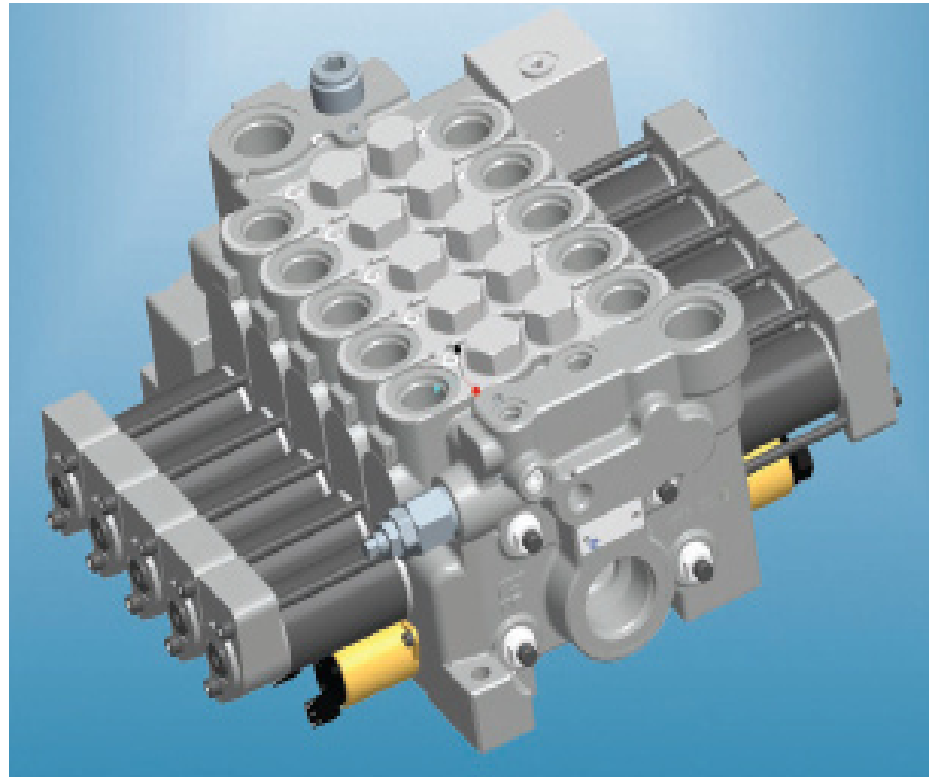




aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding



Hydraulic Valve Division EZ Reference Guide

Catalog



ENGINEERING YOUR SUCCESS.



Table of Contents Assembled Valves

	10 Digit Code	Page
VA 20 NPT Ports		
3 Way 3 Position Manual	347-9201-816	5
4 Way 3 Position Manual	347-9201-817	6
3 Way 3 Position Pneumatic	347-9201-823	7
4 Way 3 Position Pneumatic	347-9201-818	8
3 Way 3 Position Pneumatic With Power Beyond	347-9201-821	9
VG 20 O-Ring Ports		
3 Way 3 Position Pneumatic	347-9201-819	10
3 Way 3 Position Pneumatic With Power Beyond	347-9201-820	11
VA 35 NPT Ports		
3 Way 3 Position Manual	348-9201-704	12
3 Way 3 Position Pneumatic	348-9201-705	13
4 Way 3 Position Pneumatic	348-9201-706	14
3 Way 3 Position Pneumatic With Power Beyond	348-9201-707	15
VG 35 O-Ring Ports		
4 Way 3 Position Manual	348-9201-709	16
3 Way 3 Position Pneumatic With Power Beyond	348-9201-708	17





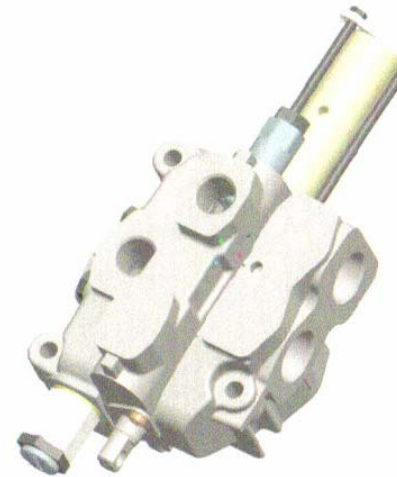
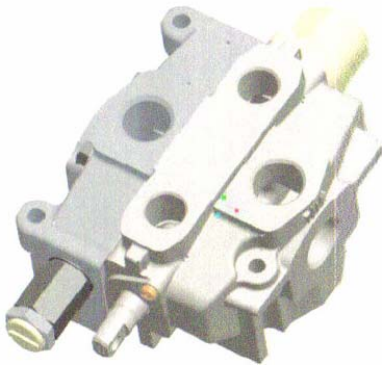
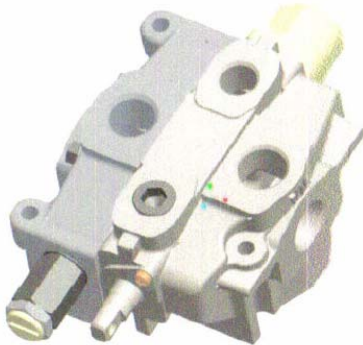
Table of Contents Valve Components

Basic Valve Construction	19-20
V20 Valve Pressure and Flow Ratings	21
V20 With NPT Pipe Threads	22
V20 With SAE Straight Thread O-Ring	23
V20 Work Port Accessories	24
V20 Handles and Stud Kits	25
DVA20 Valve Pressure and Flow Ratings	26
DVA20 With NPT Pipe Threads	27
DVA20 With SAE Straight Threads	28
DVG20 With SAE Straight Thread O-Ring	29
DVA DVG 20 Accessories	30-31
DVA35 Valve Pressure and Flow Ratings	32
DVA35 With NPT Pipe Threads	33
DVA35 With SAE Straight Thread O-Ring	34
DVG35 with SAE Straight Thread O-Ring	35
DVA DVG 35 Accessories	36-37
Commercial Coding	38



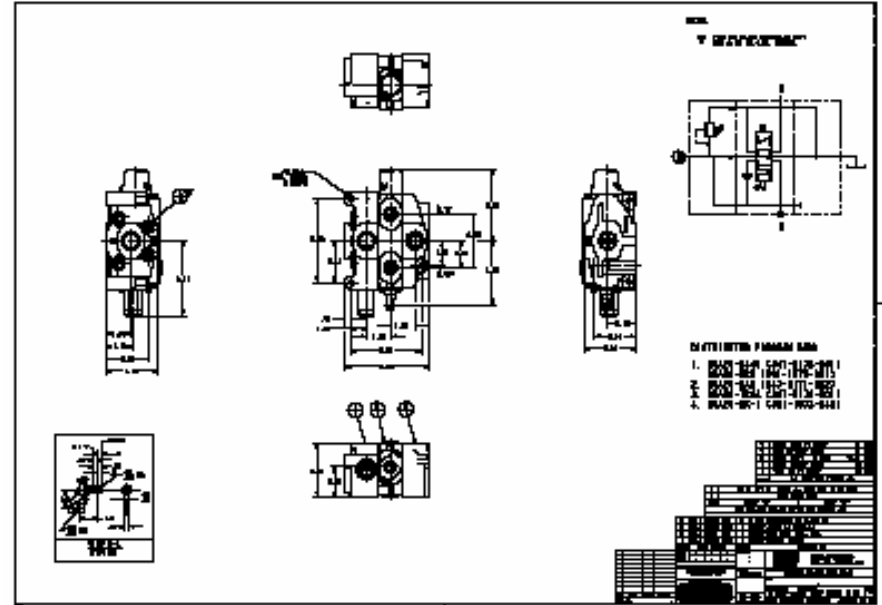
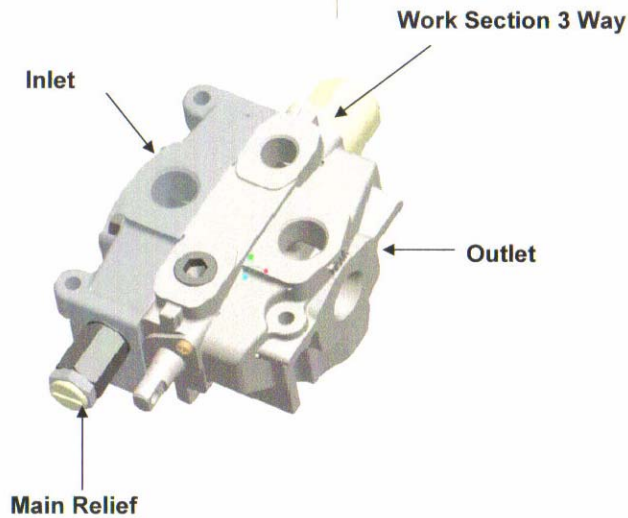


**Hydraulic Valve Division
Single Work Section
DVA DVG 20 35
Assembled Valve Program**





347-9201-816 VA20 NPT Ports 3 Way 3 Position Manual

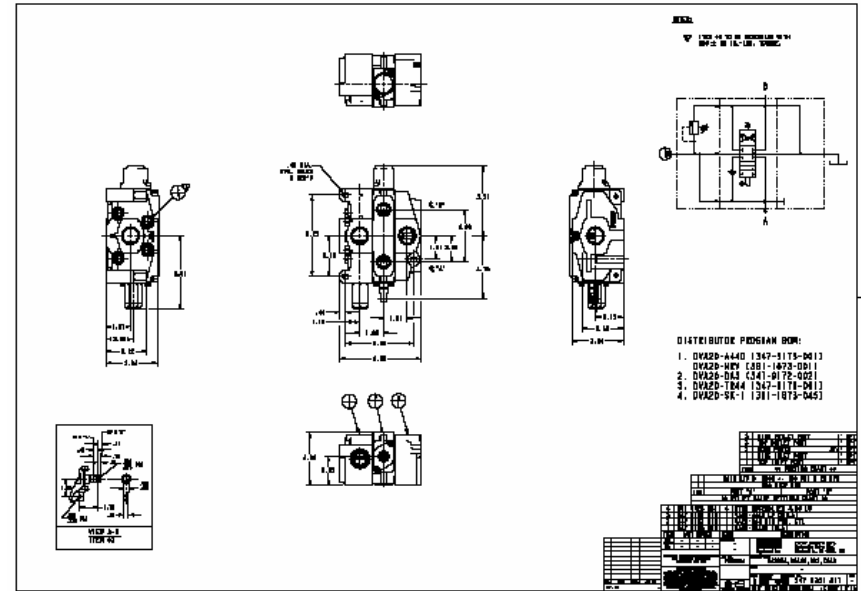
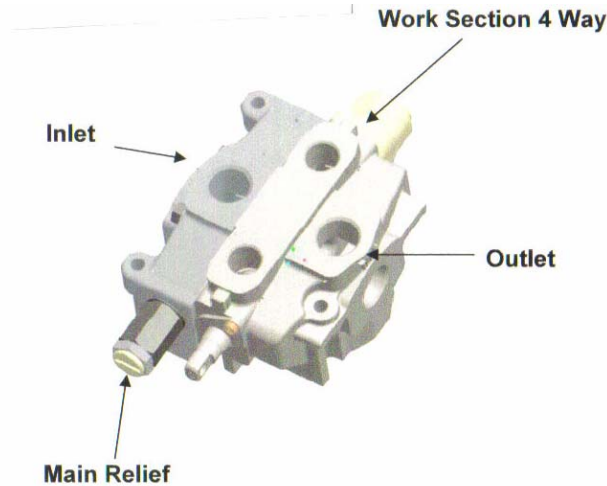


Inlet	DVA20-A440	347-9175-001
Relief Valve	DVA20-MRV	391-1873-001
Work Section	DVA20-SA3	346-9171-002
Outlet	DVA20-TR44	347-9176-001
Stud Kit	DVA20-SK-1	391-1873-045





347-9201-817 VA20 NPT Ports 4 Way 3 Position Manual



Inlet
Relief Valve
Work Section
Outlet
Stud Kit

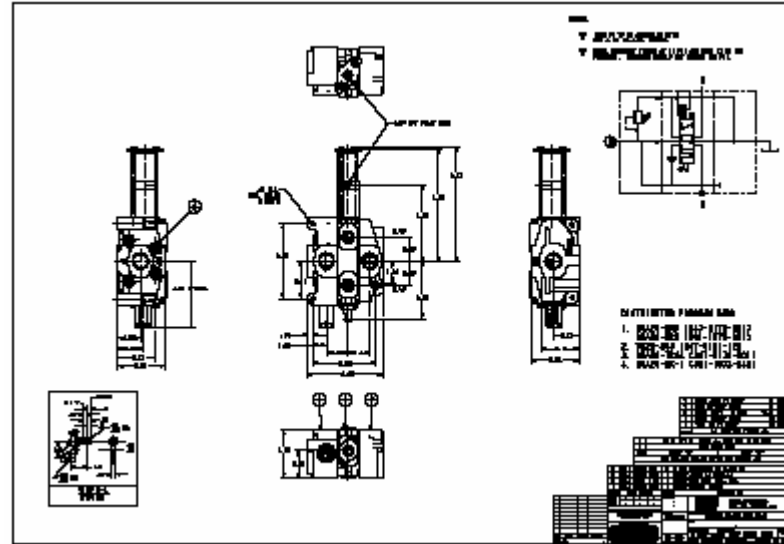
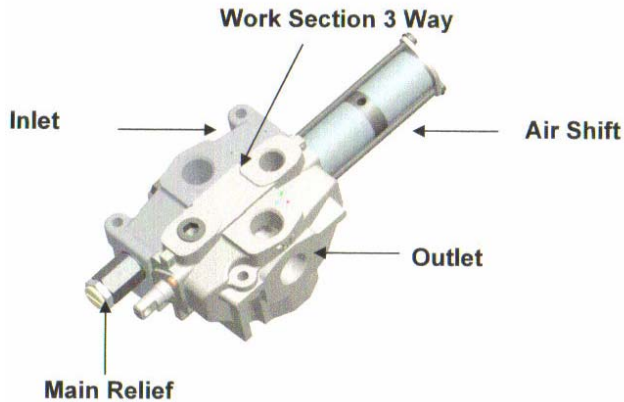
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DVA20-MRV
DVA20-DA3
DVA20-TR44
DVA20-SK-1

