

Bodies



End Connection		Basic Ordering Number	A	
Type	Size, in.		in. (mm)	F in.
Swagelok tube fitting	1/16	-QM2-B-100	1.50 (38.1)	7/16
	1/8	-QM2-B-200	1.70 (43.2)	7/16
Male NPT	1/16	-QM2-B-1PM	1.42 (36.1)	7/16
	1/8	-QM2-B-2PM	1.44 (36.6)	7/16
Female NPT	1/16	-QM2-B-1PF	1.43 (36.3)	7/16
	1/8	-QM2-B-2PF	1.62 (41.1)	9/16
Swagelok bulkhead ⁽¹⁾ tube fitting	1/8	-QM2-B1-200	2.09 (53.1)	7/16

⁽¹⁾ 1/4 in. maximum panel thickness; 21/64 in. panel hole drill size.

Swagelok

Materials of Construction

Component	Material	
	316 SS	Brass
Body, body insert, DESO adapter, stem, body valve, DESO valve, housing	316 SS	Brass C36000
SESO stem insert, valve stop		Brass C26000
DESO stem (in, springs)	316 SS	
O-rings	Fluorocarbon FKM	Buna N
Sleeve	316 SS	Brass C36000
Locking balls, snap rings	316 SS	
Lubricants	Silicone- and PTFE-based	

Wetted components listed in *italics*.
Other O-ring materials and lubricants available.

How to Order

Select a basic ordering number and a material designator.
Example: SS-QM2-S-100

Material	Designator
316 SS	SS
Brass	B

How to Order a Full-Flow Quick-Connect

A full-flow QM series quick-connect consists of a SESO stem and a full-flow body.

To order a SESO stem, select a basic ordering number and add a material designator.
Example: SS-QM2-S-200

To order a full-flow body, select a basic ordering number and add a material designator and MB.
Example:

SS-QM2-B-200MB

Pressure-Temperature Ratings

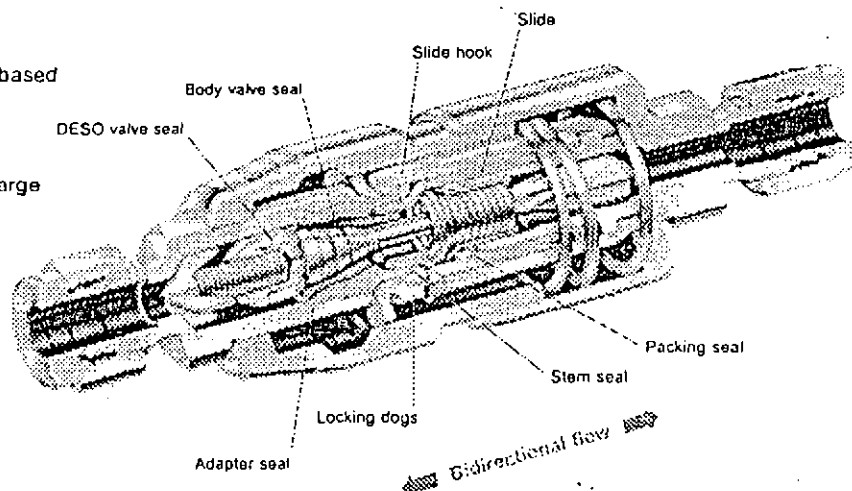
Temperature °F (°C)	316 SS with Fluorocarbon FKM O-rings	Brass with Buna N O-rings
	Pressure Rating, coupled, psig (bar)	
70 (20)	4000 (275)	2000 (137)
250 (121) ⁽¹⁾ 400 (204) ⁽²⁾	100 (6.8)	
Pressure Rating, uncoupled, psig (bar)		
70 (20)	100 (6.8)	
Pressure Rating, when coupling and uncoupling, psig (bar)		
70 (20)	100 (6.8)	

⁽¹⁾ For brass with Buna N O-rings.⁽²⁾ For 316 SS with fluorocarbon FKM O-rings.

PTFE-Sealed Quick-Connects QTM Series

Features

- Product qualification tests are based on ANSI B93.51M.
- Flush valve design reduces air inclusion and spillage.
- Locking dog mechanism with large contact area retains stem.
- Seals are recessed for protection.
- Keyed option is available.
- Push-to-connect design enables quick, simple operation.



Materials of Construction

Component	Material	
	316 SS	Alloy 400
Body	<i>Xylan-coated</i> 316 SS	<i>Xylan-coated</i> alloy R-405
Slide, stem, stem adaptor, body valve, DESO valve	316 SS	Alloy R-405
Packing gland, body bolt, body valve cap, DESO valve cap, DESO stem fins		Alloy 400/R-405
Eyelet, body insert, DESO valve post		—
Snap rings		Alloy X-740
Body fin (QTM4 only)	<i>PTFE-coated 316 SS powdered metal</i>	—
Springs	316 SS and Elgiloy®	Alloy X-740 and Elgiloy
Packing seal, stem seal, adaptor seal	<i>Dyneon™ TFM 1600</i>	
Body valve seal, DESO valve seal	<i>Virgin PTFE</i>	
Packing backup ring	<i>Filled PTFE</i>	
Locking dogs	316 SS or CF8M	M-35-1
Rear sleeve, front sleeve	316 SS	Alloy R-405
Slide hooks		Alloy 400/R-405
Lubricants	<i>PTFE-based</i>	

Wetted components listed in *italics*.

Pressure-Temperature Ratings

Temperature °F (°C)	316 SS			Alloy 400
	QTM2	QTM4	QTM8	QTM2
	Pressure Rating, coupled, psig (bar)			
0 to 120 (-17 to 48)	4500 (310)	3200 (220)		3200 (220)
Pressure Rating, uncoupled, psig (bar)				
0 to 120 (-17 to 48)	1000 (68.9)			1000 (68.9)
Pressure Rating, when coupling and uncoupling, psig (bar)				
70 (20)	250 (17.2)	100 (6.8)	50 (3.4)	250 (17.2)

Spillage and Air Inclusion

Series	Spillage	Air Inclusion
QTM2	0.1 cm ³	0.1 cm ³
QTM4	0.2 cm ³	0.4 cm ³
QTM8	1.0 cm ³	2.0 cm ³

Maximum Flow Rate

U.S. gal/min (L/min) water at 70°F (20°C)

QTM2	QTM4	QTM8
15 (56)	35 (130)	50 (180)

Insertion Depth

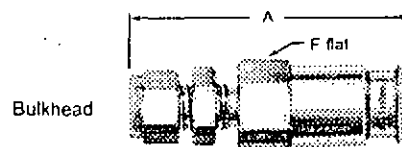
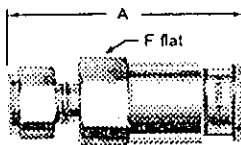
Series	Depth, in. (mm)
QTM2	1.26 (32.1)
QTM4	0.95 (24.0)
QTM8	1.15 (29.1)

Swagelok

10 Quick-Connects








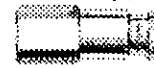
Ordering Information and Dimensions, QTM Series

Stems



How to Order

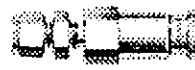
Select an ordering number.

End Connection		Ordering Number		C _v		A in. (mm)	F in.
Type	Size in.	SESO (Stem has no valve; remains open when uncoupled)	DESO (Stem has valve; shuts off when uncoupled)	SESO	DESO		
Swagelok tube fitting 	1/4	SS-QTM2-S-400 ^①	SS-QTM2-D-400 ^①	0.7	0.6	2.02 (51.3)	5/8
	1/4	SS-QTM4-S-400	SS-QTM4-D-400	0.9	0.8	2.61 (66.3)	15/16
	3/8	SS-QTM2-S-600	SS-QTM2-D-600	0.9	0.8	2.08 (52.8)	11/16
	3/8	SS-QTM4-S-600	SS-QTM4-D-600	1.7	1.6	2.67 (67.8)	15/16
	1/2	SS-QTM8-S-810	SS-QTM8-D-810	4.2	3.1	3.06 (77.7)	1 5/16
	3/4	SS-QTM8-S-1210	SS-QTM8-D-1210	6.7	6.5	3.06 (77.7)	1 5/16
	1	SS-QTM8-S-1610	SS-QTM8-D-1610	9.0	7.8	3.27 (83.1)	1 3/8
	6 mm	SS-QTM2-S-6M0 ^①	SS-QTM2-D-6M0 ^①	0.7	0.6	2.02 (51.3)	16 mm
	6 mm	SS-QTM4-S-6M0	SS-QTM4-D-6M0	0.9	0.8	2.61 (66.3)	24 mm
	8 mm	SS-QTM2-S-8M0	SS-QTM2-D-8M0	0.9	0.8	2.09 (53.1)	11/16
	10 mm	SS-QTM4-S-10M0	SS-QTM4-D-10M0	1.7	1.6	2.68 (68.1)	24 mm
	12 mm	SS-QTM8-S-12M0	SS-QTM8-D-12M0	4.2	3.1	3.06 (77.7)	35 mm
Male NPT 	1/4	SS-QTM2-S-4PM ^①	SS-QTM2-D-4PM ^①	0.2	0.2	1.91 (48.5)	5/8
	1/4	SS-QTM4-S-4PM	SS-QTM4-D-4PM	1.4	1.4	2.46 (62.5)	15/16
	3/8	SS-QTM2-S-6PM	SS-QTM2-D-6PM	0.7	0.6	2.04 (51.8)	3/4
	3/8	SS-QTM4-S-6PM	SS-QTM4-D-6PM	1.8	1.7	2.46 (62.5)	15/16
	1/2	SS-QTM8-S-8PM	SS-QTM8-D-8PM	5.1	4.4	2.78 (70.6)	1 5/16
	3/4	SS-QTM8-S-12PM	SS-QTM8-D-12PM	8.5	7.8	2.78 (70.6)	1 5/16
	1	SS-QTM8-S-16PM	SS-QTM8-D-16PM	∅	∅	3.03 (77.0)	1 3/8
Male ISO tapered 	1/4	SS-QTM2-S-4MT	SS-QTM2-D-4MT	0.2	0.2	1.91 (48.5)	5/8
	1/4	SS-QTM4-S-4MT	SS-QTM4-D-4MT	1.4	1.4	2.46 (62.5)	15/16
	1/2	SS-QTM8-S-8MT	SS-QTM8-D-8MT	5.1	4.4	2.78 (70.6)	1 5/16
Male ISO parallel ^② 	1/8	SS-QTM2-S-2MS	SS-QTM2-D-2MS	0.5	0.4	1.73 (43.9)	5/8
	1/4	SS-QTM2-S-4MS	SS-QTM2-D-4MS	0.6	0.6	2.04 (51.8)	3/4
	1/4	SS-QTM4-S-4MS	SS-QTM4-D-4MS	1.2	1.2	2.48 (63.0)	15/16
	1/2	SS-QTM8-S-8MS	SS-QTM8-D-8MS	4.8	3.9	2.78 (70.6)	1 5/16
Male JIC 37° flare 	1/4	SS-QTM4-S-4AN	SS-QTM4-D-4AN	∅	∅	2.48 (63.0)	15/16
	1/2	SS-QTM8-S-8AN	SS-QTM8-D-8AN	4.2	2.7	2.78 (70.6)	1 5/16
Female NPT 	1/8	SS-QTM2-S-2PF	SS-QTM2-D-2PF	0.7	0.7	1.73 (43.9)	5/8
	1/4	SS-QTM2-S-4PF ^③	SS-QTM2-D-4PF ^③	0.2	0.2	2.04 (51.8)	3/4
	1/4	SS-QTM4-S-4PF	SS-QTM4-D-4PF	1.4	1.4	2.36 (59.9)	15/16
	3/8	SS-QTM2-S-6PF	SS-QTM2-D-6PF	0.7	0.6	2.14 (54.4)	7/8
	3/8	SS-QTM4-S-6PF	SS-QTM4-D-6PF	1.8	1.7	2.48 (63.0)	15/16
	1/2	SS-QTM8-S-8PF	SS-QTM8-D-8PF	5.1	4.4	2.66 (67.6)	1 5/16
	3/4	SS-QTM8-S-12PF	SS-QTM8-D-12PF	8.5	7.8	2.66 (67.6)	1 5/16
Female ISO parallel 	1	SS-QTM8-S-16PF	SS-QTM8-D-16PF	∅	∅	3.17 (80.5)	1 5/8
	1/8	SS-QTM2-S-2FS	SS-QTM2-D-2FS	0.5	0.4	1.73 (43.9)	5/8
	1/4	SS-QTM2-S-4FS	SS-QTM2-D-4FS	0.6	0.6	2.04 (51.8)	3/4
	1/4	SS-QTM4-S-4FS	SS-QTM4-D-4FS	1.2	1.2	2.62 (66.5)	5/16
Female ISO tapered 	1/2	SS-QTM8-S-8FS	SS-QTM8-D-8FS	4.8	3.9	2.66 (67.6)	1 5/16
	1/4	SS-QTM2-S-4FT	SS-QTM2-D-4FT	0.2	0.2	2.04 (51.8)	3/4
	1/4	SS-QTM4-S-4FT	SS-QTM4-D-4FT	1.4	1.4	2.36 (59.9)	5/16
	1/2	SS-QTM8-S-8FT	SS-QTM8-D-8FT	5.1	4.4	2.66 (67.6)	1 5/16

① To order alloy 400 with PTFE seals, replace SS in the ordering number with M.
Example: M-QTM2-S-400

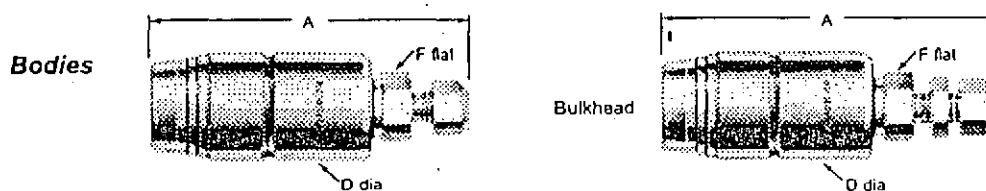
② For C_v, contact your independent Swagelok representative.









③ Include a female 60° cone profile. They accept a 60° male cone with female swivel nut.

End Connection		Ordering Number		C _v		Max Panel Thickness		Min. Panel Hole Dia in. (mm)
Type	Size in.	SESO (Stem has no valve; remains open when uncoupled)	DESO (Stem has valve; shuts off when uncoupled)	SESO	DESO	A in. (mm)	F in.	
Swagelok bulkhead tube fitting 	1/4	SS-QTM4-S1-400	SS-QTM4-D1-400	0.9	0.8	3.05 (77.5)	15/16	0.15 (3.8)
	3/8	SS-QTM4-S1-600	SS-QTM4-D1-600	1.7	1.6	3.05 (77.5)	15/16	0.15 (3.8)
	1/2	SS-QTM8-S1-810	SS-QTM8-D1-810	4.2	3.1	3.54 (89.9)	1 5/16	0.19 (4.8)
	6 mm	SS-QTM4-S1-6M0	SS-QTM4-D1-6M0	0.9	0.8	3.05 (77.5)	24 mm	0.15 (3.8)
	10 mm	SS-QTM4-S1-10M0	SS-QTM4-D1-10M0	1.7	1.6	3.06 (77.7)	24 mm	0.15 (3.8)
	12 mm	SS-QTM8-S1-12M0	SS-QTM8-D1-12M0	4.2	3.1	3.54 (89.9)	35 mm	0.19 (4.8)

Dimensions are for reference only and are subject to change.

