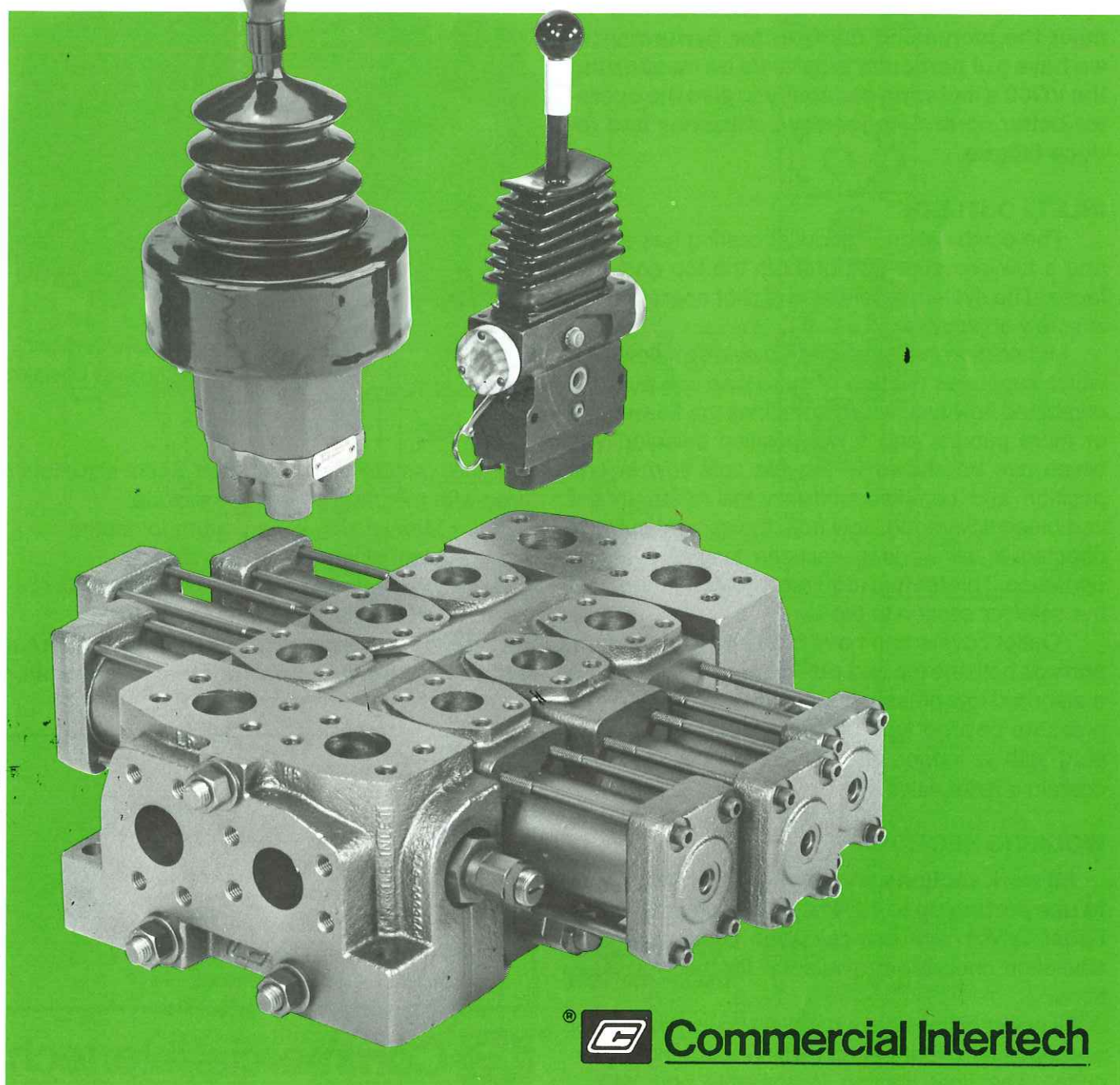


VG80

Directional Control Valves

Flow to 120 gpm • 100 igpm • 450 lpm

Rated for 3500 psi • 240 bar



VG80 Directional Control Valves

Commercial's VG80 sectional type, directional control valves, the largest in our line, are rated for operating pressure up to 3500 psi/240 bar with flows up to 120 gpm/455 lpm/100 igpm. The VG80 valve is very similar in design to our VA/VG20 and 35 valves which have proven themselves over the years to offer excellent performance and reliable service. **To meet the increasing demand for performance, we have put particular emphasis on maximizing the VG80's metering capability to give the operator better control, to improve efficiency and reduce fatigue.**

INLET / OUTLETS

The combination inlet/outlet casting has a high and a low pressure port on both the top and side faces. The system relief valve is pilot operated and is screw adjustable.

