KEYSTONE F777/778 ELECTRIC ACTUATORS

The compact electric actuator for quarter turn (90°) valve operation providing a torque range from 35 to 4500 Nm



FEATURES

- Aluminium housing with ESPC coating
- Optimized mounting interface for direct mounting on top of Keystone valves
- Epicyclical gearing for smooth control and low noise level
- Top mounted position indicator (360 degree visibility)
- IP67 and NEMA 4X ingress protection
- Thermal overload protection
- Clutchless manual override by hand wheel (except smallest sizes)
- Easy accessible quick connect terminal strip
- Mechanical travel stops
- On/off and modulating duty
- Various options i.e. torque switches, additional voltage free contacts, local control module, etc.

GENERAL APPLICATION

The Keystone F777/778 is a compact economical actuator that can be used for various applications. It is particularly suitable for process applications like HVAC and water industry because of its torque span and low energy consumption.

TECHNICAL DATA

Material:	aluminium body and cover
Torque range:	35 to 4,500 Nm (300 to 40,000 lbin)
Ambient temperature range:	-30 to +65°C (-22 to +150°F)
IP rating:	IP67 / NEMA 4X
Voltage rating:	24 V DC / 24 V AC 50/60 Hz 110-120 V AC - 50/60 Hz (1-phase) 220-240 V AC - 50/60 Hz (1-phase) 400 V AC – 50/60 Hz (3-phase)
Electrical connection:	2x M20 or ½" NPT cable entry 8-point terminal strip
Certification:	CE, CSA, RoHs

© 2014 Pentair plc. All Rights Reserved.

KEYSTONE F777/778 ELECTRIC ACTUATORS

The F777/778 electric actuator is available in three series with different torque values to cover the wide torque range. In addition there are various flange connections so it can be direct mounted to the Pentair butterfly valves, which reduces the requirement of brackets and creates a more compact valve package.

The available series are:
- F777 Keystone Imperial: Keystone shaft and flange - Imperial threading
- F777 Keystone Metric: Keystone shaft and flange – Metric threading
- F778 Keystone ISO: Keystone shaft / ISO flange – Metric threading

Note: when there is no difference between the F777 and F778 models, the models in the remainder of this document are referred to as F77x.

MODEL OVERVIEW

	Torque		Weight		
Model	**(Nm)**	**(lbin)**	**(kg)**	**(lb)**	**Manual override**
77x-003	35	310	2	5	Lever
77x-005	50	440	3	7	Lever
77x-008	90	800	11	25	Hand wheel
77x-013	150	1320	11	25	Hand wheel
77x-035	400	3540	20	45	Hand wheel
77x-044	500	4420	20	45	Hand wheel
77x-057	650	5750	20	45	Hand wheel
77x-088	1000	8850	32	72	Hand wheel
77x-130	1500	13280	32	72	Hand wheel
77x-180	2000	17700	71	158	Hand wheel
77x-220	2500	22130	71	158	Hand wheel
77x-265	3000	26560	72	160	Hand wheel
77x-310	3500	31000	72	160	Hand wheel
77x-400	4500	40000	106	236	Hand wheel

NOTES

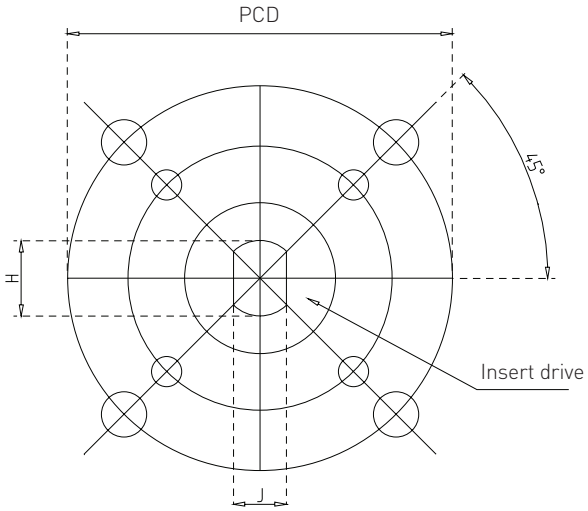
F777-014 is identical to F777-013 with larger bore
F777-036 is identical to F777-035 with larger bore
F777-045 is identical to F777-044 with larger bore
F777-058 is identical to F777-057 with larger bore
F777-089 is identical to F777-088 with larger bore
F777-181 is identical to F777-180 with larger bore
F778-058 is identical to F778-057 with larger flange
F778-089 is identical to F778-088 with larger flange
F778-131 is identical to F778-130 with larger flange

The F777/778 is available in various voltage ratings, which can be used in 50 and 60 Hz applications. Table 2 shows an overview of the available voltage ratings and appropriate stroking speed.

