SOLENOIDS, COILS & ACCESSORIES

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(1) Consult our other catalogues at: www.asco.com

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COIL CHARACTERISTICS

Coils in the catalogue pages are identified by their electrical characteristics such as:

- "**Coil insulation class**", generally F or H;
- Type of "**Connector**", mostly with a spade plug or flying lead;
- "**Connector specification**" with applicable standards;
- "**Electrical safety**" to IEC 335 / EN 60730-1 standard
- "**Electrical enclosure protection**": epoxy moulded coil and ingress protection rating of, generally, IP65 or IP67 to EN 60529/ IEC 529
- Available "**Standard voltages**": for details see "Standard voltages" on the following page;

A table with:

- "**power ratings**" (Pn):

For alternating current (~),

. the **inrush** power expressed in VA (Volt-Amps),

. the **holding** power expressed in VA and W,

For direct current (~) coils,

. the power rating in the **hot** state (coil under continuous duty) and in the **cold** state (at inrush of power)

- The min./max. values of the solenoid **operator ambient temperature range** (including the influence of the fluid temperature within the minimum and maximum limits given on the catalogue pages).

Example:

prefix option	power ratings				operator ambient temperature range (TS)	replacement coil		type (1)
	inrush ~	holding ~		hot/cold =		~	=	
	(VA)	(VA)	(W)	(W)	(C°)	230 V/50 Hz	24 V CC	
SC	34	15,6	6	7 / 9,7	-20 to + 75	400325-117	400325-142	01
	30	22,5	9	9,5/15,3	-20 to + 50	400325-217	400325-242	01

COIL IDENTIFICATION

ASCO offers coils in the following main sizes:

- XM5, M6, MXX, M12

- CM22, C22, C22A, C25A, CM25, JMX, ANX, AMX, BMX

Please note: Posiflow solenoid valves (Section B) have special coils, please contact us for details.

Coil sizes can be identified from the power ratings given in the table under "Electrical characteristics" on the catalogue pages.

For an example, see Section C, page V313:

prefix option	power ratings				operator ambient temperature range (TS)
	inrush ~	holding ~		hot/cold =	
	(VA)	(VA)	(W)	(W)	(C°)
SC	5	23	**10,5**	9/ **11,2**	-20 to + 75
	78	35	**16,7**	-	-20 to + 50
	110	33,6	**15,4**	-	-20 to + 75
	240	43	**20**	16,8/**23**	-20 to + 50

See corresponding values in the table of AC nominal power ratings

See corresponding cold-state values in the table of DC nominal power ratings

The nominal power ratings (Pn) on the catalogue pages are indicated in bold letters (see tab. A).They allow you to identify the coil size.

power ratings (Pn) — **tab. A**

holding power (W) – alternating current (AC) ~														cold state (W) – direct current (DC) =													
Pn (W)	solenoid size XM5	M6	MXX	M12	CM22	C22A	C25A	CM25	JMX	ANX	AMX	BMX	Ref. (2)	Pn (W)	solenoid size XM5	M6	MXX	M12	CM22	C22	C22A	C25A	CM25	JMX	ANX	AMX	BMX	Ref. (2)
insulation class F (155°C)														insulation class F (155°C)													
1,2 1)				●									-	1,3				●										-
1,5 1)			●										-	1,7			●											-
1,5 1)				●									-	1,8				●										-
2,5	●												-	3	●													-
2,5 7)					●								-	**3** 7)					●									-
3,5 11)						●								**3** 10)						●								-
3,7 1)				●									-	**3,6**				●										-
4 4)					●								-	**5,5** 4)						●								-
4	●												T	5,7				●										-
4 8)					●								-	**6,9** 8)					●									-
5 9)							●						-	**5** 9)									●					-
5,8 1)				●									-	6,9	●													T
6		●											T	**7** 11)							●							-
6 3)										●			-	8,6	●													-
6 3)											●		-	**9** 6)										●				-
6,3	●												B	**9,7**		●												T
8 6)									●				-	10,7				●										-
8 5)								●					-	**10,8** 5)										●				T
8,1 12)		●											T	11			●											-
9		●											B	**11,2**			●											T
10 1)			●										-	**11,6** 12)				●										T
10,1 12)			●										T	14				●										-
10,5			●										T	**15,3**		●												B
10,8 1)				●									-	**16,8**				●										-
11,1 12)		●											B	**19,7**			●											F
13,4 1)			●										-	**23**				●										B
15,4				●									T															
16,5				●									-															
16,7			●										B															
17,1 12)				●									B															
20				●									B															
insulation class H (180°C)														insulation class H (180°C)													
4 4)						●							-	**5,5** 4)							●							-
6		●											P	**9,7**		●												-
9		●											-	**10,6** 12)			●											T
10,5			●										T	**11,2**			●											-
15,4				●									-	**11,6** 12)				●										T
16,7			●										-	**13,3**		●												-
20				●									-	**15,3**		●												-
														16,8				●										-
														17,4			●											-
														18,6 12)		●												B
														19,7			●											-
														20,8		●												-
														22,6 12)				●										B
														23				●										-
														26,6				●										-
														29,5			●											-

