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Servicio de Att. al Cliente

TI-S75-11
AB Issue 4

Selection of Modulating Feedwater Valves Electrically Actuated

Safety

Your attention is drawn to
Safety Information Leaflet IM-GCM-10

1. Selection of the valve body size

The standard valve for modulating boiler water level control is DN40 (1½") nominal pipe size (40 mm). A range of seat sizes to suit this body is available to suit most sizes of boilers. However, for smaller or larger boilers, alternative sized valves can be selected from the Spirax Sarco range - See overleaf.
Valve stem seals are available in normal (PTFE) or high temperature (graphite) material. We recommend the use of the high temperature seal to decrease the possibility of leakage over long term use. Valves with high temperature stem seals are suffixed 'H'.

2. Selection of the valve body material and pressure rating

The valve body must be suitable for the maximum pressure and temperature in the feedwater line.
Standard valve types are as follows:

SG iron body	**KE71**	Screwed	PN25 rating (Pmax 25 bar g at 120°C)
	KE73	Flanged	
Cast steel body	**KE43**	Flanged	PN40 rating (Pmax 40 bar g at 120°C)

3. Selection of the valve K_V

The DN40 valve body size is available with various seat sizes giving a choice of K_V values.
Use the graph to select a suitable K_V as follows:

a) The feedwater flowrate is the actual maximum steam generation rate of the boiler plus any blowdown rate where this is significant. In practice the use of the 'from and at' boiler rating will give a small safety margin. In the example this is 15 000 kg/h.
b) The pressure drop across the valve is the feedpump pressure at the maximum flowrate, minus the boiler pressure, minus any valve and pipework losses. In the example the available pressure drop is 1.5 bar.
c) Select the larger K_V value, 16 in this example. If right on the line, or if in doubt, select a larger K_V.

4. Selection of the actuator + valve adaptor

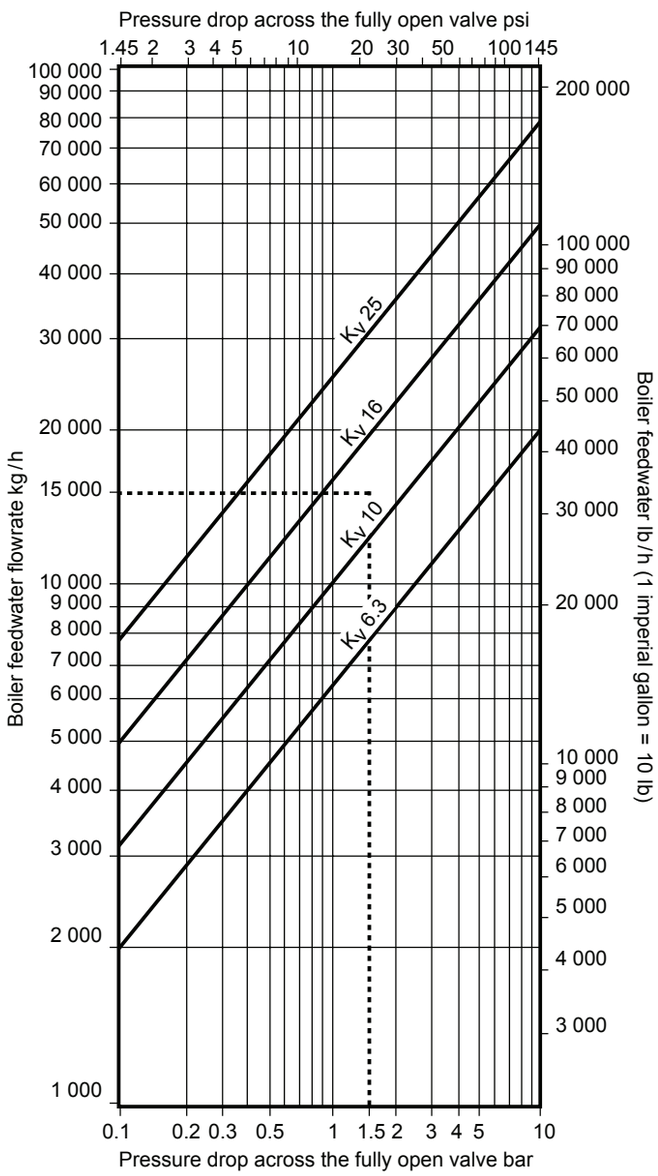
The actuator has to be capable of shutting off against the maximum feedpump pressure when the boiler is not under pressure.
Select the actuator + valve adaptor from the table below:

Actuator type	220 / 240 Vac	AEL52211JXA		AEL53211JXA		AEL54211JXA	
	110 Vac	AEL52212GXA		AEL53212GXA		AEL54212GXA	
	24 Vac	AEL52213FXA		AEL53213FXA		AEL54213FXA	
	24 Vdc	AEL52214FXA		AEL53214FXA		AEL54214FXA	
Size	K_V value	Maximum feedpump pressure bar g					
Standard valve size DN40	25.0	12.0	(8.5)	28.5	(25)	40.0	(40)
	16.0	19.8	(14.3)	40.0	(40)	-	-
	10.0	38.3	(27.7)	40.0	(40)	-	-
	6.3	40.0	(40.0)	-	-	-	-
Valve adaptor		AEL6911		AEL6911		AEL6911	
Mounting flange		EL5970		EL5970		EL5970	

Figures in brackets denotes the differential pressures for valves fitted with high temperature graphite stem sealing. These valves have a suffix 'H'.

Valve stroke is 20 mm. Actuator speed is 0.5 mm/s

Valve K_V selection graph



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For alternative sizes to the standard DN40 (1½")

2. Selection of the valve body material and pressure rating

The valve body must be suitable for the maximum pressure and temperature in the feedwater line.

Standard valve types are as follows:

SG iron body	**KE71**	Screwed	PN25 rating (Pmax 25 bar g at 120°C)
	KE73	Flanged	
Cast steel body	**KE43**	Flanged	PN40 rating (Pmax 40 bar g at 120°C)

Valve stem seals are available in normal (PTFE) or high temperature (graphite) material. We recommend the use of the high temperature seal to decrease the possibility of leakage over long term use. Valves with high temperature stem seals are suffixed 'H'.

3. Selection of the valve K_V

Use the graph to select a suitable K_V as follows:

a) The feedwater flowrate is the actual maximum steam generation rate of the boiler plus any blowdown rate where this is significant. In practice the use of the 'from and at' boiler rating will give a small safety margin. In the example this is 15 000 kg/h.

b) The pressure drop across the valve is the feedpump pressure at the maximum flowrate, minus the boiler pressure, minus any valve and pipework losses. In the example the available pressure drop is 1.5 bar.

c) Select the larger K_V value, 16 in this example. If right on the line, or if in doubt, select a larger K_V.

4. Selection of the actuator + valve adaptor

The actuator has to be capable of shutting off against the maximum feedpump pressure when the boiler is not under pressure.

Select the actuator + valve adaptor from the table below:

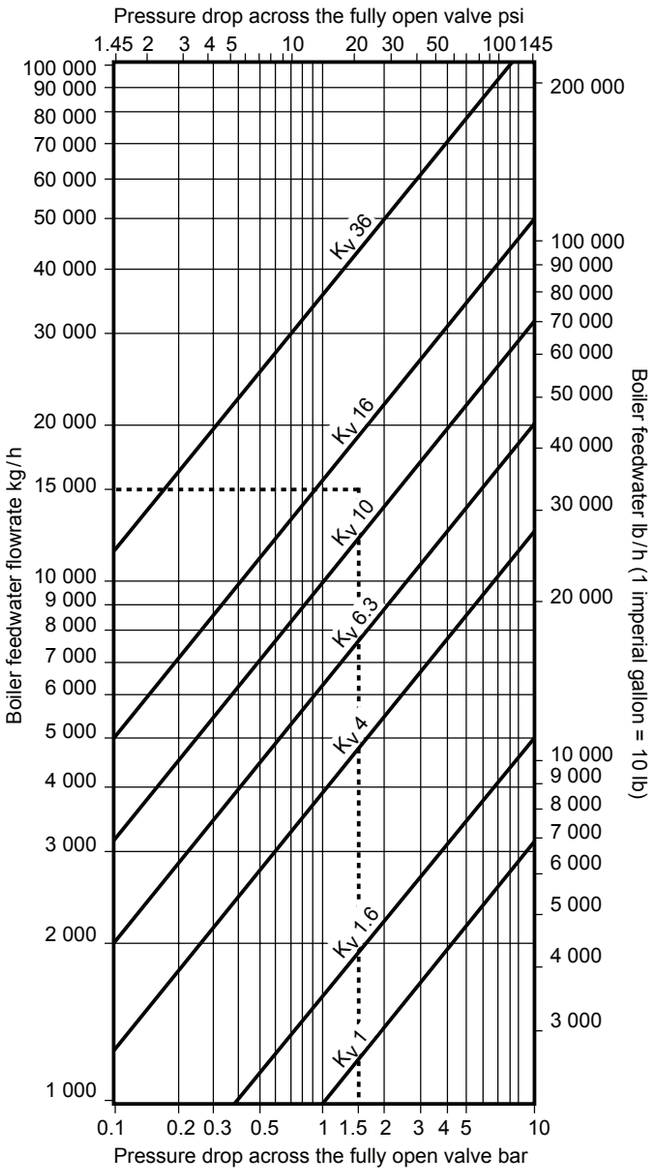
Actuator type	220 / 240 Vac	AEL52211JXA	AEL53211JXA	AEL54211JXA
	110 Vac	AEL52212GXA	AEL53212GXA	AEL54212GXA
	24 Vac	AEL52213FXA	AEL53213FXA	AEL54213FXA
	24 Vdc	AEL52214FXA	AEL53214FXA	AEL54214FXA