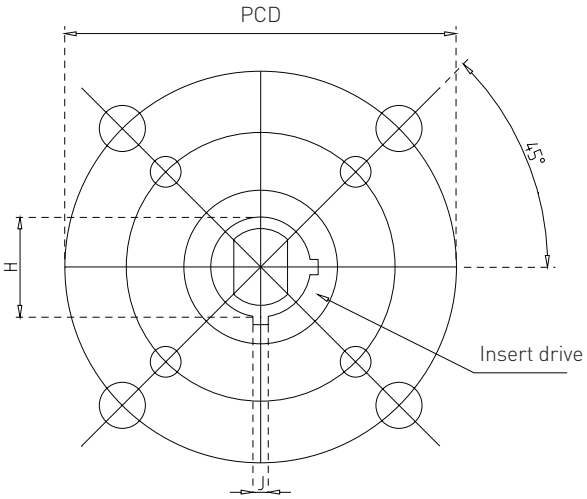
STROKE SPEED

			Stroke speed				
	Torque		24 V AC/DC	120 V AC -	240 V AC / 1 ph -	400 V AC / 3ph -	400 V AC / 3ph -
Model	**(Nm)**	**(lbin)**	**(s/90°)**	**60 Hz (s/90°)**	**50 Hz (s/90°)**	**50 Hz (s/90°)**	**60 Hz (s/90°)**
77x-003	35	310	15	12	12	12	12
77x-005	50	440	20	20	25	25	20
77x-008	90	800	15	12	18	18	12
77x-013	150	1320	22	20	25	25	20
77x-035	400	3540	15	18	18	18	18
77x-044	500	4420	20	25	25	25	25
77x-057	650	5750	28	30	30	30	30
77x-088	1000	8850	45	45	55	55	45
77x-130	1500	13280	45	45	55	55	45
77x-180	2000	17700	60	60	70	70	60
77x-220	2500	22130	60	60	70	70	60
77x-265	3000	26560	60	60	70	70	60
77x-310	3500	31000	60	60	70	70	60
77x-400	4500	40000	80	80	95	95	80

