

Products in this catalogue are identified by an **alphanumeric** or **numerical** identification system

ALPHANUMERICAL CATALOGUE NUMBERS

		E	290A385		
	SC	B	262C220		
	SC	X ⁽¹⁾ S	272A017		TPL 20655
	WP	E	030B013	E MBMO	
prefix					
pipe thread					
series no.					
basic number					
suffix					
TPL no.					

(1) The prefix X is always associated with the TPL (temporary parts list) number

PREFIX - Electrical characteristics, connectors etc.

prefix							description
1	2	3	4	5	6	7	
C	F	S	C				Solenoid with connector DIN 43650, 9,4 mm, pilot 302
C	F	V	T				Solenoid with connector M12, LED and protection, pilot 302
E	F						Explosionproof - NEMA 3, 4, 6, 7, 9
E	V						Explosionproof - NEMA 3, 4, 6, 7, 9 - 316 SS
W	B	L	P				Increased safety / encapsulation - moulded enclosure ATEX-IECEx
E	M						Encapsulated ATEX-IECEx
		E	T				Threaded conduit / ext. thread (M20 x 1.5)
				H	T		Class H - high temperature , +80°C ambient temp.
L	P	K	F				Flameproof - Alum. ATEX-IECEx
N	F						Flameproof - Alum. ATEX-IECEx
P	V						Encapsulated ATEX-IECEx
S	C						Solenoid with spade plug connector
		T					Threaded conduit / ext. thread (1/2" NPT)
W	P						Waterproof IP67 - metal enclosure
L	I						Intrinsically safe - Alum. enclosure ATEX-IECEx
N	F			I	S		I.S. with Aluminium IP67 enclosure ATEX-IECEx
W	S						Waterproof IP67 - 316 SS enclosure
W	S	E	M				Encapsulated ATEX-IECEx, 316 SS enclosure
W	S	L	I				Intrinsically safe - 316L enclosure ATEX-IECEx
W	S	L	P	K	F		Flameproof - 316L SS ATEX-IECEx
W	S	N	F				Flameproof - 316L SS ATEX-IECEx
W	S	N	F	I	S		I.S. with 316 SS IP67 enclosure ATEX-IECEx
S	G						Dust applications - coils and connectors - II 3 D, Ex tc IIIC
					X		Other special constructions *

* If prefix X is used, always specify Temporary Parts List (TPL) number

The catalogue number appears on the product label:



SUFFIX - Seal materials, manual operator etc.
(under the “options” column in the SPECIFICATIONS table)

suffix							description
1	2	3	4	5	6	7	
E	C	O					Epoxy coating on all external surfaces
N							EPDM (ethylene-propylene)
N	V						Oxygen service (CR (chloroprene)
H	W						FPM (fluoroelastomer) parts cleaned for oxygen service
J							Diaphragm for hot water service
							CR (chloroprene / neoprene)
			L	T			Low temperature
	M	B					Mounting bracket
			M	O			Impulse or maintained manual operator
			M	S			Maintained manual operator
			P				Dry gas, non-lubricated air construction
			Q				Long life construction
	S	L					Certified IEC 61508 Functional Safety data
T							PTFE (polytetrafluoroethylene)
V							FPM (fluoroelastomer)
			V	M			Primary vacuum
			V	H			Secondary vacuum

TPL (temporary parts list) number - always associated with the prefix X (under “options” in the catalogue)

TPL	description
20547	Version for external pilot air supply (series 551-553)
20655	Manual operator with pushbutton (series 272-374)
20674	LED and protection (prefix CFSC)
23012	2 Mounting holes $\varnothing M4$, 7 mm depth (stainless steel body, series 370)

NUMERICAL CATALOGUE NUMBERS

	165	0	0088	210555
	109	0	0040	970517
series no.				
type of standard material				
serial number				
				option code