Swagelok



End Connection		Ordering Number	A in. (mm)	D in. (mm)	F in.
Type	Size, in.				
Swagelok tube fitting 	1/4	SS-QTM2A-B-400 ⁽¹⁾	3.16 (80.3)	1.12 (28.4)	9/16
	1/4	SS-QTM4A-B-400	4.08 (104)	1.68 (42.7)	7/8
	3/8	SS-QTM2A-B-600	3.25 (82.6)	1.12 (28.4)	3/4
	3/8	SS-QTM4A-B-600	4.08 (104)	1.68 (42.7)	7/8
	1/2	SS-QTM8A-B-810	4.30 (109)	2.00 (50.8)	1 1/8
	3/4	SS-QTM8A-B-1210	4.30 (109)	2.00 (50.8)	1 1/8
	1	SS-QTM8A-B-1610	4.58 (116)	2.00 (50.8)	1 3/8
	6 mm	SS-QTM2A-B-6M0 ⁽¹⁾	3.16 (80.3)	28.4 mm	15 mm
	6 mm	SS-QTM4A-B-6M0	4.08 (104)	42.7 mm	24 mm
	8 mm	SS-QTM2A-B-8M0	3.16 (80.3)	28.4 mm	15 mm
	10 mm	SS-QTM4A-B-10M0	4.09 (104)	42.7 mm	24 mm
	12 mm	SS-QTM8A-B-12M0	4.31 (109)	50.8 mm	30 mm
Male NPT 	1/4	SS-QTM2A-B-4PM ⁽¹⁾	3.02 (76.7)	1.12 (28.4)	9/16
	1/4	SS-QTM4A-B-4PM	3.89 (98.8)	1.68 (42.7)	7/8
	3/8	SS-QTM2A-B-6PM	3.07 (78.0)	1.12 (28.4)	3/4
	3/8	SS-QTM4A-B-6PM	3.89 (98.8)	1.68 (42.7)	7/8
	1/2	SS-QTM8A-B-8PM	4.20 (107)	2.00 (50.8)	1 1/8
	3/4	SS-QTM8A-B-12PM	4.19 (106)	2.00 (50.8)	1 1/8
	1	SS-QTM8A-B-16PM	4.48 (114)	2.00 (50.8)	1 3/8
Male ISO tapered 	1/4	SS-QTM2A-B-4MT	3.02 (76.7)	28.4 mm	9/16
	1/4	SS-QTM4A-B-4MT	3.89 (98.8)	42.7 mm	7/8
	1/2	SS-QTM8A-B-8MT	4.20 (107)	50.8 mm	1 1/8
Male ISO parallel ⁽²⁾ 	1/4	SS-QTM2A-B-4MS	2.96 (75.2)	28.4 mm	3/4
	1/4	SS-QTM4A-B-4MS	3.89 (98.8)	42.7 mm	7/8
	1/2	SS-QTM8A-B-8MS	4.20 (107)	50.8 mm	1 1/8
Male JIC 37° flare (AN) 	1/4	SS-QTM4A-B-4AN	3.89 (98.8)	1.68 (42.7)	7/8
	1/2	SS-QTM8A-B-8AN	4.20 (107)	2.00 (50.8)	1 1/8
Female NPT 	1/8	SS-QTM2A-B-2PF	2.60 (66.0)	1.12 (28.4)	9/16
	1/4	SS-QTM2A-B-4PF ⁽¹⁾	2.99 (75.9)	1.12 (28.4)	3/4
	1/4	SS-QTM4A-B-4PF	3.35 (85.1)	1.68 (42.7)	7/8
	3/8	SS-QTM2A-B-6PF	3.04 (77.2)	1.12 (28.4)	7/8
	3/8	SS-QTM4A-B-6PF	3.35 (85.1)	1.68 (42.7)	7/8
	1/2	SS-QTM8A-B-8PF	3.53 (89.7)	2.00 (50.8)	1 1/8
	3/4	SS-QTM8A-B-12PF	4.02 (102)	2.00 (50.8)	1 5/16
	1	SS-QTM8A-B-16PF	4.40 (112)	2.00 (50.8)	1 5/8
Female ISO parallel 	1/8	SS-QTM2A-B-2FS	2.60 (66.0)	1.12 (28.4)	9/16
	1/4	SS-QTM2A-B-4FS	2.99 (75.9)	1.12 (28.4)	3/4
	1/4	SS-QTM4A-B-4FS	3.35 (85.1)	1.68 (42.7)	7/8
	1/2	SS-QTM8A-B-8FS	3.53 (89.7)	2.00 (50.8)	1 1/8
Female ISO tapered 	1/4	SS-QTM2A-B-4FT	2.99 (75.9)	1.12 (28.4)	3/4
	1/4	SS-QTM4A-B-4FT	3.35 (85.1)	1.68 (42.7)	7/8
	1/4	SS-QTM8A-B-8FT	3.92 (99.6)	2.00 (50.8)	1 1/8

Options

For keyed combinations, see page 12.

Bodies with Release Button


QTM series bodies are available with an optional release button to prevent accidental uncoupling.

For more information, contact your independent Swagelok representative.

⁽¹⁾ To order alloy 400 with PTFE seats, replace SS in the ordering number with M.
Example: M-QTM2A-B-400

⁽²⁾ Include a female 60° cone profile. They accept a 60° male cone with female swivel nut.

Dimensions are for reference only and are subject to change.

End Connection		Ordering Number	A in. (mm)	D in. (mm)	F in.	Max Panel Thickness in. (mm)	Min Panel Hole Dia. in. (mm)
Type	Size, in.						
Swagelok bulkhead tube fitting 	1/4	SS-QTM2A-B1-400 ⁽¹⁾	3.16 (80.3)	1.12 (28.4)	9/16	0.65 (16.5)	1 13/64 (30.6)
	1/4	SS-QTM4A-B1-400	4.42 (112)	1.68 (42.7)	7/8	0.15 (3.8)	29/64 (11.5)
	3/8	SS-QTM4A-B1-600	4.51 (115)	1.68 (42.7)	7/8	0.15 (3.8)	37/64 (14.7)
	1/2	SS-QTM8A-B1-810	4.78 (121)	2.00 (50.8)	1 1/8	0.19 (4.8)	49/64 (19.4)
	6 mm	SS-QTM2A-B1-6M0 ⁽¹⁾	3.16 (80.3)	28.4 mm	15 mm	0.65 (16.5)	1 13/64 (30.6)
	6 mm	SS-QTM4A-B1-6M0	4.42 (112)	42.7 mm	24 mm	0.15 (3.8)	29/64 (11.5)
	10 mm	SS-QTM4A-B1-10M0	4.52 (115)	42.7 mm	24 mm	0.15 (3.8)	21/32 (16.7)
	12 mm	SS-QTM8A-B1-12M0	4.77 (121)	50.8 mm	30 mm	0.19 (4.8)	49/64 (19.4)
Bulkhead male NPT	1/4	SS-QTM2A-B1-4PM ⁽¹⁾	3.02 (76.7)	1.12 (28.4)	9/16	0.65 (16.5)	1 13/64 (30.6)
Bulkhead female NPT	1/4	SS-QTM2A-B1-2PF	2.60 (66.0)	1.12 (28.4)	9/16	0.65 (16.5)	1 13/64 (30.6)
	1/8	SS-QTM2A-B1-4PF ⁽¹⁾	2.96 (75.2)	1.12 (28.4)	3/4	0.65 (16.5)	1 13/64 (30.6)



QTM2 bulkhead bodies have an integral bulkhead.

Swagelok

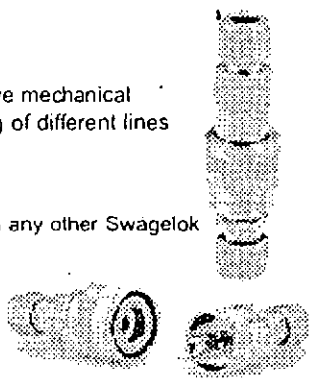
Options

Keyed QC and QTM Series

Swagelok keyed quick-connects provide a positive mechanical lockout system to prevent accidental intermixing of different lines in multifluid or multipressure systems.

Features

- Keyed quick-connects will not interchange with any other Swagelok keyed quick-connects
- If an attempt is made to couple unlike keys, the valve system will not open.
- Stems and bodies are color coded and numbered for easy identification.



QC Series Key Numbers and Sleeve Outside Diameters

for use in calculating alignment positions when panel mounting

Key Number and Color	QC4		QC6		QC8	
	Body Sleeve in. (mm)	Stem Sleeve in. (mm)	Body Sleeve in. (mm)	Stem Sleeve in. (mm)	Body Sleeve in. (mm)	Stem Sleeve in. (mm)
K1 black	0.96 (24.4)	0.82 (20.8)	1.13 (28.7)	0.99 (25.1)	1.26 (32.0)	1.10 (27.9)
K2 orange	0.99 (25.1)	0.85 (21.6)	1.16 (29.5)	1.02 (25.9)	1.29 (32.8)	1.14 (29.0)
K3 green	1.02 (25.9)	0.88 (22.4)	1.19 (30.2)	1.05 (26.7)	1.32 (33.5)	1.17 (29.7)
K4 yellow	1.05 (26.7)	0.91 (23.1)	1.22 (31.0)	1.08 (27.4)	1.35 (34.3)	1.20 (30.5)
K5 blue	1.08 (27.4)	0.94 (23.9)	1.24 (31.5)	1.11 (28.2)	1.38 (35.1)	1.23 (31.2)
K6 white	1.11 (28.2)	0.97 (24.6)	1.28 (32.5)	1.14 (29.0)	1.41 (35.8)	1.26 (32.0)
K7 purple	1.14 (29.0)	1.00 (25.4)	1.31 (33.3)	1.17 (29.7)	1.44 (36.6)	1.29 (32.8)
K8 brown	1.17 (29.7)	1.03 (26.2)	1.34 (34.0)	1.20 (30.5)	1.47 (37.3)	1.32 (33.5)

For other dimensions, see page 4 and 5.

QTM Series Key Numbers

QTM2 series quick-connects are available in keys K1 through K8.

QTM4 and QTM8 series quick-connects are available in keys K1 through K4 only (black, orange, green, or yellow).

Keyed QTM series sleeve dimensions are the same as standard QTM sleeve dimensions. (See the tables on page 10 and 11.)

How to Order

Add a key designator to the QC or QTM series ordering number.

Example: SS-QC4-B-200K1

Body and Stem Protectors

Body and stem protectors are available. Contact your independent Swagelok representative.

Dimensions are for reference only and are subject to change.

Good Practices for Operation of Swagelok Quick-Connects

- Use filters ahead of quick-connects.
- Use body and stem protectors or dust caps on uncoupled bodies and stems.
- Align bodies and stems when coupling or uncoupling.
- Couple and uncouple quick-connects at room temperature.
- Couple and uncouple quick-connects during system cleaning operations.
- Support hanging hoses or other equipment to prevent side load.
- Re-lubricate stem seal O-rings periodically.

Warning:

Pressure rating restrictions apply when coupling and uncoupling. Do not uncouple single-end shutoff quick-connects under pressure.

Caution:

- Do not rotate quick-connects while coupled.
- Do not insert foreign objects into uncoupled bodies or stems.

ISO Reference Specification

ISO 7/1 (tapered)

ISO 228/1 (straight)

Specifications can be obtained from:

ANSI (American National Standards Institute)
25 W. 43rd Street
New York, NY U.S.A. 10036
or
www.ansi.org

Safe Product Selection

When selecting a product, the total system design must be considered to ensure safe, trouble-free performance. Function, material compatibility, adequate ratings, proper installation, operation, and maintenance are the responsibilities of the system designer and user.

Caution: Do not mix or interchange parts with those of other manufacturers.

Swagelok—TM Swagelok Company
Dyneon—TM Dyneon
Elgiloy—TM Elgiloy Specialty Metals
Xylan—TM Whitford
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2002, 2003 Swagelok Company
Printed in U.S.A., MI
April 2003, R5
MS-01-130

2.2

PRECISION OIL TIGHT LIMIT SWITCHES

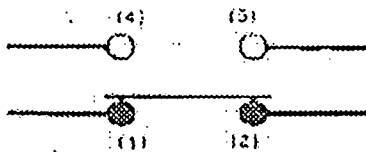
M.I. SERIES


LISTED 86C7

FEATURES

- Rigid diecast switch housing
- High mechanical strength
- Oiltight, waterproof and dust-proof construction
- Wide choice of heads and actuators
- Silver/Gold alloy contacts, double contact design
- Stainless steel essential
- Standard size & dimensions, 1/2" conduit entry
- Hi-Pot Voltage—2000VAC/minute
- Contact Arrangement—2 Circuits: 1 NO, 1 NC

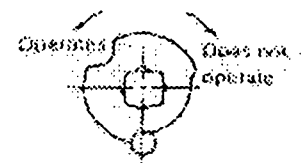
CONTACT CONFIGURATION



Relationship of cam to operation as observed from the rear of switch

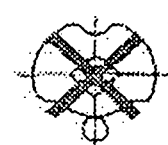
Operation on both sides

Operation on one side



Operation on one side

Avoid this combination



CHARACTERISTICS

Operating speed	1mm to 2mm/sec
Operating frequency	Mechanically: 100 operations/min. Electrically: 30 operations/min.
Contact resistance	15m Ω max. (initial)
Insulation resistance	100M Ω min. (at 500 VDC)
Dielectric strength	1,000 VAC, 50/60 Hz for 1 minute between non-conductive terminals; 2,000 VAC, 50/60Hz for 1 minute between each terminal and non-current-carrying metal part and between each terminal and ground
Temperature rise	50 degrees max.
Vibration	Malfunction durability: 10 to 55Hz; 1.5mm double amplitude
Shock	Mechanical durability: approx. 1,000m/sec ² (approx. 100G's) Malfunction durability: approx. 200m/sec ² (approx. 20G's)
Ambient temperature	Operating: -50 to +90°C
Humidity	55% RH max.
Service life	Mechanically: 12,000,000 operations min. Electrically: 500,000 operations min.
Degree of protection	IEC 529 class IP67

RATINGS

Rated voltage (V)	Non-inductive load (A)				Inductive load (A)			
	Resistive load		Lamp load		Inductive load		Motor load	
	N.C.	N.O.	N.C.	N.O.	N.C.	N.O.	N.C.	N.O.
125 VAC	10	10	3	1.5	10	5	2.5	2.5
250 VAC	5	5	3	1	5	2	1.0	1.0
480 VAC	3	3	1.5	0.8	3	1.5	0.8	0.8
600 VAC	1	1	1	0.5	1	1	0.5	0.5
6 VDC	10	10	3	1.5	10	5	2.5	2.5
14 VDC	10	10	3	1.5	10	5	2.5	2.5
30 VDC	6	6	3	1	6	3	1.0	1.0
125 VDC	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2
250 VDC	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1

Note: 1. Inductive load: power factor=0.4; time constant=7 msec.

2. Lamp load has an inrush current of 10 times the steady-state current while motor load has an inrush current of 6 times the steady-state current.

PRECISION OIL TIGHT LIMIT SWITCHES MJ SERIES

OVERTRAVEL TYPE

The Overtravel Type is a limit switch which is provided with a greater OT to facilitate dog setting. Since this type is identical in the Basic Type in dimension, both types are interchangeable. The Overtravel Type is classified into two versions - 71 series and - 72 series.

7 SERVICES

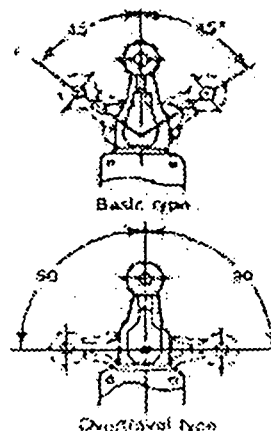
*This head of 571 series switch can be installed in any of the four directions.