Speed indication can vary +/- 10%



MODELS 003 TO 014



MODELS 035 TO 400

VALVE CONNECTION F778 KEYSTONE ISO

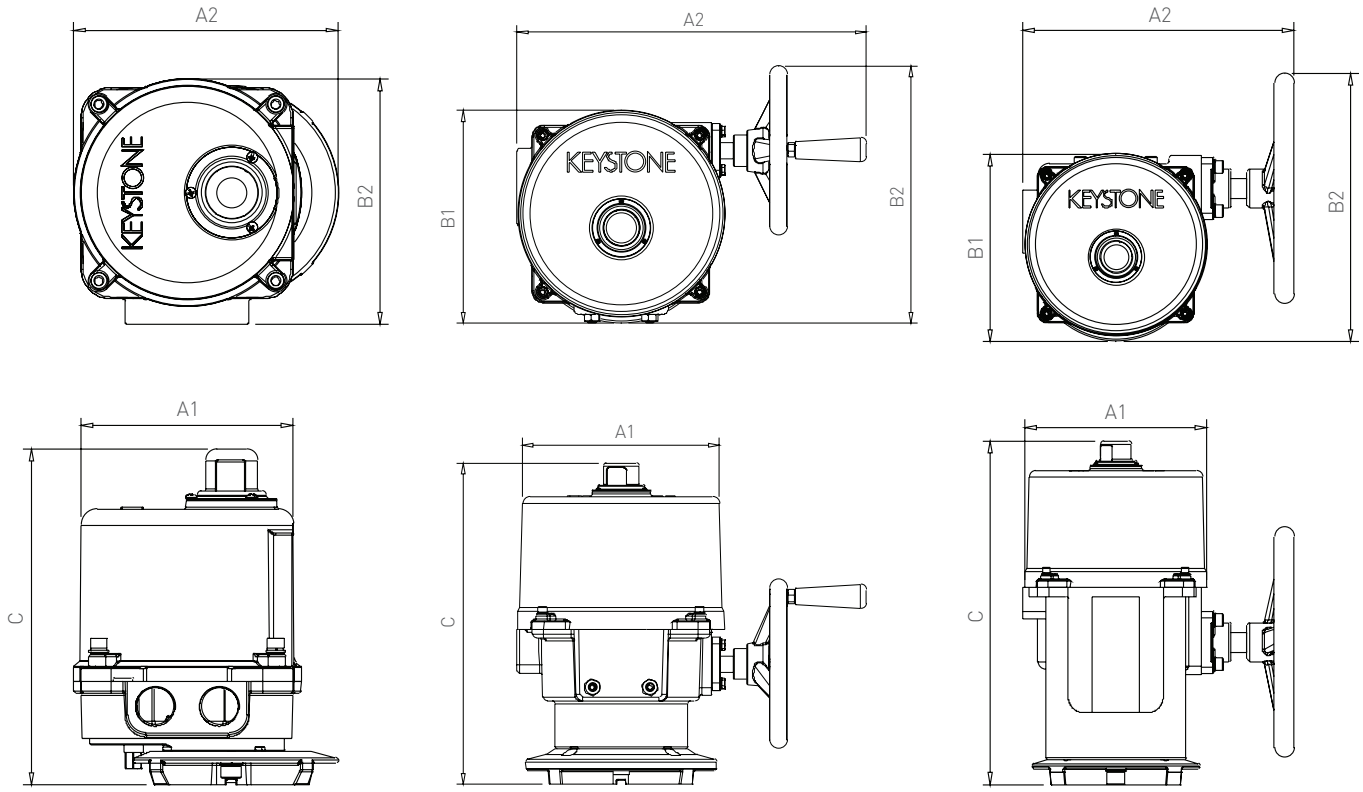
Model	Shaft connection (mm)					Mounting holes
	H	J	Key	Shaft depth	PCD	No x Size x Depth
778-003	16.0	11.0		30.0	F03	4x M5 x 10.0
					F05	4x M6 x 10.0
					F07	4x M8 x 12.0
778-005	16.0	11.0		30.0	F05	4x M6 x 10.0
					F07	4x M8 x 12.0
778-008	20.0	14.0		30.0	F07	4x M8 x 12.0
778-013	25.0	18.0		30.0	F07	4x M8 x 12.0
778-035	30.0	22.0		50.0	F07	4x M8 x 12.0
					F10	4x M10 x 15.0
					F12	4x M12 x 19.0
778-044	35.0		10.0 x 8.0	70.0	F07	4x M8 x 12.0
					F10	4x M10 x 15.0
					F12	4x M12 x 19.0
778-057	35.0		10.0 x 8.0	70.0	F10	4x M10 x 15.0
					F14	4x M16 x 24.0
778-058	35.0		10.0 x 8.0	70.0	F12	4x M12 x 19.0
					F16	4x M20 x 30.0
778-088	50.0		14.0 x 9.0	70.0	F10	4x M10 x 15.0
					F14	4x M16 x 24.0
778-089	50.0		14.0 x 9.0	70.0	F12	4x M12 x 19.0
					F16	4x M20 x 30.0
778-130	50.0		14.0 x 9.0	70.0	F10	4x M10 x 15.0
					F14	4x M16 x 24.0
778-131	50.0		14.0 x 9.0	70.0	F12	4x M12 x 19.0
					F16	4x M20 x 30.0
778-180	60.0		18.0 x 11.0	70.0	F16	4x M20 x 30.0
778-220	70.0		20.0 x 12.0	90.0	F16	4x M20 x 30.0
					F25	8x M16 x 24.0
778-265	70.0		20.0 x 12.0	90.0	F16	4x M20 x 30.0
					F25	8x M16 x 24.0
778-310	70.0		20.0 x 12.0	90.0	F16	4x M20 x 30.0
					F25	8x M16 x 24.0
778-400	70.0		20.0 x 12.0	100.0	F16	4x M20 x 30.0
					F25	8x M16 x 24.0

VALVE CONNECTION F777 KEYSTONE (IMPERIAL)

