

GCV Three-Port Control Valves

QLM and QLD Series

Description

The QLM and QLD are three-port control valves which have linear characteristics for mixing or diverting service. These valves can be used on thermal oil, compressed air, steam, condensate and some other fluids. They are available in four body materials: cast iron, SG iron, carbon steel or stainless steel. All valves can be supplied with the standard metal-to-metal seats, stellite facing for increased resistance to wear or soft seats for tight shut-off. The standard stem sealing is by spring adjusted PTFE chevrons but high temperature graphite seals or metal bellows with supplementary safety packing may also be specified.

The QLM and QLD three-port control valves can be used with the following actuators:

Pneumatic:	PN5700 series
	PN6700 series
	PN7000 series
	PN8000 series
	PN9000E series
	PN9000R series
Electric:	EL7200 series
	AEL5 series
	AEL6 series

Technical data

Plug design	Parabolic/vee port	
Flow characteristics	Linear	
Leakage rate	Metal-to-metal seat	EN 60534-4 Class IV
	Stellite faced	Maximum of 0.005% of Kv
	PTFE soft seal	EN 60534-4 Class VI
Rangeability	30:1	
Travel	DN15 to DN50	20 mm
	DN65 to DN100	30 mm
	DN125 to DN200	50 mm

Sizes and pipe connections

All valve flanges referred to in this document are in accordance with EN 1092. Note: JIS and ASME flange options are also available on request.

Limiting conditions

	QL33M and QL33D	PN16
Body design conditions	QL43M, QL43D, QL63M and QL63D	PN40
	QL73M and QL73D	PN25

Maximum differential pressures See specific actuator Technical Information Sheet.

Stem seal:	Standard bonnet	PTFE	Maximum 232°C
		Graphite	Maximum 250°C
	Extended bonnet	PTFE	Maximum 250°C
		Graphite	Maximum 400°C

	Type	Body material	Connection	Size range
QLM: Mixing service	QL33M	Cast iron	PN16	DN15, 20, 25, 32, 40, 50, 65, 80, 100, 125, 150 and 200
	QL43M*	Carbon steel	PN25/PN40	DN15, 20, 25, 32, 40, 50, 65, 80, 100, 125, 150 and 200
	QL63M*	Stainless steel	PN25/PN40	DN15, 20, 25, 32, 40, 50, 65, 80, 100, 125, 150 and 200
	QL73M	SG iron	PN16/PN25	DN15, 20, 25, 32, 40, 50, 65, 80, 100, 125, 150 and 200
QLD: Diverting service	QL33D	Cast iron	PN16	DN25, 32, 40, 50, 65, 80, 100, 125, 150 and 200
	QL43D*	Carbon steel	PN25/PN40	DN25, 32, 40, 50, 65, 80, 100, 125, 150 and 200
	QL63D*	Stainless steel	PN25/PN40	DN25, 32, 40, 50, 65, 80, 100, 125, 150 and 200
	QL73D	SG iron	PN16/PN25	DN25, 32, 40, 50, 65, 80, 100, 125, 150 and 200

* Note: QL43M, QL43D, QL63M and QL63D three-port control valves are also available with PN16 flanges by special order.

Operating limit conditions

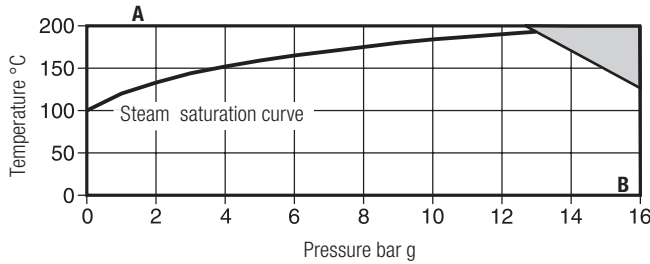
Material	Body		Bonnet												
			Standard				Extended				Bellows				
			PTFE		Graphite		PTFE		Graphite		PN16		PN25		
QL33M and QL33D (cast iron)	Pressure (bar)	16	13	16	13	16	13	-	-	16	13	-	-		
	Temperature (°C)	-5/+120	200	-5/+120	200	-5/+120	200	-	-	-5/+120	200	-	-		
QL73M and QL73D (SG iron)	Pressure (bar)	25	15	25	18.7	25	18	25	18	25	15	16	11	25	15
	Temperature (°C)	-10/+120	300	-5/+120	232	-5/+120	250	-10/+120	250	-10/+120	300	-10/+120	300	-10/+120	300
QL43M and QL43D (carbon steel)	Pressure (bar)	40	21	40	33	40	32	40	32	40	21	16	10	25	16
	Temperature (°C)	-29/+120	400	-5/+120	232	-5/+120	250	-29/+120	250	-29/+120	400	-10/+120	350	-10/+120	350
QL63M and QL63D (stainless steel)	Pressure (bar)	40	22.1	40	26.8	40	26.2	40	26.2	40	22	16	10	25	16
	Temperature (°C)	-29/+120	400	-5/+120	232	-5/+120	250	-29/+120	250	-29/+129	400	-10/+120	350	-10/+120	350

