

Servo- operated 2/2-way solenoid valves

EV220B



 **MODERN PLANT**

The Home of
Control & Automation
in Ireland

Danfoss

Data sheet

Servo-operated 2/2-way solenoid valves

Type EV220B 6 - EV220B 22



EV220B 6 - EV220B 22 is a direct servo-operated 2/2-way solenoid valve program with connections from 1/4" to 1".

This program is especially for OEM applications demanding a robust solution and moderate flow rates.

Features and versions:

- For water, oil, compressed air and similar neutral media
- Flow range from 0.2 – 19 m³/h
- Differential pressure from 0.1 – 30 bar
- Media temperature from -30 – 100 °C
- Ambient temperature: Up to 80 °C
- Coil enclosure: Up to IP67
- Thread connections: From G ¼ – G 1
- DN 6 – 22
- Viscosity: Up to 50 cSt
- Brass version NC and NO
- DZR brass version NC
- FKM and EPDM
- Also available with NPT thread

Brass valve body, NC



Conne- ction ISO 228/1	Seal material	Orifice size	K _v - value [m ³ /h]	Differential pressure min. to max. [bar] / coil type					Media temperature min. to max. [°C]	Code number		
				BA / BD	BB / BE	BB / BE	BG	BG				
				9 [W a.c]	10 [W AC]	18 [W DC]	12 [W AC]	20 [W DC]				
G 1/4	EPDM ¹⁾	6	0.7	0.1 – 20	0.1 – 20	0.1 – 10	0.1 – 20	0.1 – 20	-30 – 100	032U1236		
	FKM ²⁾			0.1 – 20	0.1 – 20	0.1 – 10	0.1 – 20	0.1 – 20	0 – 100	032U1237		
EPDM ¹⁾	G 3/8			10	1.5	0.1 – 20	0.1 – 20	0.1 – 10	0.1 – 20	0.1 – 20	-30 – 100	032U1241
FKM ²⁾						0.1 – 20	0.1 – 20	0.1 – 10	0.1 – 20	0.1 – 20	0 – 100	032U1242
G 1/2	EPDM ¹⁾	10	1.5	0.1 – 20	0.1 – 20	0.1 – 10	0.1 – 20	0.1 – 20	-30 – 100	032U1246		
	FKM ²⁾			0.1 – 20	0.1 – 20	0.1 – 10	0.1 – 20	0.1 – 20	0 – 100	032U1247		
	EPDM ¹⁾	11.5	2.3	0.1 – 10	0.1 – 10	0.1 – 10	0.1 – 10	0.1 – 10	-30 – 100	032U1279		
	FKM ²⁾			12	2.5	0.3 – 10	0.3 – 10	–	0.3 – 10	0.3 – 10	-30 – 100	032U1256
EPDM ¹⁾	18	6.0	0.3 – 10			0.3 – 10	–	0.3 – 10	0.3 – 10	0 – 100	032U1255	
FKM ²⁾				0.3 – 10	0.3 – 10					–	0.3 – 10	0.3 – 10
G 1	EPDM ¹⁾	22	6.0	0.3 – 10	0.3 – 10	–	0.3 – 10	0.3 – 10	-30 – 100	032U1263		
	FKM ²⁾								0.3 – 10	0.3 – 10	–	0.3 – 10

Brass valve body, NO



Conne- ction ISO 228/1	Seal material	Orifice size	K _v - value [m ³ /h]	Differential pressure min. to max. [bar] / coil type					Media temperature min. to max. [°C]	Code number
				BA / BD	BB / BE	BB / BE	BG	BG		
				9 [W AC]	10 [W AC]	18 [W DC]	12 [W AC]	20 [W d.c.]		
G 3/8	EPDM ¹⁾	6	0.7	0.1 – 10					-30 – 100	032U1238
	FKM ²⁾	6	0.7						0 – 100	032U1239
G 1/2	FKM ²⁾	10	1.0						0 – 100	032U1249

¹⁾ EPDM is recommended for water.

²⁾ FKM is suitable for oil and air. For water at max. 60 °C.

Technical data, NC and NO

Type	EV220B 6	EV220B 10	EV220B 12	EV220B 18	EV220B 22
Time to open [ms] ¹⁾	40	50	60	200	200
Time to close [ms] ¹⁾	250	300	300	500	500

¹⁾The times are indicative and apply to water. The exact times will depend on the pressure conditions.

