

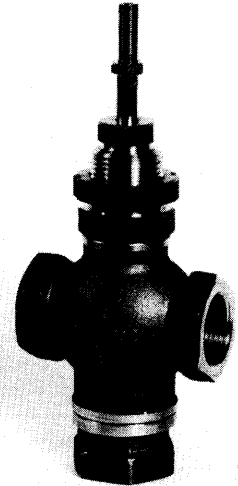
### THREE-PORT SEAT VALVES

#### Types MZ, MZF

These seat valves are of 'globe' construction with a linear moving spindle and a characterised plug operating against the upper seat which controls flow quantity to suit the load. The lower part of the plug is characterised and operates against the lower seat controlling the bypass quantity. This arrangement gives the optimum performance for both mixing and diverting applications. For the latter the valve must be fitted in the return.

The valves are suitable for the control of hot or chilled water and brine or glycol solutions within the limits given in the table below. The information given in this Data Sheet covers electric operation, using the 'AL' range of linear actuators, including 'AL-S' spring-return types.

For pneumatic operation, refer to Satchwell.



### SPECIFICATIONS AND GUIDE TO SELECTION

VALVE					SUITABLE ACTUATORS				CONTROL MEDIUM					
					- See DS 3.20		- See DS 3.21		Brine, 15% max. NaCl or CaCl (freeze protection)					
					ALM 1601,1626 ALX 1201,1226 ALE 1301,1326		ALMS 1601,1651 ALXS 1201,1251 ALES 1301,1351		Glycol solution, 25% max. (freeze protection)					
										Water				
Group	Size	Type	*Kv or CV	Stroke	Maximum differential pressure ( $\Delta p$ )		Maximum differential pressure ( $\Delta p$ )		↓	Temperature limits		Maximum internal pressure		International Pressure Rating
					bar	kPa	bar	kPa		Min.	Max.	bar	kPa	
MZ Screwed Bronze	15mm	MZ 7402	2.1	20mm	10	1000	10	1000	•	2°C	200°C	8	800	PN10 (ND10)
	20mm	MZ 7452	4.2		10	1000	7.5	750						
	25mm	MZ 7501	10		9.7	970	4.4	440						
	32mm	MZ 7551	16		5.8	580	2.9	290						
	40mm	MZ 7601	27		4.1	410	2.0	200						
	50mm	MZ 7651	39	2.4	240	1.1	110							
MZF Flanged Cast Iron	65mm	MZF 7729	63	23mm	1.4	140	0.8	80	•	2°C	200°C	8	800	PN10 (ND10)
	80mm	MZF 7779	100	1.0	100	0.5	50							
	100mm	MZF 7854	160	0.5	50	0.2	20							
	125mm	MZF 7904	215	0.28	28	—	—							
	150mm	MZF 7958	310	40mm	0.18	18	—	—						

\*Kv = Flow in m<sup>3</sup>/hr to produce 1 bar pressure drop

Cv = Flow in UK gal/min to produce 1 lbf/in<sup>2</sup> pressure drop (Cv = approx Kv)

For full TECHNICAL SPECIFICATION see table on page 2 which gives details of flange drillings, materials etc.

**CONSTRUCTION & TECHNICAL SPECIFICATION**

Technical Specification		MZ 15 to 50mm	MZF 65 to 150mm	
Pipe Connections	Screwed B.S.P. to BS 21 female — taper Screwed B.S.P. to BS 21 female — parallel Flanged BS 4504 16/11. = DIN 2533 ND 16 Face to face dimension to DIN 3300			
Characteristic Rangeability	Equal percentage 30 : 1	●	●	
Let-by	Based on:- % Cv at 1 lb/in <sup>2</sup> pressure drop % Kv at 1 bar pressure drop	0.1%Av ●	●	
Temperatures Working Pressure Test Pressure	See table 1 See table 1 24 bar	— —	— —	
Body Material	Bronze: SIS 5204 Close grained cast iron: SIS 0120	● —	— ●	
Seat	Bronze: SIS 5204	●	●	
Plug	Bronze: SIS 5204	●	●	
Spindle	Stainless steel: SIS 2346	●	●	
Gland (self-adjusting spring-loaded)	Packing: Teflon Scraper rings: Headers: Spring: Gland Nut:	●	●	
Gland 'O' Ring	Viton	●	●	