Differential pressure

For the maximum available differential pressures, see the relevant pneumatic or electrical actuator Technical Information sheets.

Operating range

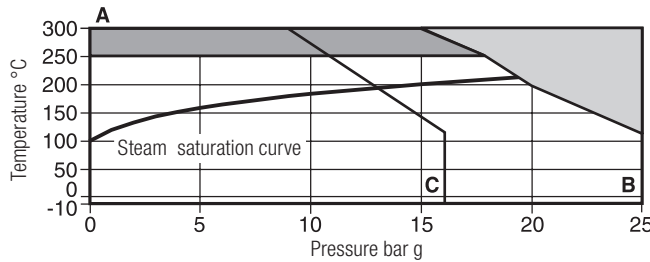
QL33M and QL33D (cast iron)



The product **must not** be used in this region.

A - B Flanged PN16

QL73M and QL73D (SG iron)



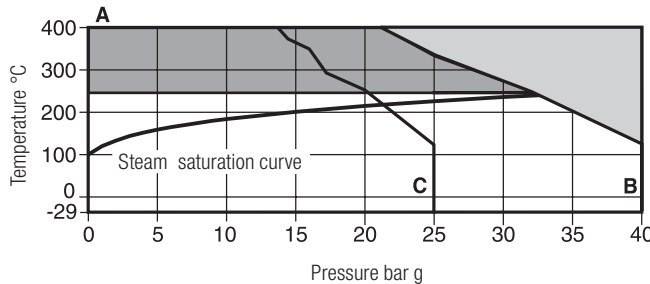
The product **must not** be used in this region.

High temperature packing is required.

A - B Flanged PN25

A - C Flanged PN16

QL43M and QL43D (carbon steel)



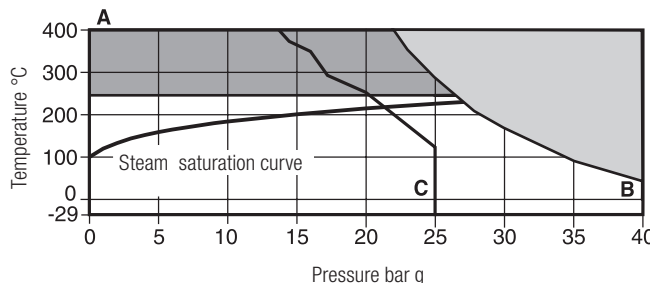
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High temperature packing is required.

A - B Flanged PN40

A - C Flanged PN25

QL63M and QL63D (stainless steel)