Installation	Vertical solenoid system is recommended.		
Pressure range	NC: 0.1 – 30 bar NO: 0.1 – 10 bar		
Max.test pressure	EV220B 6 – EV220B10: 50 bar		EV220B 12 – EV220B 22: 16 bar
Ambient temperature	BA:	Up to 40 °C	
	BD / BE DC / BB DC:	Up to 50 °C	
	BB / BE AC / BG:	Up to 80 °C	
Viscosity	Max. 50 cSt		
Materials	Valve body	Brass	W.no. 2.0402
	Armature:	Stainless steel	W.no. 1.4105 / AISI 430FR
	Armature tube:	Stainless steel	W.no. 1.4306 / AISI 304L
	Armature stop:	Stainless steel	W.no. 1.4105 / AISI 430FR
	Springs:	Stainless steel	W.no. 1.4310 / AISI 301
	O-rings:	EPDM or FKM	
	Valve plate:	EPDM or FKM	
	Diaphragm:	EPDM or FKM	

Dezincification resistant brass (DZR) brass valve body NC



Conne- tion ISO 228/1	Seal material	Orifice size	K _v - value [m ³ /h]	Differential pressure min. to max. [bar] /coil type					Media temperature min. to max. [°C]	Code number
				BA	BB / BE		BG			
				9 [W AC]	10 [W AC]	18 [W DC]	12 [W AC]	20 [W DC]		
G 3/8	EPDM ¹⁾	6	0.7	0.1 – 20	0.1 – 20	0.1 – 10	0.1 – 20	0.1 – 20	-30 – 100	032U5807
	EPDM ¹⁾	10	1.5	0.1 – 20	0.1 – 20	0.1 – 10	0.1 – 20	0.1 – 20		032U5809
G 1/2	EPDM ¹⁾	10	1.5	0.1 – 20	0.1 – 20	0.1 – 10	0.1 – 20	0.1 – 20	-30 – 100	032U5810

¹⁾ EPDM is recommended for water .

**Technical data NC,
Dezincification resistant brass (DZR)**

Main type	EV220B 6	EV220B 10	EV220B 12
Time to open [ms] ¹⁾	40	50	60
Time to close [ms] ¹⁾	250	300	300

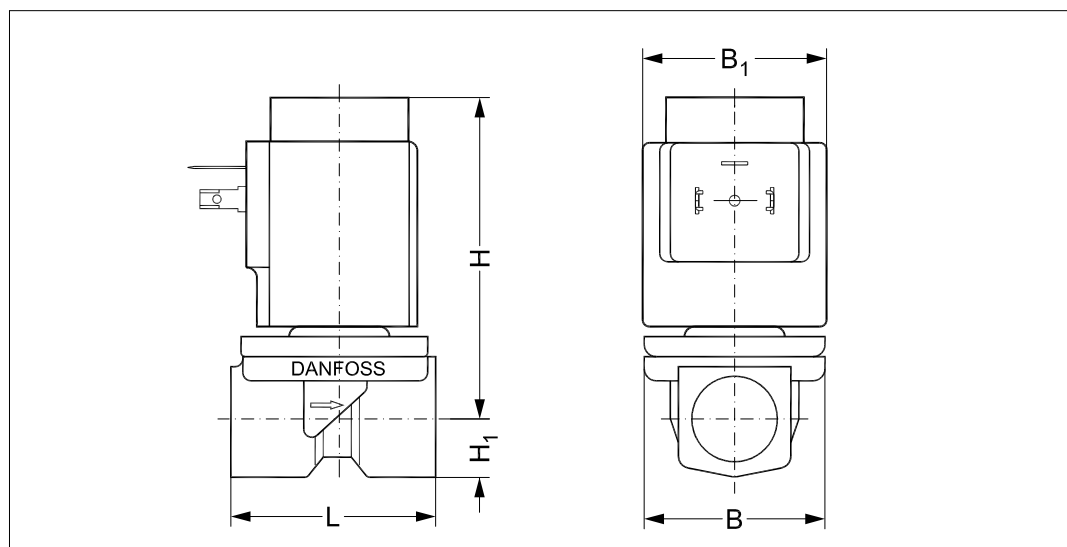
¹⁾ The times are indicative and apply to water. The exact times will depend on the pressure conditions.

