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Selection of Modulating Feedwater Valves Electrically Actuated

Safety
Your attention is drawn to Safety Information Leaflet in IM-S24-42 and IM-P713-01

1. Selection of the valve body size

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'.

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.

See page 2

For alternative sizes to the standard DN40 (1½")

See page 4

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 50 ºC)

3. Selection of the valve Kv

The DN40 valve body size is available with various seat sizes giving a choice of Kv values.
Use the graph to select a suitable Kv 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 Kv value, 16 in this example. If right on the line, or if in doubt, select a larger Kv.

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.

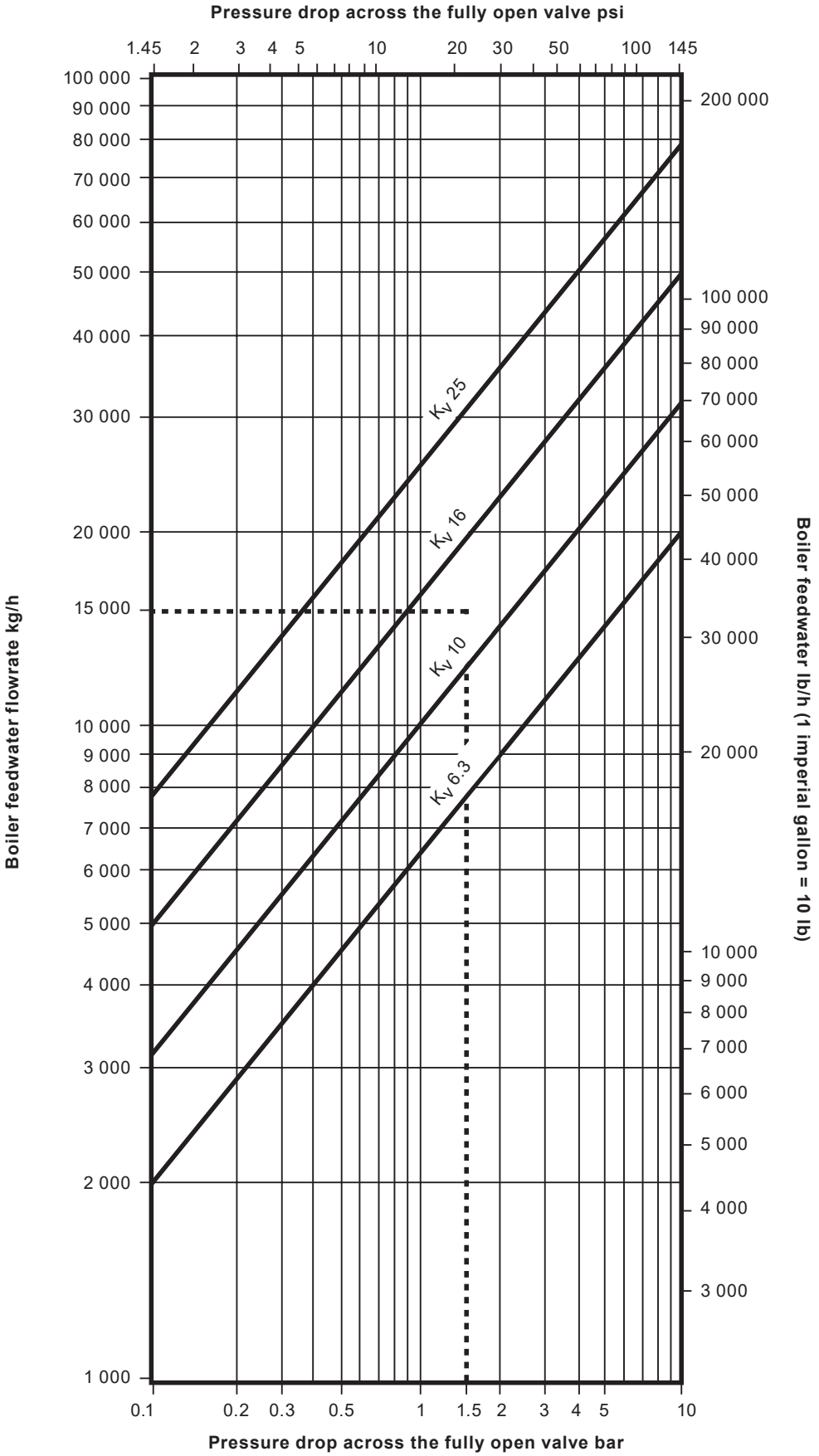
Select the actuator from the table below:

<table>
<tr><td colspan="2"></td><td colspan="4">Metal seat (T, S or W)</td><td colspan="2">PEEK seat (P or C)</td><td colspan="2"></td></tr>
<tr><td colspan="2"></td><td colspan="4">At Feedwater temperature
>50°C body rating must be considered</td><td>Feedwater temperature
≤100 °C</td><td colspan="2">Feedwater temperature
>100 °C</td></tr>
<tr><td rowspan="4">Actuator type</td><td>220/240 Vac</td><td colspan="2">AEL73221JXA</td><td colspan="2">AEL72211JXA
(0.4 mm/s)</td><td>AEL73221JXA</td><td colspan="2">AEL72211JXA (0.4mm/s)</td></tr>
<tr><td>110 Vac</td><td colspan="2">AEL73222GXA</td><td colspan="2">AEL72211GXA
(0.4 mm/s)</td><td>AEL73222GXA</td><td colspan="2">AEL72211GXA (0.4mm/s)</td></tr>
<tr><td>24 Vac</td><td colspan="2">AEL73223FXA</td><td colspan="2">AEL72213FXA
(0.4 mm/s)</td><td>AEL73223FXA</td><td colspan="2">AEL72213FXA (0.4mm/s)</td></tr>
<tr><td>24 Vdc</td><td colspan="2">AEL73224KXA</td><td colspan="2">AEL72224KXA</td><td>AEL73224KXA</td><td colspan="2">AEL72224KXA</td></tr>
<tr><td>Size</td><td>Kv value</td><td colspan="8">Maximum feedpump pressure bar g</td></tr>
<tr><td rowspan="4">DN40
Valve Size</td><td>25.0</td><td>37.1</td><td>(33.8)</td><td>15.0</td><td>(33.8)</td><td rowspan="2">40.0</td><td rowspan="2">(40.0)</td><td>18.6</td><td>(15.3)</td></tr>
<tr><td>16.0</td><td rowspan="3">40.0</td><td rowspan="3">(40.0)</td><td rowspan="3">40.0</td><td>(33.0)</td><td rowspan="3">19.0</td><td rowspan="3">(19.0)</td></tr>
<tr><td>10.0</td><td rowspan="2">(40.0)</td></tr>
<tr><td>6.3</td><td>N/A</td><td>N/A</td></tr>
<tr><td colspan="2">Auxiliary switch</td><td colspan="8">AEL7X010</td></tr>
<tr><td colspan="2">Valve adaptor</td><td colspan="8">Integral</td></tr>
<tr><td colspan="2">Mounting flange</td><td colspan="8">EL5970</td></tr>
</table>

Spindle speed 0.8mm/s unless otherwise stated

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



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4. Selection of the actuator + valve adaptor is on page 6