30° operation on any one side - impossible
30° operation on either side - possible

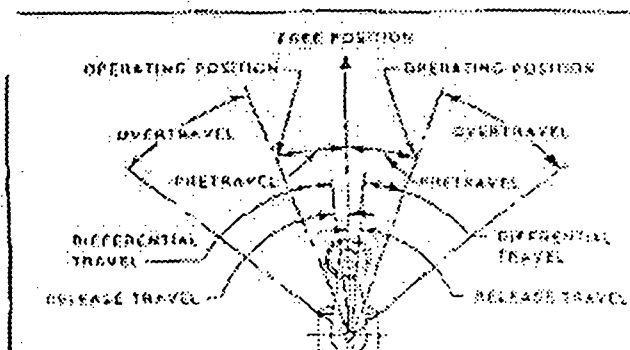
-72- SERIES

The hand of 1/2" cord switch can be installed only in two directions, forward and backward:

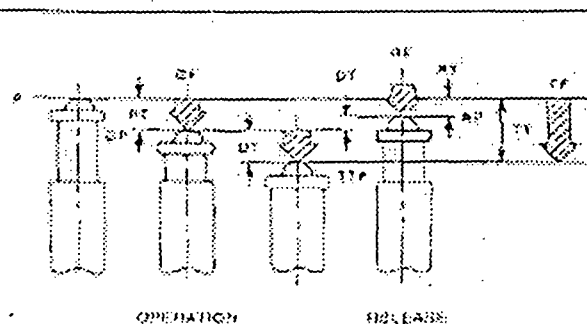
90° operation on only one side - possible
90° operation on either side - possible



NOTARY ACTUATION



IN-LINE PLUNGER ACTUATION



Characteristics: GF-Dissolving Power, PF-Fallacy, OF-Over Time, OT-Substantial Time

GP: Premiums Forfeited; GP: Operations Forfeited; TP: Term Forfeited; RP: Return Premiums Forfeited; TP: Total Forfeited

ORDER GUIDE

ITEM No

DIMENSIONS (mm)

OPERATING CHARACTERISTICS

MJ-7101

A black and white photograph of the MJ-7101 device, showing its rectangular body with a control panel and a mounting bracket on top.

Two technical drawings of the MJ-7101. The left drawing is a front view showing a width of 12.4 mm and a height of 13 mm. The right drawing is a side view showing a total width of 25.2 mm, a mounting bracket width of 10.1 mm, a body width of 14.4 mm, and a base width of 41.5 mm max.

OF MAX	2800g—8 lbs.
RF MIN	350g—2 lbs. Max.
PT MAX	2mm—0.079 in.
OT MIN	5.5mm—0.200 in. Max.
DT MAX	1.0mm—0.040 in.

OP	34 ± 0.8mm
----	------------

MJ-7102

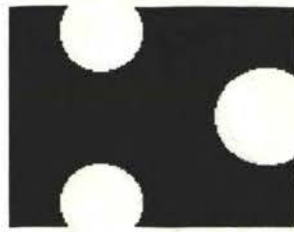
A black and white photograph of the MJ-7102 device, which is similar in design to the MJ-7101 but has a different control panel layout. A star symbol is drawn next to it.

Two technical drawings of the MJ-7102. The left drawing is a front view showing a width of 12.4 mm and a height of 13 mm. The right drawing is a side view showing a total width of 25.2 mm, a mounting bracket width of 10.1 mm, a body width of 14.4 mm, and a base width of 41.5 mm max.

OF MAX	2500g—5 lbs.
RF MIN	300g—2 lbs. Max.
PT MAX	2mm—0.079 in.
OT MIN	5.5mm—0.200 in. Max.
DT MAX	1.0mm—0.040 in.

OP	44 ± 0.8mm
----	------------

2.3



A.B.N. 41 009 668 179

HORNICK CONSTRUCTIONS PTY LTD.

VALVES

3.1

Metal Seated Gate Valves - Figure 400

DN80 - DN900

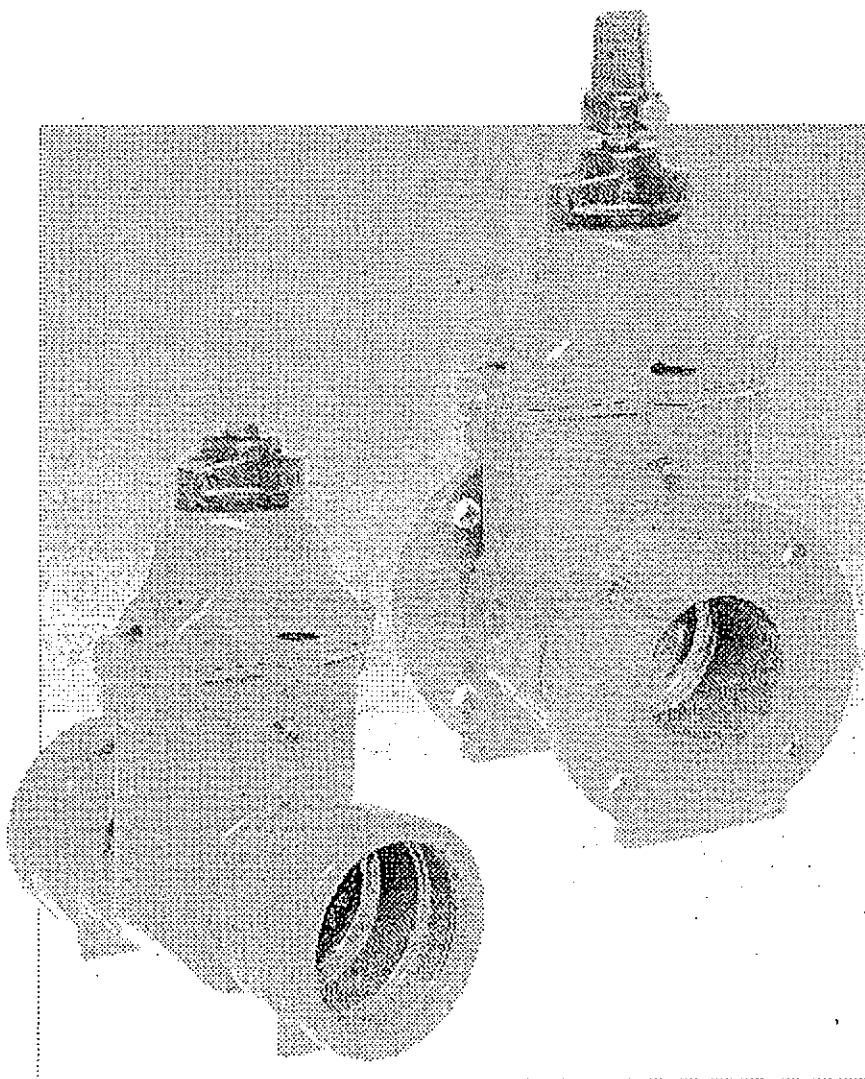
tyco

Flow Control

Tyco Water

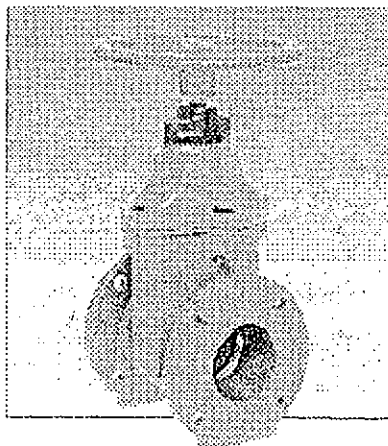
Features

- Ductile Iron body and bonnet for high strength and impact resistance.
- Solid gunmetal gate for DN80-DN200, ductile iron fusion coated gate with gunmetal rings for larger sizes.
- Grade 431 Stainless Steel spindle for high strength and corrosion resistance.
- Gunmetal dezincification resistant top casting incorporating dual O-ring seals and wiper ring for long life operation.
- Back seal facility to allow for replacement of seals under full operating pressure.
- Rilsan® Nylon 11 coating for long life corrosion protection.
- Isolated fasteners for corrosion protection.
- Anti-friction thrust washer for low operating torques.
- Integral cast in feet for safe and easy storage.
- Integral lifting lugs for installation convenience.
- Anticlockwise closing or clockwise closing available.
- Key, handwheel or gearbox operation available.



General Application

Figure 400 metal seated gate valves are suitable for use with drinking water and waste water, in below or above ground applications. Used for the isolation of sections and branches in pipelines.



Technical Data

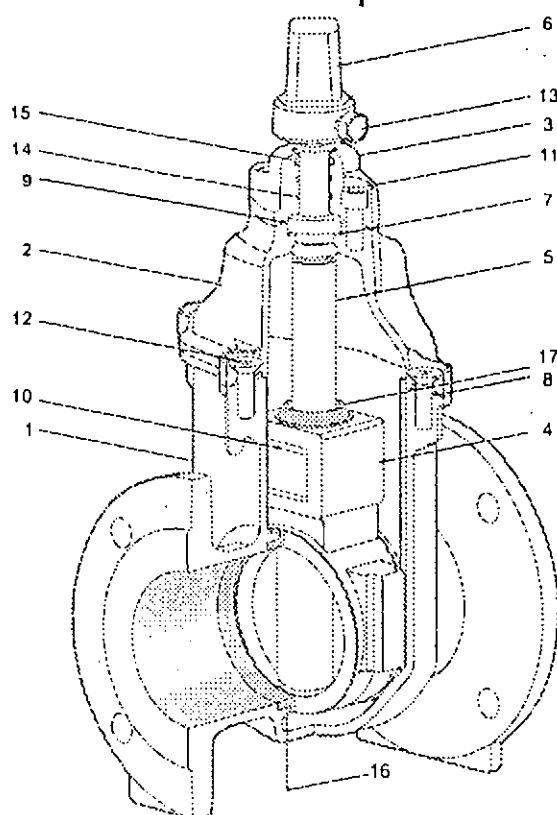
Size Range: DN80-DN900
Allowable Operating Pressure: 1600 kPa or 3500 kPa
Maximum Temperature: 40°C
End Connections: Flanged to AS 4087 Fig B5 or B6 TYTON® Socket
Approvals: WSAA Appraisal No. 98/21 StandardsMark Licence No. 1200 [DN80 - DN600]
 Certified to AS 4020 -suitable for contact with drinking water.

A.U.N. 75 087 415 745

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Metal Seated Gate Valves - Figure 400

Shown in Open

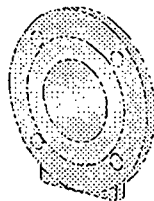


Parts List

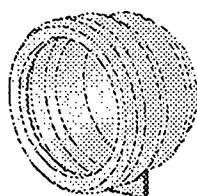
No	Description	Material	Standard
1	Body	Ductile Iron	AS 1831 400-12
2	Bonnet	Ductile Iron	AS 1831 400-12
3	Seal Retainer	Gunmetal	AS 1565 C83600
4	Gate	DN80-DN200 Gunmetal DN255-DN900 Ductile Iron	AS 1565 C83600 AS 1831 400-12
5	Spindle	Stainless Steel	ASTM A 276 431
6	Spindle Cap	Ductile Iron	AS 1831 400-12
7	Thrust Washer	Acetyl	-
8	Body Gasket	EPDM	AS 1646
9	Bonnet Gasket	EPDM	AS 1646
10	Gate Nut	Gunmetal	AS 1565 C83600
11	Socket Head Screws	High Tensile Alloy Steel	-
12	Countersunk Screws	High Tensile Alloy Steel	-
13	Hex Head Screw	Stainless Steel	ASTM A276 316
14	O-Rings	Nitrile Rubber	AS 1646
15	Wiper Ring	Nitrile Rubber	AS 1646
16	Seat Rings	Gunmetal	AS 1565 C83600
17	Backseal Grommet	Nitrile Rubber	AS 1646
18	Fusion Coating	Rilsan® Nylon II	AS/NZS 4158

Metal Seated Gate Valves - Figure 400 DN80 - DN900

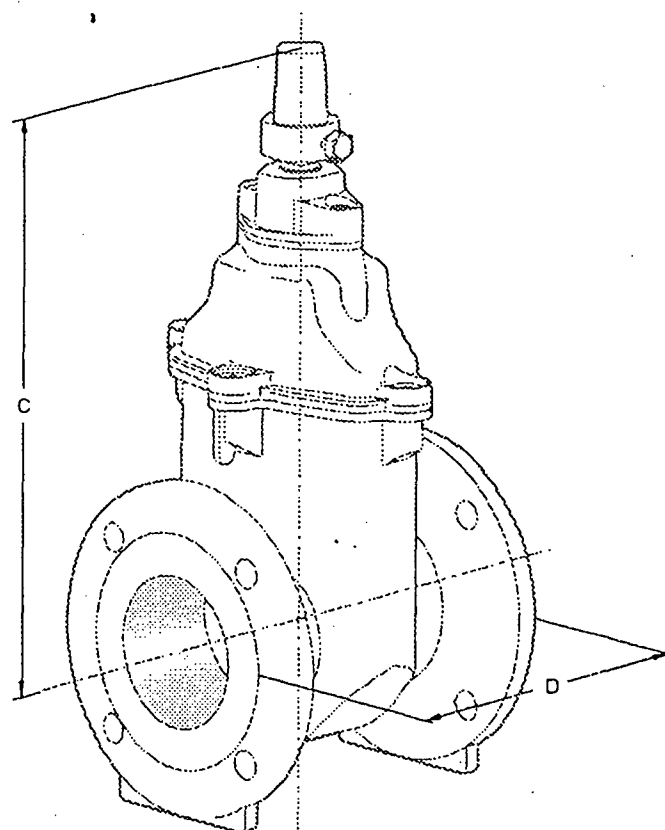
End Connections



Flange



Socket



Dimensions (mm)

Valve Size	C	D			Turns to Close	Approx. Mass kg
		Class 16 TYTON Socket	Class 16 Flange AS4087 Fig B5	Class 35 Flange AS4087 Fig B6		
80	367	-	203	280	20	18
100	402	150	229	305	23	24
150	502	170	267	330	26	43
200	610	195	292	380	34	75
225	649	205	305	405	38	85
250	723	235	330	420	42	110
300	810	245	356	430	50	160
375	960	-	381	610	62	340
450	1145	-	432	660	76	560
500	1290	-	457	710	82	710
600	1467	-	508	785	98	940

Note: DN750 and DN900 Gate Valves are also available.

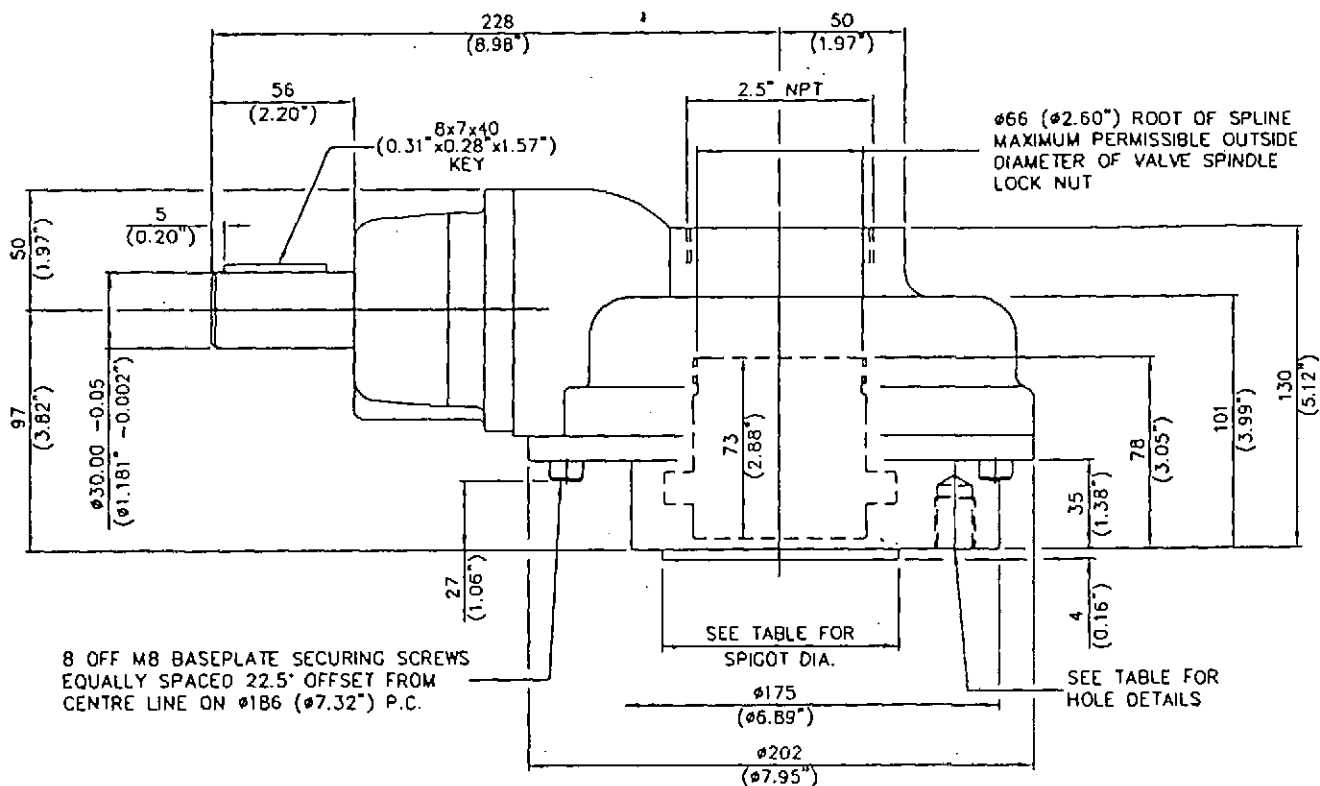
Metal Seated Gate Valves - Figure 400

DN80 - DN900

Available Range				
DN	Metal Seated Gate Valves			
	Key Operated		Handwheel Operated	
	Class 16 FI-FI	Class 16 Sc-Sc	Class 35 FI-FI	Class 16 FI-FI
80	✓		✓	✓
100	✓	✓	✓	✓
150	✓	✓	✓	✓
200	✓	✓	✓	✓
225	✓	✓	✓	✓
250	✓	✓	✓	✓
300	✓		✓	✓
375	✓		✓	✓
450	✓		✓	✓
500	✓		✓	✓
600	✓		✓	✓
750	✓		✓	
900	✓		✓	
Fig No.	400	400	400	600
Coating				
Rilsan Nylon 11	✓	✓	✓	✓
Options				
Anticlockwise Closing	✓	✓	✓	
Clockwise Closing		✓	✓	✓
Gear Actuator	✓		✓	
Flange Drilling Fig B5 (TC)	✓		✓	✓
Flange Drilling Fig B6 (HP)			✓	