Mid-section inlets are offered as a split flow type which separates the flow of more than one pump, a combined flow type which combines the flow of one or more pumps, and a two-position selector type which can be shifted to provide split flow in one position and combined flow in the other. In the combined flow mode, flow from the second pump is directed to all working sections to give 2-speed operation. This feature requires an external line from the selector section to the inlet.

Outlet covers can have high and low pressure ports on both the top and side. Internal coring allows a standard low pressure outlet to be converted to a pressure beyond type by simply replacing a short plug with a longer one. Outlet covers can also contain a relief valve.

WORKING SECTIONS

All work sections are 3" wide which allows us to use porting up to 1 1/4" split flange or SAE-24. Relief valves with anti-cavitation check and anti-cavitation checks are available for the work sections.

All work sections have parallel circuitry except for a 4th-position float section which has tandem circuitry. The float section is available only with a

Electrically detented
Joystick Controller



Electrically detented
Single-axis Controller



VG80 Valve Bank with
Remote Spool Operators

hydraulic remote spool operator. Spool actuators offered with the parallel sections include:

- Manual with spring return to neutral
- Manual with 3-position detent
- Hydraulic remote metering control
- Pilot operated control (on-off)

For optimum performance match our hydraulic remote work sections with our remote controllers.

Metric Conversion Factors

1 US gallon = .833 Imperial gallons

1 US gallon = 3.785 Liters

1 Inch = 25.4 Millimeters

1 PSI = .069 bar

(F° - 32) X .55 = C°

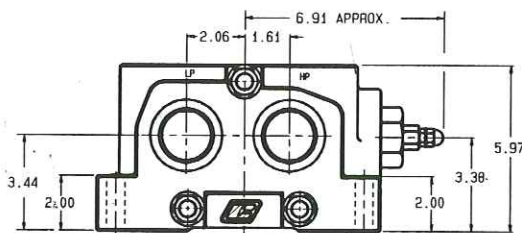
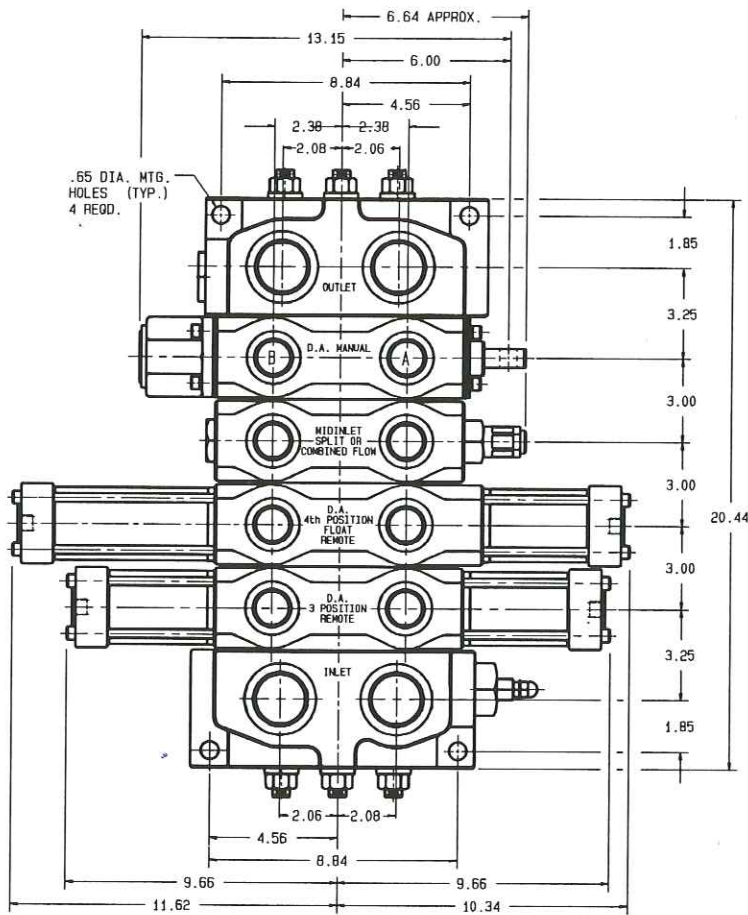
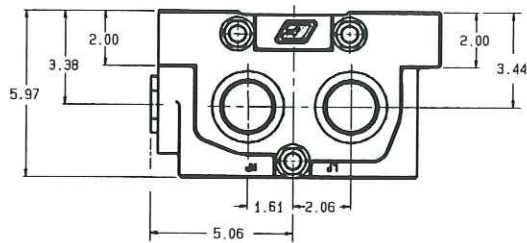
1 Inch pound = .113 Newton meters