OPTION CODES (under “options” in the catalogue)

option	description
210555	Protective cover mounted on valves 1/2-3/4-DN15-20 (series 165-166)
210556	Protective cover mounted on valves 1-1 1/4-DN25-32 (series 165-166)
210557	Protective cover mounted on valves 1 1/2-2-DN40-50 (series 165-166)
210558	Protective cover mounted on valves DN65-80 (series 165)
260657	2 explosionproof switches, 1 contact, -20°...+80°C, DN15..32 (series 165-166)
260658	2 explosionproof switches, 1 contact, -20°...+80°C, DN40..80 (series 165-166)
260660	2 explosionproof switches, 2 contacts, -20°...+80°C, DN15..32 (series 165-166)
260661	2 explosionproof switches, 2 contacts, -20°...+80°C, DN40..80 (series 165-166)
260663	2 explosionproof switches, 1 contact, -55°...+82°C, DN15..32 (series 165-166)
260664	2 explosionproof switches, 1 contact, -55°...+82°C, DN40..80 (series 165-166)
970509	Oxygen service (series 165 except for DN65 to 80, series 166)
970517	Oxygen service (series 108-109)
970523	Valve body degreased during assembly (series 165-166)

The catalogue number appears on the product label:



How to use the product's catalogue number (on the label) to find the product characteristics:

ALPHANUMERICAL CATALOGUE NUMBER
(with prefix)

example: solenoid valve SCE**238**D006



→ Use the

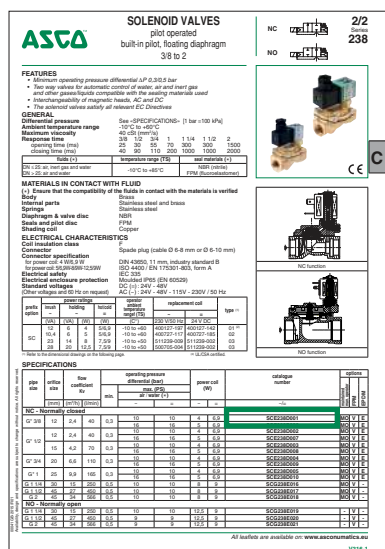
Catalogue Number Index (page V001) to:

- . Locate the sequence number **E238**
- . Locate the prefix **SC**
- . Find the full catalogue number **SCE238D006**
- . Identify the page number **V316-1**

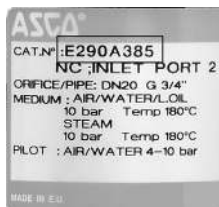
238918-117	V1100-
SCE238D001	V316-
SCE238D002	V316-1
SCE238D003	V316-1
SCE238D004	V316-1
SCE238D005	V316-1
SCE238D006	V316-1
SCE238D007	V316-1
SCE238D008	V316-1
SCE238D009	V316-1
SCE238D010	V316-1
SCG238C016	V316-1
SCG238C017	V316-1
SCG238C018	V316-1
SCG238C019	V316-1

page

→ Consult page V316-1

ALPHANUMERICAL CATALOGUE NUMBER
(without prefix)

example: pressure-operated valve **E290A385**



→ Use the

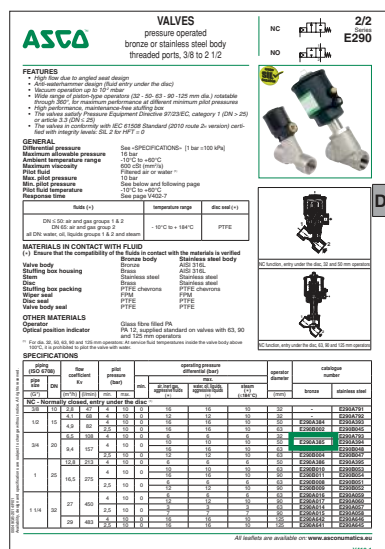
Catalogue Number Index (page V001) to:

- . Locate the sequence number **E290**
- . Find the full catalogue number **E290A385**
- . Identify the page number **V410-1**

S290B229	V420-2
S290A230	V420-2
S290A231	V420-2
S290A259	V420-2
E290A384	V410-1
E290A385	V410-1
E290A386	V410-1
E290A387	V410-2
E290A388	V410-2
E290A389	V410-2
E290A390	V410-2
E290A391	V410-2
E290A392	V410-2
E290A393	V410-1
E290A394	V410-1

page

→ Consult page V410-1



NUMERICAL CATALOGUE NUMBER

example: solenoid valve **10900040**



→ Use the

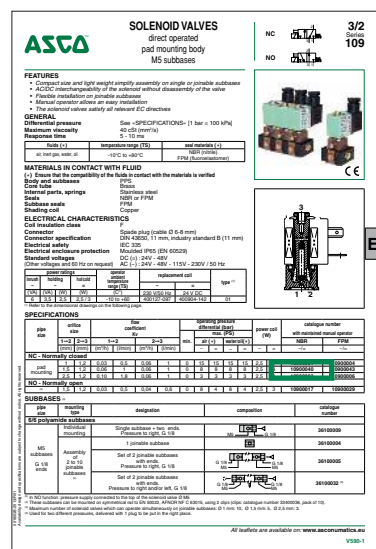
Catalogue Number Index (page V001) to:

- . Locate the series number **109**
- . Find the full catalogue number **10900040**
- . Identify the page number **V590-1**

10900003	V590-1
10900004	V590-1
10900006	V590-1
10900017	V590-1
10900029	V590-1
10900040	V590-1
10900043	V590-1
123664-017	V572-1
12600013	V905-23-
12600014	V905-23-
12600017	V905-23-
12600018	V905-23-
12600019	V905-23-
12600020	V905-23-

page

→ Consult page V590-1



If you know the valve function:

Example: solenoid valve 2/2 NC

→ Consult the page:
Solenoid valves 2/2, **section C**

CONTENTS	
GENERAL AND ENGINEERING INFORMATION	A
Catalogue number-page index	
PROPORTIONAL VALVES	B
→ 2/2 SOLENOID VALVES	C
2/2 VALVES	D

→ Consult the **Product Index** of section C, page V300-1

[illegible]

NC	0	10	-20	+85	3/8 .. 1	238	V311
NC-NO	0	9	-20	+85	3/8 .. 1 1/2	210	V313
NC	0.3	16	-10	+85	3/8 .. 2	238	V316

page

or → Consult the **Quick Selection Chart**
section C, page V300-2

[illegible]

page

→ Consult page V313-1



SOLENOID VALVES

pilot operated
hung diaphragm
3/8 to 1 1/2"

2/2

Series

210

NC



NO





FEATURES

- Two shut-off valves for the control air, inert gas, water, oil and other gases/liquids compatible with the sealing material used
- Valves do not require a minimum operating pressure
- All products are covered by Pressure Equipment Directive 97/23/EC and are suitable for group 1 and 2 fluids
- The solenoid valves satisfy all relevant EC directives

GENERAL

Differential pressure

Maximum viscosity

Response time

See [SPECIFICATIONS](#) [1 bar = 100 kPa]

65 cSt (mm²/s)

15 - 120 ms

seal materials (+)

NBR (nitrile)

fluids (+)	temperature range (°C)	seal materials (+)
air, inert gas, water, oil	-20°C to +85°C	NBR (nitrile)

MATERIALS IN CONTACT WITH FLUID

Example: pressure-operated valve 2/2 NC

→ Consult the page:
Pressure-operated valves 2/2, **section D**

CONTENTS	
GENERAL AND ENGINEERING INFORMATION	A
<i>Catalogue number-page index</i>	
PROPORTIONAL VALVES	B
2/2 SOLENOID VALVES	C
→ 2/2 VALVES	D

→ Consult the **Product Index** of section **D**, page V400-1

Simple selection according to:

- material, series no.
- & operating characteristics
- (range of values)

2/2 VALVES
 RISED OPERATED
 URE OPERATED

↑
 °duct index



Function

	J.P.		Temperature	
	min.	max.	min.	max.
	mm	mm	°C	°C
STAINLESS STEEL BODY	0	8	-102	+480 (noted values)
BRONZE BODY	0	16	-102	+184
HC-ND	0	16	-102	+184
HC-ND	0	16	-102	+184
HC-ND	0	16	-102	+184
HC-ND	0	16	-102	+184
STAINLESS STEEL BODY	0	16	-102	+184
HC-ND	0	16	-102	+184
HC-ND	0	16	-102	+184
HC-ND	0	16	-102	+184
HC-ND	0	16	-102	+184

Series

Pipe connections

Quick selection Chart page 23

↑

MOTORIZED OPERATED

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

↑

PRESSURE OPERATED

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

Series

Pipe connections

Quick selection Chart page 23

Series

Pipe connections

Quick selection Chart page 23

STAINLESS STEEL BODY						
NC-NO	0	16	-10	+184	1/2-2 1/2	E290 V410
NC-NO	0	16	-10	+184	External thread	1/2-1 1/2 V412