	Shaft connection (in)					Mounting holes
Model	**H**	**J**	**Key**	**Shaft depth**	**PCD**	**No x Size x Depth**
777-003	9/16	3/8		1.26	1.75	4x 1/4-20 UNC x 0.38
					3.25	4x 3/8-16 UNC x 0.56
777-005	9/16	3/8		1.26	3.25	4x 3/8-16 UNC x 0.56
777-008	3/4	1/2		1.26	3.25	4x 3/8-16 UNC x 0.56
777-013	3/4	1/2		1.26	3.25	4x 3/8-16 UNC x 0.56
777-014	7/8	5/8		2.00	3.25	4x 3/8-16 UNC x 0.56
					5.00	4x 1/2-13 UNC x 0.63
777-035	1 1/8		1/4 x 1/4	2.00	3.25	4x 3/8-16 UNC x 0.56
					5.00	4x 1/2-13 UNC x 0.63
777-036	1 3/8		5/16 x 5/16	2.00	3.25	4x 3/8-16 UNC x 0.56
					5.00	4x 1/2-13 UNC x 0.63
777-044	1 1/8		1/4 x 1/4	2.76	5.00	4x 1/2-13 UNC x 0.63
777-045	1 3/8		5/16 x 5/16	2.76	5.00	4x 1/2-13 UNC x 0.63
777-057	1 1/8		1/4 x 1/4	2.76	5.00	4x 1/2-13 UNC x 0.63
777-058	1 3/8		5/16 x 5/16	2.76	5.00	4x 1/2-13 UNC x 0.63
777-088	1 3/8		5/16 x 5/16	2.76	5.00	4x 1/2-13 UNC x 0.63
					6.50	4x 3/4-10 UNC x 1.00
777-089	1 5/8		3/8 x 3/8	2.76	5.00	4x 1/2-13 UNC x 0.63
					6.50	4x 3/4-10 UNC x 1.00
777-130	1 5/8		3/8 x 3/8	2.76	5.00	4x 1/2-13 UNC x 0.63
					6.50	4x 3/4-10 UNC x 1.00
777-131	1 7/8		1/2 x 3/8	2.76	5.00	4x 1/2-13 UNC x 0.63
					6.50	4x 3/4-10 UNC x 1.00
777-180	1 7/8		1/2 x 3/8	2.76	6.50	4x 3/4-10 UNC x 1.00
777-181	2 1/4		1/2 x 3/8	2.76	6.50	4x 3/4-10 UNC x 1.00
777-220	1 7/8		1/2 x 3/8	3.54	6.50	4x 3/4-10 UNC x 1.00
777-221	2 1/4		1/2 x 3/8	3.54	6.50	4x 3/4-10 UNC x 1.00
777-265	2 1/4		1/2 x 3/8	3.54	6.50	4x 3/4-10 UNC x 1.00
777-310	2 1/4		1/2 x 3/8	3.54	6.50	4x 3/4-10 UNC x 1.00
777-400	2 7/8		3/4 x 1/2	3.94	6.50	4x 3/4-10 UNC x 1.00
					10.00	8x 1/2-13 UNC x 1.00

VALVE CONNECTION F777 KEYSTONE (METRIC)

	Shaft connection (mm)					Mounting holes
Model	**H**	**J**	**Key**	**Shaft depth**	**PCD**	**No x Size x Depth**
777-003	14.3	9.5		32.0	44.5	4x M6 x 10.0
					82.5	4x M6 x 10.0
777-005	14.3	9.5		32.0	82.5	4x M6 x 13.0
777-008	19.1	12.7		32.0	82.5	4x M6 x 13.0
777-013	19.1	12.7		32.0	82.5	4x M6 x 13.0
777-014	22.2	15.9		51.0	82.5	4x M6 x 13.0
					127.0	4x M12 x 16.0
777-035	28.6		6.4 x 6.4	51.0	82.5	4x M6 x 13.0
					127.0	4x M12 x 16.0
777-036	34.9		7.9 x 7.9	51.0	82.5	4x M6 x 13.0
					127.0	4x M12 x 16.0
777-044	28.6		6.4 x 6.4	70.0	127.0	4x M12 x 16.0
777-045	34.9		7.9 x 7.9	70.0	127.0	4x M12 x 16.0
777-057	28.6		6.4 x 6.4	70.0	127.0	4x M12 x 16.0
777-058	34.9		7.9 x 7.9	70.0	127.0	4x M12 x 16.0
777-088	34.9		7.9 x 7.9	70.0	127.0	4x M12 x 16.0
					165.0	4x M20 x 30.0
777-089	41.3		9.5 x 9.5	70.0	127.0	4x M12 x 16.0
					165.0	4x M20 x 30.0
777-130	41.3		9.5 x 9.5	70.0	127.0	4x M12 x 16.0
					165.0	4x M20 x 30.0
777-131	47.6		12.7 x 9.5	70.0	127.0	4x M12 x 16.0
					165.0	4x M20 x 30.0
777-180	47.6		12.7 x 9.5	70.0	165.0	4x M20 x 30.0
777-181	54.0		12.7 x 9.5	70.0	165.0	4x M20 x 30.0
777-220	47.6		12.7 x 9.5	90.0	165.0	4x M20 x 30.0
777-221	54.0		12.7 x 9.5	90.0	165.0	4x M20 x 30.0
777-265	54.0		12.7 x 9.5	90.0	165.0	4x M20 x 30.0
777-310	54.0		12.7 x 9.5	90.0	165.0	4x M20 x 30.0
777-400	73.0		19.1 x 12.7	100.0	165.0	4x M20 x 30.0
					254.0	8x M16 x 24.0