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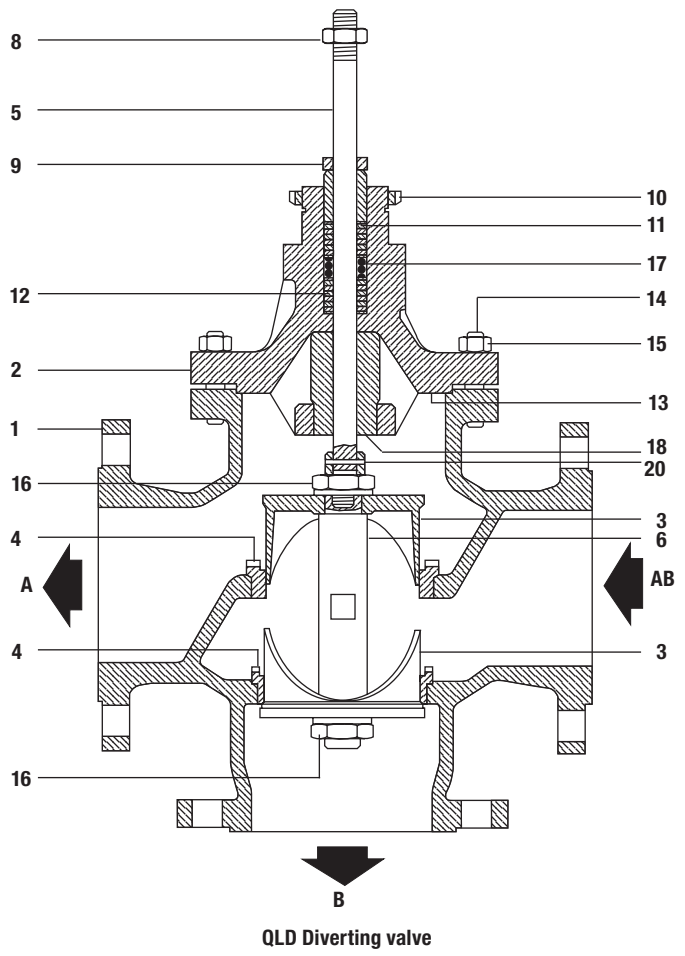
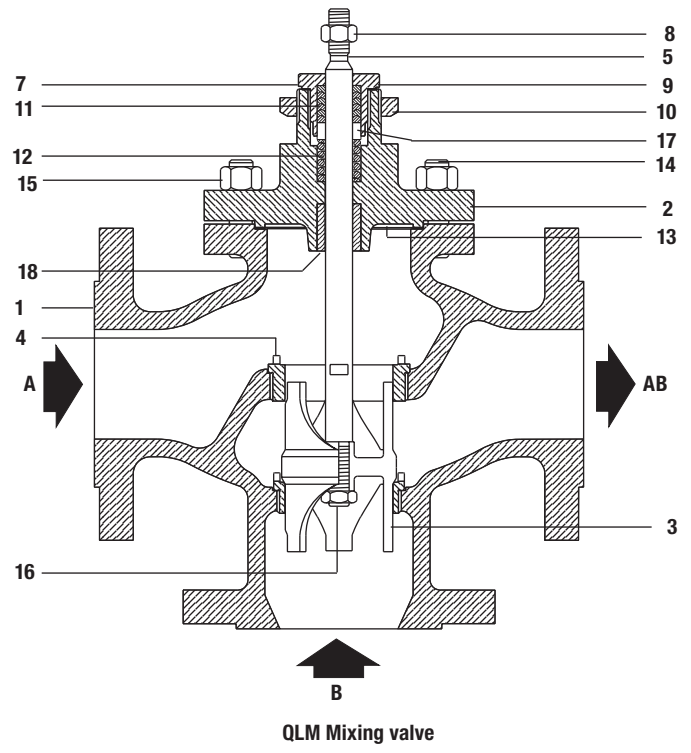
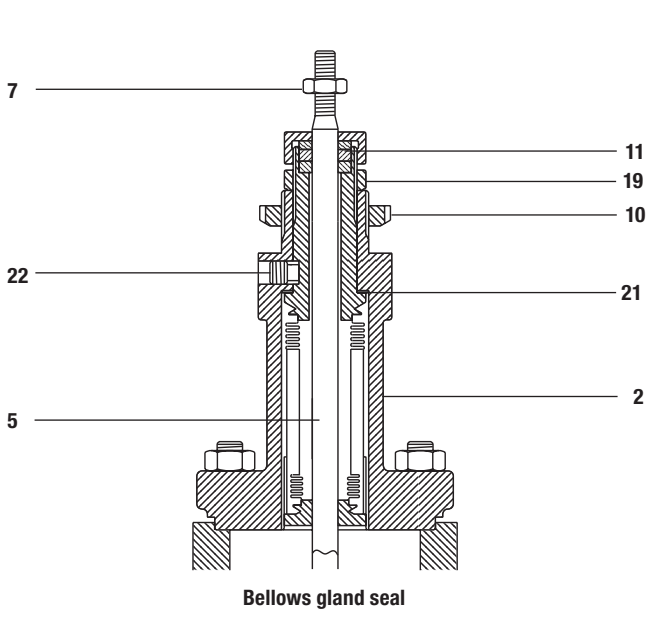
High temperature packing is required.