1 Pound = .45 Kilograms



Commercial Intertech

Dimensional Data

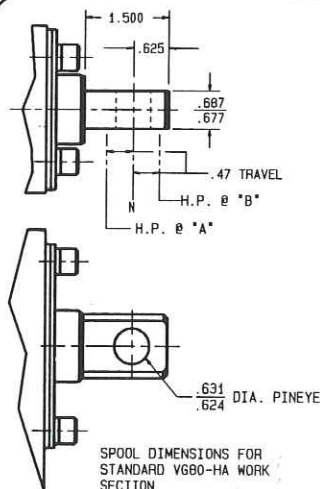
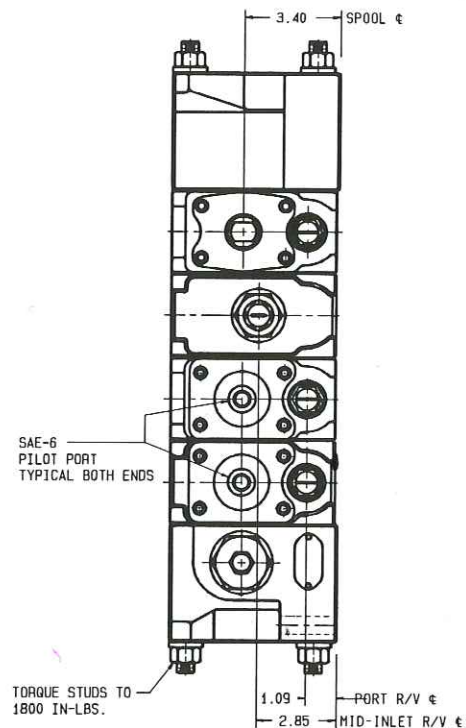


Approximate Weights (lbs)

Inlet Section.....	44.5
Work Section (Manual).....	32.5
Work Section (Remote).....	42
Work Section (Float).....	47.5
Outlet Section.....	44.5

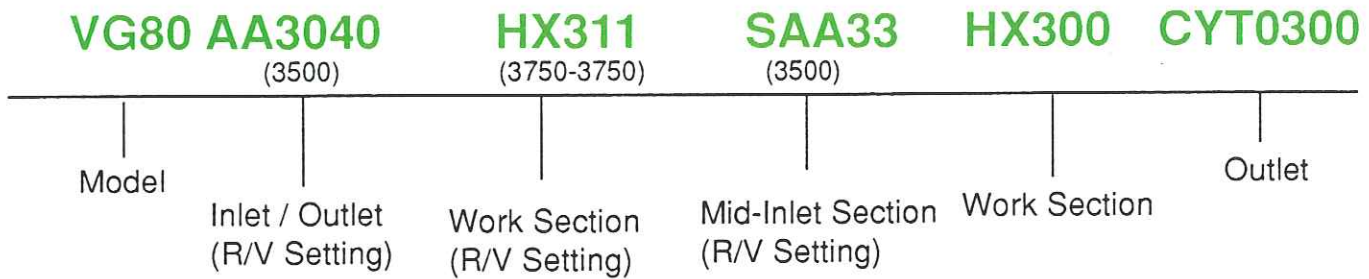
Seal Kit Part Numbers

- For Inlets & Midinlets... kit 391-1803-484
- For Work Sections... Use kit # 391-1803-594
Kit includes spool seals, section seals and transition check seals.
- For Main R/V shipped after 6/94...
Use kit # 391-1823-101
- For Main R/V shipped before 6/94...
Use kit # 391-1803-268
- For Port R/V-A/C... Use kit # 391-1803-737
- For Port A/C ... Use kit # 391-1823-038



Torque Studs To
1800 Inch Pounds

How To Order



A complete part number code is developed in the following manner:

• Inlet / Outlet

This part can serve as both the inlet and outlet. It has high pressure and low pressure ports on both the side and top faces of the casting. It also has a relief valve port.

• Work Sections:

There are 4 characteristics that must be determined to develop a complete work section code.

1. **Function**– determine circuitry (parallel or tandem) and the type of spool required (cylinder or motor)

2. **Left or right handed valve** – determine the orientation of flow vs. the location of the spool pin-eye.

- Left hand flows from left to right with pin-eye in front
- Right hand flows from right to left with pin-eye in front

3. **Porting** – Determine size and type of fitting

4. **Port Accessories** – Determine type of R/V (if any) and pressure settings. Both ports must be coded.

Mid-Inlets

These sections allow the flow from a second pump to be introduced into the valve bank. They can have high and low pressure ports on top.