Performance Requirements

- Gate valves shall be metal seated conforming to AS2638.1.
- The allowable operating pressure shall be 1600 kPa/3500 kPa.
- Operation shall be by means of a key/hand wheel.
- The direction of closing shall be anticlockwise/clockwise.
- The valve body and bonnet shall be cast in Ductile Iron and coated with a thermally applied polymeric coating to AS/NZS 4158.
- The gate shall be cast in Ductile Iron and coated with a thermally bonded polymeric coating. Gate sealing rings shall be dezincification resistant copper alloy mechanically fixed to the body and gate. Solid gunmetal gates are also acceptable.
- The spindle shall be Grade 431 Stainless Steel incorporating a failsafe thrust collar.
- The spindle seal retainer shall be manufactured from a dezincification resistant copper alloy to AS1565.
- The spindle seal shall be affected by a minimum of two O-rings, which can be replaced under full operating pressure.
- Fasteners shall be completely isolated from the external environment.
- Valves shall be manufactured under a product certification scheme and each valve marked in accordance with the certification body's requirements.



BASEPLATE DETAILS		
	SPIGOT DIA.	HOLE DETAILS (45° OFF CENTRES)
F14	Ø99.95 -0.05 (Ø3.935" -0.002")	4 HOLES M16x20 (0.79") DEEP ON Ø140.0 (Ø5.51") P.C.
FA14	Ø95.22 -0.10 (Ø3.749" -0.004")	4 HOLES 5/8"UNCx20 (0.79") DEEP ON Ø139.7 (Ø5.50") P.C.

MAX BORE RECTANGULAR KEY		
STD	BORE	KEY
BS4235 STEEL	52.0	16 x 10
BS4235 BRONZE	50.0	14 x 9
BS46 STEEL	2.000"	1/2" x 5/16"
BS46 BRONZE	1.875"	1/2" x 5/16"
ANSI B17.1 STEEL	2.000"	1/2" x 5/16"
ANSI B17.1 BRONZE	1.875"	1/2" x 5/16"

MAX BORE SQUARE KEY		
STD	BORE	KEY
BS4235 STEEL	-	-
BS4235 BRONZE	-	-
BS46 STEEL	1.875"	1/2" SQ
BS46 BRONZE	1.750"	7/16" SQ
ANSI B17.1 STEEL	1.875"	1/2" SQ
ANSI B17.1 BRONZE	1.750"	7/16" SQ

MAX ACME THREAD = 2.1/B"

IB5 BEVEL GEARBOX, 2, 3, 4 & 6:1 RATIO, MANUAL INPUT, F14/FA14 BASEPLATE

DETAILS SUBJECT TO CHANGE WITHOUT PRIOR NOTICE

FOR UP TO DATE DETAILS VISIT www.rotork.com

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gears**

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Bramley
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LS13 4ET
United Kingdom

DRAWING No

IB5

ISSUE

1

DATE

20/01/03

MULTI-TURN GEAR OPERATORS

With more than 20 years experience in actuated valve and damper control and instrumentation, Execo has developed three ranges of Gear Operators - SPUR (IS), BEVEL (IB) and WORM (IW).

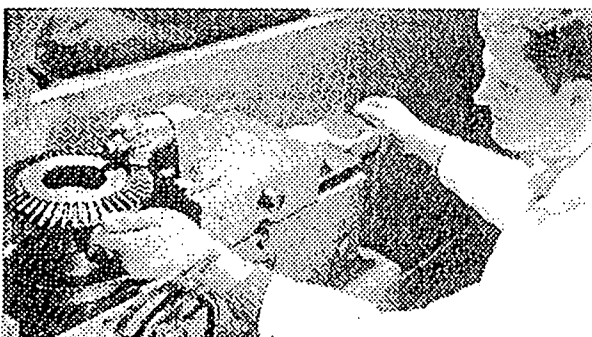
The SPUR (IS), BEVEL (IB) and MULTI-TURN WORM (IW) Gear Operators are for use on gate, globe, sluice and plugstock valves; as well as other applications where screwed or keyed shafts are used to operate equipment.

An Emphasis on Quality

Execo Gear operators are versatile, economical, and manufactured from high quality materials. A programme of continuous product development together with life testing of units at Execo's works, ensures that maximum performance, quality and reliability are consistently maintained.

BSI registered and with accreditation to BS EN ISO 9001, Execo strives to provide the valve industry with the highest quality standards of engineering and service. It is upon this commitment that Execo's reputation has been built.

Standard ratio, torque, thrust and spindle acceptances cover all valve requirements. Execo gear operators have been designed and produced for almost every application, including

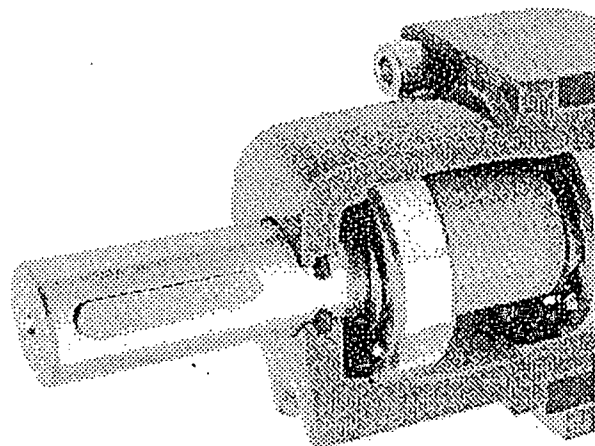


low and high temperature, submersible duty, buried service, marshised duty, AWWA specification and special indication.

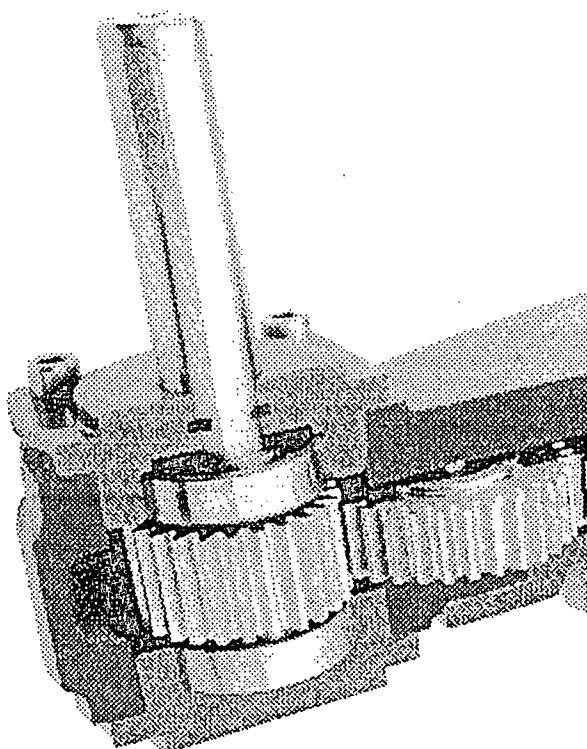
Output sleeves are made from materials compatible with valve stems and are easily removable for machining to customer requirements. A range of auxiliary input gear reducers is available to decrease operating effort (see combinations on back page).

Execo gear operators are suitable for both manual and motorised use. Input and output flanges are supplied to ISO, DIN or American standards. However, the flexibility exists to cater for variation in valve design and construction.

Catalogues with sizing details are available for each range of Execo gear operator. Please contact an Execo office for further information.

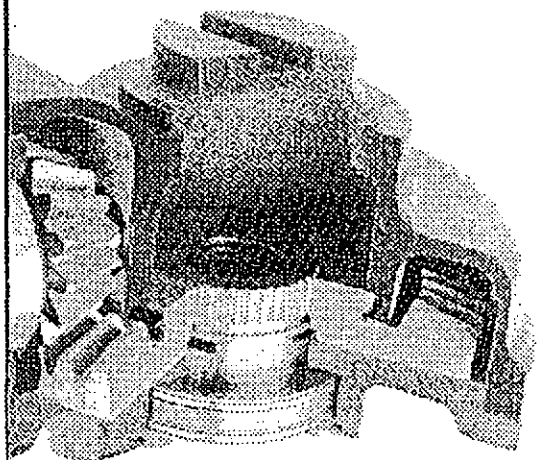


IB BEVEL



IS SPUR GEAR OPERATOR 4:1 RATIO

EXECCO



GEAR OPERATOR 4:1 RATIO

Common features of Execco BEVEL and SPUR Gear Valve Operators

- Totally enclosed gearing
- Grease filled for life and fully sealed
- Comprehensive gear ratios
- Removable output sleeve facility
- Optional input flanges for motorisation
- Optional facility to mount auxiliary spur/bevel input reducers
- Optional two-speed spur input drive
- Variety of nomenclature sizes available
- Spur and bevel combinations available

Additional features of Execco BEVEL Gear Valve Operators

- Substantial torque range (up to 10846 Nm/8000lbs ft)
- Substantial thrust range (up to 1657 kN/350000lbs)
- Pinions mounted on ball bearings
- Optional twin pinion units to facilitate secondary drive

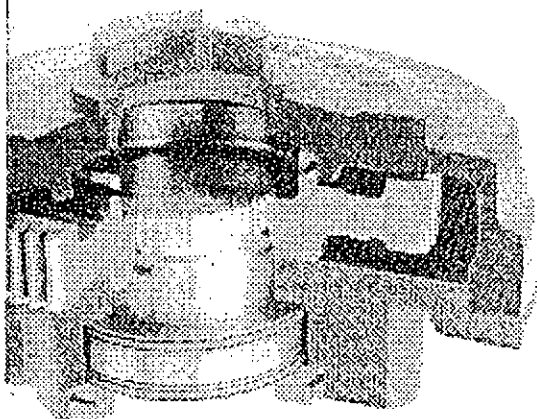
Additional features of Execco SPUR Gear Valve Operators

- Substantial torque range (up to 46100 Nm/34000lbs ft)
- Substantial thrust range (up to 3342 kN/750000lbs)
- Input and idler gears mounted on ball bearings
- Upward or downward drive option
- Twin speed option

Material specification for Execco IS and IS ranges of Gear Valve Operators

Component	Material	UK Standard	USA Standard
Shafts	Carbides	BS 4527 250	ASTM A44 353/400
Pinions	Cast Iron (ISO 1027) Stainless Steel (A 321/A 328)	BS 1452 250 BS 2749 420/42	ASTM A44 353/400 ASTM A314 35 45-12
Gears	Stainless Steel Steel	BS 2749 420/42 BS 970 60S22H or BS 7000	ASTM A314 35 45-12 ASTM A216 45M
	Designed to comply to BS 436 (BS 436 & BS 437 10)		
O Ring Seal	Sealtech Rubber		
Flange Seals	ISO Steel Metal Standard	BS 2642 & BS 4103	
Input Shaft Bearings	Ball Bearings		
Output Thrust Bearings	Double Ball Bearings (with the exception of output sizes 14, 16, 18, 19 & 20, which have roller thrust bearings)		
Output Sleeve A1	Steel	BS 2749 420/42	AISI 304 3072
Output Sleeve A2	Aluminium Bronze	BS 1484 A12	ASTM B565 C95800
Grease	Execco EL 22		
Pinions	PA 10 (any Pinion (other Pinions available on request))		

*Note: Because of our continuous policy of development improvement, Execco reserves the right to change specifications details without prior notice.
For further information on our gear valve operators please refer to brochure code EXXV04427740/16*



TORQUE, THRUST AND MOUNTING SPECIFICATIONS

GEARBOX TYPE IB		1	2	3	4	5	6	7	8	9	10	11	12	13	14
RATIO	FACTOR	MAXIMUM OUTPUT TORQUE Lbs ft & (Nm) FOR MANUAL APPLICATION													
1:1	0.85	125 (170)	280 (380)												
2:1	1.70				280 (380)										
3:1	2.55				625 (850)	1250 (1700)	1875 (2550)								
4:1	3.40									4000 (5423)					
6:1	5.10				500 (680)	1000 (1355)	1500 (2033)						8000 (10846)		
8:1	6.80														
RATIO	FACTOR	MAXIMUM OUTPUT TORQUE Lbs ft & (Nm) FOR MOTORISED APPLICATION													
1:1	0.85	100 (136)	225 (306)												
2:1	1.70				225 (306)										
3:1	2.55				500 (678)	1000 (1355)	1500 (2033)								
4:1	3.40									3000 (4067)					
6:1	5.10				400 (542)	800 (1084)	1200 (1627)						6000 (8135)	-	
8:1	6.80														
MAX THRUST	Lbsx1000 (KN)	5 (22)	12 (54)	40 (178)	12 (54)	40 (178)		80 (356)		100 (445)		150 (670)		250 (1112)	350 (1557)
MAX SPINDLE ACCEPTANCE IN mm	BORE AND KEY	25	40	52	40	52	52	65	65	76	76	90	90	110	120
	THREAD	27.5	45	55	45	55	55	73	73	86	86	100	100	127	150
INPUT FLANGE		F10 / F14				F10 / F14 / F16			F10/ F14/ F16/ F25			F14 / F16 / F25			
OUTPUT FLANGE		F07	F10	F14	F10	F14	F14	F16	F16	F25	F25	F30	F30	F35	F40
APPROX. WEIGHT	Lbs	22	36	40	36	44	62	78	121	155	231	276	380	441	754
	Kg	10	16	18	16	20	28	35	55	70	105	125	172	200	342

For further reductions and ratios see the combined Bevel and Spur Gearboxes Sizing Chart.