Installation	Vertical solenoid system is recommended		
Max. test pressure	50 bar	50 bar	16 bar
Ambient temperature	BA:	Up to 40 °C	
	BD / BE DC / BB DC:	Up to 50 °C	
	BB / BE AC / BG:	Up to 80 °C	
Viscosity	Max. 50 cSt		
Materials	Valve body	Dezincification resistant brass (DZR)	CuZn36 Pb2As / CZ132
	Armature	Stainless Steel	W.no. 1.4105 / AISI 430FR
	Armature tube	Stainless Steel	W.no. 1.4306 / AISI 304L
	Armature stop	Stainless Steel	W.no. 1.4105 / AISI 430FR
	Springs	Stainless Steel	W.no. 1.4310 / AISI 301
	Valve seat	Stainless Steel	W.no. 1.4404 / AISI 316L
	O-rings	EPDM	
	Valve plate	EPDM	
Diaphragm	EPDM		

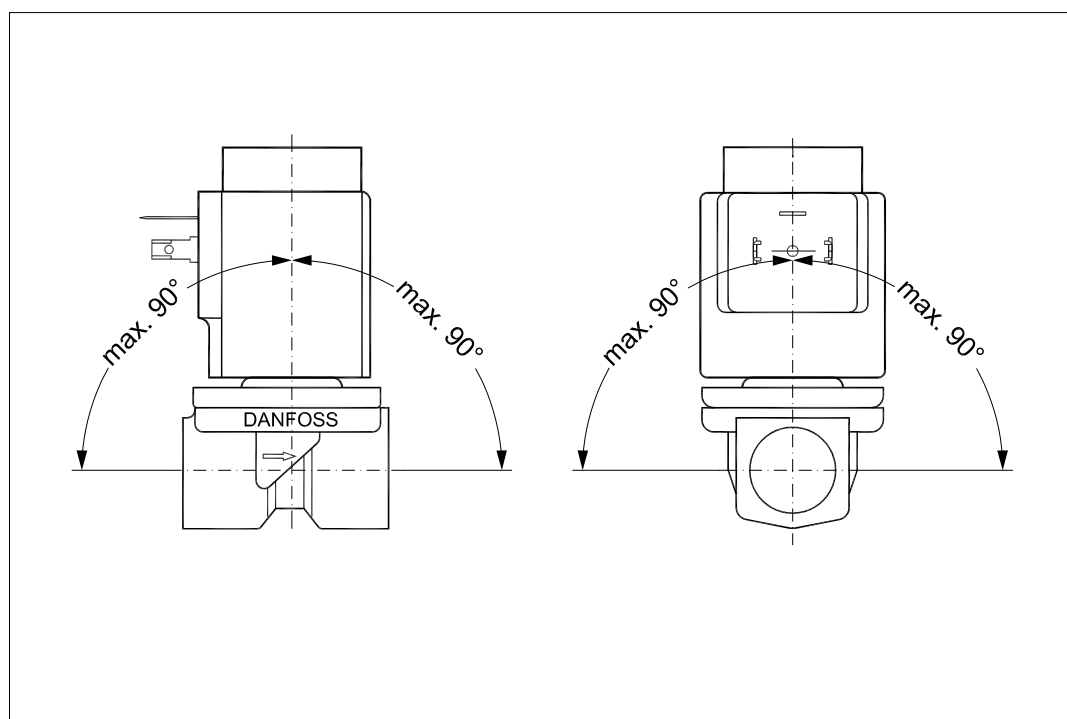
Dimensions and weight: Brass, DZR brass, NC and NO

Type	Weight gross valve body without coil [kg]	L [mm]	B [mm]	B ₁ [mm] / Coil type			H [mm]	H ₁ [mm]
				BA	BB / BE	BG		
EV220B 6B	0.22	45.5	43.5	32	46	68	78	13
EV220B 10B / EV220B11.5B	0.29	51.5	48.0	32	46	68	81	13
EV220B 12B	0.35	58.0	54.0	32	46	68	81	13
EV220B 18B	0.65	90.0	62.0	32	46	68	87	18
EV220B 22B	0.65	90.0	62.0	32	46	68	91	18

Dimensions



Mounting angle



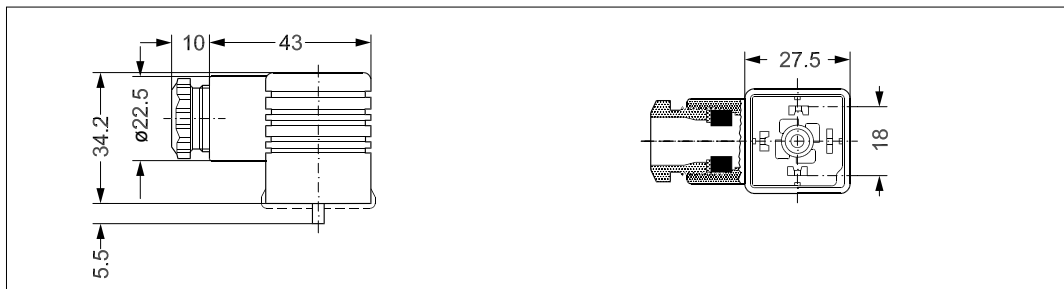
Below coils can be used with EV220B 6 - EV220B 22

