

HYDRECO

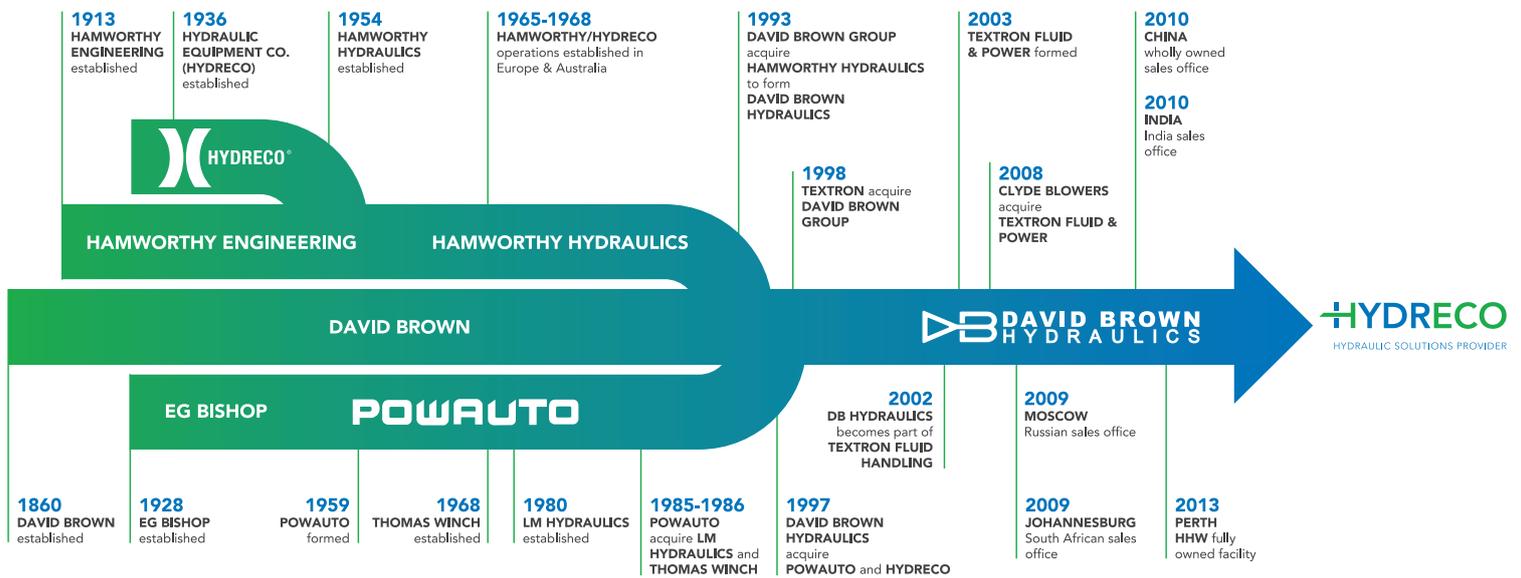
HYDRAULIC SOLUTIONS PROVIDER

SV-033 OPEN CENTRE

DIRECTIONAL CONTROL VALVE



250 BAR - 150 L/MIN.



100 YEARS OF HYDRAULICS EXPERIENCE

Hydreco Hydraulics is the designer, manufacturer and distributor of products servicing the transport and mobile hydraulics sector. Hydreco has a combined history of 100 years in developing solutions through a rich heritage of legacy companies. The joining of David Brown Hydraulics, Powauto and Hydreco in 1997 brought together some of the most respected products, people and heritage brands in the business.

Engineering excellence is at the core of our organization, the product range is geared towards offering the best possible solution for many applications within Construction, Earth moving, Transport, Industrial, Materials handling, and many more. We pride ourselves on supporting customers through leading edge products, designed to provide optimum performance and extensive reliability in continual hard working applications. With innovative technology our products have evolved and developed, leading to a range of some of the highest quality products available in the market

place. The business is positioned to respond to your hydraulic needs through a worldwide network of manufacturing and sales facilities.

Hydreco has an extensive range of low noise helical gear, aluminium and cast iron gear pumps and standard spur gear models from its David Brown heritage. Its valve range covers multi-spool sectional and monoblock models with electro hydraulic, hydraulic and lever control. Dual axis, stackable and single axis hydraulic pilot valves, with an extensive range of handle options including ergonomic handles with many switches and button options. The valves are available with spring centred and electric detent options.

Under the name Hydreco Powauto, with heritage back to 1928, we sell our range of Transport hydraulics products. The product range covers power take-off units, pumps, valves, cylinders and accessories for on and off road vehicles. This World Class brand possesses a strong footprint in Asia Pacific building on its excellent reputation.