TORQUE, THRUST AND MOUNTING SPECIFICATIONS

GEARBOX TYPE IB		1	2	3	4	5	6	7	8	9	10	11	12	13	14
RATIO	FACTOR	MAXIMUM OUTPUT TORQUE Lbs ft & (Nm) FOR MANUAL APPLICATION													
1:1	0.85	125 (170)	280 (380)												
2:1	1.70														
3:1	2.55			280 (380)											
4:1	3.40														
6:1	5.10			625 (850)	1250 (1700)	1875 (2550)	4000 (5423)				8000 (10846)				
8:1	6.80			500 (680)	1000 (1355)	1500 (2033)									
RATIO	FACTOR	MAXIMUM OUTPUT TORQUE Lbs ft & (Nm) FOR MOTORISED APPLICATION													
1:1	0.85	100 (136)	225 (306)												
2:1	1.70														
3:1	2.55			225 (306)											
4:1	3.40														
6:1	5.10			500 (678)	1000 (1355)	1500 (2033)	3000 (4067)				6000 (8135)				
8:1	6.80			400 (542)	800 (1084)	1200 (1627)									
MAX THRUST	Lbsx1000 (KN)	5 (22)	12 (54)	40 (178)	12 (54)	40 (178)	80 (356)		100 (445)		150 (670)		250 (1112)	350 (1557)	
MAX SPINDLE ACCEPTANCE	BORE AND KEY	25	40	52	40	52	52	65	65	76	76	90	90	110	120
	THREAD IN mm	27.5	45	55	45	55	55	73	73	86	86	100	100	127	150
INPUT FLANGE		F10 / F14				F10 / F14 / F16			F10/ F14/ F16/ F25			F14 / F16 / F25			
OUTPUT FLANGE		F07	F10	F14	F10	F14	F14	F16	F16	F25	F25	F30	F30	F35	F40
APPROX. WEIGHT	Lbs	22	36	40	36	44	62	78	121	155	231	276	380	441	754
	Kg	10	16	18	16	20	28	35	55	70	105	125	172	200	342

For further reductions and ratios see the combined Bevel and Spur Gearboxes Sizing Chart.

3.3

MANILLA
BRIGHT
DIVIDERS
5 TAB A4



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Made in China



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THE DOBBIE DICO METER CO. (W.A.) PTY. LTD.

Established 1948

430 VICTORIA ROAD, MALAGA, WESTERN AUSTRALIA 6093
P.O. BOX 3225, MALAGA DC, W.A. 6045

ABN 32 638 471 332

TELEPHONE: (08) 9249 7000
FACSIMILE: (08) 9249 7700
www.dobbiedico.com.au
Email: dobbiedico@netnet.auINSTALLATION AND MAINTENANCE INSTRUCTIONSORIGINAL ISSUE: 1/99LATEST REV DATE: 11/02SWING CHECK VALVES TO AS 3578

Dobbie Dico Swing Check or Reflux Valves are manufactured to AS 3578. Their function is to eliminate flow reversal of fluids in pipelines avoiding damage to pumps and ancillary equipment.

Generally the valves are of the following construction:

- Cast Iron with Bronze Trim
- Ductile Iron with Bronze Trim

Other material and configurations are available to suit customer requirements.

The valves are manufactured at our works in Perth, Western Australia. Following assembly, the valves are pressure tested to the requirements of AS 3578. Further tests are conducted to ensure the valves operate correctly and efficiently.

Valves are carefully packed for transportation to ensure they are delivered to customers in perfect condition. When received, the valves should be handled with care, and protected from incursion of dirt or grit.

Installation

Ensure all protective packing is removed from inside the valves.

The valves have flanged connections and should be bolted to matching pipe flanges using gaskets suitable for the intended service.

Ensure the pipe and pipe ends are adequately supported during and after installation.

Ascertain direction of flow and place valve in alignment with pipework.

Fit gaskets and install flange bolts and nuts. Tighten nuts in a diametrically opposite sequence.

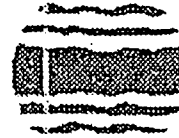
Limit switches, (where specified), are normally factory mounted. Fit and secure the eccentric cam to valve spindle swing locking screw. Adjust as necessary.

Fit lever arm and counterweight where supplied. Adjust position of counterweight as necessary.

THE DOBBIE DICO METER CO. (W.A.) PTY. LTD.

founded 1940

AON 32 008 571 932

130 VICTORIA ROAD, MALAGA, WESTERN AUSTRALIA 6090
P.O. BOX 3225, MALAGA DC, W.A. 6055TELEPHONE: (08) 9248 7000
FACSIMILE: (08) 9248 7700
www.dobbiedico.com.au
Email: dobbie@dobbiedico.net.auINSTALLATION AND MAINTENANCE INSTRUCTIONSORIGINAL ISSUE: 1/99LATEST REV. DATE: 11/02SWING CHECK VALVES TO AS 3375Maintenance

If leakage through the valve is detected, it will be necessary to disassemble it for inspection to determine the cause. This may be carried out with the valve in situ.

Disassembly

Depressurize the pipeline, or isolate the valve, and drain.

Remove the cover bolts and nuts. Lift off the cover and cover gasket.

Unscrew the gland nuts and/or hinge plugs from sides of body.

Support the hinge and flap assembly and push out the hinge spindle.

Lift hinge and flap assembly from the body.

Remove split pins, washers and flap spindle. The flap is now free from the hinge.

Examine the flap seat face. Minor damage or imperfections may be corrected by lapping the seat face. If major damage is apparent, it will be necessary to remachine the seat face, or fit a new flap.

Check for wear in flap spindle holes in flap and hinge. If necessary drill out and fit larger flap spindle.

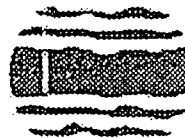
Examine the body seat ring face for damage or imperfections. The face may be corrected by lapping or machining as for the flap seat. It may be necessary to remove the body from the pipeline to complete this work.

Examine the flap spindle, hinge spindle and bushes for wear. Replace as required.

THE DOBBIE DICO METER CO. (W.A.) PTY. LTD.

ESTD 1940

ABN 32 609 571 932

VICTORIA ROAD, MALAGA, WESTERN AUSTRALIA 6020
P.O. BOX 3325, MALAGA DC, W.A. 6045TELEPHONE: (08) 9248 7000
FACSIMILE: (08) 9249 7700
www.dobbiedico.com.au
Email: dobbie@dobbie.net.auINSTALLATION AND MAINTENANCE INSTRUCTIONSORIGINAL ISSUE: 1/99LATEST REV DATE: 11/02SWING CHECK VALVES TO AS 3578Reassembly

Clean all parts thoroughly.

Rebuild the hinge and flap assembly using flap spindle, washers and split pins.

Carefully lower the hinge and flap assembly into the body and locate hinge between the hinge spindle bushes.

Support the hinge and flap assembly. Slide the spindle into the body and hinge (where lever arm is being used ensure keyway in spindle is in correct position).

Fit new O-rings in gland nuts. Replace the gland nuts and/or body plugs using thread sealing tape.

Fit new cover gasket. Replace the cover and refit the bolts and nuts. Tighten in diagonally opposite sequence.

Repressurize the pipeline and test the valve. Recommission the valve into service.

svas3578.doc

Page 3 of 3

Manufacturers of Water Meters, Waterworks Valves and Fire Protection Equipment



200mm REFLUX VALVE SPECIFICATIONS

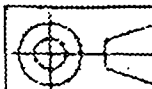
No	PART	MATERIAL	STANDARD	GRADE
1	BODY	DUCTILE IRON	AS1831	500-7
2	COVER	DUCTILE IRON	AS1831	500-7
3	BOLTS	GALV. CARBON STEEL	AS1252	HIGH STRENGTH STRUCTURAL
3	BOLT ALTERNATIVE	STAINLESS STEEL	AS2837	304 OR 316
4	BLANKING PLUG	DR BRASS	BS1256	
5	FLAP SPINDLE	STAINLESS STEEL	AS2837	316 OR 416
6	SEATING RING	GUNMETAL	AS1565	CB3600
7	FLAP	GUNMETAL	AS1565	CB3600
8	HINGE	GUNMETAL	AS1565	CB3600
9	HINGE SPINDLE	STAINLESS STEEL	AS2837	316 OR 416
10	GASKET	RUBBER OR ECPM		
11	SPINDLE BUSH	GUNMETAL OR DR BRASS	AS1565	CB3600
12	WASHER	STAINLESS STEEL	AS2837	316 OR 304
13	SPLIT PIN	STAINLESS STEEL	AS2837	316 OR 304
14	CLAMP NUT	GUNMETAL	AS1565	CB3600
15	BLEED PLUG	DR BRASS	BS1256	
16	LEVER ARM (IF REQ'D)	STRUCTURAL STEEL	AS3678	250
17	COUNTERWEIGHT (IF REQ'D)	GREY CAST IRON	AS1830	1220
18	LIMIT SWITCH (IF REQ'D)	PLUNGE TYPE		MJT102 OR AS SPECIFIED
19	CAM (IF REQ'D)	STAINLESS STEEL	AS2837	316 OR 304

AS4081 FLANGE SPECIFICATIONS

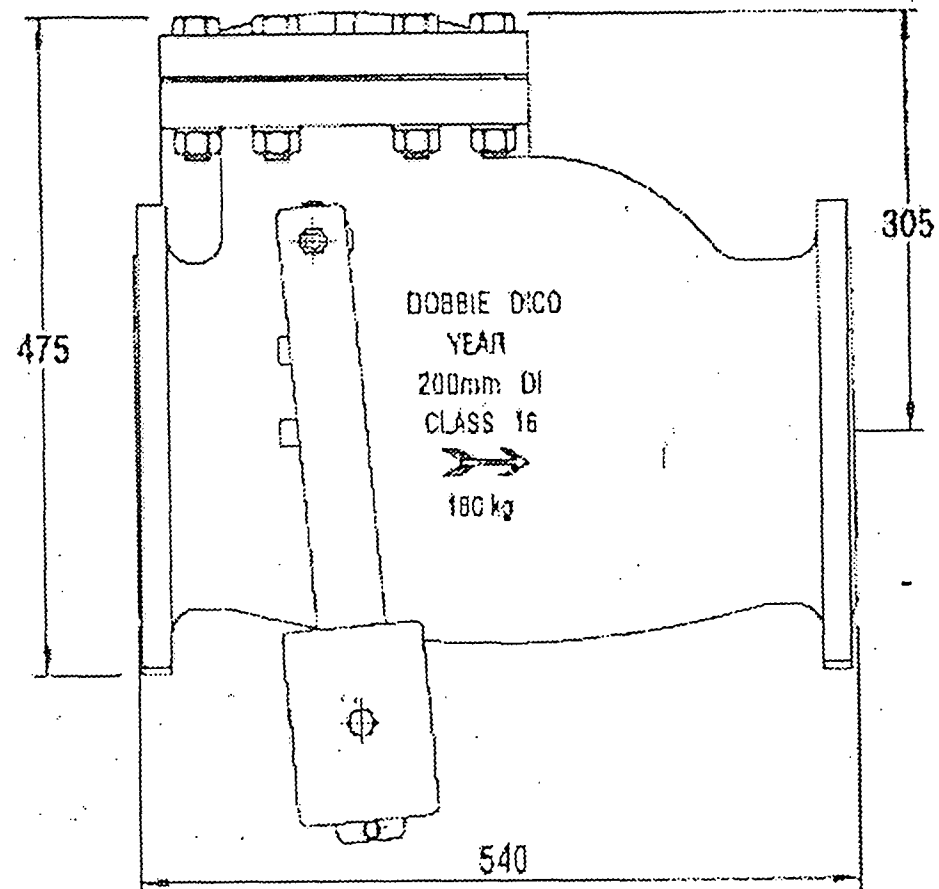
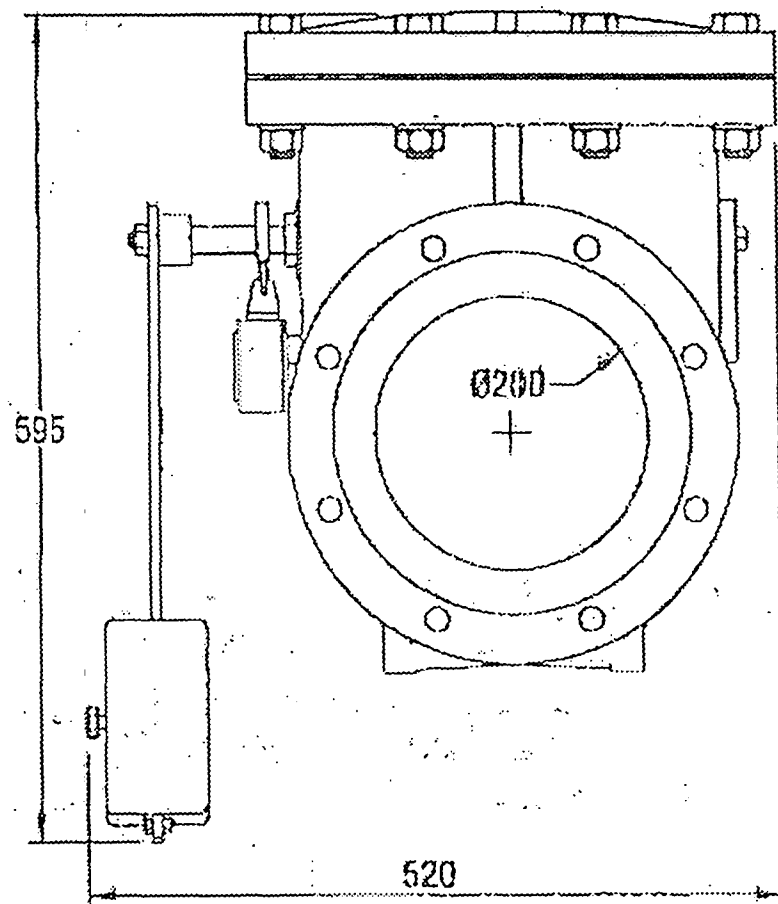
VALVE	FLANGE	FLANGE	FACE/FACE	LENGTH	MIN WALL	No. BOLT	BOLT HOLE	BOLT HOLE
CLASS	DIAM.	THICKNESS	LENGTH	TOL. +/-	THICKNESS	HOLES	DIAM.	P.C.D.
16	335	23	540	1	19	6	19	292
21/35	370	31	540	1	19	12	22	324

APPROVED FOR
MANUFACTURE
[Signature] 08/03
SIGNED DATE

REV	DATE	APPD	TITLE	DRAWING No.
1.0	13.05.02	<i>[Signature]</i>	200MM REFLUX VALVE SPECIFICATIONS	RV200/1
1.1	04.08.03	<i>[Signature]</i>		REV. 1.1



THE DOBBIE DICO METER Co. Pty. Ltd. (W.A.)

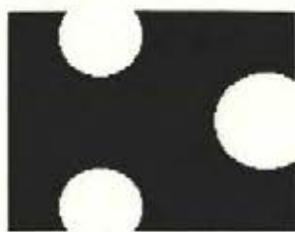


APPROVED FOR
MANUFACTURE
Wade 2016/02
SIGNED DATE

TYPICAL ARRANGEMENT
AND BODY MARKINGS

Revision	Date	Approval	Size	Drawing No.
1.0	14/05/02	<i>FW</i>	200MM REFLUX VALVE G.W. C.W. WEIGHT & LIMIT SWITCH CLASS 16-C	RV200/4
The Dobbie Dico Meter Co. Pty. Ltd. (W.A.)				

**INSPECTION AND
TEST PLAN**



A.B.N. 41 009 668 179

HORNICK CONSTRUCTIONS PTY LTD.