page

or → Consult the **Quick Selection Chart**
section D, page V400-2

new

**Detailed selection according to:
operating characteristics
(values)**

Quick Selection Chart - 2/2 VALVES

series	internal thread external	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	material	DN	min. operating pressure differential (bar)	max. operating pressure differential (bar)	fluid temperature range (°C)	power consumption (W)	series	page	
											max. allowable pressure (bar)
MOTORISED VALVES (HOLDING POSITION)											
E	E				0	6 4	-10 +90	12	0	E290	V406
NORMALLY CLOSED (NC)											
E	E				0	16 2	-10 +184	-	-	E290	V410
E	E				0	16 6	-10 +184	-	-	U290	V412
E	E				0	16 8	-10 +184	-	-	Y290	V414
E	E				0	16 1	-10 +184	-	-	S290	V420

page

→ Consult page V410-1



VALVES

pressure operated

bronze or stainless steel body

threaded ports, 3/8 to 2 1/2"

2/2

Series

E29C

NC



NO



FEATURES

- High flow due to angled seat design
- Anti-waterhammer design (fluid entry under the disc)
- Vacuum operation up to 15" mbar
- Wide range of piston-type operators (32 - 50 - 63 - 80 - 125 mm dia.) rotatable through 360° for maximum performance at different minimum pilot pressures
- High performance, maintenance-free stuffing box
- Wide safety Pressure Equipment Directive (PED) category 1 (DN > 25) or article 3.3 (DN < 25)
- The valves in conformity with IEC 61508 Standard (2010 route 2, version) certified with integrity levels: SIL 2, 3 or 4 = 0



GENERAL

Differential pressure

Maximum allowable pressure

Ambient temperature range

Maximum viscosity

Pilot fluid

Max. pilot pressure

See <SPECIFICATIONS> [1 bar = 100 kPa]

10°C to +60°C

600 cSt (mm²/s)

Filtered air or water

10 bar

SOLENOID VALVES WITH CONNECTOR

Ordering example (alphanumerical catalogue number)



+ 2 mounting holes $\varnothing$ M4,
depth 7 mm + voltage/frequency (AC)
or voltage (DC)

full catalogue number:
SCXE370A031

TPL:
23012

230V/AC 50 Hz

Ordering example (numerical catalogue number)



+ oxygen service + voltage/frequency (AC)
or voltage (DC)

full catalogue number:
10900040

option code:
970517

24V/DC

PRESSURE-OPERATED VALVES

Ordering example (piston-type valve)



=



+



full catalogue number:
E290A384

solenoid pilot valve:
18900032

Ordering example (diaphragm-type valve)



=



+



+



guard mounted on valve

full catalogue number:
16500088

solenoid pilot valve:
E314K151S1N01F8

option code:
210555

Example: You have selected a 2/2 NC series **262** solenoid valve (from **section C**) and would like to choose a solenoid for this valve for use in explosive atmosphere zones 1-21, protection type “em”.

→ Product page **V235-1** (standard solenoid valve)

IONS» [1 bar = 100 kPa]

seal materials (*)
NBR (nitrile)
UR (cast urethane)

with the materials is verified
 ANSI 303 SS

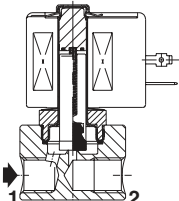
e Ø 6-10 mm)
 75301-803, form A

N 60529)
 V
 V - 115V - 230V / 50 Hz

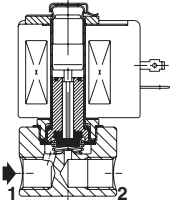
replacement coil		type (1)
~	=	
50 Hz	24 V DC	
25-117	400325-142	01
25-117	400325-242	01
25-117	400425-142	02
25-217	-	02
-	400425-342	02



CE



NC function



NO function

coil power		type
~	=	
50 Hz	24 V DC	
25-117	400325-142	01
25-117	400325-242	01
25-117	400425-142	02
25-217	-	02
-	400425-342	02

coil power:
11.2W DC

catalogue number:
SCB262C220

oil (*)		type
~	=	
50 Hz	24 V DC	
25-117	400325-142	01
25-117	400325-242	01
25-117	400425-142	02
25-217	-	02
-	400425-342	02

options				
maintained man. op.	FPM	EPDM	CR	PTFE
-	V	E	J	T
MO	V	E	J	T
-	V	E	J	T
-	V	E	J	T



→ Consult the  Quick Selection Chart, **Section C**,
page **V200/V300-5**

. in the rows: locate the series number **262**
and the coil power **11,2 W**

in the columns: locate ATEX zones 1-21
and protection type "e mb"