Outlets

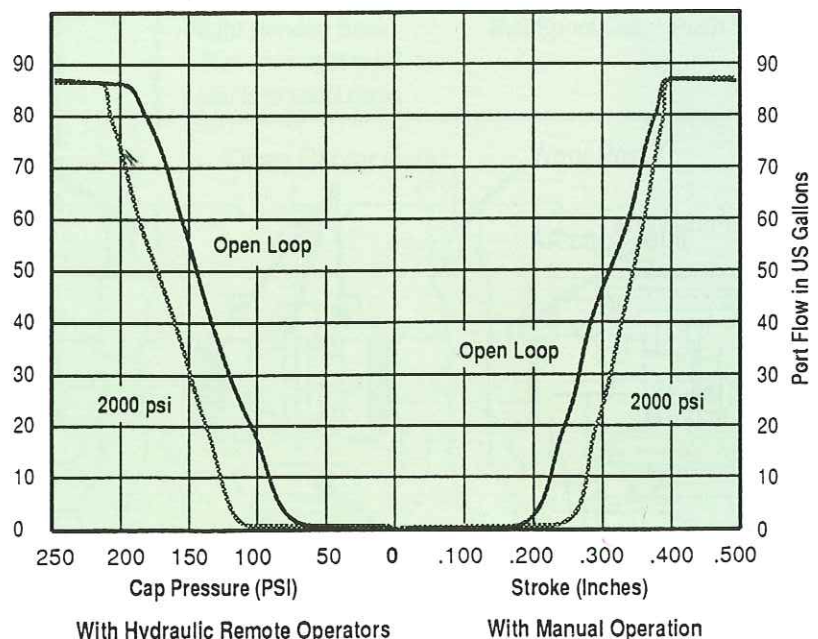
Outlet sections cap the valve bank. They can have all low pressure ports, high and low pressure ports (for pressure beyond circuits) or no ports at all, in which case the low pressure port in the inlet is used as an outlet.

Meter-In Performance

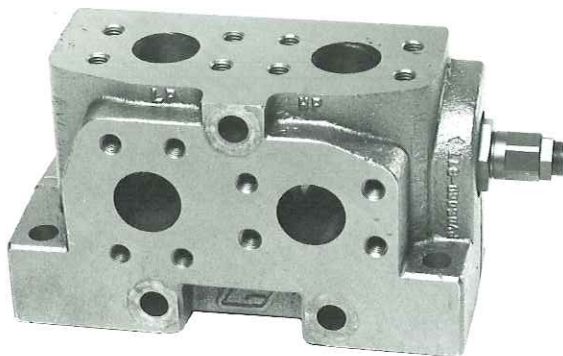
With Hydraulic Remote and Manual Operators

The meter-in curve show flows out of the work port vs. pilot pressure (left side of curve) and flow vs. spool stroke (right side). The open loop curve is a no-load condition while the other shows flow under a 2000 psi load.

Special metering notches in the spool result in a very small decrease in the metering range under an increase in pressure. This gives improved control to the machine operator.



Inlet Sections



This casting can be used as a combination inlet / outlet. They offer high-and low-pressure ports on the top and on the side and contain a relief valve port. The main relief valve is pilot operated and screw adjustable. SAE straight thread or split flange fittings are available in the ports.

Sample Coding for Inlet Section Shown

AA 4 4 4 4

Type of Section	_____	_____	_____	_____	_____
High Pressure Port on Side	_____	_____	_____	_____	_____
High Pressure Port on Top	_____	_____	_____	_____	_____
Low Pressure Port on Side	_____	_____	_____	_____	_____
Low Pressure Port on Top	_____	_____	_____	_____	_____

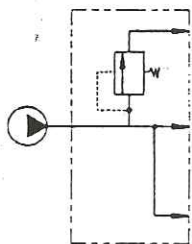
Code Description

- AA - Inlet Section With Screw Adjusted R/V
- CA - Inlet With R/V Port Plugged

Code Port Size & Type

- 2 1" SplitFlange
- 3 1 1/4" Split Flange
- 4 1 1/2" Split Flange
- 5 SAE-14
- 6 SAE-16
- 7 SAE-20
- 8 SAE-24
- 9 SAE-32
- 0 No Ports

Inlet Code AA



Work Sections

All work sections have accessory machining

Sample Work Section Coding..... H X 3 1 1

Double-Acting Cylinder Section _____
 Has Hydraulic Remote with Metering _____
 Has 1 1/4" Split Flange Ports _____
 Has R/V + AC in Both Ports _____

Function Code

H – D. A. Cylinder.
 Parallel. Work ports
 closed in neutral
L – D. A. Motor.
 Parallel. Work ports
 open in neutral
J – S.A. Cylinder
 (Port B) Parallel.
 Work port B blocked in
 neutral.
GT – D.A. Cylinder.
 Tandem with 4th
 position float. Work
 ports blocked in
 neutral.