INSPECTION AND TEST PLAN

4.1

INSPECTION AND TEST PLAN

Hornick Constructions Pty Ltd

N: Pump Station 211

ITP NO: 14a

TRACT: Bracken Ridge Road

ELEMENT:

Rev. No: C

CONTRACT No: BW30077-02/03

ITEM	PRIOR ITEM	ACTIVITY	NOTES/COMMENTS	SPECIFICATION/ DRAWING REF.	RECORDS	INSPECTION	INSPECTION BY /SIGNED OFF	DATE
1		Metal Work	Fit new landing & Walkway handrails, cable supports & pipe brackets. Duck foot bend support.	DRWG 15,16,17,18-20			B.G. M. Mahon	14/10/03
2		Pump No 3	Remove blank flange after draining of main by BW. Fit spool & valve to manifold. Fit pipework to inlet side of pump.				B.G. M. Mahon	5/12/03
3		Pump No 3	Pump outlet pipework, weld loose flanges, repair concrete linings. paint all damaged surfaces.				B.G. M. Mahon	5/12/03
4		Electrical	Refer to electrical ITP's					
5		Commission	Fully test pipework, electrical and place into service.				B.G. M. Mahon	15/12/03
6		Pump No 2	Remove old pump & pipework, fit new inlet pipework, new pump outlet pipework, weld loose flanges and pipe.	DRWG 15,16,17,18-20			B.G. M. Mahon	16/12/03
7		Pump No 2	Joint repair concrete linings, paint all damaged surfaces.				B.G. M. Mahon	16/12/03
8		Electrical	Refer to electrical ITP's					
9		Commission	Fully test pipework, electrical and place into service.				B.G. M. Mahon	
10		Pump No 1	Remove old pipework & pump, fit new inlet pipework, new pump outlet pipework, weld loose flanges & pipe.	DRWG 15,16,17,18-20			B.G. M. Mahon	12/01/04
11		Pump No 1	Join to outlet pipework, repair concrete linings, paint all damaged surfaces.				B.G. M. Mahon	12/01/04
12		Electrical	Refer to electrical ITP's					
13		Commission	Fully test pipework, electrical and place into service.				B.G. M. Mahon	14/01/04
14		Toilet	Remove block wall, relocate toilet, documents cabinet, hand basin, new block wall door, paint.	DRWG 08,09,010			B.G. M. Mahon	16/12/03
15		Flow Meter	Pipe work modifications, fit flowmeter, conduits, electrical backfill.	DRWG 12			B.G. M. Mahon	26/02/04
16		Pump Connection	Fit pipe work to existing valve, valve pit.	DRWG 12			B.G. M. Mahon	27/03/04

INSPECTION AND TEST PLAN**Hornick Constructions Pty Ltd**ON: **Pump Station 211**

ITP NO:

14


CONTRACT: Bracken Ridge Road

ELEMENT:

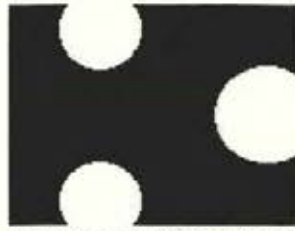
Rev. No:

C

CONTRACT No: BW. 30077-02/03

ITEM	PRIOR ITEM	ACTIVITY	NOTES/COMMENTS	SPECIFICATION/ DRAWING REF.	RECORDS	INSPECTION /N	INSPECTION BY /SIGNED OFF	DATE
1		Flap Valve Chamber	Install new flap valve & metal screens to both chambers.	DRWG 19			B.G. McMahon	24/02/07
2		Electrical	New switch board & meter box. Refer to Electrical ITP's					
3								
4								
5								
6								
7								
8								
9								
10								

**CONFORMANCE
CERTIFICATES**



A.B.N. 41 009 668 179

HORNICK CONSTRUCTIONS PTY LTD.

SUPPLIERS CONFORMANCE CERTIFICATE

5.



Flow Control

Tyco Water

Tyco Water Pty Ltd
ABN 75 087 415 745
Customer Centre Gold Coas
63 Currumbin Creek Road
PO Box 150
Currumbin QLD 4223

Phone: (07) 5589 4400
Fax: (07) 5534 7079
Email: ccg@tycowater.com

SUPPLIER'S CONFORMANCE CERTIFICATE

CERTIFICATE NO:	677976	DATE:	14/10/03
CUSTOMER:	HORNICK CONSTRUCTIONS	ORDER NO:	57194/345
INVOICE NO:	677976	TRANS NO:	494000

We certify that Tyco Water Customer Centre Gold Coast is licenced by Quality Assurance Services to AS/NZS ISO 9002 Quality systems-Model for quality assurance in production, installation and servicing (Licence No. 5459).

Tyco Water manufacturing sites are also licenced by Quality Assurance Services as follows:

Currumbin Manufacturing Facility

63 Currumbin Creek Road
Currumbin Queensland
Products: Ductile iron fittings, valves, flanged pipe, couplings and other pipeline components

Quality System

AS/NZS ISO 9001-1994 Quality systems-Model for quality assurance in design, development, production, installation and servicing Licence No.QEC 0017

Standards Mark

AS/NZS2280-1999	Ductile Iron Presssure Pipes & Fittings	Licence No.1199
AS2638-1999	Sluice Valves for Waterworks Purposes	Licence No.1200
AS3952-1991	Water Supply-DN80 Spring Hydrant Valve for General Purposes	Licence No.1202
AS3579-1993	Cast Iron Wedge Gate Valves for General Purposes	Licence No.2234

Yennora Manufacturing Facility

Yennora Road
Yennora NSW
Products: Ductile iron pipe

Quality System

AS/NZS ISO 9001-1994 Quality systems-Model for quality assurance in design, development production installation and servicing Licence No. QEC 0015

Standards Mark

AS/NZS2280-1999 Ductile Iron Pressure Pipes & Fittings Licence No. 0883

We further certify that the items supplied for the above Order/Contract have been manufactured and tested in accordance with the appropriate Australian product standards.

Other ancillary products supplied with this Order/Contract have been purchased from approved/certified manufacturers according to the requirements of AS/NZS ISO 9002.

REF No.	345
DATE REC.	15 OCT 2003
ACTION	15/10

tyco**Flow Control****Tyco Water**

Tyco Water Pty Ltd
 ABN 75 087 415 745
 Customer Centre Gold Coas
 63 Currumbin Creek Road
 PO Box 150
 Currumbin QLD 4223

Phone: (07) 5589 4400
 Fax: (07) 5534 7079
 Email: ccg@tycowater.com

SUPPLIER'S CONFORMANCE CERTIFICATE

CERTIFICATE NO:	677977	DATE:	14/10/03
CUSTOMER:	HORNICK CONSTRUCTIONS	ORDER NO:	57194/345
INVOICE NO:	677977	TRANS NO:	494008

We certify that Tyco Water Customer Centre Gold Coast is licenced by Quality Assurance Services to AS/NZS ISO 9002 Quality systems-Model for quality assurance in production, installation and servicing (Licence No. 5459).

so Water manufacturing sites are also licenced by Quality Assurance Services as follows:

Currumbin Manufacturing Facility

63 Currumbin Creek Road

Currumbin Queensland

Products: Ductile iron fittings, valves, flanged pipe, couplings and other pipeline components

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development, production, installation and servicing

Licence No.QEC 0017

Standards Mark

AS/NZS2280-1999

Ductile Iron Presssure Pipes & Fittings

Licence No.1199

AS2638-1999

Sluice Valves for Waterworks Purposes

Licence No.1200

AS3952-1991

Water Supply-DN80 Spring Hydrant Valve for General Purposes

Licence No.1202

AS3579-1993

Cast Iron Wedge Gate Valves for General Purposes

Licence No.2234

Yennora Manufacturing Facility

irsley Road

nnora NSW

Products: Ductile iron pipe

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development production installation and servicing

Licence No. QEC 0015

Standards Mark

AS/NZS2280-1999

Ductile Iron Pressure Pipes & Fittings

Licence No. 0883

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345	
HORNICK	
12 OCT 2003	
	15/10

tyco**Flow Control****Tyco Water**

Tyco Water Pty Ltd
 ABN 75 087 415 745
 Customer Centre Gold Coas
 63 Currumbin Creek Road
 PO Box 150
 Currumbin QLD 4223

Phone: (07) 5589 4400
 Fax: (07) 5534 7079
 Email: ccg@tycowater.com

SUPPLIER'S CONFORMANCE CERTIFICATE

CERTIFICATE NO:	678717	DATE:	16/10/03
CUSTOMER:	HORNICK CONSTRUCTIONS	ORDER NO:	57194/345
INVOICE NO:	678717	TRANS NO:	486249

We certify that Tyco Water Customer Centre Gold Coast is licenced by Quality Assurance Services to AS/NZS ISO 9002 Quality systems-Model for quality assurance in production, installation and servicing (Licence No. 5459).

o Water manufacturing sites are also licenced by Quality Assurance Services as follows:

C umbin Manufacturing Facility

63 Currumbin Creek Road

Currumbin Queensland

Products: Ductile iron fittings, valves, flanged pipe, couplings and other pipeline components

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development, production, installation and servicing

Licence No.QEC 0017

Standards Mark

AS/NZS2280-1999

Ductile Iron Presssure Pipes & Fittings

Licence No.1199

AS2638-1999

Sluice Valves for Waterworks Purposes

Licence No.1200

AS3952-1991

Water Supply-DN80 Spring Hydrant Valve for General Purposes

Licence No.1202

AS3579-1993

Cast Iron Wedge Gate Valves for General Purposes

Licence No.2234

Yennora Manufacturing Facility

rley Road

nora NSW

ucts: Ductile iron pipe

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development production installation and servicing

Licence No. QEC 0015

Standards Mark

AS/NZS2280-1999

Ductile Iron Pressure Pipes & Fittings

Licence No. 0883

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REF	345
DATE	16/10/03
AC	120/10

tyco**Flow Control****Tyco Water**

Tyco Water Pty Ltd
 ABN 75 087 415 745
 Customer Centre Gold Coas
 63 Currumbin Creek Road
 PO Box 150
 Currumbin QLD 4223

Phone: (07) 5589 4400
 Fax: (07) 5534 7079
 Email: ccg@tycowater.com

SUPPLIER'S CONFORMANCE CERTIFICATE

CERTIFICATE NO:	678894	DATE:	17/10/03
CUSTOMER:	HORNICK CONSTRUCTIONS	ORDER NO:	57194/345
INVOICE NO:	678894	TRANS NO:	494000

We certify that Tyco Water Customer Centre Gold Coast is licenced by Quality Assurance Services to AS/NZS ISO 9002 Quality systems-Model for quality assurance in production, installation and servicing (Licence No. 5459).

so Water manufacturing sites are also licenced by Quality Assurance Services as follows:

Currumbin Manufacturing Facility

63 Currumbin Creek Road

Currumbin Queensland

Products: Ductile iron fittings, valves, flanged pipe, couplings and other pipeline components

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development, production, installation and servicing

Licence No.QEC 0017

Standards Mark

AS/NZS2280-1999

Ductile Iron Presssure Pipes & Fittings

Licence No.1199

AS2638-1999

Sluice Valves for Waterworks Purposes

Licence No.1200

AS3952-1991

Water Supply-DN80 Spring Hydrant Valve for General Purposes

Licence No.1202

AS3579-1993

Cast Iron Wedge Gate Valves for General Purposes

Licence No.2234

Yennora Manufacturing Facility

Jursley Road

Yennora NSW

Products: Ductile iron pipe

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development production installation and servicing

Licence No. QEC 0015

Standards Mark

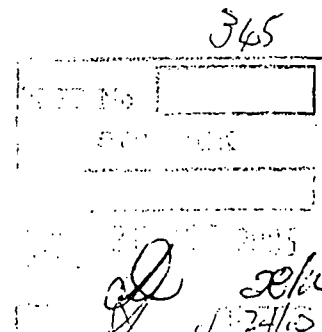
AS/NZS2280-1999

Ductile Iron Pressure Pipes & Fittings

Licence No. 0883

We further certify that the items supplied for the above Order/Contract have been manufactured and tested in accordance with the appropriate Australian product standards.

Other ancillary products supplied with this Order/Contract have been purchased from approved/certified manufacturers according to the requirements of AS/NZS ISO 9002.



tyco**Flow Control****Tyco Water**

Tyco Water Pty Ltd
 ABN 75 087 415 745
 Customer Centre Gold Coast
 63 Currumbin Creek Road
 PO Box 150
 Currumbin QLD 4223

Phone: (07) 5589 4400
 Fax: (07) 5534 7079
 Email: ccg@tycowater.com

SUPPLIER'S CONFORMANCE CERTIFICATE

CERTIFICATE NO:	679058	DATE:	17/10/03
CUSTOMER:	HORNICK CONSTRUCTIONS	ORDER NO:	57194/345
INVOICE NO:	679058	TRANS NO:	494000

We certify that Tyco Water Customer Centre Gold Coast is licenced by Quality Assurance Services to AS/NZS ISO 9002 Quality systems-Model for quality assurance in production, installation and servicing (Licence No. 5459).

so Water manufacturing sites are also licenced by Quality Assurance Services as follows:

Currumbin Manufacturing Facility

63 Currumbin Creek Road

Currumbin Queensland

Products: Ductile iron fittings, valves, flanged pipe, couplings and other pipeline components

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development, production, installation and servicing

Licence No. QEC 0017

Standards Mark

AS/NZS2280-1999

Ductile Iron Pressure Pipes & Fittings

Licence No. 1199

AS2638-1999

Sluice Valves for Waterworks Purposes

Licence No. 1200

AS3952-1991

Water Supply-DN80 Spring Hydrant Valve for General Purposes

Licence No. 1202

AS3579-1993

Cast Iron Wedge Gate Valves for General Purposes

Licence No. 2234

Vennora Manufacturing Facility

Jrsley Road

Vennora NSW

Products: Ductile iron pipe

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development production installation and servicing

Licence No. QEC 0015

Standards Mark

AS/NZS2280-1999

Ductile Iron Pressure Pipes & Fittings

Licence No. 0883

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Other ancillary products supplied with this Order/Contract have been purchased from approved/certified manufacturers according to the requirements of AS/NZS ISO 9002.

345

No	
PREPARED BY	
DATE	20 OCT 2003
CHECKED BY	
DATE	20/10/03
APPROVED BY	
DATE	20/10/03

tyco**Flow Control****Tyco Water**

Tyco Water Pty Ltd
 ABN 75 087 415 745
 Customer Centre Gold Coast
 63 Currumbin Creek Road
 PO Box 150
 Currumbin QLD 4223

Phone: (07) 5589 4400
 Fax: (07) 5534 7079
 Email: ccg@tycowater.com

SUPPLIER'S CONFORMANCE CERTIFICATE

CERTIFICATE NO:	679697	DATE:	22/10/03
CUSTOMER:	HORNICK CONSTRUCTIONS	ORDER NO:	57194/345
INVOICE NO:	679697	TRANS NO:	486249

We certify that Tyco Water Customer Centre Gold Coast is licenced by Quality Assurance Services to AS/NZS ISO 9002
 Quality systems-Model for quality assurance in production, installation and servicing (Licence No. 5459).

tyco Water manufacturing sites are also licenced by Quality Assurance Services as follows:

Currumbin Manufacturing Facility

63 Currumbin Creek Road
 Currumbin Queensland

Products: Ductile iron fittings, valves, flanged pipe, couplings and other pipeline components

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development, production, installation and servicing

Licence No.QEC 0017

Standards Mark

AS/NZS2280-1999

Ductile Iron Presssure Pipes & Fittings

Licence No.1199

AS2638-1999

Sluice Valves for Waterworks Purposes

Licence No.1200

AS3952-1991

Water Supply-DN80 Spring Hydrant Valve for General Purposes

Licence No.1202

AS3579-1993

Cast Iron Wedge Gate Valves for General Purposes

Licence No.2234

Yennora Manufacturing Facility

Yennora Road
 Yennora NSW

Products: Ductile iron pipe

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development production installation and servicing

Licence No. QEC 0015

Standards Mark

AS/NZS2280-1999

Ductile Iron Pressure Pipes & Fittings

Licence No. 0883

We further certify that the items supplied for the above Order/Contract have been manufactured and tested in accordance with the appropriate Australian product standards.

Other ancillary products supplied with this Order/Contract have been purchased from approved/certified manufacturers according to the requirements of AS/NZS ISO 9002.