DIMENSIONS F777/778

Model	Length A (mm)	Width B1 (mm)	Width B2 (mm)	Height C (mm)	Length A (in)	Width B1 (in)	Width B2 (in)	Height C (in)
77x-003	133		123	168	5.24		4.84	6.61
77x-005	126		123	213	4.96		4.84	8.39
77x-008	393	234	291	363	15.47	9.21	11.46	14.29
77x-013	393	234	291	363	15.47	9.21	11.46	14.29
77x-035	366	190	245	306	14.41	7.48	9.65	12.05
77x-044	366	190	245	306	14.41	7.48	9.65	12.05
77x-057	366	190	245	306	14.41	7.48	9.65	12.05
77x-088	347	234	343	440	13.66	9.21	13.50	17.32
77x-130	347	234	343	440	13.66	9.21	13.50	17.32
77x-180	451	276	402	554	17.76	10.87	15.83	21.81
77x-220	451	276	402	554	17.76	10.87	15.83	21.81
77x-265	451	276	402	554	17.76	10.87	15.83	21.81
77x-310	451	276	402	554	17.76	10.87	15.83	21.81
77x-400	458	276	496	581	18.03	10.87	19.53	22.87

NOTES

Following models use the same housing, but have different valve connection dimensions:

F778-014 dimensions are identical to F778-013

F778-036 dimensions are identical to F778-035

F778-045 dimensions are identical to F778-044

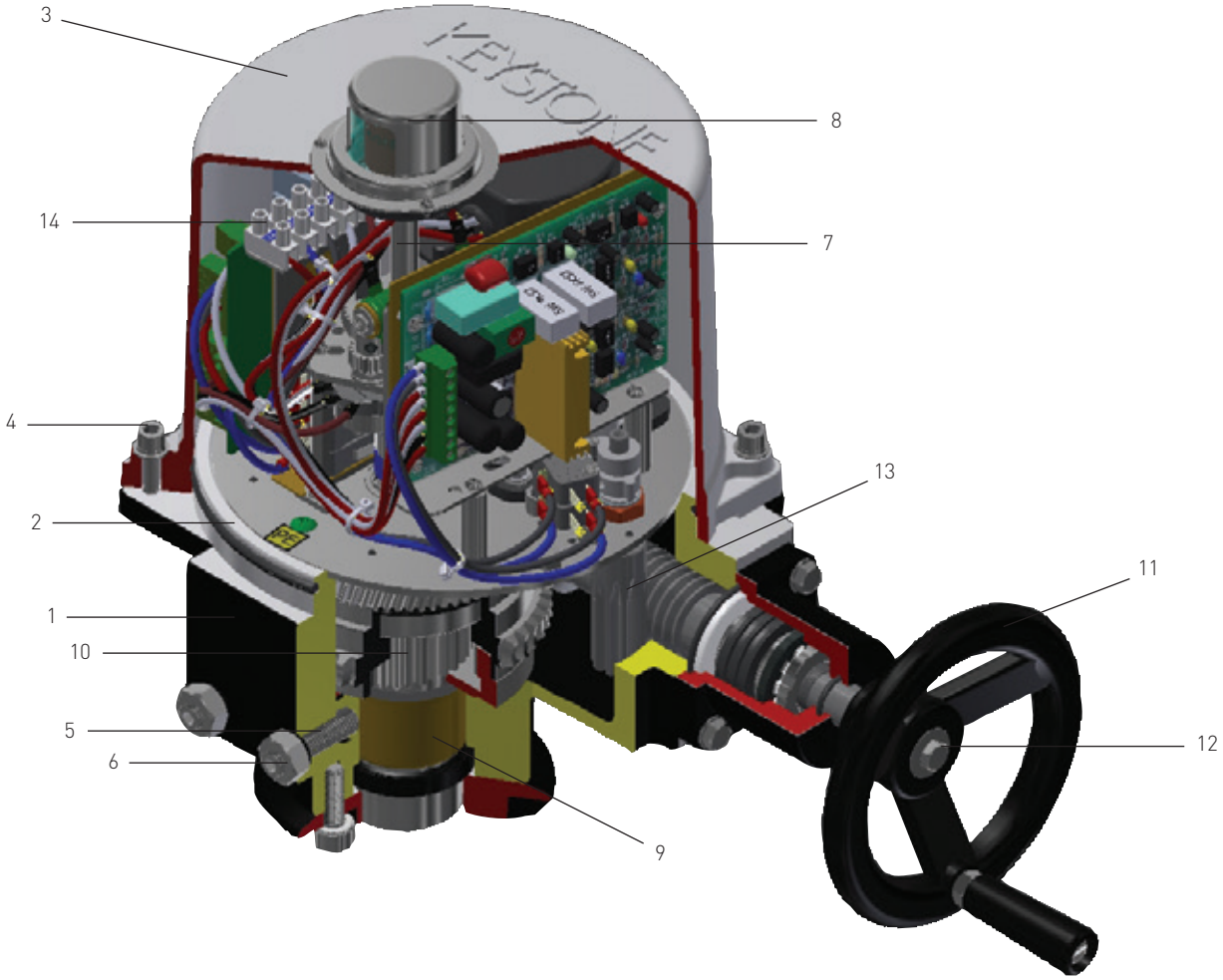
F778-058 dimensions are identical to F778-057