Coil	Type	Power consumption	Enclosure	Features
	BA / BD, screw on	9 W AC 15 W AC	IP00 with spade connector	IP20 with protective cap, IP65 with cable plug
	BB, clip on	10 W AC 18 W DC	IP00 with spade connector	IP20 with protective cap, IP65 with cable plug
	BE, clip on	10 W AC 18 W DC	IP67	With terminal box
	BF, clip on	10 W AC 18 W DC	IP67	With 1 m cable
	BG, clip on	12 W AC 20 W DC	IP67	With terminal box
	BN, clip on	20 W 26 VA	IP67	Hum free With terminal box and 1 m cable
	BO, screw on	10 W 21 VA	IP67 only including seal kit 018Z0090	For explosion-risk environment zone 1. With terminal box and 5 m cable

For further information and for ordering, see separate data sheet for coils.

Accessories:
Cable plug

Application	Code number
GDM 2011 (grey) cable plug according to DIN 43650-A PG11	042N0156



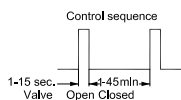
Universal electronic multi-timer, type ETM



Application	Voltage [V a.c.]	To use with coil	Ambient temperature [°C]	Code number
External adjustable timing from 1 to 45 minutes with 1 to 15 seconds drain open. With manual override (test button). Electrical connection DIN 43650 A / EN 175 301-803-A	24 – 240.	BA, BD, BB	-10 – 50	042N0185

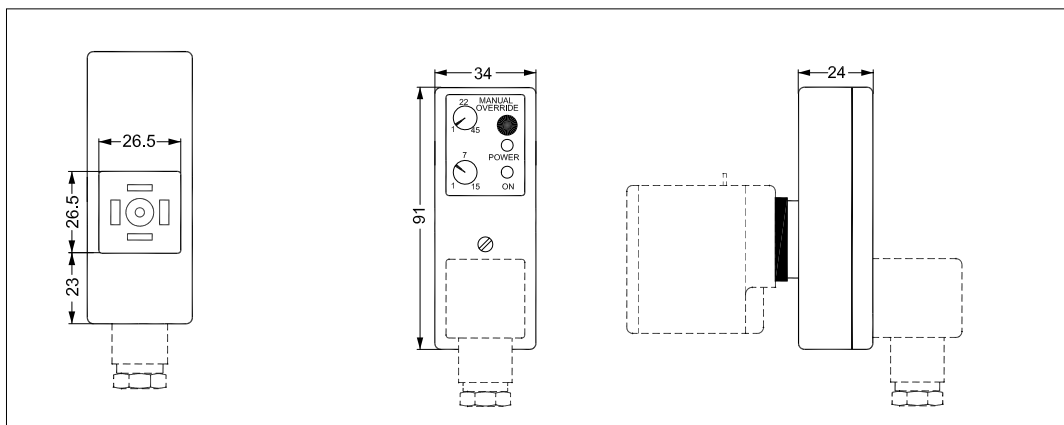
- Outside adjustments
- Light weight and small size
- External adjustable timing from 1 minute to 45 minutes with 1 to 15 seconds drain open
- One solid state timer fits all coil voltages from 24-240 V a.c
- Light diodes for indication
- All in one unit
- Manual override (test button)

Technical data

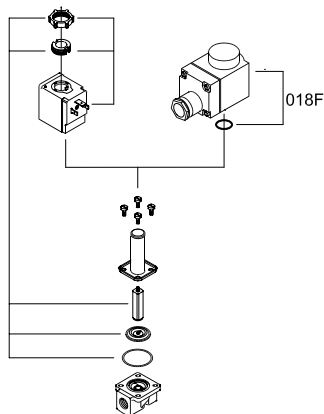


Type	ET 20 M
Voltage	24 – 240 V a.c./ 50 – 60 Hz.
Power rating	Max. 20 Watt
Enclosure	IP 00, IP65 with cable plug
Electrical connection	DIN connector (DIN 43650-A)
Ambient operating temperature range	-10°C – 50°C
Function	Start with pulse
Interval timer	1 – 45 min.
"On" timer	1 – 15 Sec.
Weight	0.084 kg