1) Rectified coil construction.
2) Additional reference identification letter for coil types: XM5, M6, MXX, M12 (Example: FT, FB, FF, HT)
3) Section H, series 340, page V901-21
4) Series 238 (...C..., page V316) and 256/356 1/8-1/4
5) Section C/series 272 and Section E/series 374-370
6) Section C/series 238, page V316
7) Section C/series 108, page V295; Sect. D/series 189/banjo, page V439; Sect. E/series 189-109, pages V585-V590.
8) Section C/series 238, page V316 (type 01)
9) Series 256/356, 238, 552/553
10) Section E/series 189, page V585 (type 06): M12 connection
11) Series 238 (...C..., page V316) and 256/356 1/4
12) Series 262/263/314 (pages V223/V253/V542)

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COIL SUBSTITUTION

- Replacement coils:

The catalogue numbers of the main coils in this catalogue are listed on pages 4, 5 and 6.

Please note:

. Page 4: Select the catalogue number for the replacement coils for coil types XM5, CM5 etc. (all coils other than type CM6/CMXX/CM12 coils) from the table on page 4. Example: 400125-142 for coil type XM5

. page 5 : For coil types M6/MXX, select the catalogue number for the replacement coils from the table. Example: 238513-006 for coil type M6

. Page 6: See page 6 for coil types CM22, C22, C22A, CM25, C25A, JMX, ANX, AMX, BMX. Example: 43005421

Some coils are identified by a letter placed before their size reference:
Letter C = coil with spade plug connector = for example, CMXX.
Letter L = coil with flying lead = for example, LMXX.
Letter S = coil with screw terminals = for example, SMXX

- To change from AC operation (~) to DC operation (=): First check whether the AC and DC ratings listed in the "coil power" columns in the "Specifications" table correspond to a coil of identical size.

At the example of Section C, page V313, we can check whether a DC coil can be fitted to a catalogue number "SCE210C093" solenoid valve initially fitted with an AC coil.

power coil (W)		catalogue number	
		brass	stainless steel
~	=		
10,5	11,2	SCE210C093	-

The values 10,5 W and 11,2 W are given in the **same row** in the "Electrical characteristics" table. So, for a valve with the catalogue number "SCE210C093", coil type MXX with an AC power rating of 10,5W can be substituted by coil type MXX with a DC power rating of 11,2W.

prefix option	power ratings				operator ambient temperature range
	inrush ~	holding ~		hot/cold =	
	(VA)	(VA)	(W)	(W)	(C°)
SC	5	23	**10,5**	9/ **11,2**	-20 to + 75

Coil power: 10,5 W at alternating current — Coil power: 11,2 W at direct current

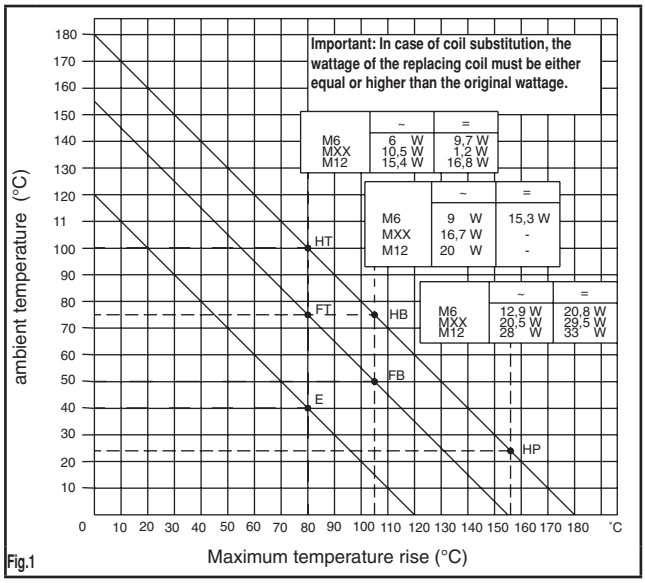


Fig.1

- In case of higher ambient temperatures, the graph (fig 1) shows an example of a coil identified FT which can be replaced by a coil identified HT. For more details, please contact us.
- To obtain higher differential pressure ratings, please contact us as changing the internal parts of a valve (stronger springs etc.) may require a modification of the product.