A - B Flanged PN40

A - C Flanged PN25

Materials

	Type	No.	Part	Material	Material designation ASTM / DIN STD	
Cast iron, SG iron and carbon steel valves	Cast iron	1	Body	Cast iron	EN-GJL-250	
		2	Standard bonnet	SG iron	EN-GJS-400-18	
	Extended bonnet		Carbon steel	1.0460		
	SG iron	1	Body	SG iron	EN-GJS-400-18	
		2	Standard bonnet	SG iron	EN-GJS-400-18	
			Extended bonnet	Carbon steel	1.0460	
	Carbon steel	1	Body	Carbon steel	1.0619	
		2	Standard bonnet	Carbon steel	1.7131	
			Extended bonnet	Carbon steel	1.0460	
	Cast iron, SG iron and carbon steel valves	Cast iron SG iron Carbon steel	3	Plug(s)	Stainless steel	BS 970 431 S29
			4	Valve seats	Stainless steel	BS 970 431 S29
			5	Valve stem	Stainless steel	BS 970 431 S29
				Bellows	Stainless steel	AISI 316 L
			6	Spacer	Stainless steel	AISI 304
			7	Stuffing box gasket	Graphite	
			8	Lock-nut	Stainless steel	AISI 304
			9	Stuffing box	Stainless steel	BS 970 431 S29
			10	Mounting nut	Zinc plated steel	NFA 35553 XC 18S
			11	Packing	PTFE / graphite	PTFE/graphite
			12	Spring	Stainless steel	BS 2056 316 S42
			13	Bonnet gasket	Graphite	
			14	Stud	Carbon steel	A193 B7M
15			Nut	Carbon steel	A194 Gr. 2H	
16			Lock-nut	Stainless steel	AISI 316	
17			Guide bush	PTFE		
18			Stem guide bush	Stainless steel	Hardened AISI 440B	
19			Lock-nut	Stainless steel	AISI 316	
20			Pin	Stainless steel	AISI 316	
21			Gasket	Graphite		
22			Anti-rotation screw	Stainless steel	AISI 304	
Stainless steel valves			Stainless steel	1	Body	Stainless steel
	2	Standard bonnet		Stainless steel	1.4552	
		Extended bonnet		Stainless steel	ASTM A182 F316	
	3	Valve plug		Stainless steel	ASTM A351 CF8M	
	4	Valve seat		Stainless steel	ASTM A276 316L	
	5	Valve stem		Stainless steel	ASTM A276 316L	
		Bellows		Stainless steel	AISI 316 L	
	6	Spacer		Stainless steel	AISI 316	
	7	Stuffing box gasket		Stainless steel	AISI 304	
	8	Lock-nut		Stainless steel	AISI 316	
	9	Stuffing box		Stainless steel	AISI 316	
	10	Mounting nut		Zinc plated steel	NFA 35553 XC 18S	
	11	Packing		PTFE / graphite	PTFE/graphite	
	12	Spring		Stainless steel	BS 2056 316 S42	
	13	Bonnet gasket		Graphite		
	14	Stud		Stainless steel	A193 B8	
	15	Nut		Stainless steel	A194 Gr. 304	
	16	Lock-nut		Stainless steel	AISI 316	
	17	Guide bush		PTFE		
	18	Stem guide bush		Stainless steel	Hard faced AISI 316	
	19	Lock-nut		Stainless steel	AISI 316	
	20	Pin		Stainless steel	AISI 316	
21	Gasket	Graphite				
22	Anti-rotation screw	Stainless steel	AISI 304			



K_v flowrate coefficients and travel

Nominal size		DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100	DN125	DN150	DN200
Travel	mm	20	20	20	20	20	20	30	30	30	50	50	50
Mixing service	K _v	4	6	10	17	25	35	62	100	130	195	310	450
Diverting service	K _v	-	-	10	17	25	35	62	100	130	195	310	450