The manufacturing engineering office from the 1950's



The Tool Room from 1947

SECTIONAL CONTROL VALVES

The Versatile Valve

- ▶ Sectional Construction allows build-up of 1 to 10 spool valve banks.
- ▶ Spool sections for Parallel and Tandem circuits (or Combination circuits).
- ▶ Inlet sections for Single pump systems with optional Pilot-Operated System-Relief valve.
- ▶ Mid-Inlet Sections for 2-pump Systems (flows separated or combined as required with optional second-system relief valve).
- ▶ Valves are normally supplied fully assembled and tested to Customer requirements but individual sections can also be supplied where additional (optional) spools may be required.
- ▶ A wide range of spool types.
- ▶ Optional Service-Port Relief and anti-Cavitation Valves.
- ▶ Manual, Hydraulic-Pilot, Pneumatic-Pilot and Electric-Remote operation.
- ▶ Wide range of Spool-Positioning devices including Mechanical and Electrically-Operated Detents.
- ▶ Minimum Neutral 'Creep' of Cylinder.

SV.033 GENERAL DATA

INTRODUCTION

The SV033 Control Valves are part of the wide range of **Hydreco Hydraulics** products (see page 11).

Careful attention to all details of design and manufacture ensures that the versatility of a sectional valve is achieved without compromising performance.

All our components and systems are backed by first class Sales, Service and spares facilities, available around the world. Whether your requirement is complex or straight forward - call us. Our technical expertise is freely available, wherever you may be.

TECHNICAL DATA

Nominal Capacity	150 l/min
Construction	Sectional
Installation	No attitude limitation
Number of Spools	1 to 10
Operating Pressure	Inlet (P) & HPCO 250 bar (max.) Service (A) & (B) 345 bar (max.) Outlet (T) 10 bar (max.)

For optimum performance, outlet pressure should not exceed 10 bar under normal working conditions.

Operating Temperature -10°C to +80°C

Ambient Temperature -40°C to +60°C

Maximum viscosity for normal working conditions 250mm²/sec (cSt)

Minimum permissible viscosity 10mm²/sec (cSt)

For optimum life and efficiency, fluid viscosity should be in the range of 15 to 25mm²/sec (cSt) during normal working conditions.

Fluid cleanliness IS04406 - 19/15 max

VALVE FEATURES

Relief & Anti-Cavitation Valves Page 5

Circuit Options Page 6

High Pressure Carry Over (HPCO) Page 6

Mid-Inlet Page 7

Spool & Mid-Inlet Sections Page 8

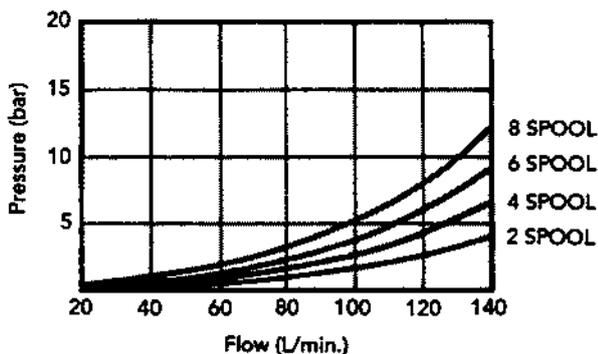
Port Sizes Page 9

Valve Dimensions Page 9

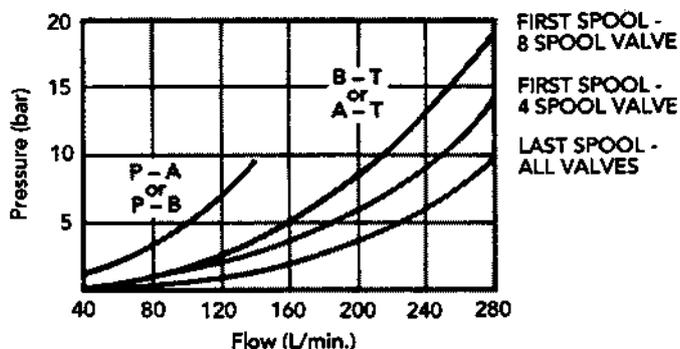
Operation & Positioning options Page 10

Spool Types Page 11

PRESSURE DROP: P-T spools in Neutral



PRESSURE DROPS: P-A, B-T or P-B, A-T with spools selected



ALL DATA IS OBTAINED FROM AVERAGE PERFORMANCE OF REGULAR PRODUCTION VALVES USING GOOD QUALITY S.A.E. 10 MINERAL HYDRAULIC OIL AT 50°C GENERALLY CORRESPONDING TO A VISCOSITY OF 23mm²/sec (cSt).

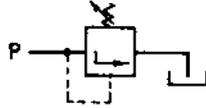
SV.033 GENERAL DATA

MAIN RELIEF VALVE (Limits pump pressure)

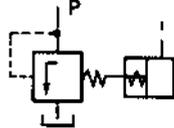
The relief valve is adjustable in the range of 90 to 250 bar. Standard location is shown on the installation drawing on page 8.