Size	Kv value	Maximum feedpump pressure bar g					
Valve size DN50	36.0	6.7	(4.7)	16.3	(14.3)	29.7	(27.2)
	25.0	12.0	(8.5)	28.5	(25.0)	40.0	(40.0)
	16.0	19.8	(14.3)	40.0	(40.0)	-	-
	10.0	38.3	(27.7)	40.0	(40.0)	-	-
Valve size DN32	16.0	19.8	(14.3)	40.0	(40.0)	-	-
	10.0	38.3	(27.7)	40.0	(40.0)	-	-
	6.3	40.0	(40.0)	-	-	-	-
	4.0	40.0	(40.0)	-	-	-	-
Valve size DN25	10.0	38.3	(27.7)	40.0	(40.0)	-	-
	6.3	40.0	(40.0)	-	-	-	-
	4.0	40.0	(40.0)	-	-	-	-
Valve size DN20	6.3	40.0	(40.0)	-	-	-	-
	4.0	40.0	(40.0)	-	-	-	-
	1.6	40.0	(40.0)	-	-	-	-
	1.0	40.0	(40.0)	-	-	-	-
Valve size DN15	4.0	40.0	(40.0)	-	-	-	-
	1.6	40.0	(40.0)	-	-	-	-
	1.0	40.0	(40.0)	-	-	-	-
Valve adaptor		AEL6911		AEL6911		AEL6911	
Mounting flange		EL5970		EL5970		EL5970	

Figures in brackets denotes the differential pressures for valves fitted with high temperature graphite stem sealing. These valves have a suffix 'H'.

Valve stroke is 20 mm. Actuator speed is 0.5 mm/s

Valve K_V selection graph



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2 Boiler house
Level controls

TI-S75-12
CTLS Issue 5

Selection of Modulating Feedwater Valves Pneumatically Actuated

Safety
Your attention is drawn to Safety Information Leaflet IM-GCM-10

1. Selection of the valve body size

The standard valve for modulating boiler water level control is DN40 (1½") nominal pipe size (40 mm).

A range of seat sizes to suit this body is available to suit most sizes of boilers.

However, for smaller or larger boilers, alternative sized valves can be selected from the Spirax Sarco range - See page 3.

Valve stem seals are available in normal (PTFE) or high temperature (graphite) material.

We recommend the use of the high temperature seal to decrease the possibility of leakage over long term use.

Valves with high temperature stem seals are suffixed 'H'.

2. Selection of the valve body material and pressure rating

The valve body must be suitable for the maximum pressure and temperature in the feedwater line.
Standard valve types are as follows:

SG iron body	**KE71**	Screwed	PN25 rating (Pmax 25 bar g at 120 °C)
	KE73	Flanged	
Cast steel body	**KE43**	Flanged	PN40 rating (Pmax 40 bar g at 120 °C)

To select the valve, please go to page 2

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3. Selection of the valve K_v

The DN40 valve body size is available with various seat sizes giving a choice of K_v values.

Use the graph to select a suitable K_v as follows:

a) The feedwater flowrate is the actual maximum steam generation rate of the boiler plus any blowdown rate where this is significant. In practice the use of the 'from and at' boiler rating will give a small safety margin. In the example this is 15 000 kg/h.

b) The pressure drop across the valve is the feedpump pressure at the maximum flowrate, minus the boiler pressure, minus any valve and pipework losses. In the example the available pressure drop is 1.5 bar.

c) Select the larger K_v value, 16 in this example. If right on the line, or if in doubt, select a larger K_v.

