



Bulletin HY14-2700/US

Master Distributor Stock Components

Effective: May 1, 2003

Supersedes: Catalog No. DSC-7000 dated 7/1/01



Model V10

Model V11

Model V12

Model V20

Model 25P

Model V40

Model V42

Model V50

Model V70

Model V90

Models HCJ, HCS, HCF

Models SP, SPK, SSK

Models 300/400

Port Plugs

Solenoid Cartridge and Coil Kits

 **WARNING**

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7. Special Tooling: A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture items sold pursuant to this contract. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the manufacture of the items sold hereunder, even if such apparatus has been specially converted or adapted for such manufacture and notwithstanding any charges

paid by Buyer. Unless otherwise agreed, Seller shall have the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

8. Buyer's Property: Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer or any other items which become Buyer's property, may be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer placing an order for the items which are manufactured using such property, Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.

9. Taxes: Unless otherwise indicated on the face hereof, all prices and charges are exclusive of excise, sales, use, property, occupational or like taxes which may be imposed by any taxing authority upon the manufacture, sale or delivery of the items sold hereunder. If any such taxes must be paid by Seller or if Seller is liable for the collection of such tax, the amount thereof shall be in addition to the amounts for the items sold. Buyer agrees to pay all such taxes or to reimburse Seller therefore upon receipt of its invoice. If Buyer claims exemption from any sales, use or other tax imposed by any taxing authority, Buyer shall save Seller harmless from and against any such tax, together with any interest or penalties thereon which may be assessed if the items are held to be taxable.

10. Indemnity For Infringement of Intellectual Property Rights: Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Part 10. Seller will defend and indemnify Buyer against allegations of infringement of U.S. Patents, U.S. Trademarks, copyrights, trade dress and trade secrets (hereinafter 'Intellectual Property Rights'). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that an item sold pursuant to this contract infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If an item sold hereunder is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using said item, replace or modify said item so as to make it noninfringing, or offer to accept return of said item and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to items delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any item sold hereunder. The foregoing provisions of this Part 10 shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

If a claim is based on information provided by Buyer or if the design for an item delivered hereunder is specified in whole or in part by Buyer, Buyer shall defend and indemnify Seller for all costs, expenses or judgments resulting from any claim that such item infringes any patent, trademark, copyright, trade dress, trade secret or any similar right.

11. Force Majeure: Seller does not assume the risk of and shall not be liable for delay or failure to perform any of Seller's obligations by reason of circumstances beyond the reasonable control of Seller (hereinafter 'Events of Force Majeure'). Events of Force Majeure shall include without limitation, accidents, acts of God, strikes or labor disputes, acts, laws, rules or regulations of any government or government agency, fires, floods, delays or failures in delivery of carriers or suppliers, shortages of materials and any other cause beyond Seller's control.

12. Entire Agreement/Governing Law: The terms and conditions set forth herein, together with any amendments, modifications and any different terms or conditions expressly accepted by Seller in writing, shall constitute the entire Agreement concerning the items sold, and there are no oral or other representations or agreements which pertain thereto. This Agreement shall be governed in all respects by the law of the State of Ohio. No actions arising out of the sale of the items sold hereunder or this Agreement may be brought by either party more than two (2) years after the cause of action accrues.

9/91-P





23613 Left Cover

V10 INLET COVERS (Housing No. 23613)

| Item No. | Model Number | Part Number | End Inlet | End Outlet | Top Inlet | Top Outlet | SAE 10 | SAE 8 | Pressure Reducing Valves [Ⓞ] |
|----------|--------------|-------------|-----------|------------|-----------|------------|--------|-------|---------------------------------------|
| 1 | 10-LC-10 | 13650709 | • | • | • | • | • | | |
| 2 | 10-LC-08 | 13650710 | • | • | • | • | | • | |
| 3 | 10-LC-10-PRV | 26157001 | | | • | • | • | | • |

All inlet covers machined to accept main relief cartridges. Two SAE port plugs are furnished loose with Items 1 and 2.

[Ⓞ] Used for Solenoid Valve Assemblies. Only top ports are available with this cover.