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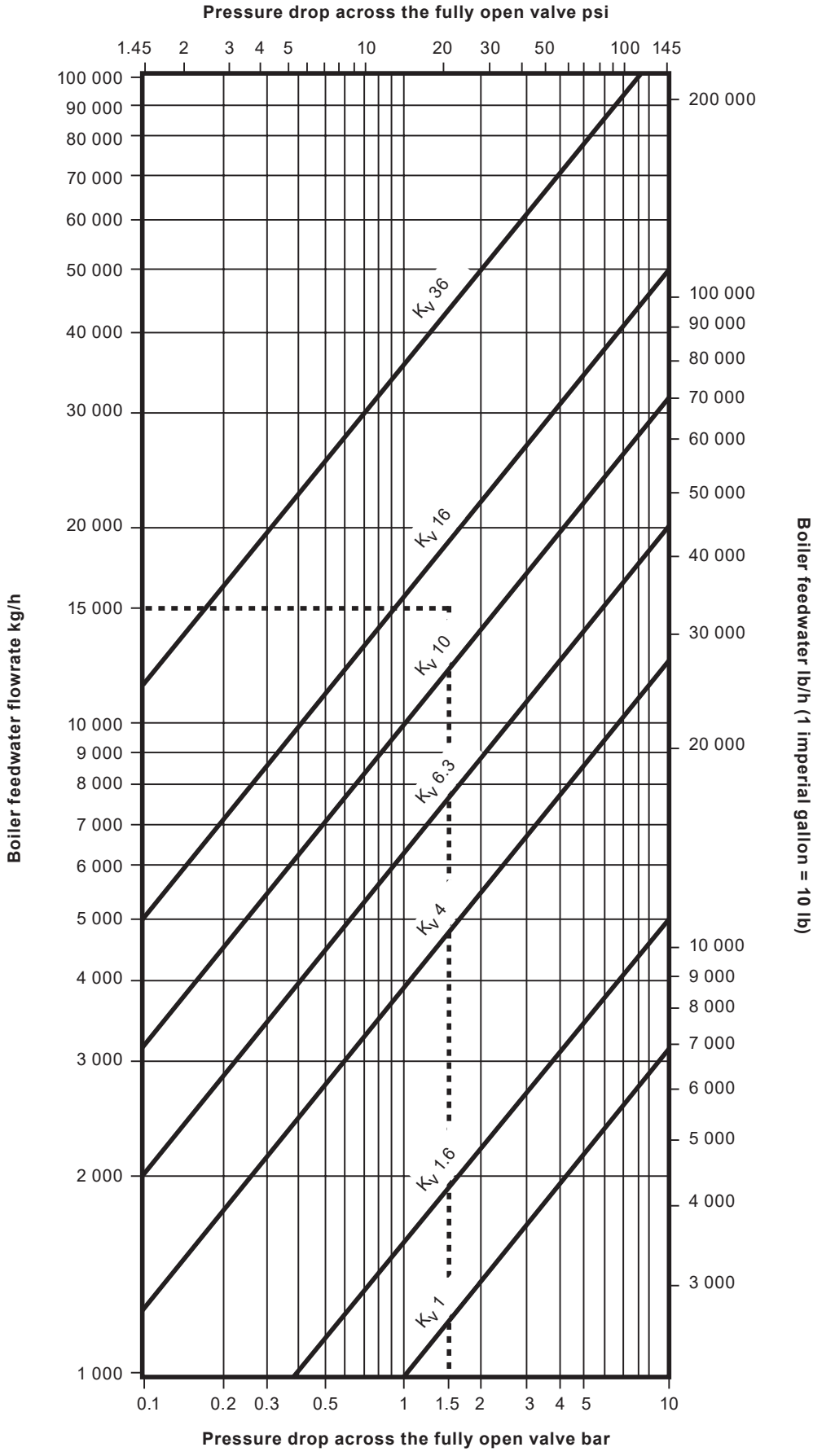

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		Metal Seat (T, S or W)				PEEK Seat (P or C)			
		At Feedwater temperature >50°C body rating must be considered				Feedwater temperature ≤100°C		Feedwater temperature >100°C	
Actuator Type	220/240 Vac	AEL73221JXA		AEL72211JXA (0.4 mm/s)		AEL73221JXA		AEL72211JXA (0.4 mm/s)	
	110 Vac	AEL73222GXA		AEL72211GXA (0.4 mm/s)		AEL73222GXA		AEL72211GXA (0.4 mm/s)	
	24 Vac	AEL73223FXA		AEL72213FXA (0.4 mm/s)		AEL73223FXA		AEL72213FXA (0.4 mm/s)	
	24 Vdc	AEL73224KXA		AEL72224KXA		AEL73224KXA		AEL72224KXA	
Size	Kv value	Maximum feedpump pressure bar g							
DN50 Valve Size	36.0	29.1	(26.5)	11.5	(8.8)	32.2	(29.6)	14.6	(12.0)
	25.0	37.1	(33.8)	15.0	(11.7)	40.0	(40.0)	18.0	(15.3)
	16.0	40.0	(40.0)	40.0	(33.0)			19.0	(19.0)
	10.0				(40.0)				
DN32 Valve Size	16.0	40.0	(40.0)	40.0	(33.0)	40.0	(40.0)	19.0	(19.0)
	10.0				(40.0)				
	6.3					N/A	N/A		
	4.0								
DN25 Valve Size	10.0	40.0	(40.0)	40.0	(40.0)	40.0	(40.0)	19.0	(19.0)
	6.3					N/A	N/A		
	4.0								
	1.6								
DN20 Valve Size	6.3	40.0	(40.0)	40.0	(40.0)	N/A	N/A	19.0	(19.0)
	4.0								
	1.6								
	1.0								
DN15 Valve Size	4.0	40.0	(40.0)	40.0	(40.0)	N/A	N/A	19.0	(19.0)
	1.6								
	1.0								
Auxiliary Switch		AEL7X010							
Valve adaptor		Integral							
Mounting flange		EL5970							

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