4. Selection of the actuator + valve adaptor

The actuator has to be capable of shutting off against the maximum feedpump pressure to Class IV when the boiler is not under pressure.

Select the actuator + valve adaptor from the table below:

Actuator type		PN9123E		PN9223E	
Valve size	K_v value	Maximum feedpump pressure bar g			
DN40	**25.0**	11.0	(8)	40	(40)
	16.0	11.0	(8)	40	(40)
	10.0	11.0	(8)	40	(40)
	6.3	11.0	(8)	40	(40)

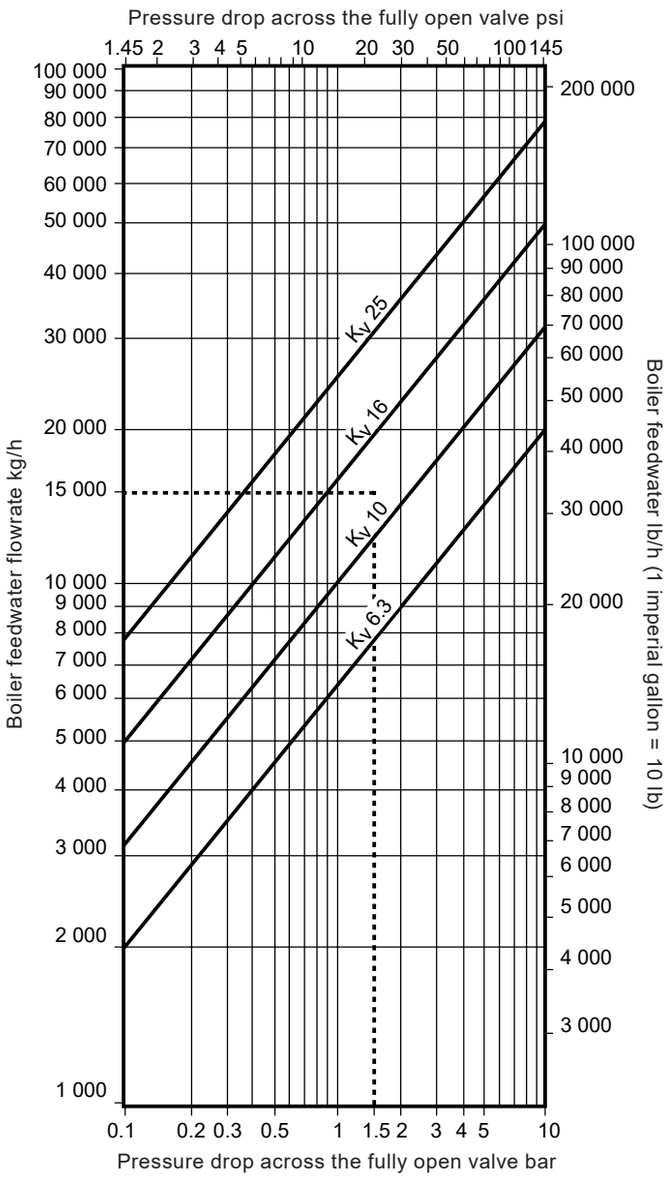
Figures in brackets denotes the differential pressures for valves fitted with high temperature graphite stem sealing. These valves have a suffix 'H'.

Valve stroke is 20 mm.

5. Electropneumatic positioner

Specify EP6 positioner (4 - 20 mA input).

Valve K_v selection graph



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For alternative sizes to the standard DN40 (1½")

2. Selection of the valve body material and pressure rating

The valve body must be suitable for the maximum pressure and temperature in the feedwater line.
Standard valve types are as follows:

SG iron body	**KE71**	Screwed	PN25 rating (Pmax 25 bar g at 120 ºC)
	KE73	Flanged	
Cast steel body	**KE43**	Flanged	PN40 rating (Pmax 40 bar g at 120 ºC)

Valve stem seals are available in normal (PTFE) or high temperature (graphite) material. We recommend the use of the high temperature seal to decrease the possibility of leakage over long term use. Valves with high temperature stem seals are suffixed 'H'.

To select the valve, please go to page 4

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3. Selection of the valve K_v

The DN40 valve body size is available with various seat sizes giving a choice of K_v values.