Operator Code

Left hand Sec. Right Hand Sec.
 Operator @ B end Operator @ A end
A – Spring Return – **E**
B – 3-Position Detent – **F**
X – Hyd Remote With Metering – **X**
XP – Hyd Remote W/O Metering – **XP**

Porting Code (Type & Size)

2 – 1" Split Flange
3 – 1 1/4" Split Flange
5 – SAE-14
6 – SAE-16
7 – SAE-20
8 – SAE-24

Accessory Code

Port A	Port B
1 – R/V + Anti-Cav	– 1
2 – Anti-Cav	– 2
5 – Plastic Closures	– 5
9 – Steel Plug	– 9

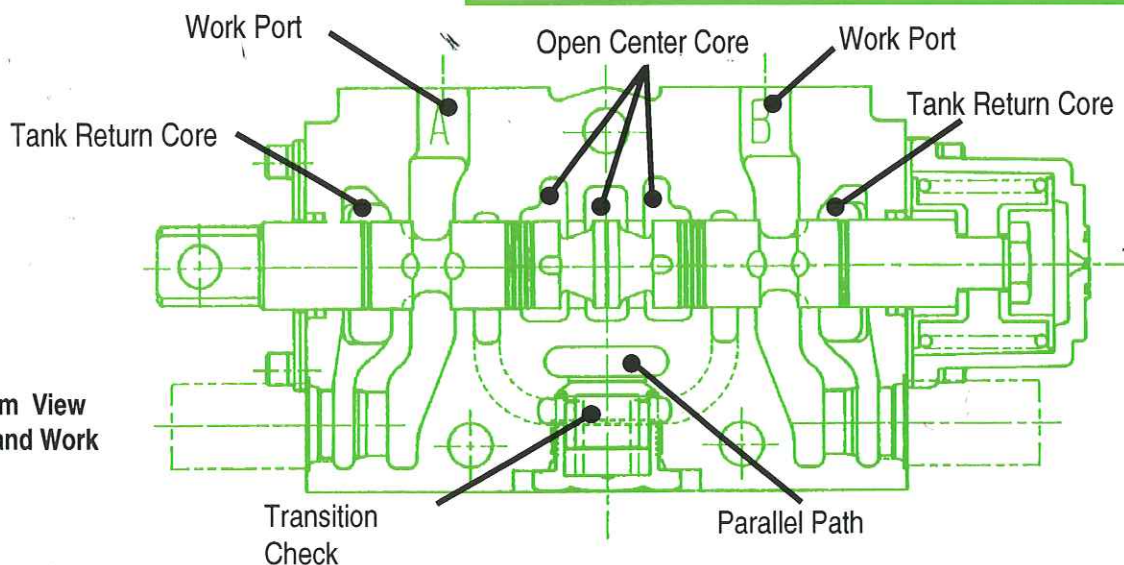
Pilot Pressures Required (500 psi Recommended)

Type of Section	Start Metering	End of Metering	Full Stroke	Full Stroke Into Float
DA Section Code X	50 psi	200 psi	250 psi	
DA Section Code XP	50 psi	85 psi	100 psi	
DA Float Section	50 psi	165 psi	175 psi	400 psi

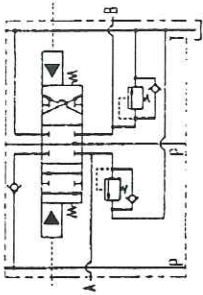
VG80 D.A. parallel work section housings are symmetrical. Therefore, the spool can be inserted from either end of the bore. This allows the valve bank to be assembled for left or right hand operation.

High Pressure At:

	Port A	Port B
Left Handed Bank	Push Spool In	Pull Spool Out
Flow from left to right as you face spool clevis		
Right Handed Bank	Pull Spool Out	Push Spool In
Flow from right to left as you face spool clevis		

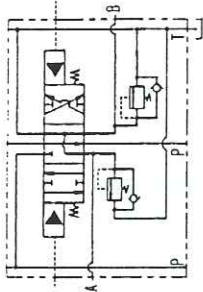
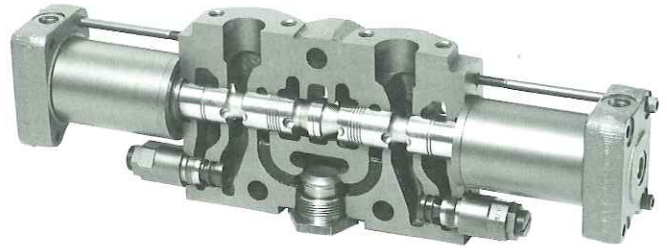


Typical Upstream View Through Left Hand Work Section



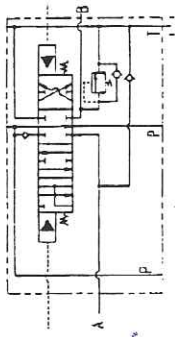
**Double-Acting Cylinder
Hyd. Remote operator
Parallel Circuit**