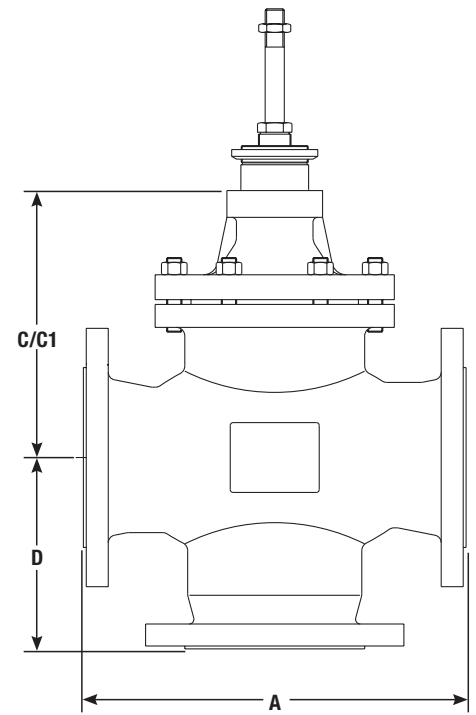
K_v flowrate coefficients are shown in metric units (K_v = water flowrate in m³/h with 1 bar differential pressure).

For conversion:
 C_v (UK) = K_v x 0.963
 C_v (US) = K_v x 1.156

Dimensions and weights (approximate) in mm and kg

Size	Dimensions (mm)				Weights (kg)	
					Standard	Extended/Bellows
DN15	130	90	105	166	7.0	166.0
DN20	150	95	105	166	6.9	8.3
DN25	160	100	109	170	8.8	10.2
DN32	180	105	124	185	11.0	12.4
DN40	200	115	137	190	14.5	15.9
DN50	230	125	143	196	18.5	20.0
DN65	290	145	160	357	31.0	33.0
DN80	310	155	165	361	40.8	42.8
DN100	350	175	180	373	48.5	50.5
DN125	400	200	280	445	78.0	81.0
DN150	480	225	300	463	115.0	118.0
DN200	600	275	370	554	143.0	147.0

* **Note:** The C1 dimension shown refers to valves fitted with an extended bonnet, with or without PN16 and PN25 bellows.



Q series control valve selection guide:

Valve size	DN15 and DN20 (mixing service only)	DN25 Q Q 4 3 M K_v10 PN40
	DN25, DN32, DN40, DN50, DN65, DN80, DN100, DN120, DN150 and DN200 (mixing and diverting service)	
Valve series	Q = Q series 3-port	
Valve characteristic	L = Linear	
	3 = Cast iron	
Body material	4 = Carbon steel	
	6 = Stainless steel	
	7 = SG iron	
Connections	3 = Flanged	
3-port design	D = Diverting	
	M = Mixing	
Stem sealing	Blank = Standard PTFE chevron	
	H = Graphite packing	
	B1 = PN16 bellows seal	
	B2 = PN25 bellows seal	
Seating option	Blank = Standard metal-to-metal	
	W = Hard facing (stellite)	
	G = Soft seal (PTFE)	
Other options	Blank = Standard	
	X = Extended bonnet	
Flow coefficient	To be specified	
Connection type	To be specified	

Selection example:

DN25	Q	L	4	3	M				K _v 10	PN40
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How to order

Example: 1 off GESTRA DN25 QL43M K_v10 flanged to PN40.

Spare parts

The spare parts available are in heavy outline. Parts drawn in broken line are not supplied as spares.

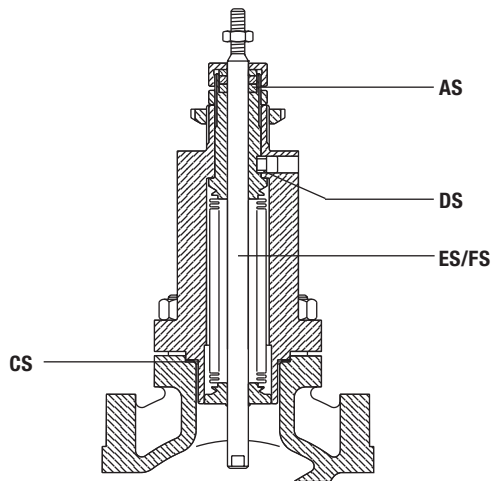
These spares are for the following valves:-

QL33D, QL43D, QL63D, QL73D	Diverting	DN25 to DN200
QL33M, QL43M, QL63M, QL73M	Mixing	DN15 to DN200