347-9175-001
391-1873-001
346-9172-002
347-9176-001
391-1873-045





347-9201-823 VA20 NPT Ports 3 Way 3 Position Air

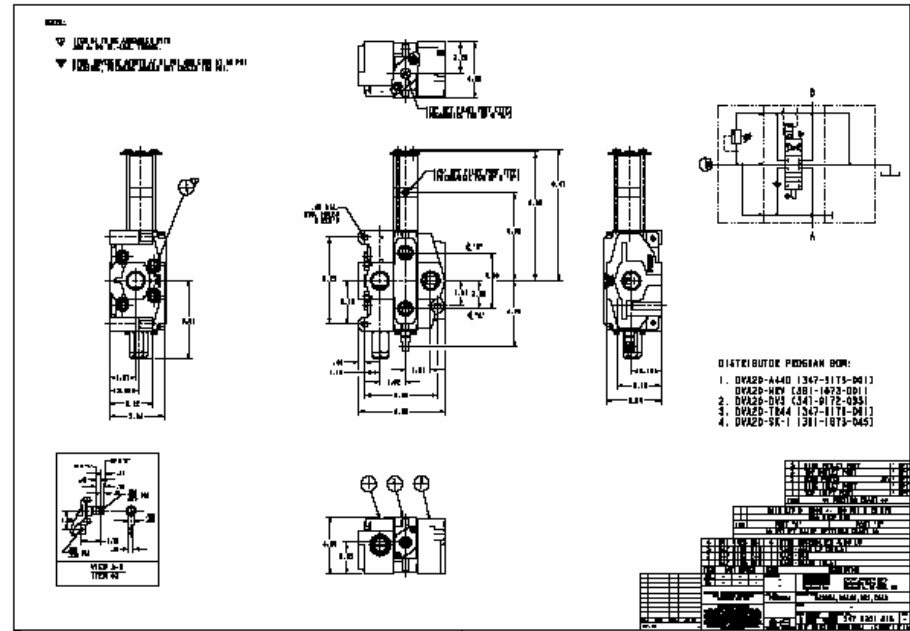
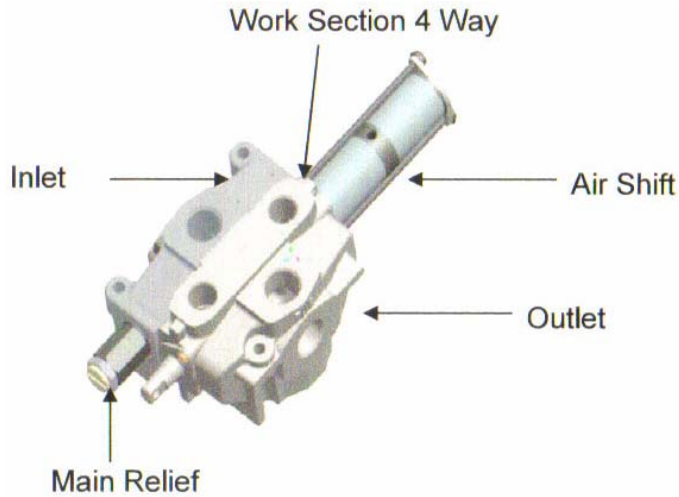


Inlet	DVA20-A440	347-9175-001
Relief Valve	DVA20-MRV	391-1873-001
Work Section	DVA20-SV3	347-9101-129
Air Shift Kit	DV20-K-113	391-1873-206
Outlet	DVA20-TR44	347-9176-001
Stud Kit	DVA20-SK-1	391-1873-045





347-9201-818 VA 20 NPT Ports 4 Way 3 Position Air

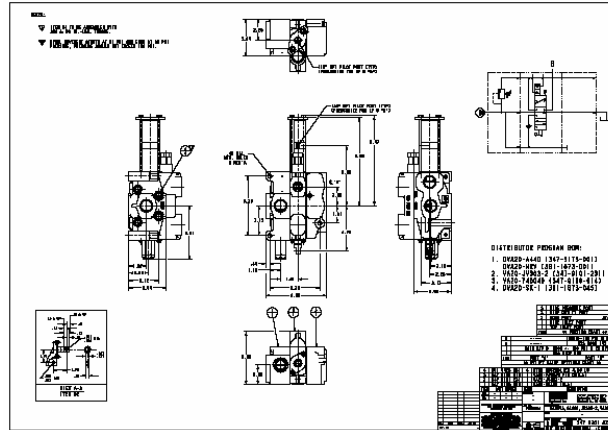
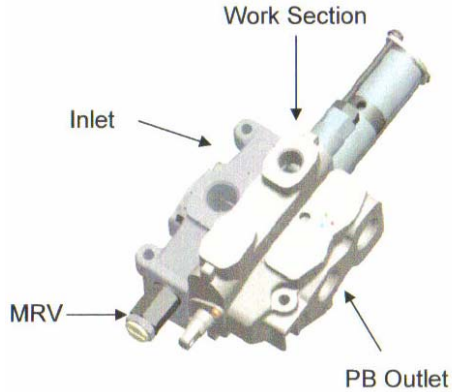


Inlet	DVA20-A440	347-9175-001
Relief Valve	DVA20-MRV	391-1873-001
Work Section	DVA20-DV3	347-9172-033
Outlet	DVA20-TR44	347-9176-001
Stud Kit	DVA20-SK-1	391-1873-045





**347-9201-821 VA20 NPT Ports 3 Way 3 Position
Air With Power Beyond
Main Relief 2500 PSI Work Port Relief 2000 PSI**



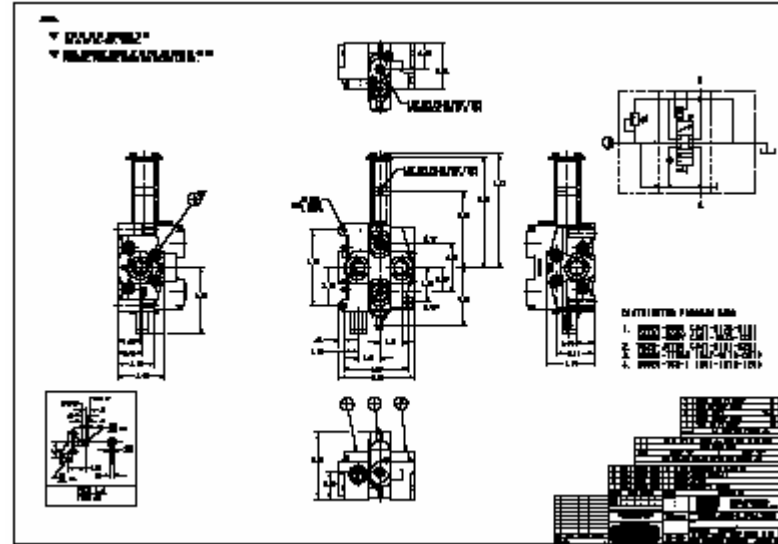
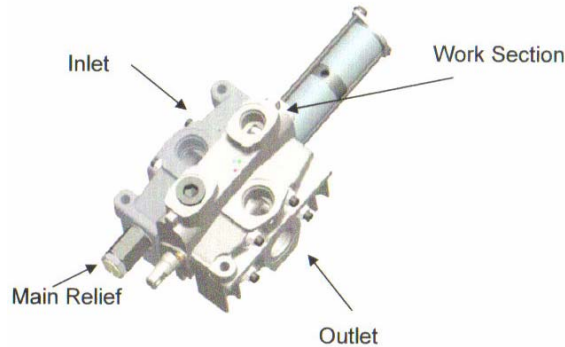
**Note: Must
Plug 4 Way to
Convert to 3 Way**

Inlet	DVA20-A440	347-9175-001
Relief Valve	DVA20-MRV	391-1873-001
Work Section	DVA20-HV355	347-9172-024
Work Section Plug	DV-DPL-75	391-1873-013
Work Port Relief	DV-PRV-2	391-1873-008
Work Port R/P	DV-PRVP	391-1873-011
Outlet	DVA20-PB44	347-9176-003
Stud Kit	DVA20-SK-1	391-1873-045





347-9201-819 VG20 Straight Thread O Ring Ports 3 Way 3 Position Air Main Relief Valve Setting 3000 PSI

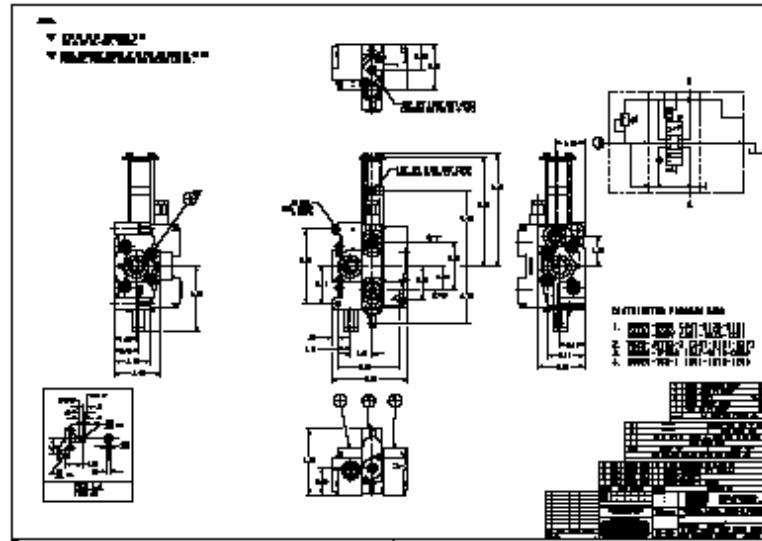
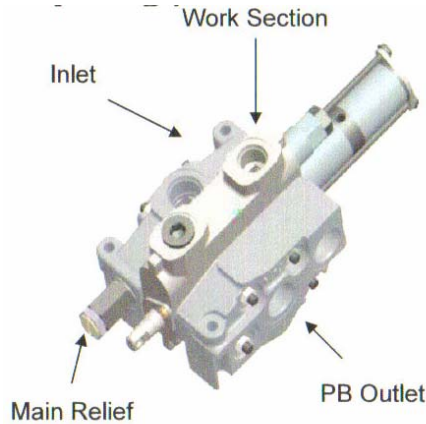


Inlet	DVG20-A770	347-9175-004
Relief Valve	DVG20-HMRV	391-1873-128
Work Section	DVG20-JA705	347-9171-007
Air Shift Kit	DV20-K-113	391-1873-206
Work Port R/P	DV-PRVP	391-1873-011
Outlet	DVG20-TTR88	347-9176-007
Stud Kit	DVG20-TSK-1	391-1873-129





347-9201-820 VG20 Straight Thread O-Ring Ports 3 Way 3 Position Air Position With Power Beyond Main Relief Valve Setting 3000 PSI Work Port Relief 2000 PSI



Inlet
Relief Valve
Work Section
Air Shift Kit
Work Port R/P
Outlet
Stud Kit

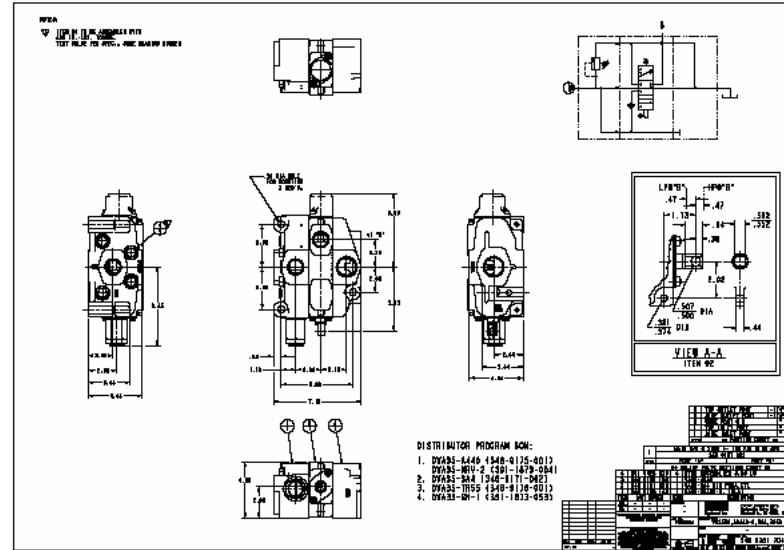
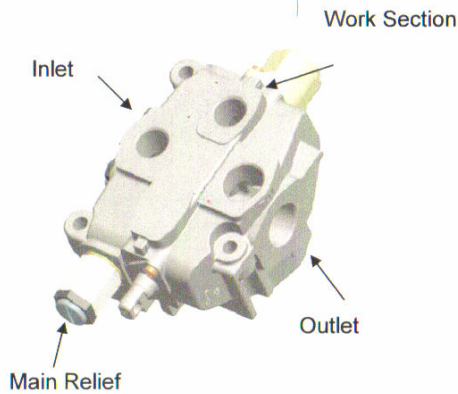
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DVG20-HMRV
DVG20-JA705
DV20-K-113
DV-PRVP
DVG20-TPB80
DVG20-TSK-1

347-9175-004
391-1873-128
347-9171-007
391-1873-206
391-1873-011
347-9176-008
391-1873-129