REF No.	345	
HORNICK		
DATE	22 OCT 2003	
REC.	22 OCT 2003	
ACTION / COPY	✓	COMP
JEFF		

tyco*Flow Control***Tyco Water**

Tyco Water Pty Ltd
 ABN 75 087 415 745
 Customer Centre Gold Coast
 63 Currumbin Creek Road
 PO Box 150
 Currumbin QLD 4223

Phone: (07) 5589 4400
 Fax: (07) 5534 7079
 Email: ccg@tycowater.com

SUPPLIER'S CONFORMANCE CERTIFICATE

CERTIFICATE NO:	679993	DATE:	23/10/03
CUSTOMER:	HORNICK CONSTRUCTIONS	ORDER NO:	57194/345
INVOICE NO:	679993	TRANS NO:	486249

We certify that Tyco Water Customer Centre Gold Coast is licenced by Quality Assurance Services to AS/NZS ISO 9002 Quality systems-Model for quality assurance in production, installation and servicing (Licence No. 5459).

o Water manufacturing sites are also licenced by Quality Assurance Services as follows:

Currumbin Manufacturing Facility

63 Currumbin Creek Road
 Currumbin Queensland

Products: Ductile iron fittings, valves, flanged pipe, couplings and other pipeline components

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development, production, installation and servicing

Licence No.QEC 0017

Standards Mark

AS/NZS2280-1999

Ductile Iron Pressure Pipes & Fittings

Licence No.1199

AS2638-1999

Sluice Valves for Waterworks Purposes

Licence No.1200

AS3952-1991

Water Supply-DN80 Spring Hydrant Valve for General Purposes

Licence No.1202

AS3579-1993

Cast Iron Wedge Gate Valves for General Purposes

Licence No.2234

Yennora Manufacturing Facility

Yennora Road

Yennora NSW

Products: Ductile iron pipe

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development production installation and servicing

Licence No. QEC 0015

Standards Mark

AS/NZS2280-1999

Ductile Iron Pressure Pipes & Fittings

Licence No. 0883

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345

REF No. 1	
HORNICK	
DATE REC.	24 OCT 2003
ACTION	124/10
	128/10

tyco

Flow Control

Tyco Water

Tyco Water Pty Ltd
ABN 75 087 415 745
Customer Centre Gold Coas
63 Currumbin Creek Road
PO Box 150
Currumbin QLD 4223

Phone: (07) 5589 4400
Fax: (07) 5534 7079
Email: ccg@tycowater.com

SUPPLIER'S CONFORMANCE CERTIFICATE

CERTIFICATE NO:	679994	DATE:	23/10/03
CUSTOMER:	HORNICK CONSTRUCTIONS	ORDER NO:	57194/345
INVOICE NO:	679994	TRANS NO:	494484

We certify that Tyco Water Customer Centre Gold Coast is licenced by Quality Assurance Services to AS/NZS ISO 9002
Quality systems-Model for quality assurance in production, installation and servicing (Licence No. 5459).

Water manufacturing sites are also licenced by Quality Assurance Services as follows:

Currumbin Manufacturing Facility

63 Currumbin Creek Road
Currumbin Queensland

Products: Ductile iron fittings, valves, flanged pipe, couplings and other pipeline components

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development, production, installation and servicing

Licence No.QEC 0017

Standards Mark

AS/NZS2280-1999

Ductile Iron Presssure Pipes & Fittings

Licence No.1199

AS2638-1999

Sluice Valves for Waterworks Purposes

Licence No.1200

AS3952-1991

Water Supply-DN80 Spring Hydrant Valve for General Purposes

Licence No.1202

AS3579-1993

Cast Iron Wedge Gate Valves for General Purposes

Licence No.2234

Yennora Manufacturing Facility

ley Road

herra NSW

ucts: Ductile iron pipe

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development production installation and servicing

Licence No. QEC 0015

Standards Mark

AS/NZS2280-1999

Ductile Iron Pressure Pipes & Fittings

Licence No. 0883

We further certify that the items supplied for the above Order/Contract have been manufactured and tested in accordance with the appropriate Australian product standards.

Other ancillary products supplied with this Order/Contract have been purchased from approved/certified manufacturers according to the requirements of AS/NZS ISO 9002.

345

REF No.	
HORNICK	
DATE	23/10/03
REC	
ACTION	
	24/10/03
	24/10/03

tyco

Flow Control

Tyco Water

Tyco Water Pty Ltd
ABN 75 087 415 745
Customer Centre Gold Coast
63 Currumbin Creek Road
PO Box 150
Currumbin QLD 4223

Phone: (07) 5589 4400
Fax: (07) 5534 7079
Email: ccg@tycowater.com

SUPPLIER'S CONFORMANCE CERTIFICATE

CERTIFICATE NO:	680569	DATE:	27/10/03
CUSTOMER:	HORNICK CONSTRUCTIONS	ORDER NO:	57194/345
INVOICE NO:	680569	TRANS NO:	486249

We certify that Tyco Water Customer Centre Gold Coast is licenced by Quality Assurance Services to AS/NZS ISO 9002 Quality systems-Model for quality assurance in production, installation and servicing (Licence No. 5459).

Water manufacturing sites are also licenced by Quality Assurance Services as follows:

Currumbin Manufacturing Facility

63 Currumbin Creek Road
Currumbin Queensland

Products: Ductile iron fittings, valves, flanged pipe, couplings and other pipeline components

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development, production, installation and servicing

Licence No.QEC 0017

Standards Mark

AS/NZS2280-1999

Ductile Iron Pressure Pipes & Fittings

Licence No.1199

AS2638-1999

Sluice Valves for Waterworks Purposes

Licence No.1200

AS3952-1991

Water Supply-DN80 Spring Hydrant Valve for General Purposes

Licence No.1202

AS3579-1993

Cast Iron Wedge Gate Valves for General Purposes

Licence No.2234

Yennora Manufacturing Facility

Yennora Road

Yennora NSW

Products: Ductile iron pipe

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development production installation and servicing

Licence No. QEC 0015

Standards Mark

AS/NZS2280-1999

Ductile Iron Pressure Pipes & Fittings

Licence No. 0883

We further certify that the items supplied for the above Order/Contract have been manufactured and tested in accordance with the appropriate Australian product standards.

Other ancillary products supplied with this Order/Contract have been purchased from approved/certified manufacturers according to the requirements of AS/NZS ISO 9002.

REF No	345
DATE	26 OCT 2003
TIME	28/10

tyco**Flow Control****Tyco Water**

Tyco Water Pty Ltd
 ABN 75 087 415 745
 Customer Centre Gold Coas
 63 Currumbin Creek Road
 PO Box 150
 Currumbin QLD 4223

Phone: (07) 5589 4400
 Fax: (07) 5534 7079
 Email: ccg@tycowater.com

SUPPLIER'S CONFORMANCE CERTIFICATE

CERTIFICATE NO:	680572	DATE:	27/10/03
CUSTOMER:	HORNICK CONSTRUCTIONS	ORDER NO:	57194/345
INVOICE NO:	680572	TRANS NO:	494303

We certify that Tyco Water Customer Centre Gold Coast is licenced by Quality Assurance Services to AS/NZS ISO 9002 Quality systems-Model for quality assurance in production, installation and servicing (Licence No. 5459).

Tyco Water manufacturing sites are also licenced by Quality Assurance Services as follows:

Currumbin Manufacturing Facility

63 Currumbin Creek Road
 Currumbin Queensland

Products: Ductile iron fittings, valves, flanged pipe, couplings and other pipeline components

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development, production, installation and servicing

Licence No. QEC 0017

Standards Mark

AS/NZS2280-1999

Ductile Iron Presssure Pipes & Fittings

Licence No. 1199

AS2638-1999

Sluice Valves for Waterworks Purposes

Licence No. 1200

AS3952-1991

Water Supply-DN80 Spring Hydrant Valve for General Purposes

Licence No. 1202

AS3579-1993

Cast Iron Wedge Gate Valves for General Purposes

Licence No. 2234

Wannora Manufacturing Facility

Wannorsley Road

Wannora NSW

Products: Ductile iron pipe

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development production installation and servicing

Licence No. QEC 0015

Standards Mark

AS/NZS2280-1999

Ductile Iron Pressure Pipes & Fittings

Licence No. 0883

We further certify that the items supplied for the above Order/Contract have been manufactured and tested in accordance with the appropriate Australian product standards.

Other ancillary products supplied with this Order/Contract have been purchased from approved/certified manufacturers according to the requirements of AS/NZS ISO 9002.

REF	345
DATE	27/10/2003
SIGNATURE	<i>[Signature]</i>
DATE	27/10

tyco**Flow Control****Tyco Water**

Tyco Water Pty Ltd
 ABN 75 087 415 745
 Customer Centre Gold Coas
 63 Currumbin Creek Road
 PO Box 150
 Currumbin QLD 4223

Phone: (07) 5589 4400
 Fax: (07) 5534 7079
 Email: ccg@tycowater.com

SUPPLIER'S CONFORMANCE CERTIFICATE

CERTIFICATE NO:	681266	DATE:	29/10/03
CUSTOMER:	HORNICK CONSTRUCTIONS	ORDER NO:	57194/345
INVOICE NO:	681266	TRANS NO:	494022

We certify that Tyco Water Customer Centre Gold Coast is licenced by Quality Assurance Services to AS/NZS ISO 9002 Quality systems-Model for quality assurance in production, installation and servicing (Licence No. 5459).

co Water manufacturing sites are also licenced by Quality Assurance Services as follows:

Currumbin Manufacturing Facility

63 Currumbin Creek Road
 Currumbin Queensland

Products: Ductile iron fittings, valves, flanged pipe, couplings and other pipeline components

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance
 in design, development, production, installation and servicing

Licence No.QEC 0017

Standards Mark

AS/NZS2280-1999

Ductile Iron Presssure Pipes & Fittings

Licence No.1199

AS2638-1999

Sluice Valves for Waterworks Purposes

Licence No.1200

AS3952-1991

Water Supply-DN80 Spring Hydrant Valve for General Purposes

Licence No.1202

AS3579-1993

Cast Iron Wedge Gate Valves for General Purposes

Licence No.2234

Wannora Manufacturing Facility

Wursley Road
 Wannora NSW

Products: Ductile iron pipe

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance
 in design, development production installation and servicing

Licence No. QEC 0015

Standards Mark

AS/NZS2280-1999

Ductile Iron Pressure Pipes & Fittings

Licence No. 0883

We further certify that the items supplied for the above Order/Contract have been manufactured and tested in accordance with the appropriate Australian product standards.

Other ancillary products supplied with this Order/Contract have been purchased from approved/certified manufacturers according to the requirements of AS/NZS ISO 9002.

REF No.		HORNICK	
DATE		29 OCT 2003	
ACTION		30/10	
COPIED TO J. MARY		25/11	

tyco*Flow Control***Tyco Water**

Tyco Water Pty Ltd
 ABN 75 087 415 745
 Customer Centre Gold Coast
 63 Currumbin Creek Road
 PO Box 150
 Currumbin QLD 4223

Phone: (07) 5589 4400
 Fax: (07) 5534 7079
 Email: ccg@tycowater.com

SUPPLIER'S CONFORMANCE CERTIFICATE

CERTIFICATE NO:	681740	DATE:	31/10/03
CUSTOMER:	HORNICK CONSTRUCTIONS	ORDER NO:	57194/345
INVOICE NO:	681740	TRANS NO:	486249

We certify that Tyco Water Customer Centre Gold Coast is licenced by Quality Assurance Services to AS/NZS ISO 9002 Quality systems-Model for quality assurance in production, installation and servicing (Licence No. 5459).

o Water manufacturing sites are also licenced by Quality Assurance Services as follows:

Currumbin Manufacturing Facility

63 Currumbin Creek Road
 Currumbin Queensland

Products: Ductile iron fittings, valves, flanged pipe, couplings and other pipeline components

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development, production, installation and servicing

Licence No.QEC 0017

Standards Mark

AS/NZS2280-1999

Ductile Iron Pressure Pipes & Fittings

Licence No.1199

AS2638-1999

Sluice Valves for Waterworks Purposes

Licence No.1200

AS3952-1991

Water Supply-DN80 Spring Hydrant Valve for General Purposes

Licence No.1202

AS3579-1993

Cast Iron Wedge Gate Valves for General Purposes

Licence No.2234

Yennora Manufacturing Facility

Yennora Road
 Yennora NSW

Products: Ductile iron pipe

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development production installation and servicing

Licence No. QEC 0015

Standards Mark

AS/NZS2280-1999

Ductile Iron Pressure Pipes & Fittings

Licence No. 0883

We further certify that the items supplied for the above Order/Contract have been manufactured and tested in accordance with the appropriate Australian product standards.

Other ancillary products supplied with this Order/Contract have been purchased from approved/certified manufacturers according to the requirements of AS/NZS ISO 9002.

345	
3	NOV 2003
✓	✓ 4/11

tyco

Flow Control

Tyco Water

Tyco Water Pty Ltd
ABN 75 087 415 745
Customer Centre Gold Coas
63 Currumbin Creek Road
PO Box 150
Currumbin QLD 4223

Phone: (07) 5589 4400
Fax: (07) 5534 7079
Email: ccg@tycowater.com

SUPPLIER'S CONFORMANCE CERTIFICATE

CERTIFICATE NO:	683049	DATE:	7/11/03
CUSTOMER:	HORNICK CONSTRUCTIONS	ORDER NO:	57861/345
INVOICE NO:	683049	TRANS NO:	500568

We certify that Tyco Water Customer Centre Gold Coast is licenced by Quality Assurance Services to AS/NZS ISO 9002 Quality systems-Model for quality assurance in production, installation and servicing (Licence No. 5459).

o Water manufacturing sites are also licenced by Quality Assurance Services as follows:

Currumbin Manufacturing Facility

63 Currumbin Creek Road
Currumbin Queensland

Products: Ductile iron fittings, valves, flanged pipe, couplings and other pipeline components

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance
in design, development, production, installation and servicing

Licence No.QEC 0017

Standards Mark

AS/NZS2280-1999

Ductile Iron Presssure Pipes & Fittings

Licence No.1199

AS2638-1999

Sluice Valves for Waterworks Purposes

Licence No.1200

AS3952-1991

Water Supply-DN80 Spring Hydrant Valve for General Purposes

Licence No.1202

AS3579-1993

Cast Iron Wedge Gate Valves for General Purposes

Licence No.2234

Yennora Manufacturing Facility

ley Road

hara NSW

ducts: Ductile iron pipe

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance
in design, development production installation and servicing

Licence No. QEC 0015

Standards Mark

AS/NZS2280-1999

Ductile Iron Pressure Pipes & Fittings

Licence No. 0883

We further certify that the items supplied for the above Order/Contract have been manufactured and tested in accordance with the appropriate Australian product standards.

Other ancillary products supplied with this Order/Contract have been purchased from approved/certified manufacturers according to the requirements of AS/NZS ISO 9002.

REF No	345
HORNICK	
DATE REC 07 NOV 2003	
ACTION / COMP	✓ COMP
	✓ 10/11

tyco**Flow Control****Tyco Water**

Tyco Water Pty Ltd
 ABN 75 087 415 745
 Customer Centre Gold Coast
 63 Currumbin Creek Road
 PO Box 150
 Currumbin QLD 4223

Phone: (07) 5589 4400
 Fax: (07) 5534 7079
 Email: ccg@tycowater.com

SUPPLIER'S CONFORMANCE CERTIFICATE

CERTIFICATE NO: 683472
CUSTOMER: HORNICK CONSTRUCTIONS
INVOICE NO: 683472

DATE: 10/11/03
ORDER NO: 57861/345
TRANS NO: 500562

We certify that Tyco Water Customer Centre Gold Coast is licenced by Quality Assurance Services to AS/NZS ISO 9002 Quality systems-Model for quality assurance in production, installation and servicing (Licence No. 5459).

o Water manufacturing sites are also licenced by Quality Assurance Services as follows:

Currumbin Manufacturing Facility

63 Currumbin Creek Road
 Currumbin Queensland

Products: Ductile iron fittings, valves, flanged pipe, couplings and other pipeline components

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development, production, installation and servicing

Licence No.QEC 0017

Standards Mark

AS/NZS2280-1999

Ductile Iron Presssure Pipes & Fittings

Licence No.1199

AS2638-1999

Sluice Valves for Waterworks Purposes

Licence No.1200

AS3952-1991

Water Supply-DN80 Spring Hydrant Valve for General Purposes

Licence No.1202

AS3579-1993

Cast Iron Wedge Gate Valves for General Purposes

Licence No.2234

Yennora Manufacturing Facility

ley Road

Yennora NSW

Products: Ductile iron pipe

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development production installation and servicing

Licence No. QEC 0015

Standards Mark

AS/NZS2280-1999

Ductile Iron Pressure Pipes & Fittings

Licence No. 0883

We further certify that the items supplied for the above Order/Contract have been manufactured and tested in accordance with the appropriate Australian product standards.