F778-089 dimensions are identical to F778-088

F778-131 dimensions are identical to F778-130

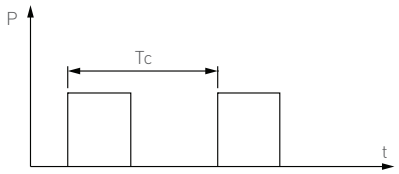
F778-181 dimensions are identical to F778-180

F778-221 dimensions are identical to F778-220

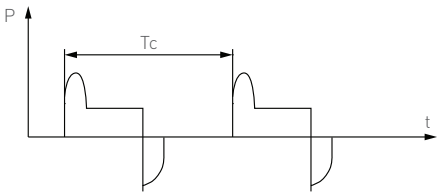


MATERIALS OF CONSTRUCTION

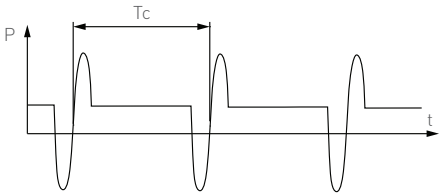
No.	Item	Material	Finish
1	Body	Aluminium alloy	ESPC
2	Body O-ring	NBR	Natural
3	Cover	Aluminium alloy	ESPC
4	Cover bolt	Stainless steel	Natural
5	Travel stop bolt	OM2-8-stainless steel	Natural/Zinc plated
6	Travel stop nut	Stainless steel	Natural
7	Position indicator shaft	S45C	Zinc plated
8	Position indicator	ABS765B	Natural
9	Output shaft	S45C/FCD60	Nickel plated/Phosphate coated
10	Gear	Alloy steel	Natural
11	Hand wheel	Up to F77x-057 Nylon	Natural
		From F77x-088: Aluminium	ESPC
12	Hand wheel bolt	Steel	Zinc plated
13	Torque shaft	S45C	Electrodeposition coating
14	Terminal strip	PA66	Natural



DUTY CYCLE S3



DUTY CYCLE S5



DUTY CYCLE S7

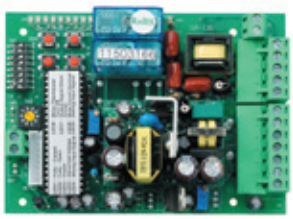
POWER REQUIREMENTS

	Motor power	Duty cycle	12V DC/AC			24V DC/AC		
Model	(W)	(IEC60034)	Run (A)	Start (A)	Lock (A)	Run (A)	Start (A)	Lock (A)
77x-003	10	S7-75%	1.9	2.0	2.8	1.1	1.1	1.6
77x-005	10	S7-75%	1.3	1.5	2.8	0.8	0.9	1.6
77x-008	40	S7-75%	3.4	5.2	16.5	2.2	4.5	14.5
77x-013	40	S7-75%	4.4	4.9	16.5	2.4	5.0	14.5
77x-035	80	S7-75%	16.1	16.1	33.0	8.5	9.2	30.0
77x-044	80	S7-75%	14.1	13.5	33.0	7.5	9.0	30.0
77x-057	80	S7-75%	12.3	12.5	33.0	7.0	8.5	30.0
77x-088	80	S7-75%				6.8	7.8	30.0
77x-130	80	S7-75%	25.0	26.0	59.0	8.1	8.0	30.0
77x-180	80	S5-50%				8.8	11.0	26.0
77x-220	80	S5-50%	28.0	60.0	59.0	11.8	11.0	26.0
77x-265	80							
77x-310	220							
77x-400	220							

	Motor power	Duty cycle	110V AC - 1 Ph			240V AC - 1 Ph		
Model	(W)	(IEC60034)	Run (A)	Start (A)	Lock (A)	Run (A)	Start (A)	Lock (A)
77x-003	10	S3-30%	0.6	0.6	0.7	0.3	0.4	0.4
77x-005	10	S3-30%	0.6	0.6	0.7	0.3	0.4	0.5
77x-008	40	S3-30%	1.0	1.8	1.6	0.5	0.8	0.9
77x-013	40	S3-30%	1.2	1.8	1.6	1.0	1.2	0.9
77x-035	80	S3-30%	1.9	3.8	3.6	1.1	2.0	2.2
77x-044	80	S3-30%	2.0	3.8	3.6	1.1	2.0	2.2
77x-057	80	S3-30%	2.1	3.8	3.6	1.1	2.0	2.2
77x-088	120	S3-30%	3.1	8.5	9.0	1.4	4.1	5.0
77x-130	120	S3-30%	3.3	9.0	9.0	1.6	4.4	5.0
77x-180	180	S3-30%	3.3	5.8	5.9	2.1	3.8	3.6
77x-220	180	S3-30%	4.0	6.5	5.9	2.3	4.0	3.6
77x-265	180	S3-30%	4.5	3.5	5.9	2.5	4.2	3.6
77x-310	220	S3-30%	4.0	8.0	7.5	2.4	4.4	4.8
77x-400	220	S3-30%	4.2	8.0	7.5	2.4	4.8	4.8