Code HX311



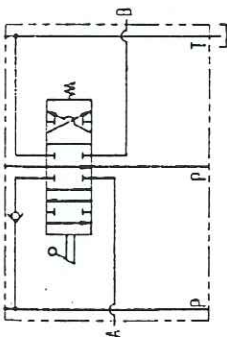
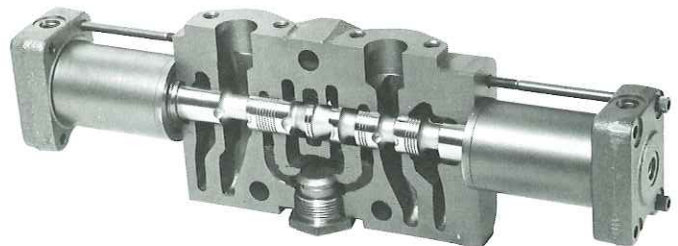
**Double-Acting Motor
Hyd. Remote Operator
with Metering
Parallel Circuit**

Code LX311



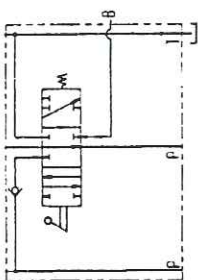
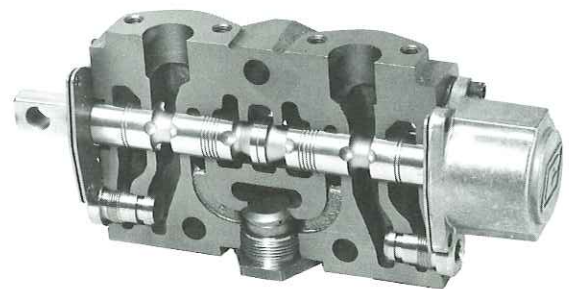
**Double-Acting Cylinder
Tandem Circuit
4th Position Float
in Neutral**

Code GTX300



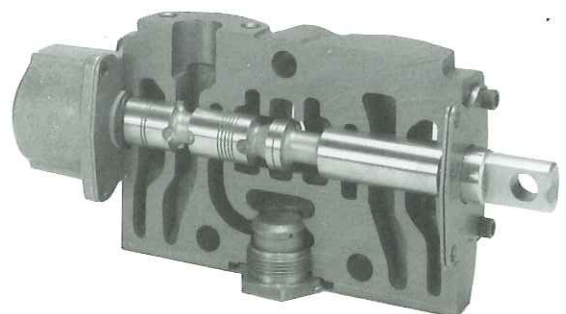
**Double-Acting Cylinder
Spring Return
Parallel Circuit**

Code HA322



**Single-Acting Cylinder
Spring Return
Parallel Circuit**

Code JA300



Mid-Section Inlets

Sample Mid-Section Inlet Codes

SAS	3	3
Function	HIGH Pressure TOP	LOW Pressure TOP

Code	Description
------	-------------

SAA	Split Flow With Screw Adjustable R/V
SCA	Split Flow Without R/V
CAA	Combined Flow With Screw Adjustable R/V
CCA	Combined Flow Without R/V

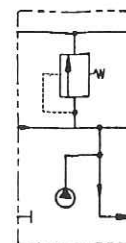
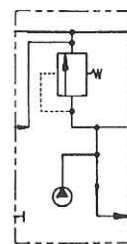
Code	Port Size & Type	Code	Port Size & Type
2	1" Split Flange	5	SAE-14
3	1 1/4" Split Flange	6	SAE-16
		7	SAE-20
		8	SAE-24



Note: There is a midinlet selector type available that provides split-flow in one position and combined-flow in the other. In the combined-flow mode, flow from the second pump is directed upstream to provide two-speed operation for all of the sections. Operation of the selector can be manual or by hydraulic remote.

Inlet Code SAA

Inlet Code CAA



Outlet Sections

Sample Outlet Code

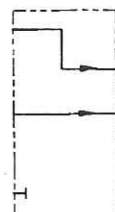
CYT	0	3	0	0
Function	LOW Pressure Port On SIDE	LOW Pressure Port On TOP	HIGH Pressure Port On SIDE	HIGH Pressure Port On TOP

Code	Description	Code	Port Size & Type
ZT	LOW Pressure, ALL Ports	2	1" Split Flange
CYT	Pressure Beyond, Convertible to Codes DYT or AYT	3	1 1/4" Split Flange
		4	1 1/2" Split Flange
		5	SAE-14
		6	SAE-16
		7	SAE-20
		8	SAE-24
		9	SAE-32
DYT	LOW Pressure All Ports. Convertible to Pressure Beyond by Replacing Short Plug with Long Plug		
AYT	Pressure Beyond with Screw Adjustable R/V Convertible to DYT or CYT		