For information relating to the following associated products see the Data Sheets listed:-  
 Actuators, mains voltage (ALM), 24 volt (ALX) or with electronic positioner (ALE) DS 3.20  
 Spring return actuators, mains voltage (ALMS), 24 volt (ALXS) or with electronic positioner(ALES) DS 3.21  
 Pneumatic actuators (refer to Satchwell) DS 9.35

## GOOD DESIGN PRACTICE

### CONTROL MEDIUM

The table on page 1 lists suitable fluids and which valves are appropriate.

Other fluids — e.g. seawater, oils etc: Satchwell cannot accept responsibility for use of these valves with fluids other than those listed in table on Page 1. Detailed specifications of all materials in contact with the fluid are given in table on page 2 and it is the responsibility of the specifier to check their suitability.

Note that all brass components used in valve construction, which are in contact with the fluid, are manufactured from dezincification resistant materials.

The valves are intended to be used in closed circuits for water; if the circuit is open e.g. mains water or from exposed cooling tower ponds it is possible that a build up of mineral deposits may impair the operation of the valve and frequent maintenance will be necessary. Appropriate precautions should be taken.

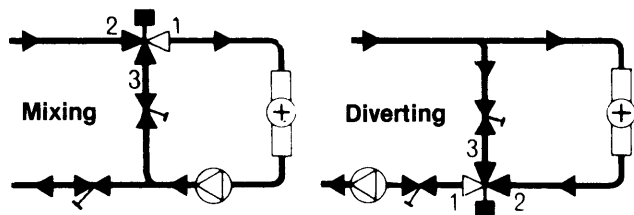


Fig. 1

### VALVE SIZING

The valve should have an authority of not less than approximately 0.5. That is, the pressure drop through the valve should be as near as practicable equal to the pressure drop through either of the parallel paths in which the flow quantity is varied.

SIZING CHARTS ARE GIVEN IN DS V110.

### PLANNING THE INSTALLATION

In planning pipework layout the following considerations apply when deciding on the valve position:-

- Allow sufficient access for actuator and wiring.
- Avoid spindle pointing vertically downwards to avoid risk of condensation or leakage damaging actuator.
- Observe the upper ambient temperature limitation of actuators (50°C).
- Where fluid in valve exceeds 100°C actuator must *not* be above valve. Therefore valve should be mounted with spindle horizontal.
- Observe correct direction of flow through valve as indicated by arrow cast on body.
- Ensure system is efficiently vented, particularly for low flow rates.
- Where operating conditions are particularly arduous, use the VSF valve with Spheroidal Graphite iron body.
- For valves having a Kv/Cv of, say, 1.0 or below, it is recommended that a pipeline strainer be installed upstream of valve. Suggested size 100 micron.

### INSTALLATION

The system should be thoroughly flushed out to remove foreign matter before fitting the valve.

Step-by-step installation instructions are packed with each valve and the precautions listed under 'Planning the Installation' must be observed.

Instructions for fitting electric actuators to valve are packed with actuator.

It is recommended that valve insulation covers should be fitted to conserve energy.

Cast iron valves used in chilled water systems which are subject to the formation of condensation should also be protected against corrosion by a further coat of suitable paint.