348-9201-704 VA35 NPT Ports 3 Way 3 Position Manual



Inlet
Relief Valve
Work Section
Outlet
Stud Kit

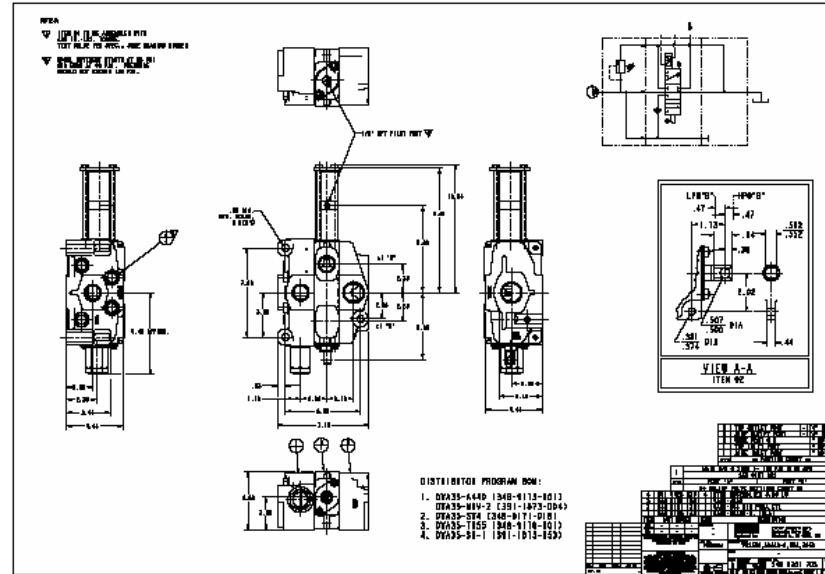
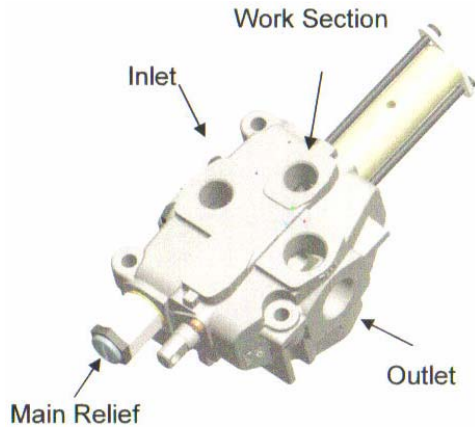
DVA35-A440
DVA35-MRV-2
DVA35-SA4
DVA35-TR55
DVA35-SK1

348-9175-001
391-1873-004
348-9171-002
348-9176-001
391-1873-053





348-9201-705 VA35 NPT Ports 3 Way 3 Position Air



Inlet

Relief Valve

Work Section

Outlet

Stud Kit

DVA35-A440

DVA35-MRV-2

DVA35-SV4

DVA35-TR55

DVA35-SK1

348-9175-001

391-1873-004

348-9171-018

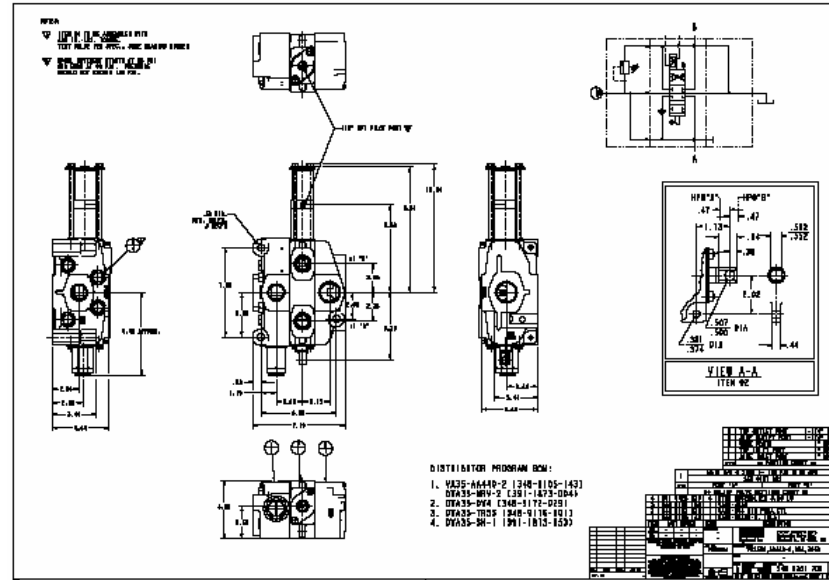
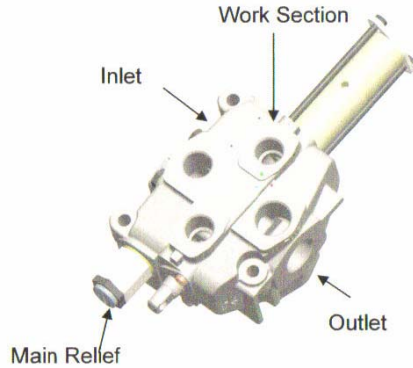
348-9176-001

391-1873-053





348-9201-706 VA35 NPT Ports 4 Way 3 Position Air



Inlet
Relief Valve
Work Section
Outlet
Stud Kit

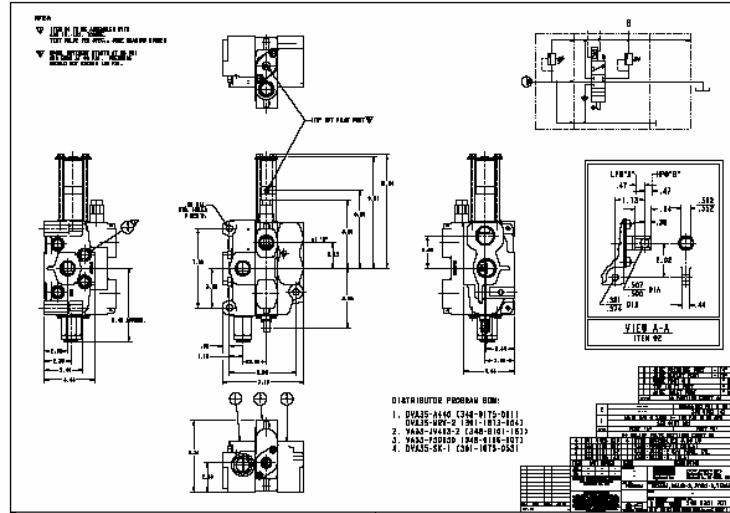
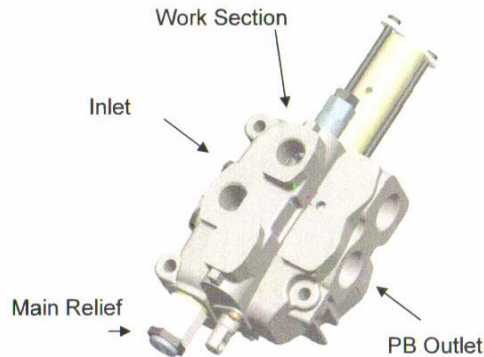
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DVA35-MRV-2
DVA35-DV4
DVA35-TR55
DVA35-SK1

348-9175-001
391-1873-004
348-9172-029
348-9176-001
391-1873-053





348-9201-707 VA35 NPT Ports 3 Way 3 Position Air With Power Beyond Main Relief 2500 PSI Work Port Relief 2000



Inlet
Relief Valve
Work Section
Air Shift Kit
Work Port Relief
Outlet
Stud Kit

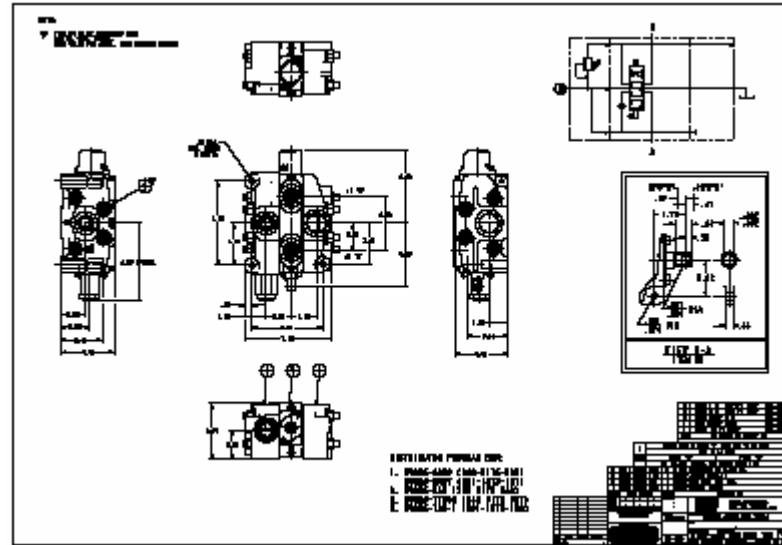
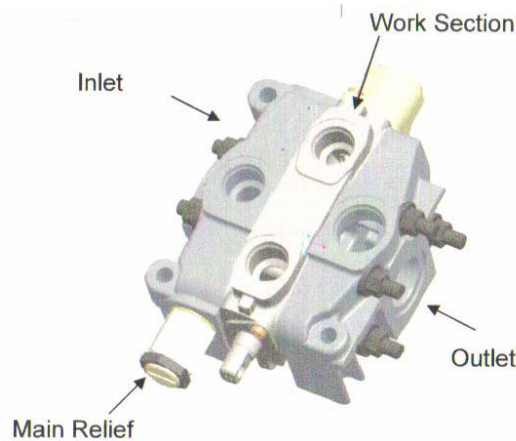
DVA35-A440
DVA35-MRV-2
DVA35-JA405
DV35-K-213
DV-PRV-2
DVA35-PB55
DVA35-SK1

348-9175-001
391-1873-004
348-9171-005
391-1873-203
391-1873-008
348-9176-003
391-1873-053





348-9201-709 VG35 O Ring Straight Thread O-Ring Ports 4 Way 3 Position Manual

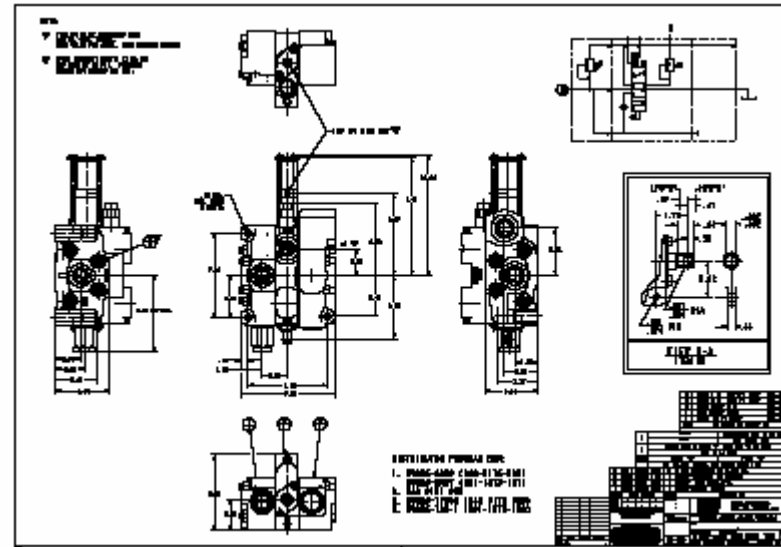
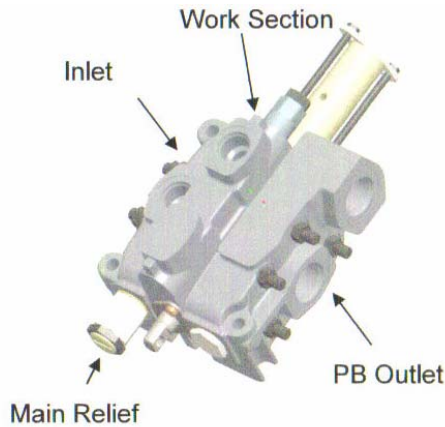


Inlet	DVG35-A880	348-9175-008
Relief Valve	DVG35-HMRV	391-1873-135
Work Section	DVG35-DA8	348-9172-048
Outlet	DVG35-TTR-99	348-9176-007
Stud Kit	DVG35-TSK-1	391-1873-138





348-9201-708 VG35 O Ring Straight Thread O-Ring Ports 3 Way 3 Position Air With Power Beyond Main Relief 3000 PSI Work Port Relief 2000 PSI



Inlet	DVG35-A880	348-9175-008
Relief Valve	DVG35-HMRV	391-1873-137
Work Section	DVG35-JA805	348-9171-011
Air Shift Kit	DV35-K-213	391-1873-203
Work Port Relief	DV-PRV-2	391-1873-008
Outlet	DVG35-TPB99	348-9176-008
Stud Kit	DVG35-TSK-1	391-1873-138