V10 Main Relief Cartridges

| Item No. | Model Number | Part Number | 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 | 2600-3000 Set @ 3000 PSI c/p | 3001-3500 Set @ 3500 PSI c/p | |
| 1 | RCM-1200 | 13650712 | • | | | | | | |
| 2 | RCM-1700 | 13650713 | | • | | | | | |
| 3 | RCM-1950 | 13650714 | | | • | | | | |
| 4 | RCM-2550 | 13650715 | | | | • | | | |
| 5 | RCM-3000 | 13650716 | | | | | • | | |
| 6 | RCM-3500 | 13650774 | | | | | | | • |
| 7 | K-10-NR | 13650718 | No Relief Cavity Plug for V10 Inlet Covers | | | | | | |

Model RCM relief cartridges are internal shirn adjustable.



No Relief Cavity Plug

Relief External Adjustment Kit

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|--|
| 1 | K-WH-A | 8650381 | External Screw Adjustment Option for RCM Relief Cartridges |



External Adjustment Kit

V10 OUTLET COVERS (Housing No. 23627)

| Item No. | Model Number | Part Number | SAE 8 | SAE 10 | Top Outlet | End Outlet | Machined for Power Beyond | With Mechanical Pressure Control Cartridge [Ⓞ] |
|----------|-----------------|-------------|-------|--------|------------|------------|---------------------------|---|
| 1 | 10-RC-08-EY | 13650719 | • | | • | • | • | |
| 2 | 10-RC-10-EY | 13650720 | | • | • | • | • | |
| 3 | 10-RC-10-P-MECH | 26157002 | | • | • | • | | • |

All outlet covers machined to accept (top) Option Cartridges. Two SAE port plugs furnished loose with each cover.

[Ⓞ] Used for Solenoid Valve Assemblies.

The pressure control cartridge must be located in the downstream valve if using the optional power beyond feature in the solenoid-operated upstream valve.



23627 Outlet Cover

V10 Outlet Cover Conversion Kits

| Item No. | Model Number | Part Number | Description |
|----------|---------------|-------------|---|
| 1 | K-10-C | 13650722 | Closed Center Plug |
| 2 | K-10-08-Y | 13650723 | SAE 8 Power Beyond Sleeve |
| 3 | K-10-10-Y | 13650724 | SAE 10 Power Beyond Sleeve |
| 4 | K-10-P (MECH) | 26157055 | Pilot Control Cartridge (for Solenoid Valves) |

The power beyond sleeves listed here are required for (top) power beyond part only.

To power beyond out the (end) of the valve, requires installation of the K-10-C plug in the (top) option port. Refer to the V10 Service Manual for procedures on selecting Closed Center and Power Beyond options. Pilot control cartridge not required in closed center systems.



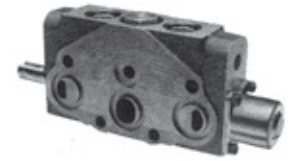
Closed Center Plug

V10

V10 Parallel Work Sections with Machined Upper Option Cavities (Housing No. 24990)

| Item No. | Model Number | Part Number | SAE 8 [8] | 3-Way 3-Pos [3] | 4-Way 3-Pos [4] | 4-Way 3-Pos Free Flow [F4] | 4-Way 4-Pos Float [K4] | Spring Return to Neutral [0] | 3-Pos Detent [D] | 1-Pos. Detent (Spool In) [R] |
|----------|--------------|-------------|-----------|-----------------|-----------------|----------------------------|------------------------|------------------------------|------------------|------------------------------|
| 1 | 10-08-03 | 13650776 | • | • | | | | • | | |
| 2 | 10-08-R3 | 13650971 | • | • | | | | | | • |
| 3 | 10-08-04 | 13650973 | • | | • | | | • | | |
| 4 | 10-08-F4 | 13650975 | • | | | • | | • | | |
| 5 | 10-08-DF4 | 13650977 | • | | | • | | | • | |
| 6 | 10-08-K4 | 13650979 | • | | | | • | | | |

The work sections listed above all have the upper work port relief option cavities machined and plugged. V10 work sections do not include handles or brackets. They are supplied (LCHA) Less Complete Handle Assembly.