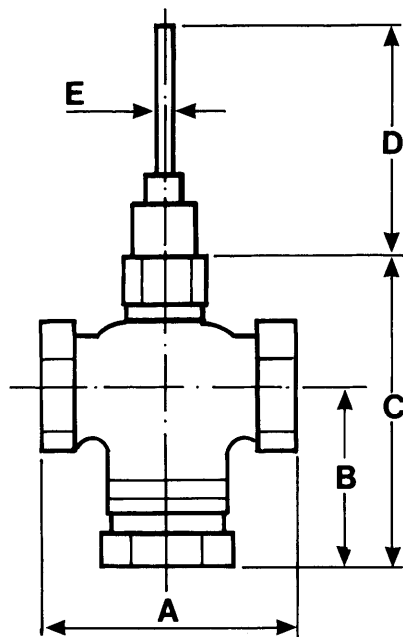
### MAINTENANCE

A periodic check of the valve gland should be made.

## DIMENSIONS

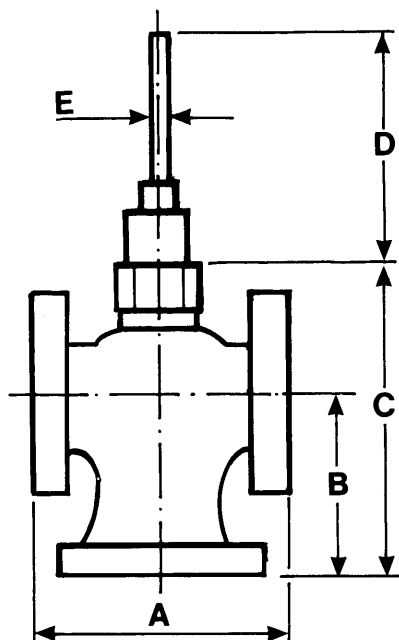
## MZ

Valve Size	A mm	B mm	C mm	D mm	E
15	70	70	121	100	3/8"UNF
20	80	70	121	100	3/8"UNF
25	90	70	127	100	3/8"UNF
32	115	80	139	100	3/8"UNF
40	130	85	152	100	3/8"UNF
50	160	100	173	100	3/8"UNF



## MZF

Valve Size	A mm	B mm	C mm	D mm	E
65	260	170	270	100	3/8"UNF
80	280	185	295	100	3/8"UNF
100	320	200	320	100	3/8"UNF
125	370	230	380	100	3/8"UNF
150	420	250	420	100	3/8"UNF



- NOTE:
- Allow 110mm between top of actuator and nearest obstruction to permit fitting and removal of actuator, also access to manual operator.
  - Allow 150mm clearance for access to actuator terminal cover

## CAUTION

- Observe recommendation under 'Good Design Practise'.
- Observe maximum ambient temperature limits.
- Observe limits of water temperature, system pressure and maximum differential pressure.
- Interference with those parts under sealed covers renders the guarantee void.
- A periodic system check of the control system is recommended.
- When valve/plug spindle assemblies are changed after factory test or replaced in service, the original specified percentage let-by can no longer be guaranteed.
- Information is given for guidance only and Satchwell do not accept responsibility for the selection or installation of its products unless information has been given by the Company in writing relating to a specific application.
- Design and performance of Satchwell equipment are subject to continual improvement and therefore liable to alteration without notice.

**AUSTRALIA**  
GEC Building Services Division  
Telephone: (02) 644 9822

**NEW ZEALAND**  
GEC New Zealand Limited  
Telephone: (644) 375-409

**SINGAPORE**  
Indeco Engineers Pte Ltd.  
Telephone: 542 4411

**INDONESIA**  
P. T. Mugi  
Telephone: (21) 515624

**HONG KONG**  
Analogue Technical Agencies Ltd.  
Telephone: 5-618278

**KUWAIT**  
Maseelah Trading Company  
Telephone: (965) 445467

**DUBAI**  
Satchwell Control Systems Ltd.  
Telephone: (9714) 665758

See DS 02 for complete  
list of overseas distributors

## HEAD OFFICE:

**Satchwell Control Systems Ltd.**

PO Box 57, Slough, Berkshire, England SL1 4UH

Telephone: Slough (0753) 23961 Telex: 848186 Fax: (0753) 824078

Holding Company The General Electric Company p.l.c.