HVD Valve Components Open Center V20 VA20 VA35

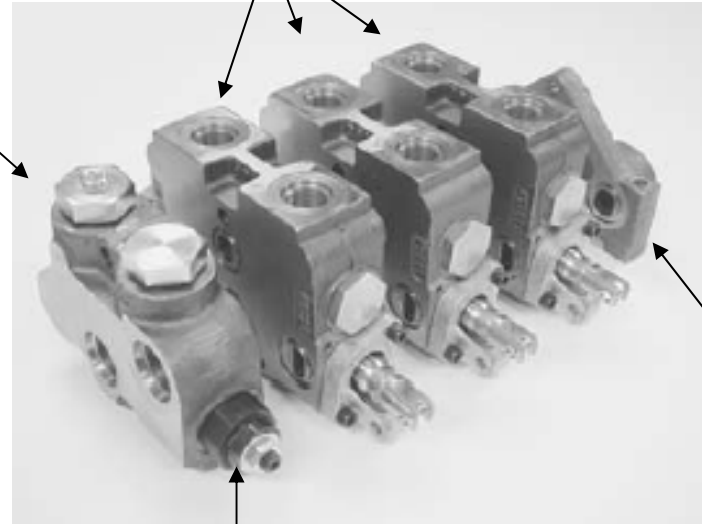




Basic Construction

Work Section

Inlet



Outlet

Main Relief

All Valves Have
And Inlet – Outlet
And Work Sections

Work Port Plugs
This is Where Work
Port Reliefs are Installed

Torque for Valves

- Gresen V20 Series
- Commercial DVA20 Series
- Commercial DVA35 Series

Studs

- 384 In. lbs
- 350 In. lbs
- 400 In. lbs

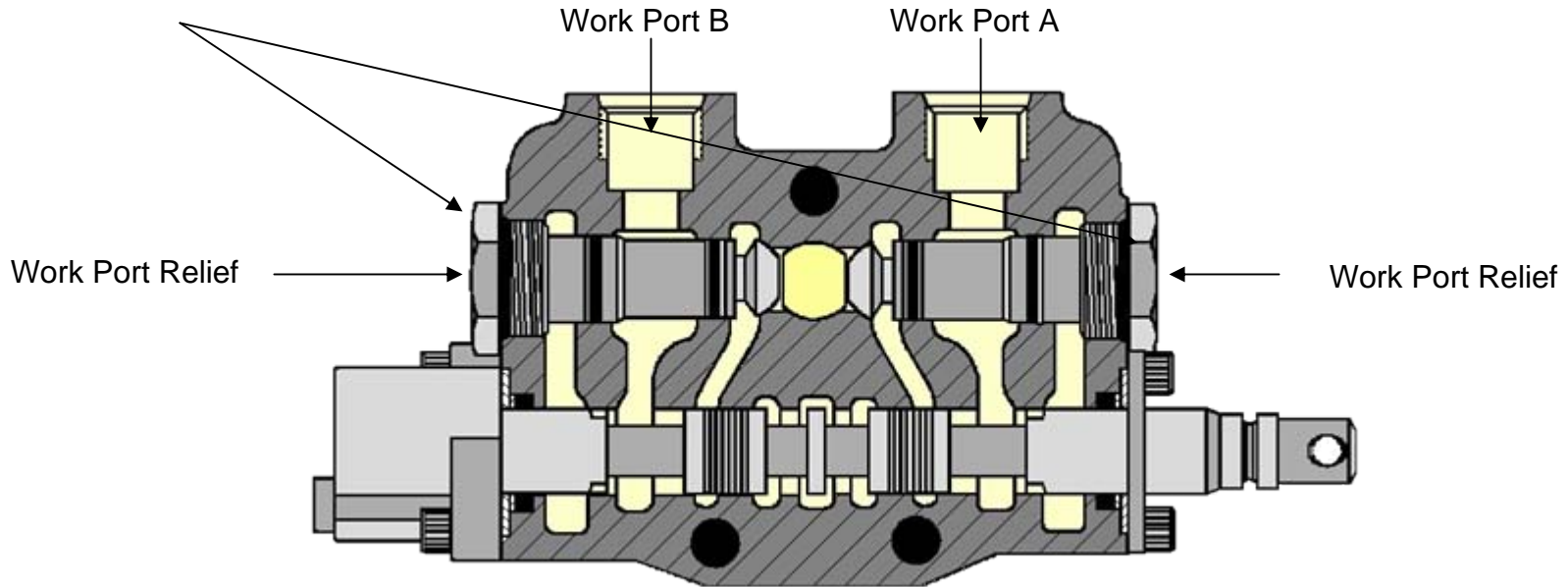
Main Relief

- 75 ft. lbs
- 90 ft. lbs



Basic Work Section

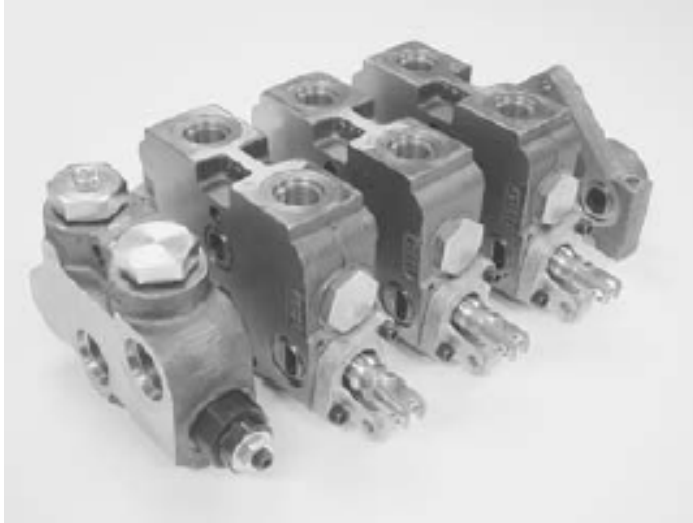
All Work Sections Have Plugged Accessory Ports



Note: Commercial Low Boy Work Sections do not Provide for Work Port Relief Ports



V20 Flow and Pressure Rating



Flow Rating 25 GPM

Pressure Rating 3500 PSI

Inlets & Outlets

NPT 3/4"

SAE 12

Work Ports

NPT 1/2"

SAE 10





V20 NPT Pipe Thread

NPT (Pipe Thread)

V20 Inlet

	Gresen #
20-LC-75	08650030
RP51A-3000	08650421
WH-1700	08650418
WH-1950	08650419
WH-2550	08650420
20-75-CF	08650001

Description

V 20 Inlet 3/4 NPT Add Relief
Main Relief Adjustable
Main Relief Non Adjustable
Main Relief Non Adjustable
Main Relief Non Adjustable
Combined Flow Mid-Inlet

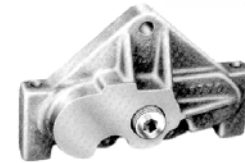


8398 Left Cover

V20 OUTLET

20-RC-75-E	13650147
20-RC-75-E-MY	08650027
K-20-50-7	08650101

Standard Outlet
Power Beyond Outlet
1/2" NPT Power Beyond Sleeve



8398 Right Cover

V20 WORK SECTIONS

20-50-04	08650021	V20 D/A Cylinder 1/2" NPT
20-50-03	08650017	V20 S/A Cylinder 1/2" NPT
20-50-K4	08650015	V20 D/A Motor Spool

FOR SINGLE ACTING FLOAT USE 20-50-03 AND K-20-R



Model V20P
(8072 Section)

V20 SPOOL ACTION KITS

K-20-D	08650105	V20 Detent Kit (3 Position)
K-20-R	08650106	V20 Spool In Detent (S/A Float)
K-20-PA1	08650630	Air Shift
K-20-VH-B	08650151	Handle Kit Complete





V20 SAE Straight Thread O-Ring

V20 INLET

20-LC-12
 RP51A-3000
 WH-1700
 WH-1950
 WH-2550
 20-12-CF

Gresen# DESCRIPTION

08650029 V20 Inlet SAE 12 Plugged Relief
 Same Main Relief Adjustable 3000 PSI
 08650418 Main Relief Non Adjustable
 08650419 Main Relief Non Adjustable
 08650420 Main Relief Non Adjustable
 08650003 Combined Flow Mid-Inlet

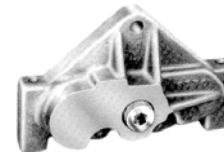


8398 Left Cover

V20 OUTLETS

20-RC-12-E
 20-RC-12-E-MY
 K-20-10-Y

13650146 Standard Outlet
 08650024 Power Beyond Outlet
 08650103 SAE 10 Power Beyond Sleeve



SAE 10 Power Beyond Sleeve

V20 Work Sections

20-10-04 08650020 V20 D/A Cylinder SAE 10
 20-10-03 08650016 V20 S/A Cylinder SAE 10
 20-10-K4 08650015 D/A FLOAT
 20-10-F4 08650019 V20 D/A Motor Spool

For Single Acting Float use 20-10-03 and K-20-R



Model V20P
(8072 Section)

All Work Sections are Ported for Work Port Relief's and Plugged "Add Port Options"





V20 Work Port Accessories

Model Number	Part Number	Relief Valve	Combination Relief & Anti-Cav Check	Anti-Cavitation Check Assembly	Pressure Range and Setting				
					500-1249 Set @ 1200 PSI c/p	1250-1749 Set @ 1700 PSI c/p	1750-1999 Set @ 1950 PSI c/p	2000-2599 Set @ 2550 PSI c/p	500-3500 Set @ 2500 PSI c/p
RC-1200	8650394	•			•				
RC-1700	8650395	•				•			
RC-1950	8650396	•					•		
RC-2550	8650397	•						•	
RP20A-2500	8650975	•							•
CRA-1200	8650387		•		•				
CRA-1700	8650388		•			•			
CRA-1950	8650389		•				•		
CRA-2550	8650390		•					•	
K-20-AC	8650380			•					



Model RC
Work Port Relief Valve



CRA Combination
Relief Anti-Cavitation
Check Valve



Anti-Cavitation
Check Valve





V20 Handle and Stud Kits

V20 Handle End Options

Handle Kits Contain Necessary Links and Pins.

Item No.	Model Number	Part Number	Description
1	K-20-VH-B	8650151	Vertical Handle (Black)
2	K-20-VH-P	8650153	Vertical Handle (Plain)
3	K-20-HH-B	8650154	Horizontal Handle (Black)
4	K-20-HH-P	8650156	Horizontal Handle (Plain)
5	K-20-RET	8650107	Standard Seal Retainer Plate
6	K-20-RET-HD	8650108	Heavy Duty Seal Retainer
7	K-20-WIPER	8650097	Sec. Spool Wiper
8	K-20-HBO-CI	8650113	Complete Bracket (Cast Iron) less Handle and Links
9	K-20-BOOT	8650112	Spool Boot Assembly



Vertical Handle Assemblies

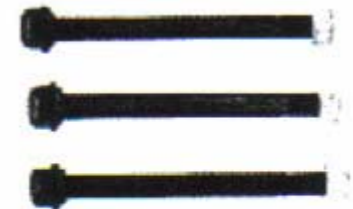


Horizontal Handle Assemblies

V20 Standard Section Stud Assembly Kits

Includes Section Seals and Nuts. (Stud Kits Do Not include 21866-001 Load Sensing and Solenoid Pilot Passage Section Seals. These seals must be purchased separately if required.)

Item No.	Model Number	Part Number	Description
1	K-20-1	8650087	One Section
2	K-20-2	8650088	Two Section
3	K-20-3	8650089	Three Section
4	K-20-4	8650090	Four Section
5	K-20-5	8650091	Five Section
6	K-20-6	8650092	Six Section
7	K-20-7	8650093	Seven Section
8	K-20-8	8650094	Eight Section
9	K-20-9	8650095	Nine Section
10	K-20-10	8650096	Ten Section
11	K-20-SECT-SEAL ♦	13850405	Section seal for load sensing and/or solenoid pilot passages.



Stud Assembly Kit

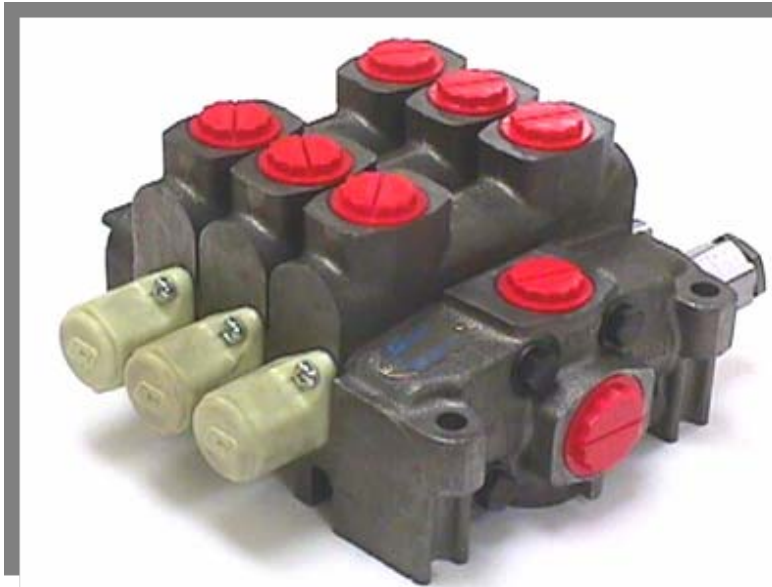
When using an 8644 Right End Cover add one section to assure proper stud length.

♦ Kit includes 25 pieces of seal number 21866001.





DVA DVG 20 Flow and Pressure Rating



Flow Rating **40 GPM**

Pressure

DVA **2500 PSI**

DVG **3500 PSI**

Inlets & Outlets

NPT **1"**

SAE **16**

Work Ports

NPT **3/4"**

SAE **12**





DVA20 NPT Pipe Thread

DVA Inlets

DVA20-A440

10 Digit

347-9175-001

Description

Inlet 1" Pipe (Need to Add Relief)



DVA20 MRV & MRV Plugs

DVA20-MRV

391-1873-001

DVA20-MRVP

391-1873-002

500 TO 2000 PSI Relief
Main Relief Plug



DVA20 Outlets

DVA20-TR44

347-9176-001

DVA20-PB44

347-9176-003

Standard Outlet 1" Ports
Power Beyond Outlet 1" Ports



DVA Work Sections

DVA20-DA3

347-9172-002

DVA20-SA3

346-9171-002

DVA20-MA3

347-9172-005

DVA20-FC3

347-9172-037

DVA20-DV3

347-9172-033

Single Acting Float – Use DVA20-SA3 and DVA20-K-114 Kit

Low-Boy

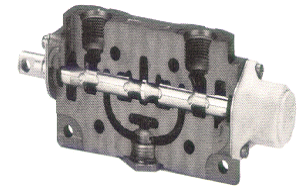
D/A 3/4" Work Ports

SA 3/4" Work Ports

Motor Spool 3/4" Work Ports

D/A Float 3/4" Work Ports

D/A With Air Shift



DVA20 Work Sections

DVA20-HA355

347-9172-008

DVA20-JA305

347-9171-005

High-Boy (Must use WPR or Plugs)

D/A 3/4" Work Ports

S/A 3/4" Work Ports





DVA20 SAE Straight Thread O-Ring

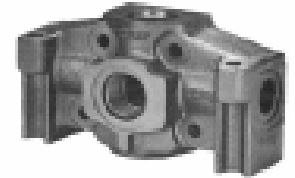
DVA20 Inlets

DVA20-A880

10 Digit Code

347-9175-002

Inlet SAE 16(Need to add Relief Valve)