Two-stage versions are also available in which external pilot pressure is used to either increase or decrease the pressure setting.

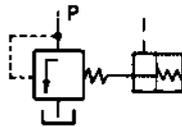
Standard



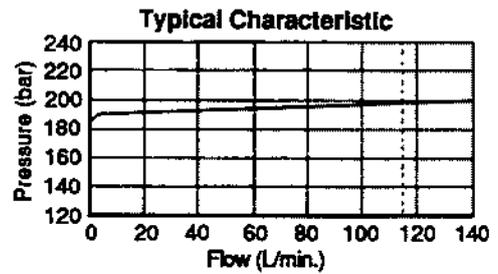
Two-stage
Pressure Increasing



Two-stage
Pressure Reducing



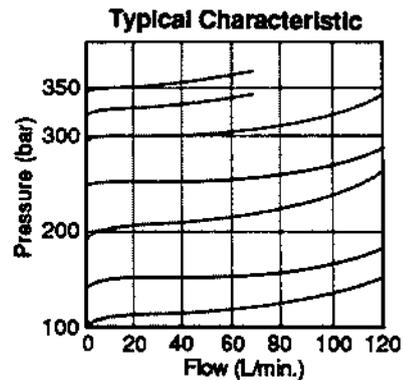
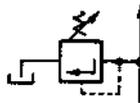
Pilot pressure to change the setting is Nominal 60 bar.
Maximum permissible: 250 bar



SERVICE PORT RELIEF VALVE (Protects service lines)

These are available on all Service Ports. Relief setting ranges from 30 to 345 bar by pre-set stages. This valve may also be combined with Anti-Cavitation valves as shown below.

Service ports A or B



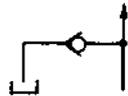
ANTI-CAVITATION CHECK VALVE

These are available as single-function checks or combined with service-port relief valves.

Available on all service ports.

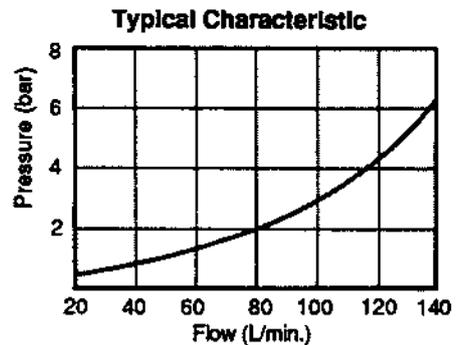
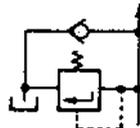
Standard
Anti-Cavitation

Service ports A or B



Combined Anti-Cavitation and service-Port Relief:

Service ports A or B



SERVICE PORT LEAKAGE

Leakage from Service Ports A or B to T with spools in Neutral will not exceed *36mL/min at *140 bar.

*(with fluid temperature 50°C, viscosity 23mm²/sec(cSt)).

SPOOL OPERATING FORCES

Double Acting Spools: Maximum spring force 178N, maximum operating force 278N.

SV.033 CIRCUIT OPTIONS

The use of Tandem, Parallel, Series or Mixed circuits in a system normally depends on the type of work cycle required. For advice on the best type of circuit for your operating requirements consult **Hydreco Hydraulics** sales department.

Typical TANDEM Circuit (SVT033)

In Tandem circuit valves, the spool nearest the inlet takes all the oil supply when fully selected.

Essentially, the Tandem circuit valve is intended to feed the whole of the oil supply to one service at a time.

Tandem circuit can be specified between any spools in a valve bank, e.g. between Bucket and Lift spools in a Loading-Shovel valve.

Typical PARALLEL Circuit (SVP033)

Parallel circuit valves have a common internal pressure gallery allowing simultaneous feed to any number of work ports. The service at the lowest static pressure will move first, unless its spool is throttled to build up sufficient pressure to operate other services. The Parallel circuit valve is able to divide the oil flow between any number of services, providing full pressure at any one or more, but with an operating speed less than maximum for each service.