	Motor power	Duty cycle	220V AC - 3 Ph			380V AC - 3 Ph			440V AC - 3 Ph		
Model	(W)	(IEC60034)	Run (A)	Start (A)	Lock (A)	Run (A)	Start (A)	Lock (A)	Run (A)	Start (A)	Lock (A)
77x-003											
77x-005											
77x-008	40	S3-30%	0.8	1.4	1.5	0.4	0.7	0.7	0.4	0.9	0.6
77x-013	40	S3-30%	0.8	1.4	1.5	0.4	0.7	0.7	0.4	0.9	0.6
77x-035	80	S3-30%	1.0	1.8	2.3	0.7	1.3	1.5	0.6	1.4	1.4
77x-044	80	S3-30%	1.0	1.8	2.3	0.7	1.3	1.5	0.6	1.4	1.4
77x-057	80	S3-30%	1.0	1.8	2.3	0.7	1.3	1.5	0.6	1.4	1.4
77x-088	120	S3-30%	0.9	2.0	2.2	0.7	1.2	1.4	0.5	1.3	1.3
77x-130	120	S3-30%	1.0	2.4	2.6	0.7	1.5	1.5	0.6	1.2	1.2
77x-180	180	S3-30%	1.3	3.7	3.9	0.7	2.0	2.3	0.7	2.0	2.2
77x-220	180	S3-30%	1.3	3.4	3.9	0.7	2.0	2.4	0.7	2.0	2.2
77x-265	180	S3-30%	1.3	3.5	3.9	0.7	2.0	2.4	0.7	2.0	2.2
77x-310	220	S3-30%	1.5	4.8	5.4	0.9	2.5	2.5	0.8	2.6	2.4
77x-400	220	S3-30%	1.5	4.9	5.4	1.0	2.5	2.5	0.8	2.6	2.4

OPTIONS



Modulating controller
The F777/778 can be equipped with a modulating controller board and control a valve position from 0-100% based on an analog input signal. This input signal can be 4-20 mA, 1-5 V DC or 2-10 V DC. This option also includes a position feedback signal either 4-20 mA or 2-10 V DC.

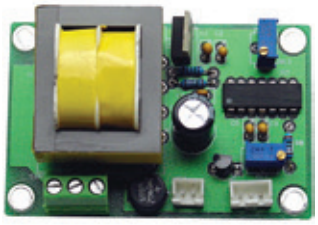




Heater
The heater option increases the internal temperature and avoids internal condensation. It is not recommended using a heater above 35°C (95°F) ambient temperature, but with large temperature deviations between day/night or between summer/winter, the heater in combination with a thermostat is recommended for these applications.



Additional limit switches
The standard position feedback switches can be extended with 2 additional switches providing dry contacts for fully open and close position. Alternatively they can also be used for intermediate position indication.



Current position transmitter
For continuous monitoring of valve position, the current position transmitter can be used. It provides a feedback signal of 0-20 mA, 4-20 mA, 0-5 V DC, 1-5 V DC, 0-10 V DC, or 2-10 V DC.



Potentiometer
The alternative continuous position monitoring is using a potentiometer. The potentiometer is available as 1k or 5k ohm resistance value, and can be used on on/off actuators only.



Torque switches
In order to reduce the torque applied to the valve stem, configurable torque switches can be used. They are available for the model F777/778-008 onwards, and must be ordered with the actuator.





Local control module
For safety during maintenance the local control module has a Local/Remote selector switch and Open/Close buttons for local operation.

SELECTION GUIDE

Example	778	035	24	15	3	X1XXXTXS	1	M	00	M11	D30

Figure number

777 Keystone flange
778 ISO flange

Model/Size

003	**035**	**058**	**180**	**310**
005	**036**	**088**	**181**	**400**
008	**044**	**089**	**221**	
013	**045**	**130**	**220**	
014	**057**	**131**	**265**	

Voltage

01	12 V DC	**12**	120 V AC 1Ph
02	24 V DC	**24**	240 V AC 1Ph
03	24 V AC 1Ph	**40**	400 V AC 3Ph

Cycle speed

Check Table for cycle speed per model

Duty cycle

3 30% (standard 120-240 V AC))
5 50%
7 70%

Options (consult sales for possible combinations)