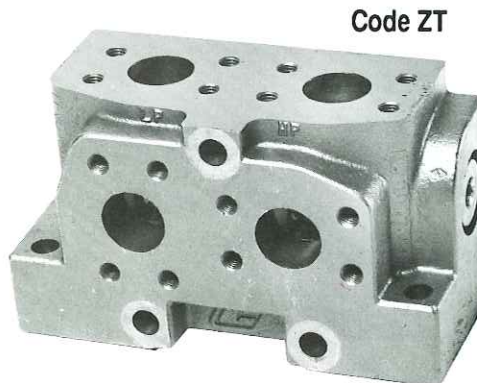
Code ZT



Code CYT



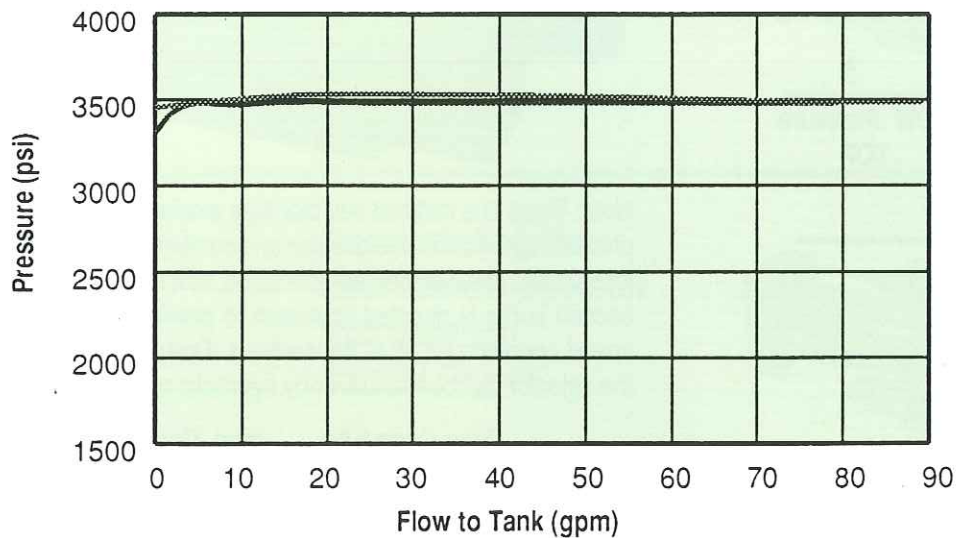
Code CYT



Code ZT

Relief Valve Performance

Main Relief Valve Curve



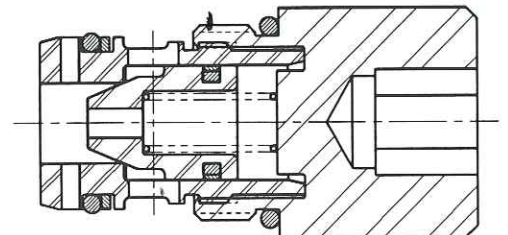
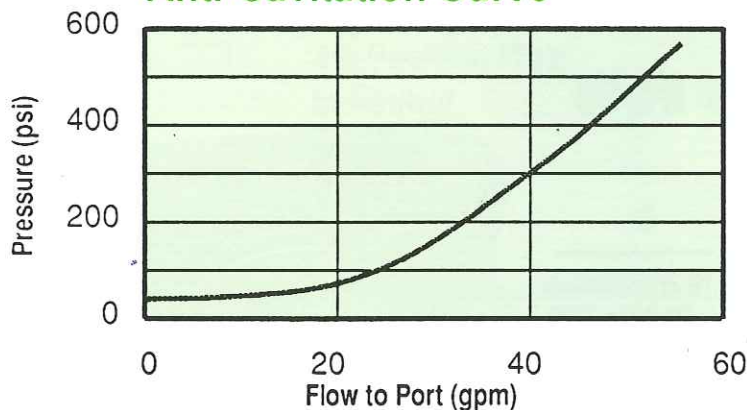
Commercial's VG80 inlets are available with the following relief valve options:

- Pilot operated, screw adjustable, main relief valve with choice of 2 pressure ranges.
 - 1000 – 2500 psi
 - 2500 – 3500 psi
- No relief valve. R/V port is plugged
- Anti-cavitation check

Port Accessory Options Include:

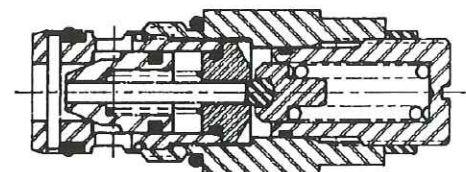
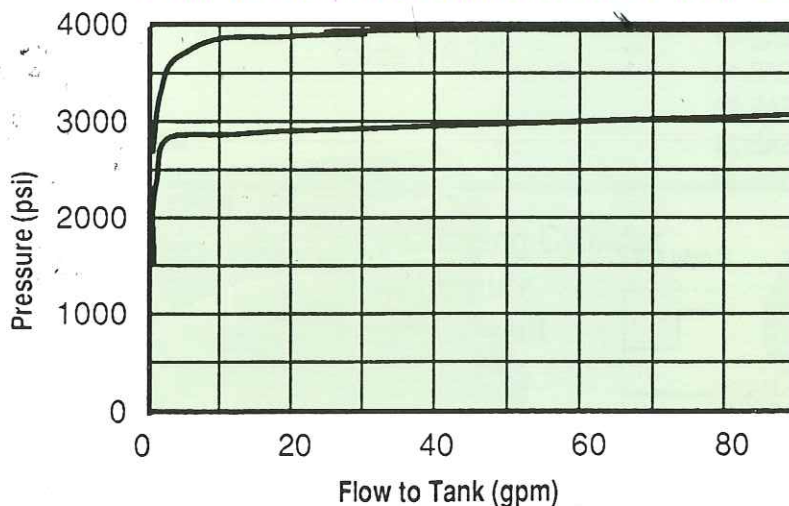
- Pilot operated R/V + AC screw adjustable
- Anti-cavitation check
- Lock-out R/V