Dimensions



**Spare parts kit for
EV220B 6 - EV220B 22 B, NC
(brass body)
EV220B 6 - EV220B 12 BD
(dezincification resistant
brass body)**



Type	Seal material	Code number
EV220B 6B	EPDM ¹⁾	032U1062
EV220B 6B	FKM ²⁾	032U1063
EV220B 10B	EPDM ¹⁾	032U1065
EV220B 10B	FKM ²⁾	032U1066
EV220B 12B	EPDM ¹⁾	032U1068
EV220B 12B	FKM ²⁾	032U1067
EV220B 18 - EV220B 22	EPDM ¹⁾	032U1070
EV220B 18 - EV220B 22	FKM ²⁾	032U1069

¹⁾ EPDM is recommended for water.
²⁾ FKM is suitable for oil and air. For water at max. 60 °C.

EV220B 6 – EV220B 10 spare parts kit comprises:
Locking button
Nut for the coil
Armature with valve plate and spring
Diaphragm
O-ring

EV220B 12 – EV220B 22 spare parts kit comprises:
Locking button
Nut for the coil
Armature with valve plate and spring
Diaphragm

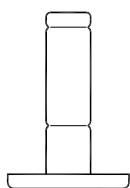
EV220B 6 - EV220B 10B



EV220B 12 - EV220B 22B



Assembled NO unit

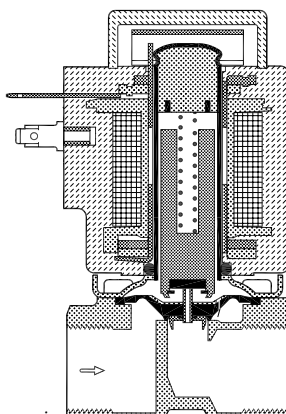


Type	Seal material	Code number
EV220B 6B	EPDM ¹⁾	032U0165
EV220B 6B	FKM ²⁾	032U0166
EV220B 10B	FKM ²⁾	032U0167

¹⁾ EPDM is recommended for water.
²⁾ FKM is suitable for oil and air. For water at max. 60 °C.

Spare part kit comprises:
NO actuator unit
Locking button
Nut for coil
O-ring

Function, NC



1. Armature spring
2. Armature
3. Valve plate
4. Equalizing orifice
5. Main orifice
6. Pilot orifice
7. Diaphragm
8. Coil

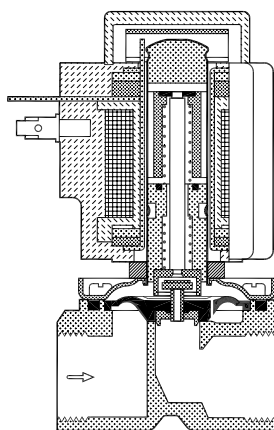
Coil voltage disconnected (closed):

When the supply voltage to the coil (8) is disconnected, the valve plate (3) is pressed down against the pilot orifice (6) by the armature spring (1). The pressure across the diaphragm (7) is built up via the equalizing orifice (4). The diaphragm closes the main orifice (5) as soon as the pressure across the diaphragm is equivalent to the inlet pressure. The valve will be closed for as long as the voltage to the coil is disconnected.

Coil voltage connected (open):

When voltage is applied to the coil, the pilot orifice (6) is opened. As the pilot orifice is larger than the equalizing orifice (4), the pressure across the diaphragm (7) drops and therefore it is lifted clear of the main orifice (5). The valve is now open and will be open for as long as the minimum differential pressure across the valve is maintained, and for as long as there is voltage to the coil.