MIXED Circuit

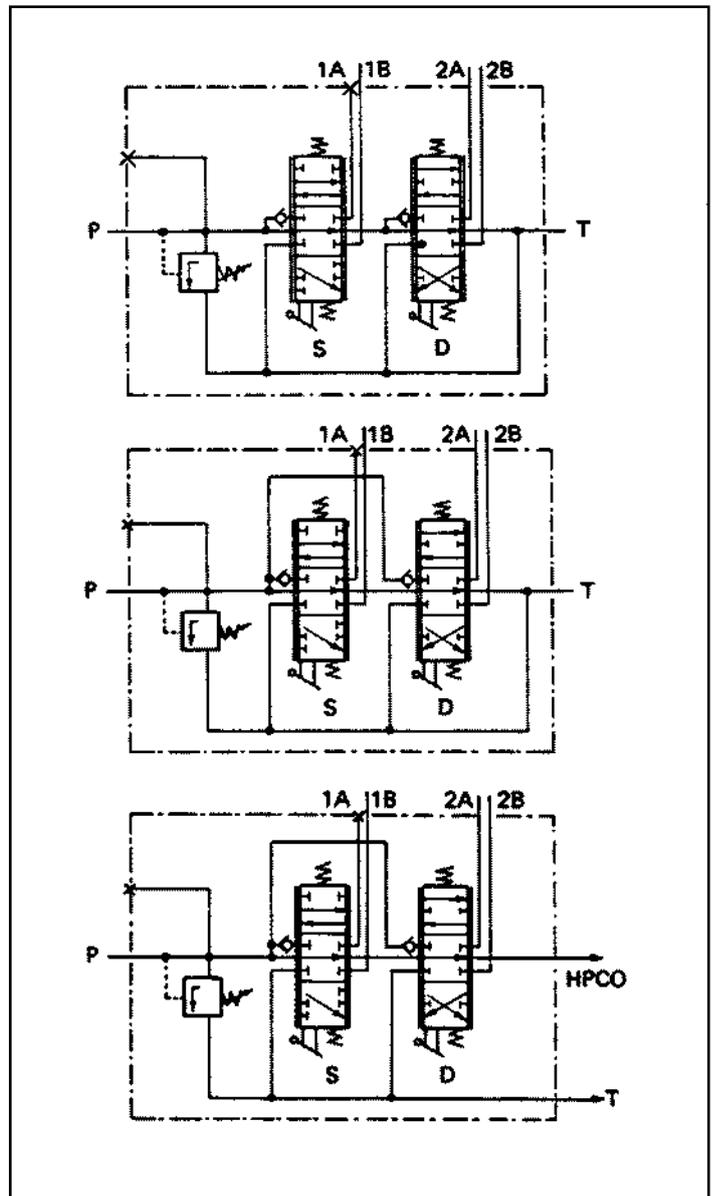
The mixed circuit can be a combination of Parallel, Tandem and Series circuits in the same valve assembly.

High pressure Carry Over (HPCO)

The HPCO allows additional valves to be connected downstream of the Control valve, using the high pressure supplied to the first valve.

No secondary pump is required and the system remains protected by the Main Relief valve of the first valve.

Standard valves can be converted for HPCO by fitting an internal plug in the tapped hole below the outlet T1. For HPCO location, see page 8.



SV.033 MID-INLET SECTIONS

Mid-inlet sections enable two separate valve banks to be combined into a single package. Separate pumps supply the upstream and downstream valve banks, and flows from these pumps can be separated or combined for the downstream bank.

Optional relief valves are available. A third version incorporates an unloader valve.

Mid-inlet sections provide great flexibility of circuit design and packaging. **Hydreco Hydraulics** would be pleased to advise on which type is best suited to your requirements.

Separating Flows

Two completely independent pump-and-valve bank circuits can be packaged so that there is only one valve bank assembly, thus saving on installation costs.

P1 supplies the upstream spools and P2 supplies the downstream spools. There is no connection of pump flows.