. at the row/column intersection: find the ATEX-compatible
 solenoids (identified by the logo )
 . and identify the ATEX page number **V1047-1**

and identify the ATEX page number **V1047-1**

[illegible]

→ Consult page **V1047-1: solenoid operators** zone 1-21 “e mb”



OPERATORS
for potentially explosive atmospheres
increased safety/encapsulation
II2 G Ex mb I T6, T3 Gb, II2 D Ex IIC T85°C,
T200°C Db IP66/67, steel or stainless steel enclosure

Series
EM
WSEM

FEATURES

- Explosionproof operator for use in potentially explosive atmospheres according to ATEX Directive 94/92C
- EC type examination certificate no.: **KEMA 98 ATEX 2542 X**
- IECEx Certificate of Conformity no.: **IECEx KEM 08.0002X**
- Compliance with the Essential Health and Safety Requirements has been achieved by compliance with the International and European Standards EN-IEC 60079-0, EN-IEC 60079-7, EN-IEC 60079-18 and EN-IEC 60079-31
- Easy electrical installation by means of a screw terminal coil
- Peak voltage suppression standard for DC enclosures
- Enclosure provided with integral strain relief for cable with an o.d. of 7 to 12 mm
- Ingress protection degree IP66/67
- A wide range of valves can be supplied with the operator

CONSTRUCTION

Solenoid enclosure

Cable gland
Core, core tube and plugnut
Shading coil
Nameplate
Coil connection
Safety cover

EM Zinc plated steel (epoxy coated)
WSEM Stainless steel, AISI 316
PA MDX u 1.5
Stainless steel
Copper or silver
Polyester
Embedded screw terminals
II2 G Ex mb IIC T6, T3 Gb
II2 G Ex IIIC T85°C, 220°C Db IP66/67

CE

ELECTRICAL CHARACTERISTICS

Standard voltages
(Other voltages and 60 Hz on request)

TEMPERATURE CLASSIFICATION TABLES

AC (-) solenoids

Ph (watt)	solenoid size		maximum ambient °C				
			surface temperature				
	Ph	MAX	T6	T5	T4	T3	T2
insulation class F (155°C) 100% E.D.							
1.2 W	1	1	1	1	1	1	1
1.5 W	1	1	1	1	1	1	1
1.8 W	1	1	1	1	1	1	1
3.7 W	1	1	1	1	1	1	1
5.0 W	1	1	1	1	1	1	1
6.8 W	1	1	1	1	1	1	1
9.0 W	1	1	1	1	1	1	1
10.0 W	1	1	1	1	1	1	1
10.0 W	1	1	1	1	1	1	1
10.5 W	1	1	1	1	1	1	1
13.0 W	1	1	1	1	1	1	1
13.6 W	1	1	1	1	1	1	1
14.1 W	1	1	1	1	1	1	1

DC (-): 24V - 48V
PA MDX u 1.5: 24V - 48V - 115V - 230V / 50 Hz

DC (+) solenoids

Ph (watt)	solenoid size		maximum ambient °C				
			surface temperature				
	Ph	MAX	T6	T5	T4	T3	T2
insulation class F (155°C) 100%							
1.2 W	1	1	1	1	1	1	1
1.5 W	1	1	1	1	1	1	1
1.8 W	1	1	1	1	1	1	1
3.7 W	1	1	1	1	1	1	1
5.0 W	1	1	1	1	1	1	1
6.8 W	1	1	1	1	1	1	1
9.0 W	1	1	1	1	1	1	1
10.0 W	1	1	1	1	1	1	1
10.0 W	1	1	1	1	1	1	1
10.5 W	1	1	1	1	1	1	1
13.0 W	1	1	1	1	1	1	1
13.6 W	1	1	1	1	1	1	1
14.1 W	1	1	1	1	1	1	1

power compatibility:
11.2W DC / coil MXX

Ph (watt)	solenoid size		maximum ambient °C				
			surface temperature				
	Ph	MAX	T6	T5	T4	T3	T2
insulation class F (155°C) 100%							
1.2 W	1	1	1	1	1	1	1
1.5 W	1	1	1	1	1	1	1

Example: You have selected a series **290** pressure-operated valve 2/2 NC (from **section D**) and would like to use it in explosive atmosphere zone 22.