DVA20 MRV & MRV Plugs

DVA20-MRV

391-1873-001

500-2500 PSI Relief

DVA20-MRVP

391-1873-002

Main Relief Plug



DVA20 Outlets

DVA20-PB08

347-9176-005

Power Beyond Outlet/ Top Porting

DVA20-TR88

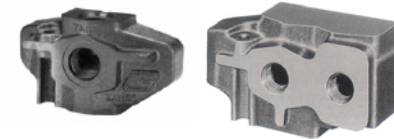
347-9176-002

Standard Outlet

DVA20-PB80

347-9176-004

Power Beyond Outlet/End Porting



DVA20 Work Sections

DVA20-DA7

347-9172-003

Low Boy

D/A

DVA20-SA7*

347-9171-003

S/A

DVA20-SC7

347-9171-014

Single Acting With Float

DVA20-MA7

347-0172-006

Motor Spool

DVA20-DV7

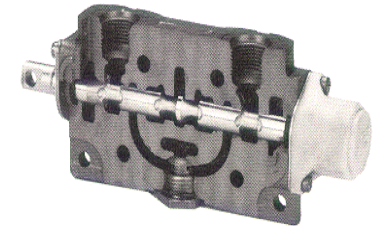
347-9172-034

D/A With Air Shift

DVA20-SV7

347-9171-018

S/A With Air Shift



*Single Acting Float - USE DVA20-SA7 and DVA20-K-114

DVA20 Work Sections

DVA20-HA755

347-9172-009

High Boy

D/A W/ Work Ports

DVA20-JA705

347-9171-006

S/A W/ Work Ports





DVG20 SAE Straight Thread O-Ring

DVG20 Inlets

DVG20-A880

10 Digit

347-9175-010

Description

Inlet SAE 16



DVG20 Main Relief Valve

DVG20-HMRV

391-1873-128

Main Relief 2500 to 3500 PSI

DVG20-MRVP

391-1873-002

Main Relief Valve Plug



DVG20 Outlets

DVG20-TTR88

347-9176-007

Standard Outlet SAE 16

DVG20-TPB80

347-9175-010

Outlet Power Beyond SAE 16



DVG20 Work Sections

DVG20-DA7

347-9172-052

D/A Cylinder SAE 12

DVG20-DV7

347-9172-067

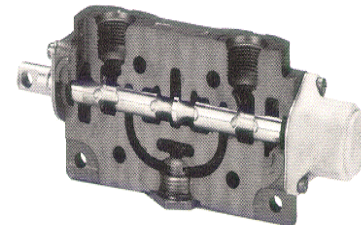
D/A Cylinder Air Shift

DVG20-MA7

347-9172-053

D/A Motor Float in Neutral SAE 12

Low Boy



DVG20 Work Sections

DVG20-JA705

347-9171-007

S/A Cylinder SAE 12

DVG20-HA755

347-9172-056

D/A Cylinder SAE 12

DVG20-LA755

347-9172-057

D/A Motor Float in Neutral SAE 12

High Boy





DVA DVG 20 Accessories

Stud Kits

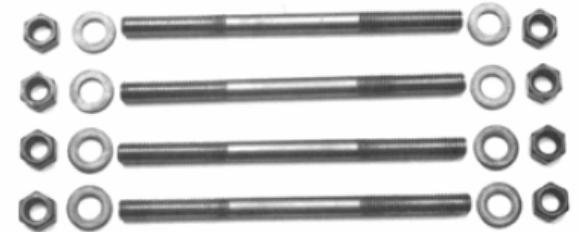
DVA20-SK-1	391-1873-045
DVA20-SK-2	391-1873-046
DVA20-SK-3	391-1873-047
DVA20-SK-4	391-1873-048
DVA20-SK-5	391-1873-049
DVA20-SK-6	391-1873-050
DVA20-SK-7	391-1873-051
DVA20-SK-8	391-1873-052
DVG20-TSK-1	391-1873-129
DVG20-TSK-2	391-1873-130
DVG20-TSK-3	391-1873-131
DVG20-TSK-4	391-1873-132
DVG20-TSK-5	391-1873-133
DVG20-TSK-6	391-1873-134
DVG20-TSK-7	391-1873-135
DVG20-TSK-8	391-1873-136

Work Port Accessories

DV-PRAVC	391-1873-006
DV-PRVS-1	391-1873-344
DV-PRVS-2	391-1873-345
DV-PRV-1	391-1873-007
DV-PRV-2	391-1873-008
DV-PRV-3	391-1873-009
DV-PRL-12	391-1873-016
DV-PRV-SK	391-1873-080
DV-PRT-12	391-1873-234

Work Sections

- One
- Two
- Three
- Four
- Five
- Six
- Seven
- Eight
- One
- Two
- Three
- Four
- Five
- Six
- Seven
- Eight



- Screw Adj. Relief 2500 PSI
- Adj. Relief 500-1000 PSI
- Adj. Relief 1000-2500 PSI
- WPR Shim Adj. 500-1000 PSI
- WPR Shim Adj. 1000-2500 PSI
- WPR Shim Adj. 2500-3000 PSI
- Work Port Plug
- Shim Kit
- Work Port Restrictor





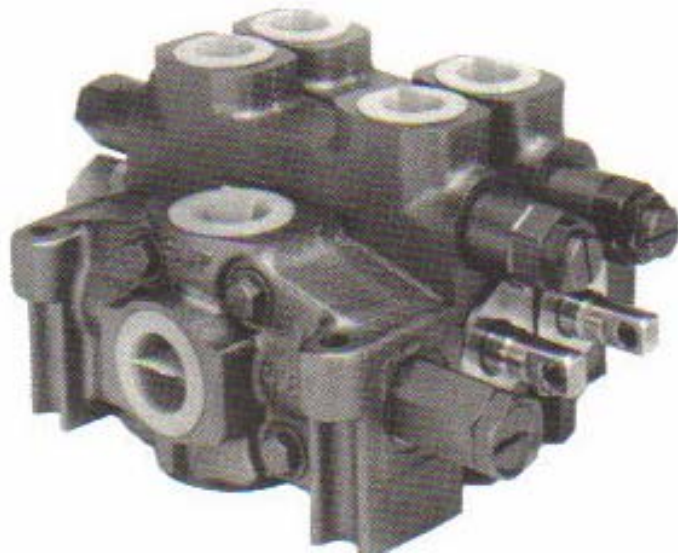
DVA DVG 20 Accessories

Handle Assemblies	10 Digit #	Description
DV20-H-3	391-1873-093	6" Std Handle
DV20-H-4	391-1873-098	8" Std Handle
DV20-H-6	391-1873-061	6" Handle for High Boy
DV20-H-8	391-1873-062	8" Handle for High Boy
Seal Kits		
DV20-K-1	391-1873-035	Work Section Assembly
DV20-K-2	391-1873-036	Work Section , Spool, Check Seals
Spool Action Kits		
DV20-K-100	391-1873-019	Spring Center Kit
DV20-K-101	391-1873-020	3 Position Detent
DV20-K-113	391-1873-206	Air Shift
DV20-K-114	391-1873-206	Detent In , Single Acting Float





DVA DVG 35 Flow and Pressure Ratings



Flow Rating **70 GPM**

Pressure Rating

DVA **2500 PSI**

DVG **3500 PSI**

Inlet and Outlets

NPT **1 1/4"**

SAE **20**

Work Ports

NPT **1"**

SAE **16**





DVA35 NPT Pipe Thread

DVA35 Inlet
DVA35-A440

10 Digit #
348-9175-001

Description
Inlet 1" Pipe (Add Relief)



DVA35 Main Relief Valve

DVA35-MRV-1 391-1873-003
DVA35-MRV-2 391-1873-004

800-2000 PSI
2000-2500 PSI



Outlet

DVA35-TR55 348-9176-001
DVA35-PB55 348-9176-003

Standard Outlet
Power Beyond



Work Sections

DVA35-SA4 348-9171-002
DVA35-DA4 348-9172-002
DVA35-MA4 348-9172-005
DVA35-SV4 348-9171-018

Low Boy

S/A Cylinder 1" Work Ports
D/A Cylinder 1" Work Ports
D/A Motor Float In Neutral
S/A Cylinder Air Shift



Work Sections

DVA35-JA405 348-9171-005
DVA35-HA455 348-9172-008
DVA35-LA455 348-9172-011
DVA35-GC455 348-9172-031

High Boy

S/A Cylinder
D/A Cylinder
D/A Motor Float In Neutral
D/A Detent Float In Neutral





DVA35 SAE Straight Thread O-Ring

DVA35 Inlet

DVA35-A880
DVA35-A980

10 Digit

348-9175-005
348-9175-002

Description

Inlet SAE 16 Need To Add Relief
Inlet SAE 20 Need To Add Relief



Main Relief

DVA35-MRV-1
DVA35-MRV-2

391-1873-003
391-1873-004

800-2000 PSI
2000-2500 PSI



Outlet

DVA35-TR99
DVA35-PB90

348-9176-002
348-9176-004

Standard Outlet
Power Beyond



Work Sections

DVA35-SA8
DVA35-DA8
DVA35-MA8
DVA35-SV8
DVA35-DV8

348-9171-003
348-9172-003
348-9171-016
348-9171-016
348-9172-030

Low Boy

S/A Cylinder SAE 16
D/A Cylinder SAE 16
D/A Motor Float In Neutral
S/A Cylinder Air Shift
D/A Cylinder Air Shift



Work Sections

DVA35-JA805
DVA35-HA855
DVA35-GC855

348-9171-006
348-9172-009
348-9172-032

High Boy

S/A Cylinder
D/A Cylinder
D/A Detent Float In Neutral





DVG35 SAE Straight Thread O-Ring

DVG35 Inlets

DVG35-A880
DVG35-A980

10 Digit

348-9175-008
348-9175-004

Description

Standard Inlet SAE 16
Inlet SAE 20



DVG35 Main Relief

DVG35-HMRV
DVG35-MRVP

391-1873-137
391-1873-005

2800 to 3500 PSI
Main Relief Plug



DVG35 Outlets

DVG35-TTR99
DVG35-TPB99

348-9176-007
348-9176-008

Standard Outlet SAE 20
Power Beyond Outlet SAE 20



DVG35 Work Sections

DVG35-DA8
DVG35-MA8

347-9172-048
348-9172-049

Low Boy

D/A Cylinder SAE 16
D/A Motor Float in Neutral



DVG35 Work Sections

DVG35-JA805
DVG35-HA855
DVG35-GC855

348-9171-001
348-9172-065
348-9172-099

High Boy

S/A Cylinder SAE 16
D/A Cylinder SAE 16
D/A Detent Float In Neutral





DVA DVG 35 Valve Accessories

DVA/DVG Stud

DVA35-SK-1	391-1873-053
DVA35-SK-2	391-1873-054
DVA35-SK-3	391-1873-055
DVA35-SK-4	391-1873-056
DVA35-SK-5	391-1873-057
DVA35-SK-6	391-1873-058
DVA35-SK-7	391-1873-059
DVA35-SK-8	391-1873-060

DVG35-TSK-1	391-1873-138
DVG35-TSK-2	391-1873-139
DVG35-TSK-3	391-1873-140
DVG35-TSK-4	391-1873-141
DVG35-TSK-5	391-1873-142
DVG35-TSK-6	391-1873-143
DVG35-TSK-7	391-1873-144
DVG35-TSK-8	392-1873-145

DVG35 Work Port Accessories

DV-PRAVC	391-1873-006
DV-PRVS-1	391-1873-344
DV-PRVS-2	391-1873-345
DV-PRV-1	391-1873-007
DV-PRV-2	391-1873-008
DV-PRV-3	391-1873-009
DV-DPL-16	391-1873-017
DV-PRV-SK	391-1873-080

Work Sections

- One
- Two
- Three
- Four
- Five
- Six
- Seven
- Eight



- One
- Two
- Three
- Four
- Five
- Six
- Seven
- Eight



- Screw Adj. Relief 2500 PSI
- Adj. Relief 500-1000 PSI
- Adj. Relief 1000-2500 PSI
- WPR Shim Adj. 500-1000 PSI
- WPR Shim Adj. 1000-2500 PSI
- WPR Shim Adj. 2500-3000 PSI
- Work Port Plug
- Shim Kit





DVA DVG 35 Valve Accessories

Handle Assembly

DV35-H-3	391-1873-096	6" Standard Handle
DV35-H-4	391-1873-097	8" Standard handle
DV35-H-6	391-1873-064	6" Handle For High Boy
DV35-H-8	391-1873-065	8" Handle For High Boy