24990 Work Section

V10 Parallel Work Sections Without Upper Option Cavities (Housing No. 24990)

| Item No. | Model Number | Part Number | SAE 8 [8] | 3-Way 3-Pos [3] | 4-Way 3-Pos [4] | 4-Way 3-Pos Free Flow [F4] | 4-Way 4-Pos Float [K4] | Spring Return to Neutral [0] | 3-Pos Detent [D] | 1-Pos. Detent (Spool In) [R] |
|----------|--------------|-------------|-----------|-----------------|-----------------|----------------------------|------------------------|------------------------------|------------------|------------------------------|
| 1 | 10-08-N-03 | 13650726 | • | • | | | | • | | |
| 2 | 10-08-N-R3 | 13650970 | • | • | | | | | | • |
| 3 | 10-08-N-04 | 13650972 | • | | • | | | • | | |
| 4 | 10-08-N-F4 | 13650974 | • | | | • | | • | | |
| 5 | 10-08-N-DF4 | 13650976 | • | | | • | | | • | |
| 6 | 10-08-N-K4 | 13650978 | • | | | | • | | | |

The 'N' in the work sections listed above designates that the upper work port relief option cavities are NOT machined. If the application requires the use of work port option cartridges, (i.e. reliefs or anti-cavitation checks), do not select work section from this group. V10 work sections do not include handles or brackets. They are supplied (LCHA) Less Complete Handle Assembly.

V10 Tandem Work Sections with Machined Upper Option Cavities (Housing No. 24990)

| Item No. | Model Number | Part Number | SAE 8 [8] | 3-Way 3-Pos [3] | 4-Way 3-Pos [4] | 4-Way 3-Pos Free Flow [F4] | 4-Way 4-Pos Float [K4] | Spring Return to Neutral [0] | 3-Pos Detent [D] | 1-Pos. Detent (Spool In) [R] |
|----------|--------------|-------------|-----------|-----------------|-----------------|----------------------------|------------------------|------------------------------|------------------|------------------------------|
| 1 | 10T-08-03 | 13650782 | • | • | | | | • | | |
| 2 | 10T-08-R3 | 13650981 | • | • | | | | | | • |
| 3 | 10T-08-04 | 13650983 | • | | • | | | • | | |
| 4 | 10T-08-F4 | 13650985 | • | | | • | | • | | |
| 5 | 10T-08-DF4 | 13650987 | • | | | • | | | • | |
| 6 | 10T-08-K4 | 13650989 | • | | | | • | | | |

The work sections listed above all have the upper work port relief option cavities machined and plugged. V10 work sections do not include handles or brackets. They are supplied (LCHA) Less Complete Handle Assembly.

V10 Tandem Work Sections Without Upper Option Cavities (Housing No. 24990)

| Item No. | Model Number | Part Number | SAE 8 [8] | 3-Way 3-Pos [3] | 4-Way 3-Pos [4] | 4-Way 3-Pos Free Flow [F4] | 4-Way 4-Pos Float [K4] | Spring Return to Neutral [0] | 3-Pos Detent [D] | 1-Pos. Detent (Spool In) [R] |
|----------|--------------|-------------|-----------|-----------------|-----------------|----------------------------|------------------------|------------------------------|------------------|------------------------------|
| 1 | 10T-08-N-03 | 13650738 | • | • | | | | • | | |
| 2 | 10T-08-N-R3 | 13650980 | • | • | | | | | | • |
| 3 | 10T-08-N-04 | 13650982 | • | | • | | | • | | |
| 4 | 10T-08-N-F4 | 13650984 | • | | | • | | • | | |
| 5 | 10T-08-N-DF4 | 13650986 | • | | | • | | | • | |
| 6 | 10T-08-N-K4 | 13650988 | • | | | | • | | | |

The 'N' in the work sections listed above designates that the upper work port relief option cavities are NOT machined. If the application requires the use of work port option cartridges, (i.e. reliefs or anti-cavitation checks), do not select work section from this group. V10 work sections do not include handles or brackets. They are supplied (LCHA) Less Complete Handle Assembly.



24990 Work Section

V10 'Parallel' Solenoid-Operated Work Sections with Machined Upper Option Cavities (Housing No. 23962)

| Item No. | Model Number | Part Number | SAE 8 [8] | 3-Way 3-Pos [3] | 4-Way 3-Pos [4] | 4-Way 3-Pos Free Flow [F4] | 12 VDC On/Off Solenoid [SOL-I-12] | 12 VDC Proportional Solenoid [EPC-I-12] |
|----------|-------------------|-------------|-----------|-----------------|-----------------|----------------------------|-----------------------------------|---|
| 1 | 10-08-03-SOL-I-12 | 26157003 | • | • | | | • | |
| 2 | 10-08-03-EPC-I-12 | 26157005 | • | • | | | | • |
| 3 | 10-08-04-SOL-I-12 | 26157007 | • | | • | | • | |
| 4 | 10-08-04-EPC-I-12 | 26157009 | • | | • | | | • |
| 5 | 10-08-F4-SOL-I-12 | 26157011 | • | | | • | • | |
| 6 | 10-08-F4-EPC-I-12 | 26157013 | • | | | • | | • |