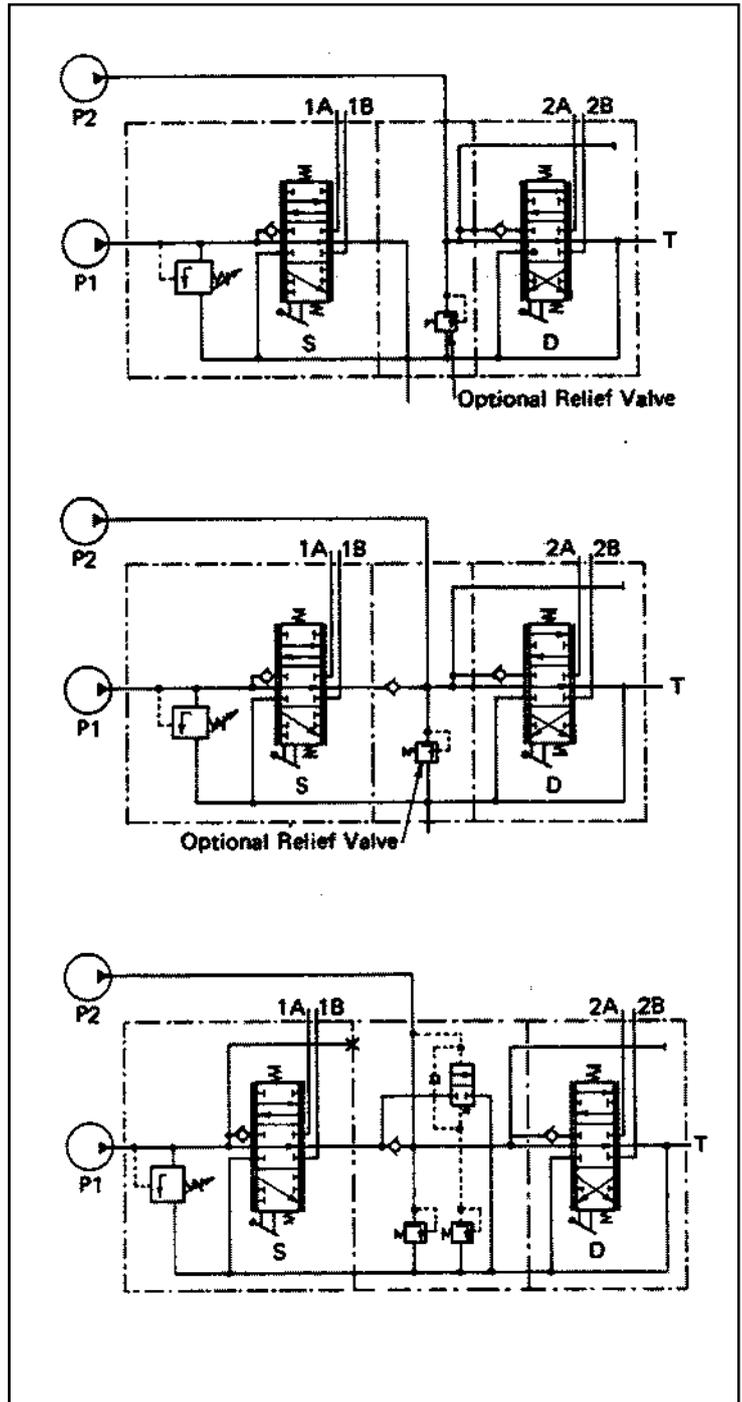
Combining Flows

Upstream valve spools are supplied by P1. So long as no upstream spools are selected, the downstream spools are supplied by P1 plus P2. A check valve prevents reverse flow from P2. P1 might well be a smaller pump giving independent operation of upstream spools requiring lower flows (for example an excavator slew spool).

Separating or Combining Flows with R.V. and Unloading Valve.

P1 supplies the upstream spools whilst downstream spools can be supplied by either P1 or P1 plus P2.

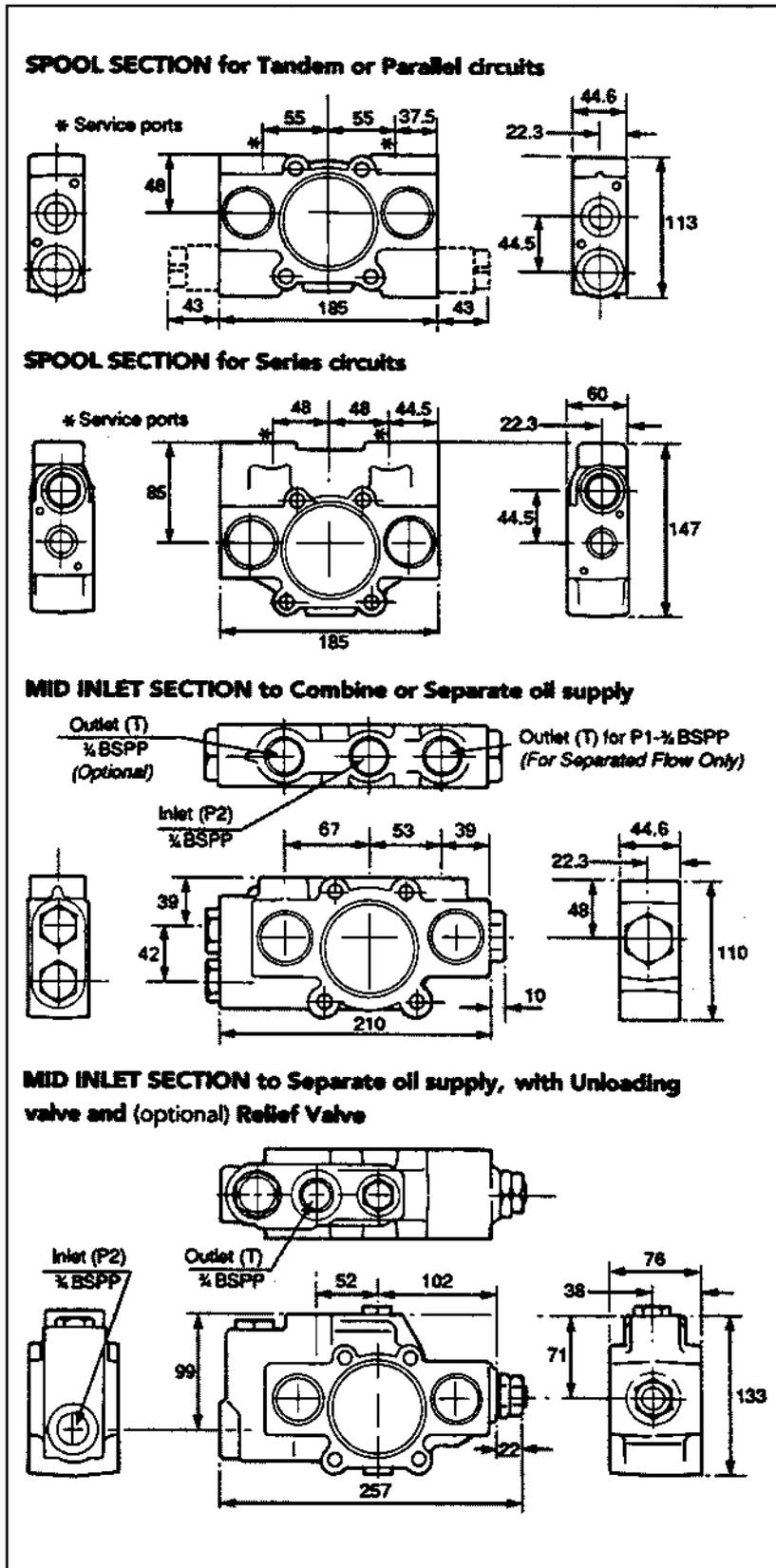
An unloader valve sensing pressure P2 will dump P1 tank at a pre-set pressure. Thus the power available is absorbed by P1 plus P2 at lower pressures, and by P2 only at higher pressures, and an approximation to constant power absorption is achieved.