XXXXXXX	None (standard)	**XXX1XXX**	Potentiometer 1K ohm
MXXXXXX	Modulating controller	**XXX2XXX**	Potentiometer 5K ohm
X1XXXXX	Heater 24 V DC	**XXXXTXX**	Torque switches
X2XXXXX	Heater 48 V DC	**XXXXXLX**	Local control
X3XXXXX	Heater 120 V AC	**XXXXXXB**	Switch card with 2 additional limit switches (USA)
X4XXXXX	Heater 240 V AC		
XXTXXXX	4-20 mA Current position transmitter	**XXXXXXS**	2 additional limit switches

IP rating

1 IP67/Nema 4X

Flange threading

M Metric
U Imperial

Variant

00 Standard

Valve flange

F03	PCD 36 mm (ISO 5211)	**M05**	F03+F05 (ISO 5211)	**U1C**	PCD 1.75" (Keystone 45°)
F05	PCD 50 mm (ISO 5211)	**M06**	F03+F05+F07 (ISO 5211)	**U34**	PCD 3.25" (Keystone 45°)
F07	PCD 70 mm (ISO 5211)	**M07**	F05+F07 (ISO 5211)	**U50**	PCD 5.00" (Keystone 45°)
F10	PCD 102 mm (ISO 5211)	**M10**	F07+F10 (ISO 5211)	**U68**	PCD 6.50" (Keystone 45°)
F12	PCD 125 mm (ISO 5211)	**M11**	F07+F10+F12 (ISO 5211)		
F14	PCD 140 mm (ISO 5211)	**M12**	F10+F12 (ISO 5211)	**C34**	PCD 1.75+3.25" (Keystone 45°)
F16	PCD 165 mm (ISO 5211)	**M14**	F10+F14 (ISO 5211)	**C50**	PCD 3.25+5.00" (Keystone 45°)
		M16	F12+F16 (ISO 5211)	**C68**	PCD 5.00+6.50" (Keystone 45°)
		M25	F16+F25 (ISO 5211)	**CA0**	PCD 6.50+10.0" (Keystone 45°)

Shaft dimension

S11	Star11	**D12**	DD12 x 8	**M35**	35K10 x 8	**P06**	DD3⁄8" x 1⁄4" (9.53 x 6.35 mm)
S14	Star14	**D16**	DD16 x 11	**M40**	40K12.0	**P09**	DD7⁄16" x 3⁄8" (14.29 x 9.53 mm)
S17	Star17	**D20**	DD20 x 14	**M44**	44K12.0	**P0A**	DD5⁄8" x 7⁄16" (15.88 x 11.1 mm)
S22	Star22	**D25**	DD25 x 18	**M50**	50K14 x 9	**P0C**	DD3⁄4" x 1⁄2" (19.05 x 12.7 mm)
S27	Star27	**D30**	DD30 x 22	**M60**	60K18 x 11	**P0E**	DD7⁄8" x 5⁄8" (22.2 x 15.88 mm)
S36	Star36			**M70**	70K20 x 12		
S46	Star46			**M75**	75K20 x 12		
S55	Star55			**M80**	80K22 x 14		
S75	Star75			**M90**	90K25		
				MA0	100K28		

U0D	Dia 13⁄16"; K3⁄16 x 3⁄16 (20.6K4.78 mm)
U10	Dia 1"; K1⁄4 x 3⁄16" (25.4K6.35 mm)
U11	Dia 1 1⁄8"; K1⁄4 x 1⁄4" (28.6K6.35 mm)
U16	Dia 1 3⁄8"; K5⁄16 x 5⁄16 (34.9K7.94 mm)
U1A	Dia 1 5⁄8"; K3⁄8 x 3⁄8" (41.3K9.53 mm)
U1E	Dia 1 7⁄8"; K1⁄2 x 3⁄8" (47.6K12.7 mm)
U24	Dia 2 1⁄4; K1⁄2 x 3⁄8" (57.2K12.7 mm)
U26	Dia 2 3⁄8"; K5⁄8 (63.3 x K15.9 mm)
U2C	Dia 2 3⁄4"; K5⁄8" (69.9 x K15.9 mm)
U2E	Dia 2 7⁄8"; K3⁄4" (73.0 x K19.1 mm)
U38	Dia 3 1⁄2"; K7⁄8" (88.9K22.23 mm)



PENTAIR VALVES & CONTROLS
www.pentair.com/valves

All Pentair trademarks and logos are owned by Pentair plc. All other brand or product names are trademarks or registered marks of their respective owners. Because we are continuously improving our products and services, Pentair reserves the right to change product designs and specifications without notice. Pentair is an equal opportunity employer. © 2016 Pentair plc. All rights reserved.