Use the graph to select a suitable K_v as follows:

a) The feedwater flowrate is the actual maximum steam generation rate of the boiler plus any blowdown rate where this is significant. In practice the use of the 'from and at' boiler rating will give a small safety margin. In the example this is 15 000 kg/h.

b) The pressure drop across the valve is the feedpump pressure at the maximum flowrate, minus the boiler pressure, minus any valve and pipework losses. In the example the available pressure drop is 1.5 bar.

c) Select the larger K_v value, 16 in this example. If right on the line, or if in doubt, select a larger K_v.

4. Selection of the actuator + valve adaptor

The actuator has to be capable of shutting off against the maximum feedpump pressure to Class IV when the boiler is not under pressure.

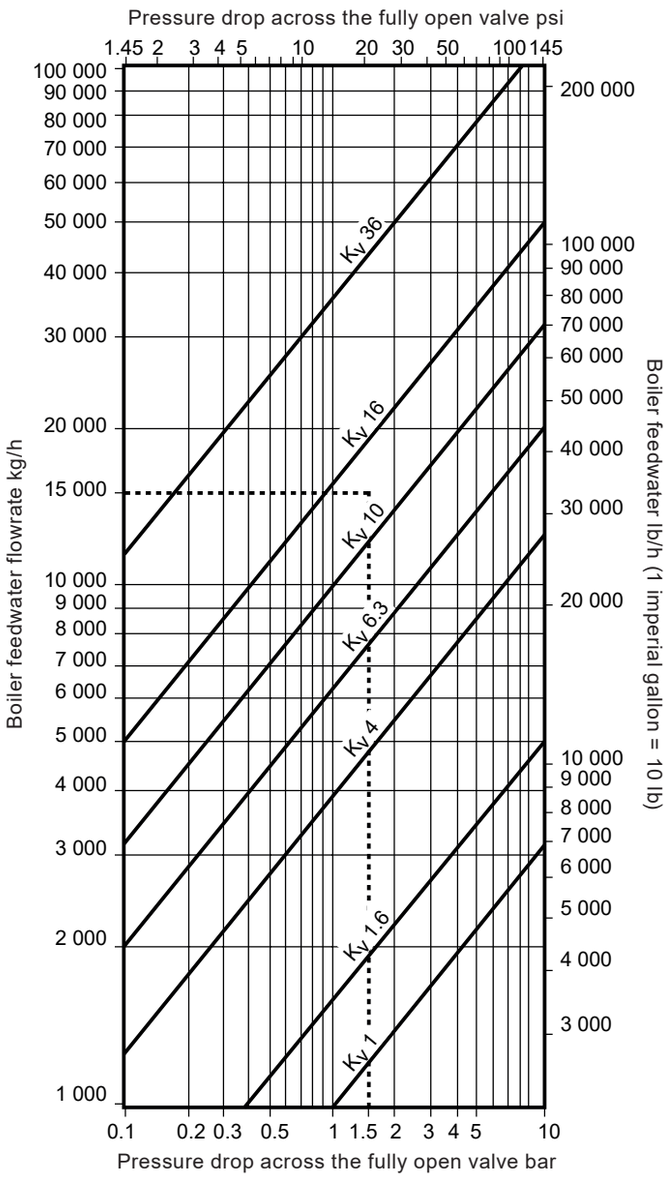
Select the actuator + valve adaptor from the table below:

Actuator type		PN9123E		PN9223E	
Valve size	K_v value	Maximum feedpump pressure bar g			
DN50	36.0	7	(5)	38	(36)
	25.0	7	(5)	38	(36)
	16.0	7	(5)	38	(36)
	10.0	7	(5)	38	(36)
DN32	16.0	29	(23)	40	(40)
	10.0	29	(23)	40	(40)
	6.3	29	(23)	40	(40)
	4.0	29	(23)	40	(40)
DN25	10.0	37	(29)	40	(40)
	6.3	37	(29)	40	(40)
	4.0	37	(29)	40	(40)
	1.6	37	(29)	40	(40)
DN20	6.3	40	(40)	-	-
	4.0	40	(40)	-	
	1.6	40	(40)	-	-
	1.0	40	(40)	-	-
DN15	4.0	40	(40)	-	-
	1.6	40	(40)	-	
	1.0	40	(40)	-	-

Figures in brackets denotes the differential pressures for valves fitted with high temperature graphite stem sealing. These valves have a suffix 'H'.

Valve stroke is 20 mm.

Valve K_v selection graph



5. Electropneumatic positioner

Specify EP6 positioner (4 - 20 mA input).

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