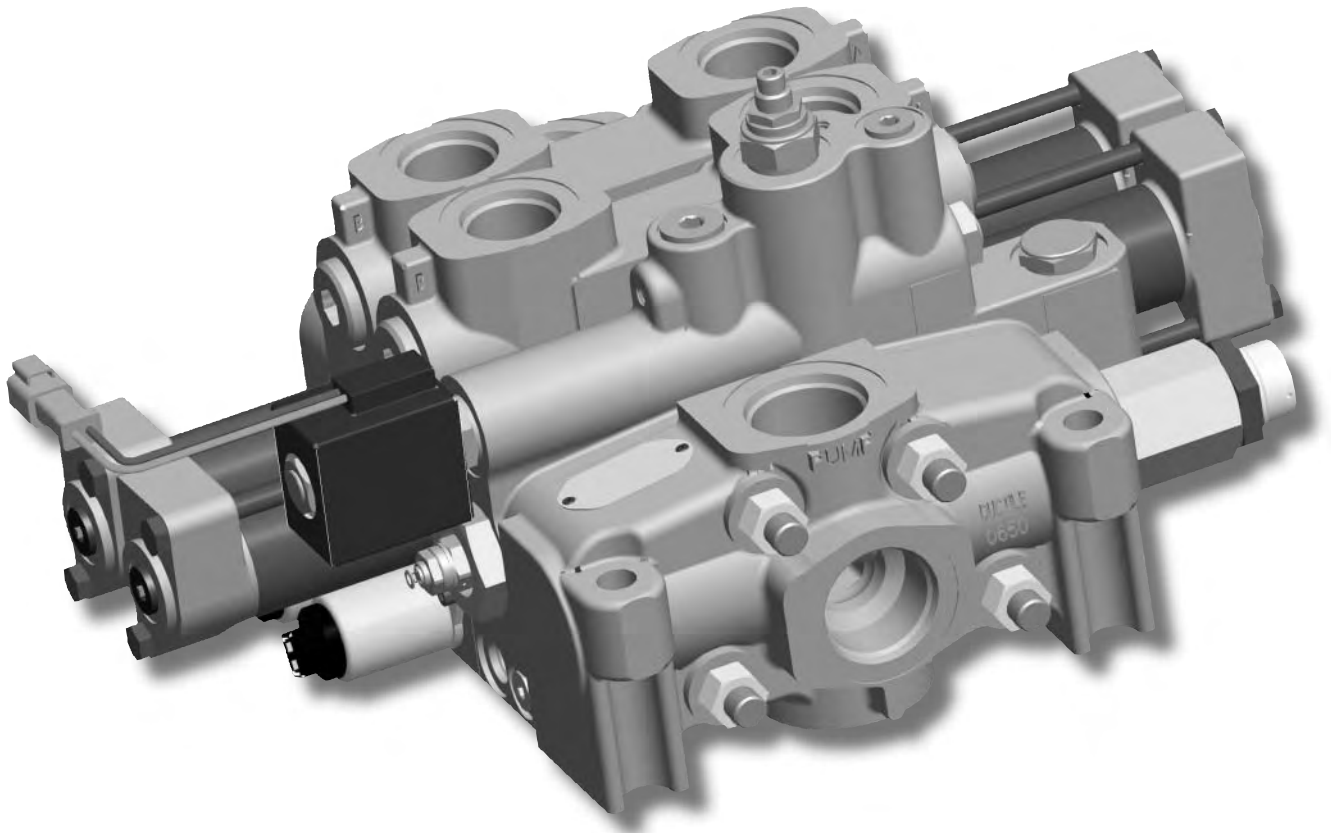
Seal Kits

DV35-K11	391-1873-040	Work Section Assembly Seals
DV35-K12	391-1873-041	Work Section, Spool, Check Seals

Spool Action Kits

DV35-K-200	391-1873-026	Spring Return
DV35-K-201	391-1873-027	3 Position Detent
DV35-K-213	391-1873-203	Air Shift





VG35EH Open-Center Directional Control Valve

Build Program with Pricing
Bulletin HY14-2007-B1/US

Addendum to PL HY14-2000/US
Effective: January 1, 2008

aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding



ENGINEERING YOUR SUCCESS.

Technical Information

General Description..... 1

Operation..... 1

Features 1

Specifications 2

Weights..... 2

Connections 2

Ordering Information

Inlet Covers 3

Main Relief covers 3

Outlet Covers..... 3

Power Beyond Outlet Covers..... 3

Stud Assembly Kits..... 4

Pilot Generating/Regulating Section 4

Work Sections 4

Offer of Sale II

Safety Guide II



WARNING – USER RESPONSIBILITY

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

- This document and other information from Parker-Hannifin Corporation, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise.
- The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors.
- To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.

OFFER OF SALE

The items described in this document are hereby offered for sale by Parker-Hannifin Corporation, its subsidiaries or its authorized distributors. This offer and its acceptance are governed by the provisions stated in the detailed "Offer of Sale" elsewhere in this document or available at www.parker.com/hydraulicvalve.

SAFETY GUIDE

For safety information, see Safety Guide SG HY14-1000 at www.parker.com/safety or call 1-800-CParker.

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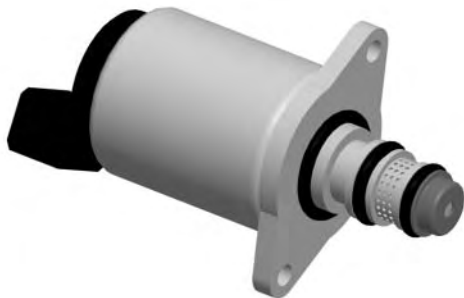


General Description

The VG35 has been a strong and reliable player in the 170-246 LPM (45-65 GPM) open-center, directional control valve market for many years. Now it has a new, electrohydraulic package designed for open-center systems and for those customers wanting to take machine control to the next level.

The offering consists of the following:

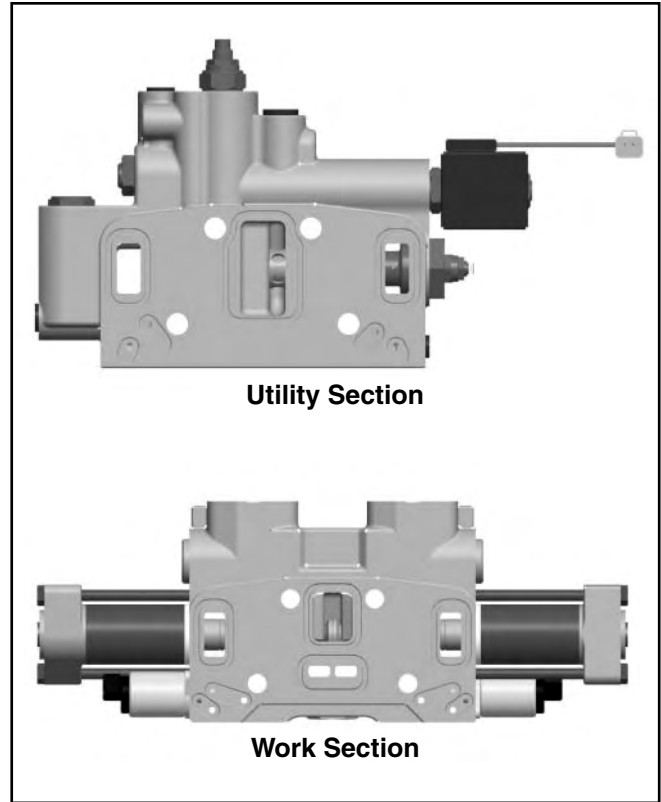
- A global solenoid (pwm) that can be used for proportional or on/off control. The connector options are Amp Jr., Deutsch and Weather Pak.
- Work sections rated to 275 Bar (4000 PSI): 4-way, 3-position; and 3-way, 3-position.
- A pilot generating/regulating section that is referred to as a “utility section”. The purpose of this section is to generate and regulate pilot pressure in an open-center circuit. This section is positioned adjacent to the inlet.
- An outlet that can accept an external regulated signal. This is an option, when a pilot generating/regulating or “utility” section is not required.



Solenoid



Outlet



Operation

Open-center valves that are operated by either hydraulic-remote or electrohydraulic require a way to generate and regulate the pilot pressure. For hydraulic-remote operation, the regulated pilot pressure is needed for the pilot controllers. For electrohydraulic operation, the regulated pilot pressure is required for the work section solenoids. Generation and regulation of the pilot signal can be accomplished externally with an in-line solution, however, this approach requires extra plumbing.

The VG35 has an integrated section that selectively generates and regulates the pilot pressure to be sent to the hydraulic-remote controllers, or the solenoids installed in the work section.

When an operator selects a spool, a signal is sent to a normally open solenoid in the “utility” section. Pressure will then build until it reaches the setting of relief valve. This is sufficient pressure to move the main spool, so that it can be connected to the load pressure. At that point, the inlet of the valve will see system pressure, and the pressure-reducing valve in the “utility section” will regulate the pilot pressure to the hydraulic-remote controllers or the work section solenoids.

For electrohydraulic operation, optimizing machine control is achieved by having a dedicated drain for the work section solenoids. Therefore, the VG35EH package isolates the solenoid within the control valve, and the solenoid drain port is located in the “utility section”.

Specifications

Pressures	Pump Inlet Ports: 275 Bar (4000 PSI) Service Ports: 45 Bar (5000 PSI) Pilot: 35 Bar (508 PSI) (input or internal supply) Tank Return Ports: 15 Bar (220 PSI) Solenoid Drain: 2 Bar (29 PSI)
Flow Rates (maximum recommended)	246 LPM (65 GPM)
Leakage Performance	With mineral oil, 100 SUS@ 49°C (120° F) at 75.9 Bar (1100 PSI) differential Workport w/Steel Plug of no accessory: 30cc/min max. Workport w/RV or RV+AC: 35cc/min max.
Hydraulic Fluid	Mineral Base oil For other fluids consult factory Viscosity, working range: 15-380mm ² /s (15-380 cSt)
Hydraulic Oil Temperature	Recommended Operating Range without Solenoid Operation: -30° to 90°C (-22 to 194°F) Recommended Operating Range with Solenoid Operation: -20° to 80°C (-4 to 176°F)
Filtration (ISO4406)	20/18/14 in Main Flow Paths 18/16/13 Pilot Supply

Weights

Inlet with relief	7.2 kg (15.8 lbs)
Work section – manual spring return	8.4 kg (18.4 lbs)
Work section – hydraulic remote	10.4 kg (22.8 lbs)
Work section – solenoid operated	10.8 kg (23.8 lbs)
Work section – pilot generation	9.6 kg (21.1 lbs)
Add for port relief	0.3 kg (0.65 lbs)
Outlet	4.8 kg (10.6 lbs)

Solenoid Specifications

Voltage	12 or 24 VDC
Frequency	100 ±10 Hz
Pilot	35 Bar (508 PSI) 15-23 LPM (4-6 GPM)
Current Input (I)	1.5A for 12 VDC 0.75A for 24 VDC
Current (mA) for Spool Shift	12V 24V
Start Shift	550 225
Full Shift	150 575
Insulation Material	Class H
Duty Cycle	100%
R20 Ohm	5.3 (±5%) for 12 VDC 21.2 (±5%) for 24 VDC
Fluid Cleanliness	17/14 per ISO 4406
Ambient Temperature	-30° to 80°C (-22 to 176°F)
Fluid Temperature	-20° to 80°C (-4 to 194°F)

Connections

O-ring boss ports SAE-J1926-1
 BSPP ports ISO 1179-1

Description	SAE#	Thread Size	
		O-ring boss	BSPP
Inlet port, Top or Side	16	1-5/16"-12 UNF	1"-11
Inlet port, Top or Side	20	1-5/8"-12 UNF	1-1/4"-11
Outlet port, Top or Side	16	1-5/16"-12 UNF	1"-11
Outlet port, Top or Side	20	1-5/8"-12 UNF	1-1/4"-11
Work Ports	16	1-5/16"-12 UNF	1"-11
Work Ports	12	1-1/16"-12 UNF	3/4"-14



VG35EH Inlet Covers

Product Code	Part Number	List Price	SAE-16 Top	SAE-16 Side	SAE-20 Top	SAE-20 Side	Blocked Pilots
DVG35-A990	348 9175 009	\$192.44			X	X	
DVG35-A880	348 9175 008	\$192.44	X	X			
VG35-A990-BP	348 9195 098	\$225.50			X	X	X

NOTE: VG35-A990-BP is required when a pilot generation utility section is NOT used. This inlet has face machining that terminates the internal pilot and drain galleries.



VG35EH Main Relief Options

Product Code	Part Number	List Price	800-2000 PSI	2000-2500 PSI	2500-3500 PSI	No R/V Option
DVA35-MRV-1	391 1873 003	\$102.40	X			
DVA35-MRV-2	391 1873 004	\$102.40		X		
DVG35-HMRV	391 1873 137	\$127.12			X	
DV-MRVP	391 1873 005	\$27.41				X



VG35EH Outlet Covers

Product Code	Part Number	List Price	SAE-20 Side	SAE-20 Top	SAE-24 Side	No Machined Ports	Ext Pilot & Drain SAE-6
VG35-ZT99000	348 9106 285	\$194.80	X	X			
VG35-ZT99022	348 9106 287	\$270.38	X	X			X
VG35-ZT100000	348 9106 304	\$194.80			X		
VG35-ZT100022	348 9106 305	\$270.38			X		X
VG35-ZT00000	348 9106 306	\$194.80				X	

NOTE: External pilot and drain ports are required to bring an outside pilot supply into the valve stack. The external pilot and drain ports are NOT required when using a pilot generation utility section.



VG35EH Power Beyond Outlet Covers

Product Code	Part Number	List Price	SAE-20 Top	SAE-20 Side	Non Ported
DVG35-TPB99	348 9176 008	\$194.84	X	X	
DVG35-TPB00	348 9176 011	\$194.84			X

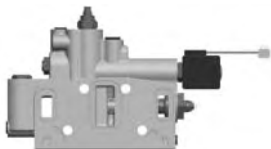
NOTE: Power Beyond Outlets have application limitations. An outside pilot supply cannot be fed into them. Additionally, a last in-line work section is required. Consult factory for these special part numbers.



VG35EH Stud Assembly Kits

Product Code	Part Number	List Price	No of Sections
DVG35-TSK-1	391 1873 138	\$62.50	1
DVG35-TSK-2	391 1873 139	\$69.75	2
DVG35-TSK-3	391 1873 140	\$80.59	3
DVG35-TSK-4	391 1873 141	\$89.64	4
DVG35-TSK-5	39 11873 142	\$98.68	5
DVG35-TSK-6	391 1873 143	\$104.12	6
DVG35-TSK-7	391 1873 144	\$154.52	7
DVG35-TSK-8	391 1873 145	\$114.96	8

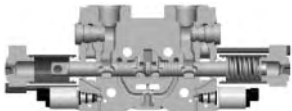
NOTE: Remember to count pilot generating section as one section when ordering studs.



VG35EH Pilot Generating Utility Sections

Product Code	Part Number	List Price	12V	24V	Deutsch
VG35EH-PGP2DA	348 9159 001	\$776.56	X		X
SOL-12V-DUMP	DSL103AD012LWD6R	\$123.33	X		X
SOL-24V-CONVT	S10LWD6RD024	\$78.00		X	X

NOTES: 1. SOL-12V-DUMP can be added to the Utility section. This allows for selective operation of VG35 work sections.
 2. SOL-24V-CONVT coil will convert the Utility section from 12 volt to 24 volt.
 3. Solenoids have 6" leadwires terminated with Deutsch DT04-2P receptacle with pin terminals.