STANDARD VOLTAGES

The standard voltages indicated in the catalogue are as follows:

Alternating current (AC): 24 V, 48 V, 115 V, 230 V
(50 Hz frequency)

Direct current (DC): 24 V, 48 V

Other voltages and 60 Hz on request.

The catalogue numbers for the coils that can be operated at two frequencies (50Hz and 60Hz) are identified on page 5 by the symbol (❖).

COILS WITH SPADE PLUG CONNECTORS

Most coils in the catalogue are provided with spade terminals to mount a connector.

- Example for an alphanumerical catalogue number:

The prefix "SC" in the "prefix option" column identifies a coil with spade plug connection.

prefix option	power ratings				operator ambient temperature range (TS)	replacement coil		type (1)
	inrush ~	holding ~		hot/cold =		~	=	
	(VA)	(VA)	(W)	(W)	(C°)	230 V/50 Hz	24 V CC	
SC	34	15,6	6	7 / 9,7	-20 to + 75	400325-117	400325-142	01
	30	22,5	9	9,5/15,3	-20 to + 50	400325-217	400325-242	01

Example: **SC**E210C073»

- Example for a numerical catalogue number:

With a numerical catalogue number (series 107, 108, 109, 302), there is no prefix in the corresponding column, and therefore no identification as to whether it is a coil with a spade plug connector or not. To identify whether the coil has a spade plug connector, look for the specification "**Connector: spade plug connector**" under "Electrical characteristics".

-	power ratings				operator ambient temperature range (TS)	replacement coil		type (1)
	inrush ~	holding ~		hot/cold =		~	=	
	(VA)	(VA)	(W)	(W)	(C°)	230 V/50 Hz	24 V CC	
-	15	7	5	5/5	-10 to + 60	400727-117	400727-185	01

COILS WITH FLYING LEADS

Coils can be supplied with either 2 or 3 leads, according to the version selected. For more details, please contact us.

OPERATING VOLTAGE

All coils are designed to operate at 15% or 10% below the nominal voltage (Un) and at 10% above the nominal voltage (Un). [Applicable standards: IEC 335, EN 60730- 1, UL 429]

The coils are rated for continuous duty within the maximum ambient temperature limits (100% ED).

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COIL IDENTIFICATION

400 0 0 0 - 0 0 0 - D Z

400 ← BASIC NUMBER

SIZE

0	1	2 (**)	3	4	5	6	7	8	9
	CM22 (XM5)	CM5	M6	MXX	M12 AC	M12 DC			(*)

TYPE / TERMINATION

0	1	2	3	4	5	6	7	8	9
embedded screw terminals	leaded	spade plug connection	spade terminal	leaded with ground wire	PV cable end				

INSULATION CLASS

0	1	2	3	4	5	6	7	8	9
		A	E	B	F	H			(*)

TEMPERATURE CLASS

0	1	2	3	4	5	6	7	8	9
-	T	B	F	C	P	I			

50 Hz

00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19
12	24	26	36	42	48	64	110	120	127	220	240	380	415	440	100	200	230	115	400

60 Hz

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
12	24	42	48	100	120	208	220	240	380	550	480	110	200	230					

DC (=) VOLTAGE

40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
6	12	24	32	48	60	64	100	110	120	125	180	187	220	240	250				

SPECIAL

60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
21,6 DC	99 DC	207 DC																	

50-60 Hz bifrequency

80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99
12	24	26	36	42	48	64	110	120	127	220	240	380	415	440	100	200	230	115	400

CABLE LENGTH

A	B	C	D	E	F	G	H	J	K	
			457						1829	(mm)
			18						72	(inch)

UL STANDARDS

Z
UL

Standard

(*) Customer special (these coils deviate from the identification system)