For dimensions see page 8.

SV.033 INSTALLATION DATA

DIMENSIONS for INDIVIDUAL SECTIONS

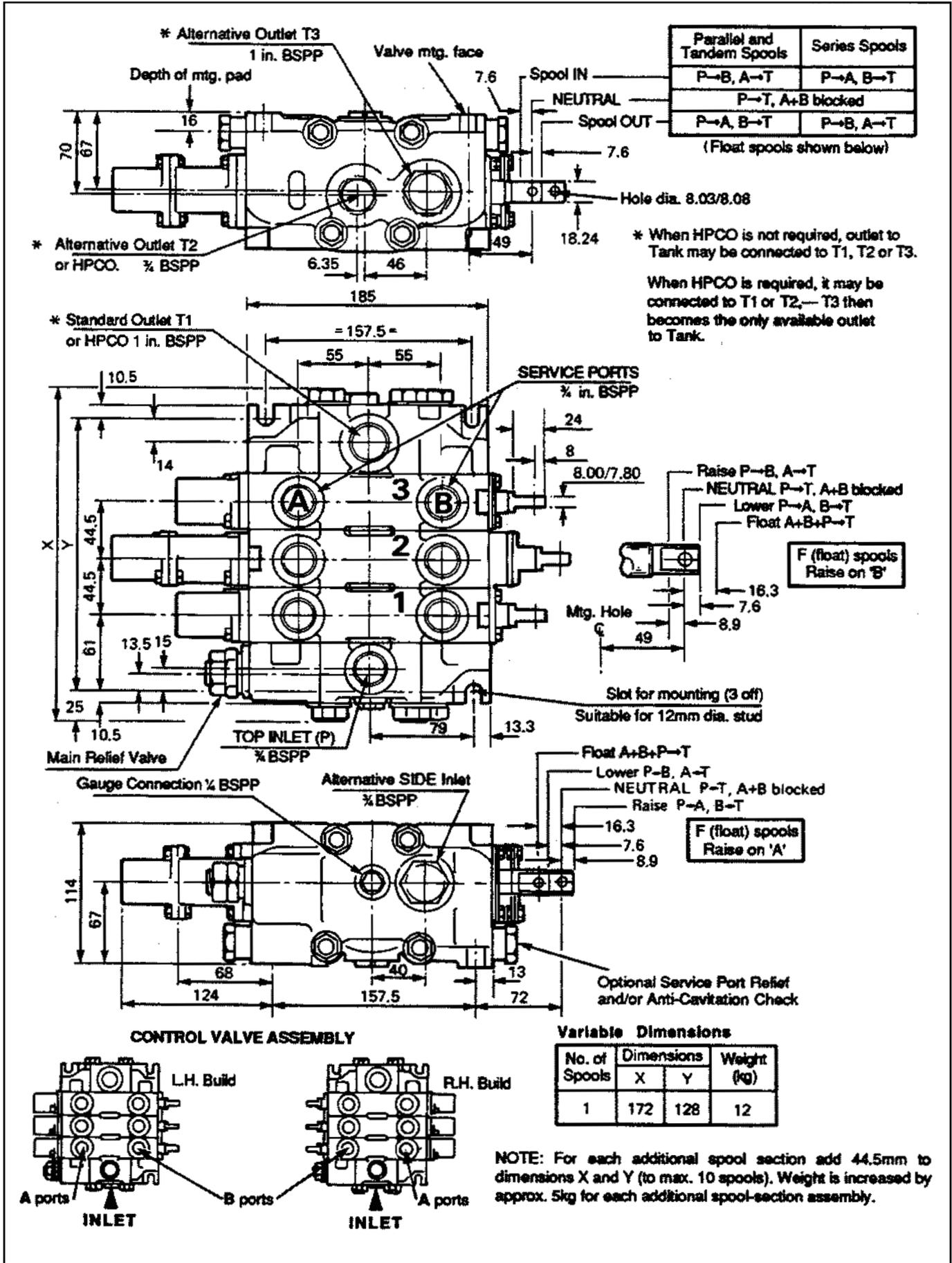


Spool sections are normally supplied **WITHOUT** provision for Service Line Relief or Anti-Cavitation valves.

Where such valves are specified, the spool section is machined for **both** 'A' and 'B' ports (i.e. at both ends).

If required for one position only ('A' or 'B') the other position will be plugged.