Other ancillary products supplied with this Order/Contract have been purchased from approved/certified manufacturers according to the requirements of AS/NZS ISO 9002.

REF No.	345
DATE REC.	11 NOV 2003
ACTION	12/11
	25/11

Co Pies To J M M

tyco**Flow Control****Tyco Water**

Tyco Water Pty Ltd
 ABN 75 087 415 745
 Customer Centre Gold Coast
 63 Currumbin Creek Road
 PO Box 150
 Currumbin QLD 4223

Phone: (07) 5589 4400
 Fax: (07) 5534 7079
 Email: ccg@tycowater.com

SUPPLIER'S CONFORMANCE CERTIFICATE

CERTIFICATE NO:	684387	DATE:	13/11/03
CUSTOMER:	HORNICK CONSTRUCTIONS	ORDER NO:	57861/345
INVOICE NO:	684387	TRANS NO:	500586

We certify that Tyco Water Customer Centre Gold Coast is licenced by Quality Assurance Services to AS/NZS ISO 9002 Quality systems-Model for quality assurance in production, installation and servicing (Licence No. 5459).

so Water manufacturing sites are also licenced by Quality Assurance Services as follows:

Currumbin Manufacturing Facility

63 Currumbin Creek Road
 Currumbin Queensland

Products: Ductile iron fittings, valves, flanged pipe, couplings and other pipeline components

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development, production, installation and servicing

Licence No.QEC 0017

Standards Mark

AS/NZS2280-1999

Ductile Iron Pressure Pipes & Fittings

Licence No.1199

AS2638-1999

Sluice Valves for Waterworks Purposes

Licence No.1200

AS3952-1991

Water Supply-DN80 Spring Hydrant Valve for General Purposes

Licence No.1202

AS3579-1993

Cast Iron Wedge Gate Valves for General Purposes

Licence No.2234

Yennora Manufacturing Facility

Yennora Road
 Yennora NSW

Products: Ductile iron pipe

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development production installation and servicing

Licence No. QEC 0015

Standards Mark

AS/NZS2280-1999

Ductile Iron Pressure Pipes & Fittings

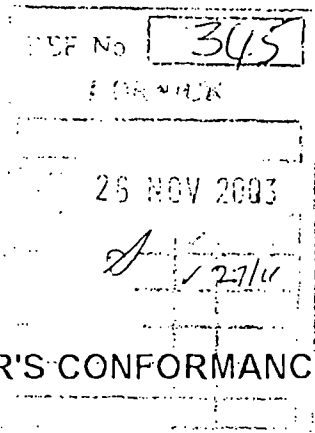
Licence No. 0883

We further certify that the items supplied for the above Order/Contract have been manufactured and tested in accordance with the appropriate Australian product standards.

REF No. 345

Other ancillary products supplied with this Order/Contract have been purchased from approved/certified manufacturers according to the requirements of AS/NZS ISO 9002.

DATE	13/11/2003
TIME	14/11
SIGNATURE	
INITIALS	
REMARKS	

tyco**Flow Control****Tyco Water**

Tyco Water Pty Ltd
 ABN 75 087 415 745
 Customer Centre Gold Coas
 63 Currumbin Creek Road
 PO Box 150
 Currumbin QLD 4223

Phone: (07) 5589 4400
 Fax: (07) 5534 7079
 Email: ccg@tycowater.com

SUPPLIER'S CONFORMANCE CERTIFICATE

CERTIFICATE NO:	688026	DATE:	26/11/03
CUSTOMER:	HORNICK CONSTRUCTIONS	ORDER NO:	57879/345
INVOICE NO:	688026	TRANS NO:	504486

We certify that Tyco Water Customer Centre Gold Coast is licenced by Quality Assurance Services to AS/NZS ISO 9002 Quality systems-Model for quality assurance in production, installation and servicing (Licence No. 5459).

Tyco Water manufacturing sites are also licenced by Quality Assurance Services as follows:

Currumbin Manufacturing Facility

63 Currumbin Creek Road
 Currumbin Queensland

Products: Ductile iron fittings, valves, flanged pipe, couplings and other pipeline components

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development, production, installation and servicing

Licence No. QEC 0017

Standards Mark

AS/NZS2280-1999

Ductile Iron Presssure Pipes & Fittings

Licence No.1199

AS2638-1999

Sluice Valves for Waterworks Purposes

Licence No.1200

AS3952-1991

Water Supply-DN80 Spring Hydrant Valve for General Purposes

Licence No.1202

AS3579-1993

Cast Iron Wedge Gate Valves for General Purposes

Licence No.2234

Yennora Manufacturing Facility

Yennora Road

Yennora NSW

Products: Ductile iron pipe

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development production installation and servicing

Licence No. QEC 0015

Standards Mark

AS/NZS2280-1999

Ductile Iron Pressure Pipes & Fittings

Licence No. 0883

We further certify that the items supplied for the above Order/Contract have been manufactured and tested in accordance with the appropriate Australian product standards.

Other ancillary products supplied with this Order/Contract have been purchased from approved/certified manufacturers according to the requirements of AS/NZS ISO 9002.

tyco*Flow Control***Tyco Water**

Tyco Water Pty Ltd
 ABN 75 087 415 745
 Customer Centre Gold Coast
 63 Currumbin Creek Road
 PO Box 150
 Currumbin QLD 4223

Phone: (07) 5589 4400
 Fax: (07) 5534 7079
 Email: ccg@tycowater.com

SUPPLIER'S CONFORMANCE CERTIFICATE

CERTIFICATE NO: 688379
CUSTOMER: HORNICK CONSTRUCTIONS
INVOICE NO: 688379

DATE: 27/11/03
ORDER NO: 57194/345
TRANS NO: 504318

We certify that Tyco Water Customer Centre Gold Coast is licenced by Quality Assurance Services to AS/NZS ISO 9002 Quality systems-Model for quality assurance in production, installation and servicing (Licence No. 5459).

o Water manufacturing sites are also licenced by Quality Assurance Services as follows:

Currumbin Manufacturing Facility

63 Currumbin Creek Road
 Currumbin Queensland

Products: Ductile iron fittings, valves, flanged pipe, couplings and other pipeline components

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development, production, installation and servicing

Licence No. QEC 0017

Standards Mark

AS/NZS2280-1999

Ductile Iron Pressure Pipes & Fittings

Licence No. 1199

AS2638-1999

Sluice Valves for Waterworks Purposes

Licence No. 1200

AS3952-1991

Water Supply-DN80 Spring Hydrant Valve for General Purposes

Licence No. 1202

AS3579-1993

Cast Iron Wedge Gate Valves for General Purposes

Licence No. 2234

Yennora Manufacturing Facility

Yennora Road
 Yennora NSW

Products: Ductile iron pipe

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development production installation and servicing

Licence No. QEC 0015

Standards Mark

AS/NZS2280-1999

Ductile Iron Pressure Pipes & Fittings

Licence No. 0883

We further certify that the items supplied for the above Order/Contract have been manufactured and tested in accordance with the appropriate Australian product standards.

Other ancillary products supplied with this Order/Contract have been purchased from approved/certified manufacturers according to the requirements of AS/NZS ISO 9002.

tested in accordance	
REF No.	345
HORNICK	
DATE REC. 27 NOV 2003	
ACTION	COMP
✓	✓
28/11	

tyco**Flow Control****Tyco Water**

Tyco Water Pty Ltd
 ABN 75 087 415 745
 Customer Centre Gold Coas
 63 Currumbin Creek Road
 PO Box 150
 Currumbin QLD 4223

Phone: (07) 5589 4400
 Fax: (07) 5534 7079
 Email: ccg@tycowater.com

SUPPLIER'S CONFORMANCE CERTIFICATE

CERTIFICATE NO:	690248	DATE:	5/12/03
CUSTOMER:	HORNICK CONSTRUCTIONS	ORDER NO:	57194/345
INVOICE NO:	690248	TRANS NO:	504321

We certify that Tyco Water Customer Centre Gold Coast is licenced by Quality Assurance Services to AS/NZS ISO 9002
 Quality systems-Model for quality assurance in production, installation and servicing (Licence No. 5459).

o Water manufacturing sites are also licenced by Quality Assurance Services as follows:

Currumbin Manufacturing Facility

63 Currumbin Creek Road

Currumbin Queensland

Products: Ductile iron fittings, valves, flanged pipe, couplings and other pipeline components

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance
 in design, development, production, installation and servicing

Standards Mark

AS/NZS2280-1999

AS2638-1999

AS3952-1991

AS3579-1993

Ductile Iron Presssure Pipes & Fittings

Sluice Valves for Waterworks Purposes

Water Supply-DN80 Spring Hydrant Valve for General Purposes

Cast Iron Wedge Gate Valves for General Purposes

Licence No. QEC 0017

Licence No. 1199

Licence No. 1200

Licence No. 1202

Licence No. 2234

REF No. 345	
HORNICK	
DATE REC. 05 DEC 2003	
ACTION / COPY	COMP
✓	9/1/03

Yennora Manufacturing Facility

sley Road

Yennora NSW

Products: Ductile iron pipe

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance
 in design, development production installation and servicing

Licence No. QEC 0015

Standards Mark

AS/NZS2280-1999

Ductile Iron Pressure Pipes & Fittings

Licence No. 0883

We further certify that the items supplied for the above Order/Contract have been manufactured and tested in accordance with the appropriate Australian product standards.

Other ancillary products supplied with this Order/Contract have been purchased from approved/certified manufacturers according to the requirements of AS/NZS ISO 9002.

tyco**Flow Control****Tyco Water**

Tyco Water Pty Ltd
 ABN 75 087 415 745
 Customer Centre Gold Coas
 63 Currumbin Creek Road
 PO Box 150
 Currumbin QLD 4223

Phone: (07) 5589 4400
 Fax: (07) 5534 7079
 Email: ccg@tycowater.com

SUPPLIER'S CONFORMANCE CERTIFICATE

CERTIFICATE NO:	696004	DATE:	18/12/03
CUSTOMER:	HORNICK CONSTRUCTIONS	ORDER NO:	57623/345
INVOICE NO:	696004	TRANS NO:	5C8942

We certify that Tyco Water Customer Centre Gold Coast is licenced by Quality Assurance Services to AS/NZS ISO 9002 Quality systems-Model for quality assurance in production, installation and servicing (Licence No. 5459).

Tyco Water manufacturing sites are also licenced by Quality Assurance Services as follows:

Currumbin Manufacturing Facility

63 Currumbin Creek Road

Currumbin Queensland

Products: Ductile iron fittings, valves, flanged pipe, couplings and other pipeline components

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development, production, installation and servicing

Licence No. QEC 0017

Standards Mark

AS/NZS2280-1999

Ductile Iron Pressure Pipes & Fittings

Licence No. 1199

AS2638-1999

Sluice Valves for Waterworks Purposes

Licence No. 1200

AS3952-1991

Water Supply-DN80 Spring Hydrant Valve for General Purposes

Licence No. 1202

AS3579-1993

Cast Iron Wedge Gate Valves for General Purposes

Licence No. 2234

Yennora Manufacturing Facility

Dunsley Road

Yennora NSW

Products: Ductile iron pipe

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development production installation and servicing

Licence No. QEC 0015

Standards Mark

AS/NZS2280-1999

Ductile Iron Pressure Pipes & Fittings

Licence No. 0883

REF No	345
CERT. F. CATES	
10 JUL 2003	
19/12	
Licence No. 0883	

We further certify that the items supplied for the above Order/Contract have been manufactured and tested in accordance with the appropriate Australian product standards.

Other ancillary products supplied with this Order/Contract have been purchased from approved/certified manufacturers according to the requirements of AS/NZS ISO 9002.

tyco**Flow Control****Tyco Water**

Tyco Water Pty Ltd
 ABN 75 087 415 745
 Customer Centre Gold Coas
 63 Currumbin Creek Road
 PO Box 150
 Currumbin QLD 4223

Phone: (07) 5589 4400
 Fax: (07) 5534 7079
 Email: ccg@tycowater.com

SUPPLIER'S CONFORMANCE CERTIFICATE

CERTIFICATE NO:	714004	DATE:	30/01/04
CUSTOMER:	HORNICK CONSTRUCTIONS	ORDER NO:	57967.345
INVOICE NO:	714004	TRANS NO:	513689

We certify that Tyco Water Customer Centre Gold Coast is licenced by Quality Assurance Services to AS/NZS ISO 9002 Quality systems-Model for quality assurance in production, installation and servicing (Licence No. 5459).

co Water manufacturing sites are also licenced by Quality Assurance Services as follows:

Currumbin Manufacturing Facility

63 Currumbin Creek Road
 Currumbin Queensland

Products: Ductile iron fittings, valves, flanged pipe, couplings and other pipeline components

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development, production, installation and servicing

Licence No.QEC 0017

Standards Mark

AS/NZS2280-1999

Ductile Iron Presssure Pipes & Fittings

Licence No.1199

AS2638-1999

Sluice Valves for Waterworks Purposes

Licence No.1200

AS3952-1991

Water Supply-DN80 Spring Hydrant Valve for General Purposes

Licence No.1202

AS3579-1993

Cast Iron Wedge Gate Valves for General Purposes

Licence No.2234

Yennora Manufacturing Facility

Jrsley Road

Yennora NSW

Products: Ductile iron pipe

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development production installation and servicing

Licence No. QEC 0015

Standards Mark

AS/NZS2280-1999

Ductile Iron Pressure Pipes & Fittings

Licence No. 0883

We further certify that the items supplied for the above Order/Contract have been manufactured and tested in accordance with the appropriate Australian product standards.

Other ancillary products supplied with this Order/Contract have been purchased from approved/certified manufacturers according to the requirements of AS/NZS ISO 9002.

REF No.	345
DATE REC	2 FEB 2004
ACTION	2/2

tyco

Flow Control

Tyco Water

Tyco Water Pty Ltd
 ABN 75 087 415 745
 Customer Centre Gold Coast
 63 Currumbin Creek Road
 PO Box 150
 Currumbin QLD 4223

Phone: (07) 5589 4400
 Fax: (07) 5534 7079
 Email: ccg@tycowater.com

SUPPLIER'S CONFORMANCE CERTIFICATE

CERTIFICATE NO:	719029	DATE:	24/02/04
CUSTOMER:	HORNICK CONSTRUCTIONS	ORDER NO:	57194/345
INVOICE NO:	719029	TRANS NO:	944101

We certify that Tyco Water Customer Centre Gold Coast is licenced by Quality Assurance Services to AS/NZS ISO 9002
 Quality systems-Model for quality assurance in production, installation and servicing (Licence No. 5459).

Water manufacturing sites are also licenced by Quality Assurance Services as follows:

Currumbin Manufacturing Facility

63 Currumbin Creek Road
 Currumbin Queensland

Products: Ductile iron fittings, valves, flanged pipe, couplings and other pipeline components

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development, production, installation and servicing

Licence No. QEC 0017

Standards Mark

AS/NZS2280-1999

Ductile Iron Pressure Pipes & Fittings

Licence No. 1199

AS2638-1999

Sluice Valves for Waterworks Purposes

Licence No. 1200

AS3952-1991

Water Supply-DN80 Spring Hydrant Valve for General Purposes

Licence No. 1202

AS3579-1993

Cast Iron Wedge Gate Valves for General Purposes

Licence No. 2234

Yennora Manufacturing Facility

Y Road

NSW

Products: Ductile iron pipe

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development production installation and servicing

Licence No. QEC 0015

Standards Mark

AS/NZS2280-1999

Ductile Iron Pressure Pipes & Fittings

Licence No. 0883

We further certify that the items supplied for the above Order/Contract have been manufactured and tested in accordance with the appropriate Australian product standards.

Other ancillary products supplied with this Order/Contract have been purchased from approved/certified manufacturers according to the requirements of AS/NZS ISO 9002.

ORDER No. 345	
HORNICK	
DATE REC.	24 FEB 2004
ACTION / COPY	23/2