(**) Obsolete

CATALOGUE NUMBERS OF REPLACEMENT COILS

	24 V =	48 V =	24 V ~	48 V ~	115 V ~	230 V ~
CM6-FT	**400325-142**	**400325-144**	**400325-101**	**400325-105**	**400325-118**	**400325-117**
CM6-FB	**400325-242**	**400325-244**	**400325-201**	**400325-205**	**400325-218**	**400325-217**
CMXX-FT	**400425-142**	**400425-144**	**400425-101**	**400425-105**	**400425-118**	**400425-117**
CMXX-FB	-	-	**400425-201**	**400425-205**	**400425-218**	**400425-217**
CMXX-FF	**400425-342**	**400425-344**	-	-	-	-
CM12-FT	**400625-142**	**400625-144**	**400525-101**	**400525-105**	**400525-118**	**400525-117**
CM12-FB	**400625-242**	**400625-244**	**400525-201**	**400525-205**	**400525-218**	**400525-217**

EMBEDDED SCREW TERMINAL COIL	**SPADE PLUG CONNECTION COIL**	**LEADED COIL (2 LEADS)**	**LEADED COIL WITH GROUND WIRE**
Example: 400505-110 SM12-FT-220/50	Example: 400425-342 CMXX-FF-24 DC	Example: 400315-111D LM6-FT-240/50-457 mm	Example: 400145-201D LM22-FB-24/50- 457 mm
			

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COIL IDENTIFICATION

238 0 10 - 0 00 - D

238 ← BASIC NUMBER

SIZE, SERVICE & CLASS

1	2	3	4	5	6	7	8	9
MXX AC class F	M6 AC class F	M6 DC class F	M6 AC class H	M6 DC class H	MXX/M12 AC class F	MXX DC class F	MXX/M12 AC class H	MXX DC class H

TYPE / CONSTRUCTION

0	1	2	3	4
leaded	-	spade terminal	spade plug (DIN / Europe)	leaded explosionproof (EF)

INSULATION CLASS / TEMPERATURE CLASS

0	1	2	3	4	5	6	7	8	9
FT, HT	FB, HB	FF, HF	HC	HP	-	-	-	foreign winding	(*)

02	06	10	12	14	16	27	29	31	33	35	37	51	53	55	57	59	63	81	83
12	24	32	36	42	48	100	110	115	120	125	127	200	208	220	230	240	277	380	400

50 Hz

01	05	09	11	13	15	26	28	30	32	34	36	50	52	54	56	58	62	80	82
12	24	32	36	42	48	100	110	115	120	125	127	200	208	220	230	240	277	380	400

60 Hz

02	03	04	05	06	08	10	12	13	15	17	18	20	21	31	32	33	34	50	52
6	9	12	15	24	28	32	36	38	42	48	50	60	64	100	110	115	120	220	230

DC (=) VOLTAGE

CABLE LENGTH

A	B	C	D	E	F	G	H	J	K	
			457						1829	(mm)
			18						72	(inch)

Standard

(*) Customer special

CATALOGUE NUMBERS OF REPLACEMENT COILS

	24 V =	48 V =	24 V ~	48 V ~	115 V ~	230 V ~
M6-HT	**238513-006**	**238513-017**	-	-	-	-
M6-FT	-	-	**238213-006**	**238213-016**	**238213-033** [b]	**238213-059** [a]
M6-HB	**238513-106**	**238513-117**	-	-	-	-
M-6-FB	-	-	**238213-106**	**238213-116**	**238213-133** [b]	**238213-157**
MXX-HT	**238913-006**	**238913-017**	-	-	-	-
MXX-FT	**238713-006**	**238713-017**	**238613-006**	**238613-016**	**238613-033** [b]	**238613-059** [a]
MXX-HB	**238913-106**	**238913-117**	-	-	-	-
MXX-FB	-	-	**238613-106**	**238613-116**	**238613-133** [b]	**238613-159** [a]

All 238 basic numbers are UL/CSA approved as standard and are marked with the relevant logos.