→ Product page **V410-1** (standard pressure-operated valve)

VALVES
pressure operated
bronze or stainless steel body
threaded ports, 3/8 to 2 1/2

angled seat design
or design (fluid entry under the disc)
up to 10⁵ mbar
ston-type operators (32 - 50 - 63 - 90 - 125 mm dia.) rotatable
maximum performance at different minimum pilot pressures
e, maintenance-free stuffing box
y Pressure Equipment Directive 97/23/EC, category 1 (DN > 25)
y ≤ 25
ormality with IEC 61508 Standard (2010 route 2, version) certi-
levels: SIL 2 for HFT = 0

pressure
range
See - SPECIFICATIONS- [1 bar = 100 kPa]
16 bar
-10°C to +60°C
600 cSt (mm²/s)
Filtered air or water (1)
10 bar
See below and following page
-10°C to +60°C
See page V402-7

ids (+)	temperature range	disc seal (+)
d gas groups 1 & 2 nd gas group 2 is groups 1 & 2 and steam	-10°C to +184°C	PTFE

CONTACT WITH FLUID
compatibility of the fluids in contact with the materials is verified

Bronze body	Stainless steel body
Brass	AISI 316L
Stainless steel	Stainless steel
Brass	Stainless steel
PTFE chevrons	PTFE chevrons
FPM	FPM
PTFE	PTFE
PTFE	PTFE

LS
Glass fibre filled PA
PA 12, supplied standard on valves with 63, 90
and 125 mm operators

nd 125 mm operators: At service fluid temperatures inside the valve body above
pilot the valve with water.

pilot iv	min.	max.	operating pressure differential (bar)		min.	max.	catalogue number selected:	ess steel
			air, inert gas, aggressive fluids (+)	water, oil, liq aggressive liq (+)				
ed, entry under the disc (1)								
47	4	10	0	16	16	10	32	E290A791
68	4	10	0	12	12	10	32	E290A792
68	4	10	0	16	16	10	50	E290A384
								E290A393

2/2 Series
E290

NC NO

D

NC function, entry under the disc, 32 and 50 mm operators

NC function, entry under the disc, 63, 90 and 125 mm operators

→ Consult page **V436: pressure-operated valves** (Ex)

ATEX 94/9/EC
CESSORIES
osive atmospheres
0 and 390

ly explosive atmospheres in accordance with ATEX-Directive 94/9/EC,
uirements has been assured by compliance with European Standards EN
as and paint coating industries etc.

classification (zones)									
category 2					category 3				
dusts	gas			safety code	dusts	gas			safety code
	IIA	IIB	IIC			IIA	IIB	IIC	
21	1	1	-	⊕ II 2 GD c IIB T4 T135°C	22	2	2	2	⊕ II 3 GD c T4 T135°C
21	1	1	-	⊕ II 2 GD c IIB T4 T135°C	22	2	2	2	⊕ II 3 GD c T4 T135°C
21	1	1	-	⊕ II 2 GD c IIB T4 T135°C	22	2	2	2	⊕ II 3 GD c T4 T135°C
21	-	-	-	⊕ II 2 D c T135°C	22	2	2	2	⊕ II 3 GD c T4 T135°C

suffix to be added to the valve's catalogue number (1)

category 2	category 3
GD2	GD3

esigned for use in zones 1 and 21 (category 2), catalogue number: **E290B010GD2**

see	catalogue page

2/2 - 3/2 Series
290 - 390

Ex

D

Suffix **GD3** behind the selected
catalogue number:
E290A384 GD3



→ Consult the **Ex** Quick Selection Chart, **Section D**, page **V400-4**

- in the rows: locate the series number **E290**
- in the columns: locate ATEX zone 22
- at the row/column intersection: find the ATEX-compatible products (identified by the logo **Ex**)
- and identify the ATEX page number **V436**

Quick Selection Chart - POTENTIALLY EXPLOSIVE ATMOSPHERES												
PRESSURE OPERATED VALVES												
		DN	dusts zone 22			group II gas zone 21			gas zone 1			dusts
page	series		IIA	IIB	IIC	IIA	IIB	IIC	IIA	IIB	IIC	
SERIES 290 VALVES ATEX 94/9/EC (see page V436)			ATEX page									
V410	E290	10 → 32	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	
V412	E290	10 → 20	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	
V414	series E290	10 → 20	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	
V420		10 → 65	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	
V431		25 → 50	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	
SERIES 2 E290 X 94/9/EC (see page V461)												
V451	E298	15 → 50	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	
V453	T298	15 → 50	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	