Function, NO



1. Opening spring
2. Armature
3. Valve plate
4. Equalizing orifice
5. Main orifice
6. Pilot orifice
7. Diaphragm
8. Coil

Coil voltage disconnected (open):

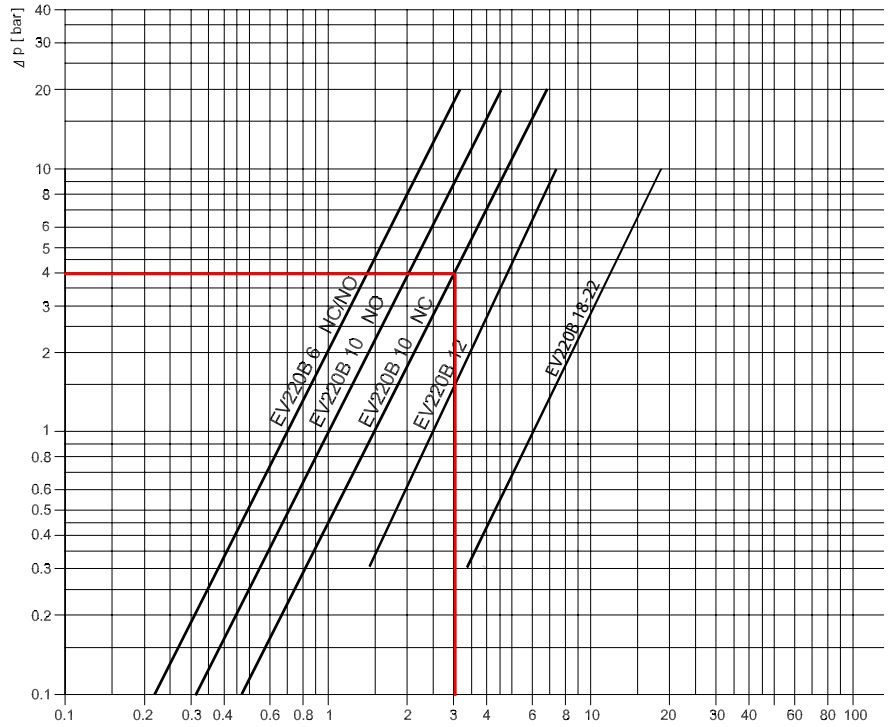
When the voltage to the coil (8) is disconnected, the pilot orifice (6) is open. As the pilot orifice is larger than the equalizing orifice (4), the pressure across the diaphragm (7) drops and therefore it is lifted clear of the main orifice (5). The valve will be open for as long as the minimum differential pressure across the valve is maintained, and for as long as the voltage to the coil is disconnected

Coil voltage connected (closed):

When voltage is applied to the coil, the valve plate (3) is pressed down against the pilot orifice (6). The pressure across the diaphragm (7) is built up via the equalizing orifice (4). The diaphragm closes the main orifice (5) as soon as the pressure across the diaphragm is equivalent to the inlet pressure. The valve will be closed for as long as there is voltage to the coil.

Capacity diagram:

Example, water: EV220B 10 NC,
at 4 bar diff. pressure: Approx: 3 m³/h





As Ireland's official distributor for Grohe, Modern Plant stock-holds and displays a large range of Grohe Commercial and Domestic products including showers, taps, frames and accessories.



Modern Plant Ltd are an official stocking distribution centre for Emerson Rosemount industrial flow, level, pressure, analytical and temperature instrumentation products.



Modern Plant Ltd offer a wide range of Stiebel Eltron products, from instantaneous hot water heating, stored water and electric space heating solutions.



Comfort through technology



We are one of Ireland's leading suppliers of Stuart Turner pumps to suit a variety of water boosting and water transfer applications across multiple market sectors.



Modern Plant Ltd are official stocking distributors for the full range of SMC products and have a wide range of parts available from our trade counter.



Modern Plant Ltd is the sole Irish distributor for the complete Medem gas safety product range. Both companies work closely to ensure the products remain best in class.



We stock a comprehensive range of Haws AG emergency equipment. We also supply special models to the highest level of quality as well as attractive, stylish drinking fountains and water coolers.



We are the official Irish distributor for all Metso Automation valve and control products, including NELES branded flanged ball valves, rotary plug valves, segment valves, high performance off-set butterfly valves, valve actuators and much more.



We stock a large range of Bobrick washroom accessories made from type 304 stainless steel... the material of choice and quality for public washrooms.



We stock Bonfiglioli power transmission and control products, providing automation solutions for all areas of industry including the packaging, beverage, textile, food, ceramic, wood, mining and metal processing industries.



We stock tapware and shower solutions for commercial changing facilities, toilets and accessibility to people with reduced mobility in collective facilities. High tech solutions for healthcare, elderly care and laboratories.



AMG specialise in quarter turn rack and pinion pneumatic actuators with many available from stock held locally in Modern Plant.



MODERN PLANT For more information call 00353 1 461 4300

Modern Plant Limited, Otter House, Naas Road, Clondalkin, D 22

E: sales @ modernplant.ie, W: www.modernplant.ie