[a] 230 V/50 Hz - 250 V/50 Hz

[b] 115 V/50 Hz - 120 V/50 Hz

SPADE PLUG CONNECTION COIL Example: 238513-006 CM6-HT-24 DC	**SPADE PLUG CONNECTION COIL** Example: 238613-059 CMXX-FT-230 AC
	

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CATALOGUE NUMBERS OF REPLACEMENT COILS

solenoid valve series	coil type	alternating current , AC (~) 50 Hz					direct current , DC (=)			
		24 V	48 V	115 V	230 V	240 V	12 V	24 V	48 V	110 V
189	C22A - 2,5 W	43004416 (❖)	43004417 (❖)	43004419 (❖)	43004422 (❖)	43004423 (❖)	43004149	43004166	43004167	43004168
	C22-2,5 W-M12	-	-	-	-	-	-	43005523	-	-
256 - 356 (1/8-1/4) 238 G3/8 to 1	CM22-4W/6,9W F	400127-181 (❖)	400127-185 (❖)	400127-198 (115V/50-120V/60)	400127-197 (❖)	-	400127-141	400127-142	400127-144	400127-148
108 - 109 - 189 banjo - 551	CM22 - 2,5/3 W	400127-081 (❖)	400127-085 (❖)	400127-098 (115V/50-120V/60)	400127-097 (❖)	400127-091 (❖)	400904-541	400904-542	400904-544	400904-548
256 - 356 (1/4) 238 G3/8 to 1 552/553	CM25-5W/5W F	400727-181 (❖)	400727-185 (❖)	400727-118 (115V/50)	400727-117 (130V/50)	-	400727-181	400727-185	400727-118	400727-117
238 G1 1/4 to 2	ANX - 8/9 W	511239-005	511239-006	511239-007	511239-009	-	511239-001	511239-002	511239-003	-
	ANX - 12,5 W	511239-011	511239-012	511239-013 (110V/50-120V/60	511239-014	-	-	-	-	-
240	AMX - 9 W	43005153	-	43005155	43005157	-	-	-	-	-
	BMX - 6 W	43005168	-	43005169	43005171	-	-	-	-	-
272 - 374	JMX	43005090	43005091	43005093	43005096	-	43005098	43005099	43005100	43005101
121 MB 231 - 232	screw terminals 12 W	43002425	43002433	43002442	43002449	43002451	-	43001995	43002003	43002076
131 3/2	MPV1 (~) 15 W	43002566	43002574	43002583	43002591	-	-	-	-	-
131 3/2 ATEX Ex **d** 231 ET - 232 ET, Ex **d**	CPV1 (=) 24 W	-	-	-	-	-	-	43002124	43002132	43002141
231 ET - 232 ET	MPV1 (~)	43002566	43002574	43002583	43002591	-	-	-	-	-
	CPV1 (=) 80 W	-	-	-	-	-	-	43002197	43002203	43002212
131 4/2	MPV1 (~) 20 W	43002641	43002648	43002657	43002665	-	-	-	-	-
131 4/2 ATEX Ex **d**	CPV1 (=) 24 W	-	-	-	-	-	-	43002124	43002132	43002141
126 , ATEX Ex **d**	18 W / 15 W	43004028	43004036	43004045	43004053	43004054	-	43002091	43002098	43004408
126 reset version, ATEX Ex **d**	18 W / 10 W	43004028	43004036	43004045	43004053	43004054	-	43002092	43004407	43004409
121 MB - 231 - 232 ATEX Ex **d**	12W / 10 W	43002496	43002504	43002513	43002521	-	43002055	43002059	43002067	43002076
PV-EM5, ATEX Ex **mb** 256-356 (1/8-1/4; except manifold) 238 G3/8 to 1 (.....C...) 189-189 banjo 551 (TPL 20787)	4 W AC/ 3W DC 2 m	43005348PV (❖)	43005349PV (❖)	43005350PV (❖)	43005352PV (❖)	-	-	43005366PV	43005367PV	-
	4 m	-	-	-	43005562PV (❖)	-	-	43005595PV	-	-
	6,3 W AC/ 6,9W DC 2 m	43005355PV	43005356PV	43005357PV	43005359PV	-	-	43005371PV	-	-
	4 m	-	-	-	-	-	-	43005593PV	-	-
	6 m	-	-	-	-	-	-	43005594PV	-	-

For other products, please consult www. asco.com

(❖) Bifrequency 50/60 Hz.
(1) Except for manifold-mount versions.

SPADE PLUG CONNECTION COIL Example: CM22-4/6,9W series 551, 256, 356, 238	SPADE PLUG CONNECTION COIL Example: JMX series 272, 374, 370	SPADE PLUG CONNECTION COIL Example: CM25-5/5W series 238 - 256/356 1/4	COIL WITH SCREW TERMINALS Example: ATEX, Ex **d** housing
			

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