VG35EH Work Sections

Product Code	Part Number	List Price	12 Volt 4-Way 3-Pos Hold in Neutral	12 Volt 4-Way 3-Pos Float in Neutral	12 Volt 3-Way 3-Pos Hold in Neutral	24 Volt 4-Way 3-Pos Hold in Neutral	24 Volt 4-Way 3-Pos Float in Neutral	24 Volt 3-Way 3-Pos Hold in Neutral	Solenoid Push Pin Override
VG35-HP2AS899	348 9152 161	\$882.97	X						
VG35-LP2AS899	348 9152 162	\$887.50		X					
VG35-JP2AS809	348 9151 020	\$864.11			X				
VG35-HP4AS899	348 9152 163	\$882.97				X			
VG35-LP4AS899	348 9152 164	\$887.50					X		
VG35-JP4AS809	348 9151 021	\$864.11						X	
VG35-HP2AOS899	348 9152 033	\$894.33	X						X
VG35-LP2AOS899	348 9152 062	\$899.62		X					X
VG35-JP2AOS809	348 9151 012	\$876.23			X				X
VG35-HP4AOS899	348 9152 127	\$894.33				X			X
VG35-LP4AOS899	348 9152 128	\$899.62					X		X
VG35-JP4AOS809	348 9151 022	\$876.23						X	X

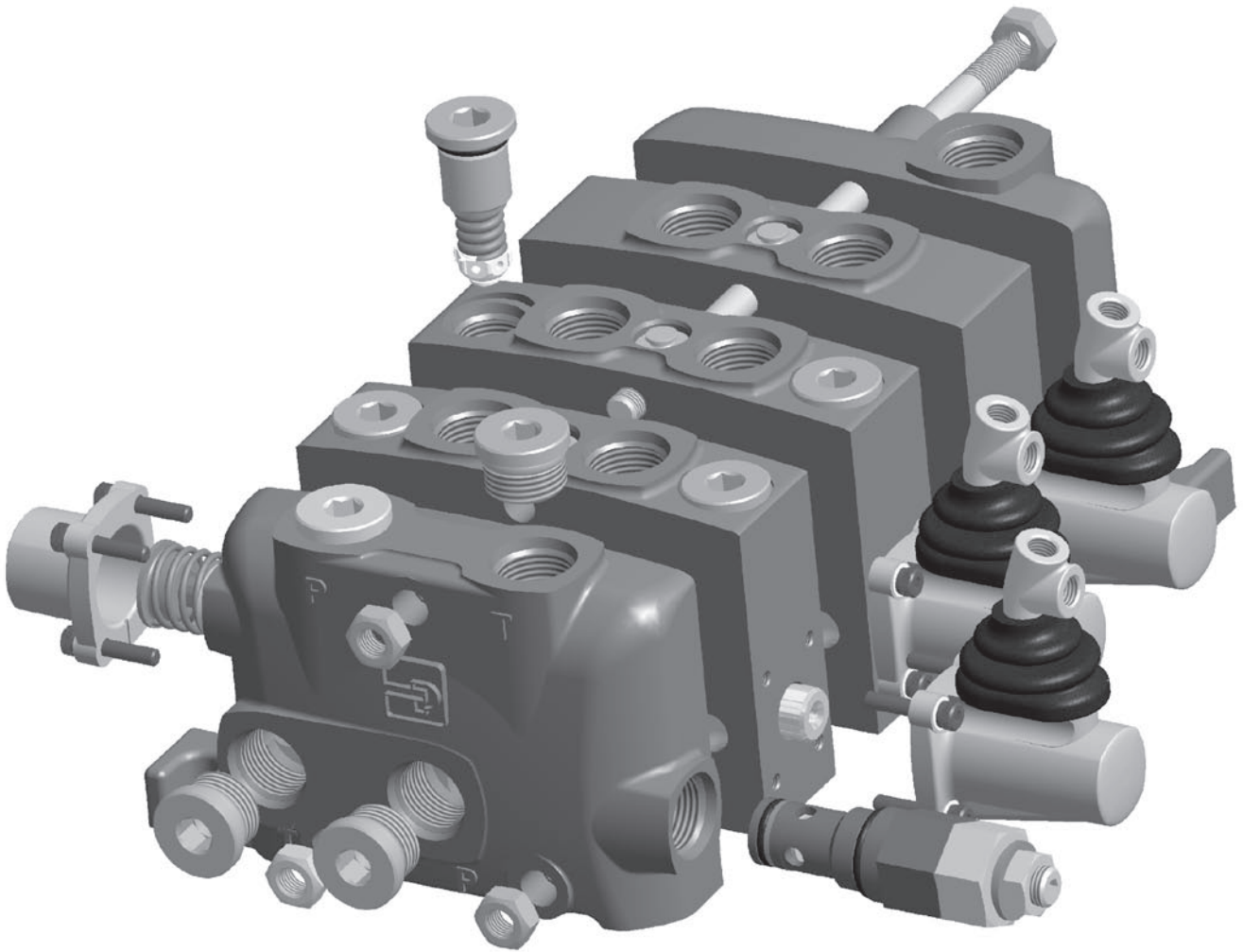
NOTES: 1. Port Accessories are same as DVA/DVG from Distributor Valve Program Bulletin HY14-2000/US.
 2. Work sections listed have SAE-16 workports.
 3. Work sections listed use "AMP Junior Power Timer" connectors.
 4. Use adapter kit 391 1823 417 to convert from AMP Jr. to Packard.
 5. Series circuit work sections are not available at this time.



Bulletin HY14-2720-B2/US

VO40 Open-Center Directional Control Valve Build Program

Effective: March 15, 2006



Technical Information

General Description..... 1

Operation..... 1

Benefits 1

Specifications 2

Ordering Information

Inlet Covers 3

Main Inlet Relief Options 3

Outlet Covers..... 3

Outlet Cover Option Kits..... 3

Parallel Work Sections with Machined Upper Option Cavities..... 4

Parallel Work Sections without Machined Upper Option Cavities..... 4

Tandem Work Sections with Machined Upper Option Cavities..... 5

P.O. Check (Lock Out) Work Section 5

Spool Positioners/Actuators 6

Handle Option Kits 6

Mechanical Joysticks..... 6

Section Stud Assembly Kits 7

Direct-Acting Workport Relief Options..... 7

Offer of Sale 8

 **WARNING**

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and

Offer of Sale

The items described in this document are hereby offered for sale by Parker Hannifin Corporation, its subsidiaries or its authorized distributors. This offer and its acceptance are governed by the provisions stated in the "Offer of Sale".

General Description

The VO40 Build Program is designed to help a stocking distributor increase the value and services offered to their customers. This is accomplished by having the in-house capability of being responsive to your customer's needs. Its stackable design and modularity enables the distributor to build an almost unlimited number of assemblies with a limited level of inventory. A wide variety of sections and kits facilitate conversion and customization of valve stack assemblies for your customers.

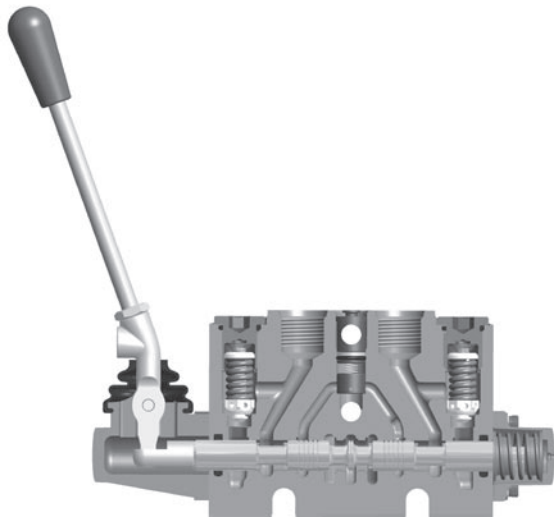
Valve assemblies are comprised of an inlet cover plus main relief options, work sections plus relief and positioner options, an outlet cover plus conversion options, and a stacking kit. All of these components are available in the Build Program, giving you the flexibility to build just about any arrangement imaginable.

The basic kits for the program are:

- Inlet covers
- Inlet cover relief valve options
- Work sections
- Work section relief valve options
- Work section positioner options
- Outlet covers
- Outlet conversion kits
- Handle kits
- Tie bolt stacking kits

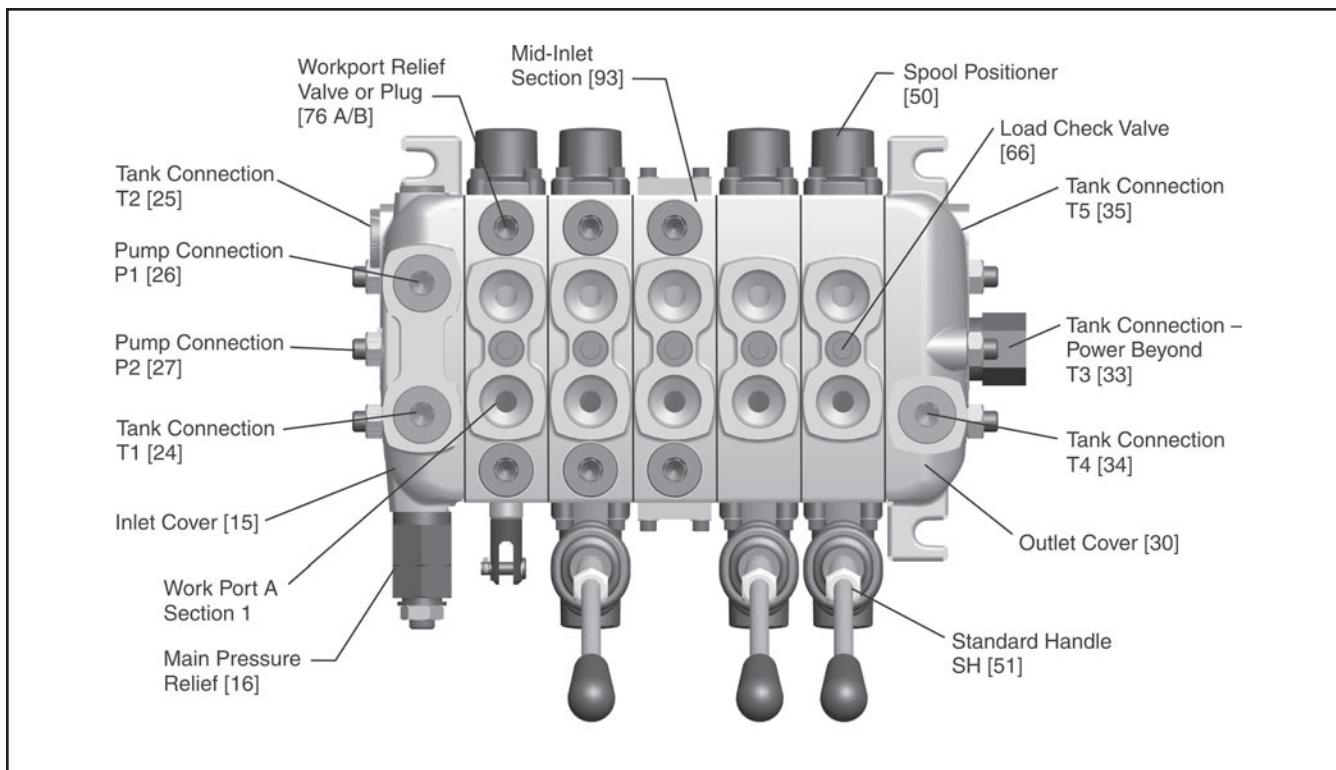
Operation

The VO40 valve incorporates traditional open-center technology. It is usually interfaced with a constant flow pump, whose flow is routed directly to tank when the spools are in neutral. When one or more spools are selected, flow is directed to the actuators. The throttling of that flow depends upon the spool position and the design of the metering notches. Spool notches can be designed to accommodate resistive loads (meter-in) and negative loads (meter-out). To accommodate multiple pump circuits, split flow and combined flow mid-inlets are available.



Benefits

- **Enhanced metering** – especially during simultaneous operation, this is accomplished by having notches in the three critical areas of the spool: open center, parallel path and tank.
- **Improved simultaneous metering** – having a transition check in each work section ensures that a load does not “dip” downward when metering two or more work-sections.
- **Repeatability** – consistent metering from valve to valve is achieved by flycutting all of the critical cast lands. This means that the notch position relative to the spool stroke is controlled and predictable. The result is consistent machine control.
- **Reduced operator fatigue** – the open-center core is a split wing or “Y” core design, which provides for a consistent lever force when selecting the spool from neutral to both power positions.
- **Reduced function drift** – low internal leakage accomplished thru the use of contemporary honing technology. Also, for those functions requiring near zero drift, pilot-operated checks are available.
- **Small footprint** – port accessories are installed vertical to the spool, allowing the handle to be positioned closer to the valve body.
- **Ease of service** – the bottom two stud assemblies are slotted, enabling a work section to be replaced without completely disassembling the valve assembly. This is accomplished by loosening the top tie bolt and then lifting the section out of the assembly. Downtime is minimized.
- **Easy conversion from a left-handed to a right-handed section** – the work section housing and spool are symmetrical, which enables the spool to be inserted in either end of the housing.
- **Improved spool seal life** – the enclosed handle assembly protects the spool and spool seal area from contamination and the potential corrosion.



Specifications

Pressures	Inlet Port: 300 Bar (4350 PSI) Tank Port: 50 Bar (725 PSI) Work Ports: 300 Bar (4350 PSI)
Flow Rates (maximum recommended)	40 LPM (10.6 GPM)
Internal Pilot Pressure	Required for solenoids – consult factory
Spool Leakage from work port to tank	Max. 6 mL/min @ 172 Bar (2500 PSI) Oil temp. 50°C (122°F), and viscosity 40 cSt

Weights

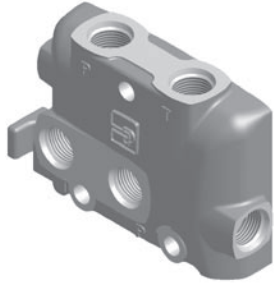
Weights are approximate due to number of variations available

Inlet with relief	1.92 kg (4.2 lbs)
Outlet	1.88 kg (4.1 lbs)
Work section with reliefs and manual actuator	1.93 kg (4.3 lbs)
Work section and manual actuator without reliefs	1.98 kg (4.4 lbs)
Work Section, PO Checks with manual actuator	2.1 kg (4.6 lbs)
Joystick assembly	0.8 kg (1.8 lbs)

Connections

Standard valves are available in SAE-6 or SAE-8 (J1926/1). Also available in 3/8" BSP (DIN 3852/2).