Available spares

Actuator clamping nut	A
PTFE gland seal kit for DN15 to DN50 only (gasket, chevrons, spring, upper and lower bearings and 'O' ring)	B
PTFE gland seal kit for DN65 to DN100 only (gasket, chevrons, guide bush, spring)	B1
PTFE gland seal kit for DN125 to DN200 only (gasket, chevrons, guide bush, spring)	B2
Graphite gland seal kit for DN15 to DN200 (graphite stem seals and stuffing box gasket)	C
Stem, plug and bonnet gasket	D, E
Bonnet gasket (packet of 3)	E
Seats (1 off top and bottom)	F

Note: PTFE and graphite seal kits are suitable for stuffing box and extended bonnet versions.



Available spares for valves with bellows seal

Graphite gland seal kit	(packing set)	AS
Seats	(2 items)	BS
Bonnet gasket	(packet of 3)	CS
Bellows gasket	(packet of 3)	DS
Bellows, stem, plug and bellows gasket	Mixing valves	FS, CS, DS
	Diverting valves	FS, CS, DS

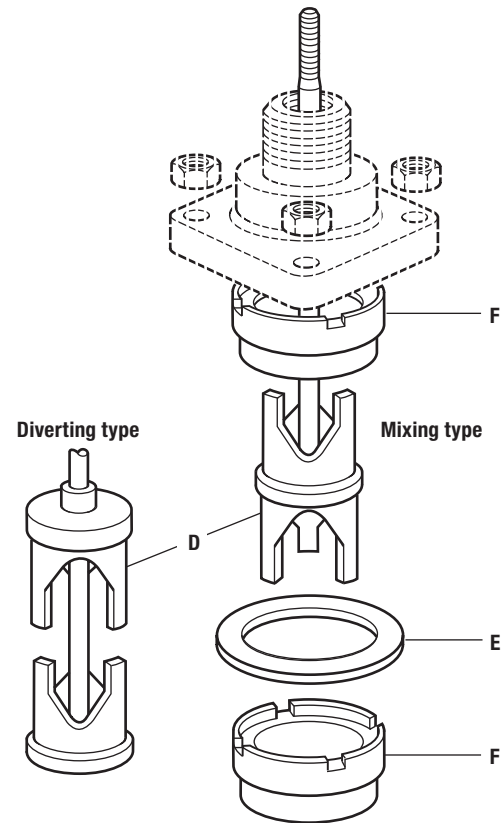
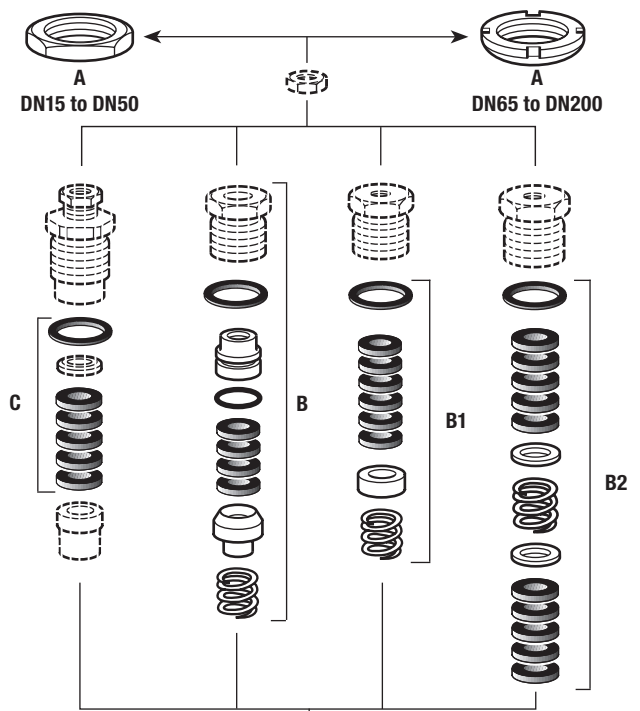
How to order spares

Always order spares by using the description given in the column headed 'Available spares', and state the size and type of valve including the date code of the product.

Example: 1 - PTFE gland seal kit for a GESTRA DN65 QL43M three port control valve. Date coded C03.

How to fit spares

Full fitting instructions are given in the Installation and Maintenance Instructions supplied with the spare.



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