Anti-Cavitation Curve



Anti-cavitation Check

Full-Flow Port Relief Valve Flow Curve



Port Relief Valve

Open Center Pressure Drop

US GPM IGPM L/PM		60 50 227	70 58 265	80 67 303	90 75 341	100 83 378	110 92 416	120 100 454
Number of Sections in Assembly	1	14	21	23	32	41	51	60
		1.0	1.4	1.6	2.2	2.8	3.5	4.1
	2	29	39	47	61	75	90	118
		2.0	2.7	3.2	4.2	5.2	6.2	8.1
	3	43	58	71	90	109	129	168
		3.0	4.0	4.9	6.2	7.5	8.9	11.6
	4	58	76	95	119	143	167	219
		4.0	5.2	6.6	8.2	9.9	11.5	15.1
	5	72	95	119	148	177	206	269
		5.0	6.6	8.2	10.2	12.2	14.2	18.6
	6	86	113	142	177	211	245	319
		5.9	7.8	9.8	12.2	14.6	16.9	22.0

Values shown in pressure
drop tables are in PSI
BAR

Open Loop Pressure Drop

US GPM IGPM L/PM	60 50 227	70 58 265	80 67 303	90 75 341	100 83 378	110 92 416	120 100 454							
Number of Sections in Assembly	Inlet to Work Port	Work Port to Outlet	Inlet to Work Port	Work Port to Outlet	Inlet to Work Port	Work Port to Outlet	Inlet to Work Port	Work Port to Outlet	Inlet to Work Port	Work Port to Outlet	Inlet to Work Port	Work Port to Outlet	Inlet to Work Port	Work Port to Outlet
1	80 5.5	36 2.4	108 7.4	44 3.0	142 10.2	56 3.8	174 12.0	66 4.5	204 14.1	82 5.6	236 16.3	94 6.4	274 18.9	100 6.8
2	85 5.9	38 2.6	114 7.9	46 3.1	150 10.3	59 4.0	184 12.7	69 4.7	215 14.8	87 5.9	250 17.2	100 6.8	288 19.9	108 7.3
3	90 6.2	40 2.7	120 8.3	48 3.3	158 10.4	61 4.1	194 13.4	71 4.8	227 15.7	92 6.2	264 18.2	107 7.3	302 20.8	117 7.9
4	95 6.6	41 2.8	131 8.6	49 3.3	166 11.4	64 4.3	204 14.1	74 5.0	238 16.4	97 6.6	277 19.1	113 7.7	315 21.7	125 8.5
5	100 6.9	43 2.9	131 9.0	51 3.5	174 12.0	66 4.5	214 14.8	76 5.2	249 17.2	102 6.9	291 20.1	119 8.1	329 22.7	133 9.0
6	105 7.2	45 3.1	137 9.4	53 3.6	182 12.6	69 4.7	224 15.4	79 5.4	260 17.9	107 7.3	305 21.0	125 8.5	343 23.7	141 9.6

Remote Control Operators

- **Hydraulic,**
- **Electro-Hydraulic**
- **Pneumatic**

Hydraulic Remote Controllers

Commercial's joystick types and stackable hydraulic remote controllers offer precise metering and excellent performance. Our standard spring packs are specifically matched to the springs in our control valves to assure optimum metering and repeatability.

Joysticks and stackable controllers are available with electric or mechanical detents, electric switch handles or standard ball knob handles. Stackable units are also offered with a foot pedal. Both types of controllers are available in a marine version.

For more information ask for:
Oil Hydraulic Remote Control Catalog H-113
Digitrak Electronic Remote Controllers Catalog H-128

Pneumatic Remote Control Devices

Commercial offers a fine line of air operated remote devices. They require 11.7 cfm @ 100 psi. These controllers are available in dual types that operate one valve spool and quad models that control two spools. Detents are available in dual (stackable) models only. Ask for Catalog H-111VA for full details

 **Commercial Intertech**

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Hicksville, OH 43526-6611
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