Connection	Location	SAE -8	SAE-6	BSP
P1, P2	Inlet	3/4-16 UNF	9/16-18 UNF	3/8-19
T1, T2	Inlet	3/4-16 UNF	9/16-18 UNF	3/8-19
P3	Outlet	3/4-16 UNF	9/16-18 UNF	3/8-19
T3	Outlet	3/4-16 UNF	9/16-18 UNF	3/8-19
PB1	Outlet	3/4-16 UNF	9/16-18 UNF	3/8-19
Work Ports	Work Sections	3/4-16 UNF	9/16-18 UNF	3/8-19
GAGE PORT	Inlet	7/16-20 UNF	7/16-20 UNF	1/4
PC (Hyd. Conn.)	Work Sections	7/16-20 UNF	7/16-20 UNF	1/4
PT (Pneu.Conn.)	Work Sections	1/8 NPT	1/8 NPT	1/8 NPT



VO40 Inlet Covers

Item No.	Part Number	End Inlet	End Outlet	Top Inlet	Top Outlet	SAE 8 Ports
1	VO40-LC-08	•	•	•	•	•

NOTE: A SAE 4 gage port (plugged) is located on the end, opposite the main RV.
 Two SAE port plugs are installed in the top ports.

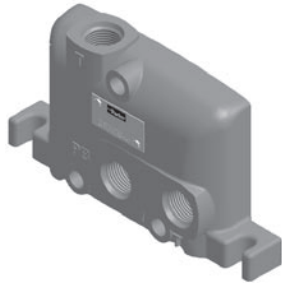
VO40 Main Relief Options



Item No.	Part Number	Description
1	RCP-15A	No Relief Plug Kit
2	CRV-15B-2500	Pilot-Operated Relief Valve Cartridge Set @ 2500 PSI C/P
3	CRV-15F-2500	Direct-Acting Relief Valve Cartridge Set @ 2500 PSI C/P

NOTE: CRV-15B Relief Valve is screw adjustable from 725-4350 PSI.
 CRV-15F Relief Valve is screw adjustable from 900-3000 PSI.

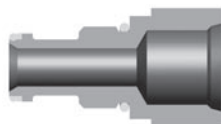
VO40 Outlet Covers



Item No.	Part Number	Top Outlet	End Outlet	SAE 8	Machined for Power Beyond
1	VO40-RC-08	•	•	•	•

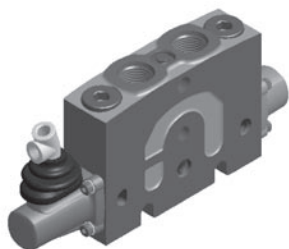
NOTE: Two SAE port plugs are installed, one top port and one side port.

VO40 Outlet Cover Option Kits



Item No.	Part Number	Description
1	K-PB-08	SAE 8 Power Beyond Sleeve
2	K-CC-PLUG	Closed Center Plug
3	K-MECH	Pressure Build-up Cartridge for Solenoid Valves

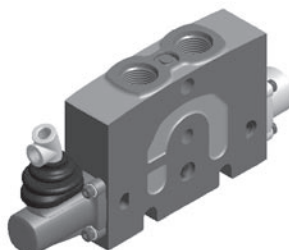
VO40 Parallel Work Sections with Machined Upper Option Cavities



Item No.	Part Number	SAE 6	SAE 8	3-Way 3-Pos	4-Way 3-Pos	4-Way 3-Pos Free Flow	4-Way 4-Pos Float	Spring Return to Neutral	Enclosed Handle Bracket	Less Handle Bracket
1	VO40-06-03	•		•				•	•	
2	VO40-06-04	•			•			•	•	
3	VO40-06-F4	•				•		•	•	
4	VO40-06-K4	•					•	•	•	
5	VO40-06-03-LB	•		•				•		•
6	VO40-06-04-LB	•			•			•		•
7	VO40-06-F4-LB	•				•		•		•
8	VO40-08-K4-LB	•					•	•		•
9	VO40-08-03		•	•				•	•	
10	VO40-08-04		•		•			•	•	
11	VO40-08-F4		•			•		•	•	
12	VO40-08-K4		•				•	•	•	
13	VO40-08-03-LB		•	•				•		•
14	VO40-08-04-LB		•		•			•		•
15	VO40-08-F4-LB		•			•		•		•
16	VO40-08-K4-LB		•				•	•		•

The work sections listed above all have the upper work port relief option cavities machined and plugged. Work sections marked “-LB” (Less Handle Bracket) have a spool with a female clevis. Handle rod/knob sold separately as shown on page 6.

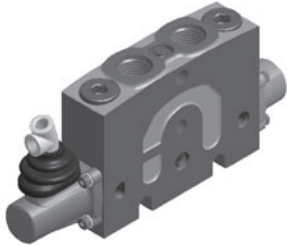
VO40 Parallel Work Sections without Upper Option Cavities



Item No.	Part Number	SAE 6	SAE 8	3-Way 3-Pos	4-Way 3-Pos	4-way 3-Pos Free Flow	4-Way 4-Pos Float	Spring Return to Neutral	Enclosed Handle Bracket	Less Handle Bracket
1	VO40-06-N-03	•		•				•	•	
2	VO40-06-N-04	•			•			•	•	
3	VO40-06-N-F4	•				•		•	•	
4	VO40-06-N-K4	•					•	•	•	
5	VO40-06-N-03-LB	•		•				•		•
6	VO40-06-N-04-LB	•			•			•		•
7	VO40-06-N-F4-LB	•				•		•		•
8	VO40-06-N-K4-LB	•					•	•		•
9	VO40-08-N-03		•	•				•	•	
10	VO40-08-N-04		•		•			•	•	
11	VO40-08-N-F4		•			•		•	•	
12	VO40-08-N-K4		•				•	•	•	
13	VO40-08-N-03-LB		•	•				•		•
14	VO40-08-N-04-LB		•		•			•		•
15	VO40-08-N-F4-LB		•			•		•		•
16	VO40-08-N-K4-LB		•				•	•		•

The “N” in the work sections listed above designates that the the upper work port relief option cavities are NOT machined. Work sections marked “-LB” (Less Handle Bracket) have a spool with a female clevis. If the application requires work port option cartridges (i.e. reliefs or anti-cavitation checks) do not select from this group. Handle rod/knob sold separately as shown on page 6.

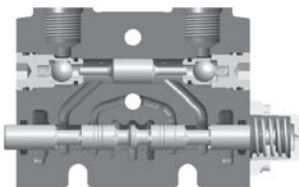
VO40 Tandem Work Sections with Machined Upper Option Cavities



Item No.	Part Number	SAE 6	SAE 8	3-Way 3-Pos	4-Way 3-Pos	4-Way 3-Pos Free Flow	4-Way 4-Pos Float	Spring Return to Neutral	Enclosed Handle Bracket	Less Handle Bracket
1	VO40T-06-03	•		•				•	•	
2	VO40T-06-04	•			•			•	•	
3	VO40T-06-F4	•				•		•	•	
4	VO40T-06-K4	•					•		•	
5	VO40T-06-03-LB	•		•				•		•
6	VO40T-06-04-LB	•			•			•		•
7	VO40T-06-F4-LB	•				•		•		•
8	VO40T-06-K4-LB	•					•			•
9	VO40T-08-03		•	•				•	•	
10	VO40T-08-04		•		•			•	•	
11	VO40T-08-F4		•			•		•	•	
12	VO40T-08-K4		•				•		•	
13	VO40T-08-03-LB		•	•				•		•
14	VO40T-08-04-LB		•		•			•		•
15	VO40T-08-F4-LB		•			•		•		•
16	VO40T-08-K4-LB		•				•			•

The work sections listed above all have the upper work port relief option cavities machined and plugged. Work sections marked “-LB” (Less Handle Bracket) have a spool with a female clevis. Handle rod/knob sold separately as shown on page 6.

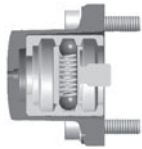
VO40 P.O. Check (Lock Out) Work Section



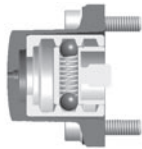
Item No.	Part Number	SAE 6	SAE 8	4-Way 3-Pos	Pilot Operated Checks	Spring Return to Neutral	Enclosed Handle Bracket	Less Handle Bracket
1	VO40-06-L04	•		•	•	•	•	
2	VO40-06-L04-LB	•		•	•	•		•
3	VO40-08-L04		•	•	•	•	•	
4	VO40-08-L04-LB		•	•	•	•		•

Work sections marked “-LB” (Less Handle Bracket) have a spool with a female clevis. Handle rod/knob sold separately as shown on page 6.

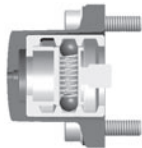
VO40 Spool Positioners/Actuators



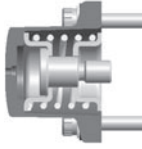
K-VO40-D



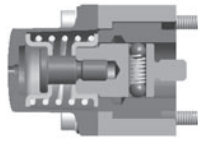
K-VO40-DI



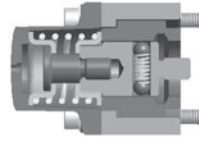
K-VO40-DO



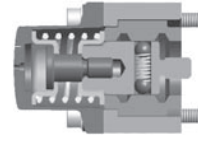
K-VO40-S



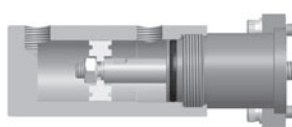
K-VO40-RI



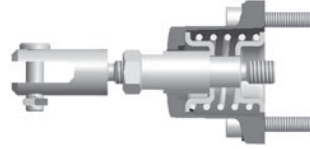
K-VO40-RO



K-VO40-RIO



K-VO40-PA1



K-VO40-2C

Item No.	Part Number	Description
1	K-VO40-D	3-Position detent positioner kit
2	K-VO40-DI	2-Position detent positioner kit: Neutral and spool "in" kit
3	K-VO40-DO	2-Position detent positioner kit: Neutral and spool "out" kit
4	K-VO40-RI	Spool "in" detent, with spring return to neutral positioner kit
5	K-VO40-RO	Spool "out" detent, with spring return to neutral positioner kit
6	K-VO40-RIO	Spool "in & out" detent, with spring return to neutral positioner kit
7	K-VO40-S	Spring return to neutral positioner kit
8	K-VO40-PA1	Pneumatic spool actuator kit
9	K-VO40-HR	Hydraulic remote spool actuator kit (Available May-06)
10	K-VO40-2C	Dual clevis extension kit

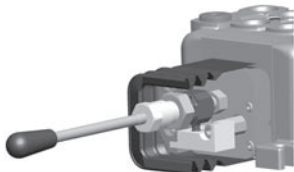
VO40 Handle Option Kits



Item No.	Part Number	Description
1	K-VO40-H1	Straight Handle Lever Kit
2	K-VO40-H2	Offset Handle Lever Kit

Not included with valve work-section assemblies.

VO40 Mechanical Joystick



Item No.	Part Number	Description
1	VO40-MJL	Mechanical Joystick - Left Handed
2	VO40-MJR	Mechanical Joystick - Right Handed
3	K-VO40-H1	Straight Handle Lever Kit
4	K-VO40-H2	Offset Handle Lever Kit

VO40 Section Stud Assembly Kits



Item No.	Part Number	Description
1	K-VO40-1	Stud Kit for (1) Work Section
2	K-VO40-2	Stud Kit for (2) Work Sections
3	K-VO40-3	Stud Kit for (3) Work Sections
4	K-VO40-4	Stud Kit for (4) Work Sections
5	K-VO40-5	Stud Kit for (5) Work Sections
6	K-VO40-6	Stud Kit for (6) Work Sections
7	K-VO40-7	Stud Kit for (7) Work Sections
8	K-VO40-8	Stud Kit for (8) Work Sections
9	K-VO40-9	Stud Kit for (9) Work Sections
10	K-VO40-10	Stud Kit for (10) Work Sections

NOTE: Each stud kit includes (3) studs and (6) nuts (sect. seals are included with sections).
Stud Bolt Torque: 11-14 Ft Lbs (15-19 Nm)

VO40 Direct-Acting Workport Relief Options



Item No.	Part Number	Set @ 2.5 GPM	Relief Valve Anti-Cav	Straight Anti-Cav	No Relief Plug
1	VO40 RV/AC-500	500 PSI	•		
2	VO40 RV/AC-750	750 PSI	•		
3	VO40 RV/AC-1000	1000 PSI	•		
4	VO40 RV/AC-1250	1250 PSI	•		
5	VO40 RV/AC-1500	1500 PSI	•		
6	VO40 RV/AC-1750	1750 PSI	•		
7	VO40 RV/AC-2000	2000 PSI	•		
8	VO40 RV/AC-2250	2250 PSI	•		
9	VO40 RV/AC-2500	2500 PSI	•		
10	VO40 RV/AC-2750	2750 PSI	•		
11	VO40 RV/AC-3000	3000 PSI	•		
12	VO40 RV/AC-3250	3250 PSI	•		
13	VO40 RV/AC-3500	3500 PSI	•		
14	VO40 RV/AC-3750	3750 PSI	•		
15	VO40 RV/AC-4000	4000 PSI	•		
16	VO40 RV/AC-4250	4250 PSI	•		
17	VO40-AC	N/A		•	
18	VO40-NR	N/A			•



Commercial Coding

First 3 Digits

341

342

347

349

355

357

361

355-95

Product

Old A20

Old A35

VAVG 20

VAVG 35

Relief Valves

D Lines

Remote Controls

Hand Pumps