SV.033 INSTALLATION DATA

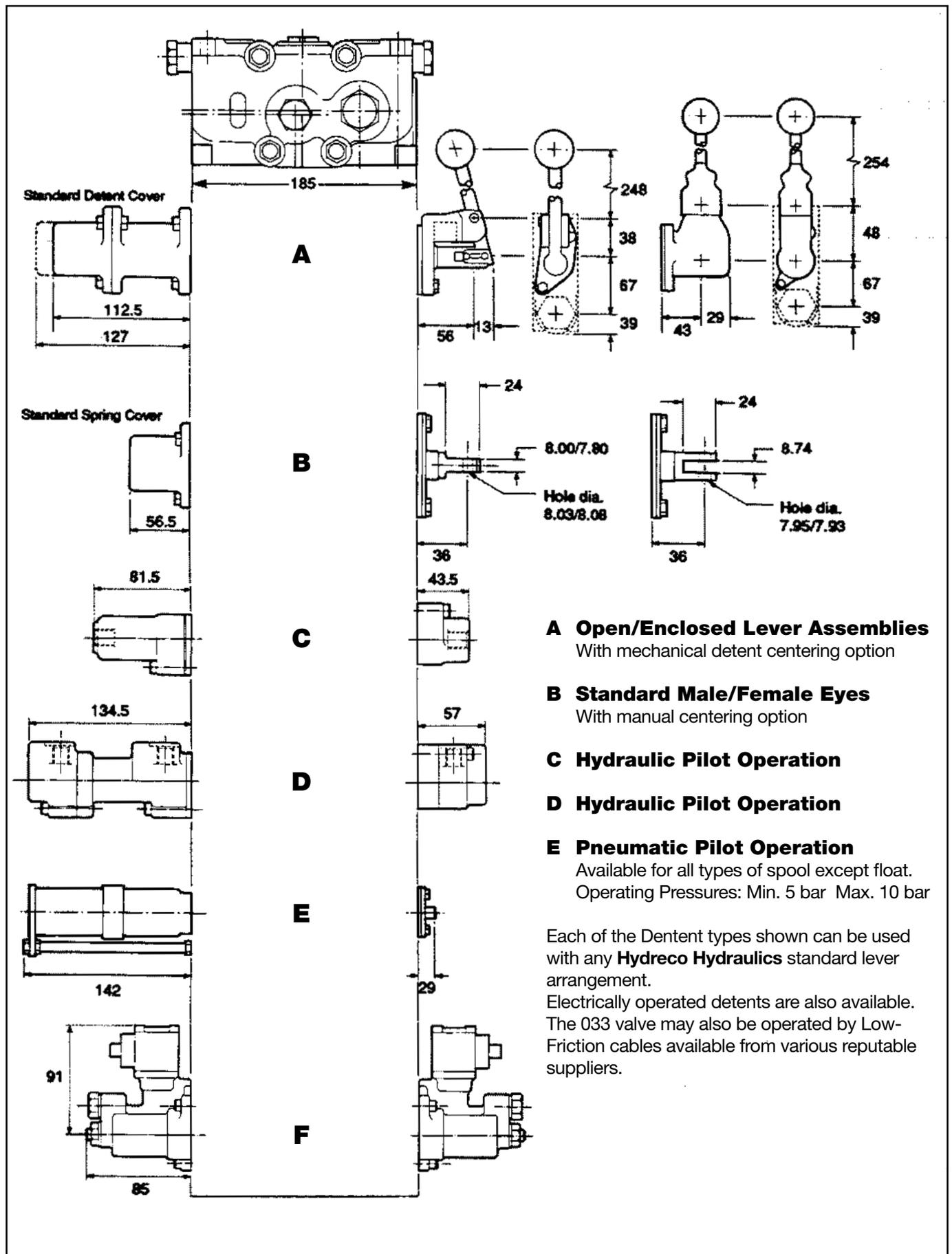


Parallel and Tandem Spools	Series Spools
P→B, A→T	P→A, B→T
P→T, A+B blocked	
P→A, B→T	P→B, A→T

(Float spools shown below)

* When HPCO is not required, outlet to Tank may be connected to T1, T2 or T3.
When HPCO is required, it may be connected to T1 or T2, — T3 then becomes the only available outlet to Tank.

SV.033 OPERATION & POSITIONING OPTIONS



A Open/Enclosed Lever Assemblies
With mechanical detent centering option

B Standard Male/Female Eyes
With manual centering option

C Hydraulic Pilot Operation

D Hydraulic Pilot Operation

E Pneumatic Pilot Operation
Available for all types of spool except float.
Operating Pressures: Min. 5 bar Max. 10 bar

Each of the Detent types shown can be used with any **Hydreco Hydraulics** standard lever arrangement.

Electrically operated detents are also available. The 033 valve may also be operated by Low-Friction cables available from various reputable suppliers.

SV.033 SPOOL TYPES

DOUBLE ACTING For Parallel and Tandem circuits

To control Double-Acting cylinders and reversible actuators.

DOUBLE ACTING For Series circuits

To control Double-Acting cylinders and reversible actuators.

MOTOR For Parallel and Tandem circuits

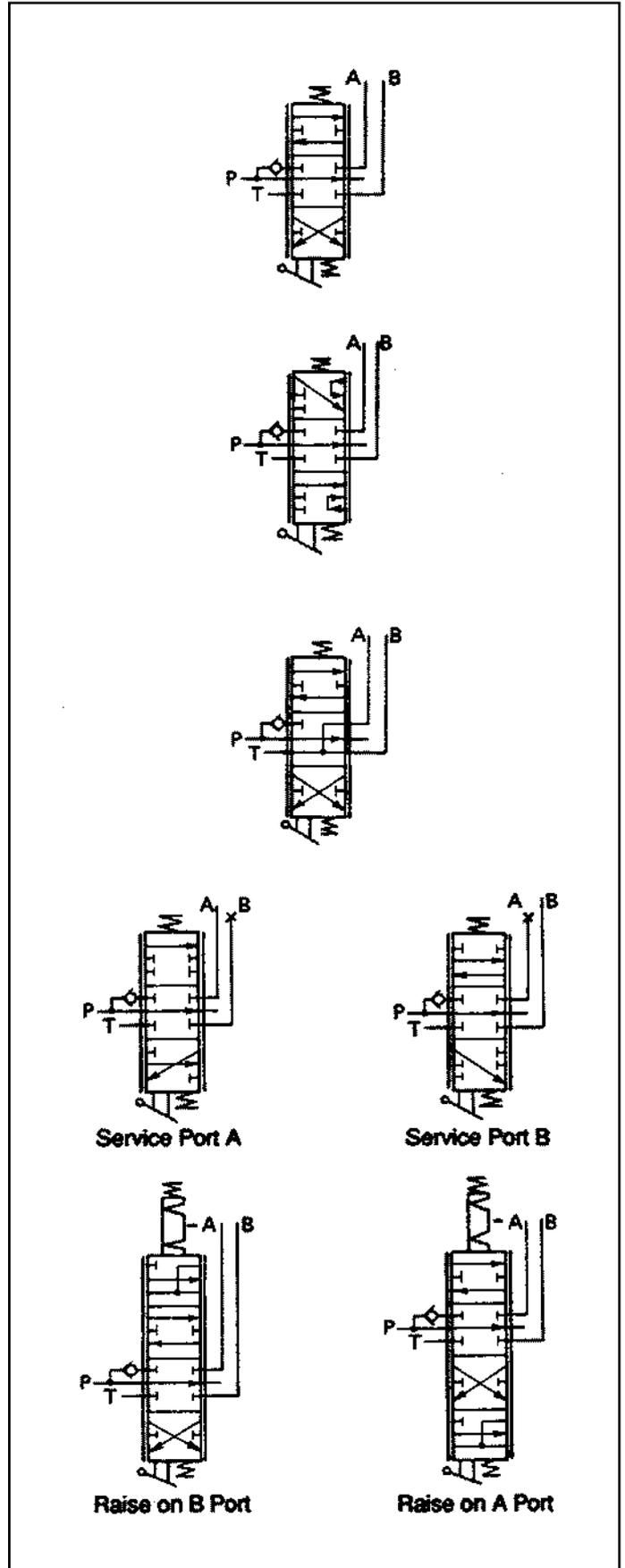
To control Single and Double-Acting cylinders and reversible actuators, when they are not required to hold a load in Neutral.

SINGLE ACTING For Parallel and Tandem circuits

To control Single-Acting cylinders and non-reversible actuators.

FLOAT For Parallel and Tandem circuits

To control Double-Acting cylinders when a fourth position is required to connect both Cylinder Ports and Pump to tank.





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