The solenoid-operated work sections listed above all have the upper work port relief option cavities machined and plugged. These sections do **NOT** offer the handle override feature. Contact the Gresen factory in Minneapolis for solenoid sections with handle.

Solenoid Cartridges & Coil Kits

Refer to page 83 in the Electronics Section

V10 Spool Positioner Option Kits



Positioner Kit

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|--|
| 1 | K-10-A | 13650746 | Spring Extended Spool Positioner [Ⓞ] |
| 2 | K-V10-A | 26157056 | Spring Extended Spool Positioner (For Use With 24990 Housing) [Ⓞ] |
| 3 | K-10-D | 13650747 | 3-Position, 'D' Detent Spool Positioner |
| 4 | K-V10-D | 26157057 | 3-Position, 'D' Detent Spool Positioner (For Use With 24990 Housing) |
| 5 | K-10-M | 13650748 | Manual 'M' Spool Positioner |
| 6 | K-V10-M | 26157058 | Manual 'M' Spool Positioner (For Use With 24990 Housing) |
| 7 | K-10-S | 13650749 | Spring Center to Neutral Spool Positioner |
| 8 | K-V10-S | 26157059 | Spring Return to Neutral Spool Positioner (For Use With 24990 Housing) |
| 9 | K-10-RI | 13650750 | 1-Position, 'R' Detent Spool 'IN' with Spring return to Neutral |
| 10 | K-V10-RI | 26157060 | 1-Position, 'R' Detent Spool 'IN' with Spring return to Neutral (For Use With 24990 Housing) |
| 11 | K-10-RO | 13650751 | 1-Position, 'R' Detent Spool 'OUT' with Spring return to Neutral [Ⓞ] |
| 12 | K-V10-RO | 26157061 | 1-Position, 'R' Detent Spool 'OUT' with Spring return to Neutral (For Use with 24990 Housing) [Ⓞ] |

The Above K-V10-(Kits) are for use with the new style 24990 work section housings. The internal working parts are **NOT** interchangeable with the equivalent K-10-(Kits).

Ⓞ K-10-A and K-V10-A Spool Positioners holds the spool in the 'B' port power (Spool Out) position and will limit the shifting of the spool to the neutral position only.

Ⓞ K-10-RO and K-V10-RO Spool Positioner detent sleeve may be reversed for 'RIO' (Detent 'In' and 'Out') applications. Refer to the V10 Service and Parts manual for procedures.

V10 Mechanical Joysticks

Fits V10 '24990' Work Section Housings. Includes two Spool Clevis Adapters.

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-----------------------|--|
| 1 | MJA2-10L-NB | 13650968 [Ⓞ] | V10 Mechanical Joystick, 'LH' Assembly |
| 2 | MJA2-10R-NB | 13650969 [Ⓞ] | V10 Mechanical Joystick, 'RH' Assembly |
| 3 | K-MJA-O | 13650691 | Mechanical Joystick 'Offset' Handle Assembly |
| 4 | K-MJA-S | 13650690 | Mechanical Joystick 'Straight' Handle Assembly |

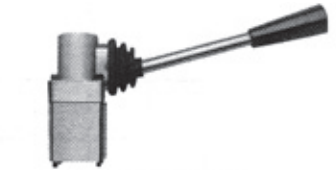
Ⓞ Includes boot assembly.

V10

V10 Handle Option Kits

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|---|
| 1 | K-10-VH | 13650752 | Vertical Handle Assembly |
| 2 | K-10-HH | 13650753 | Horizontal Handle Assembly |
| 3 | K-10-VH-EXT | 13650786 | Extended Vertical Handle Kit - For use in V10/V11 valves using port reliefs on handle end |
| 4 | K-10-HH-EXT | 13650948 | Extended Horizontal Handle Kit - For use in V10/V11 valves using port reliefs on handle end |

Refer to Model V10 Service Catalog No. GSD-1010 for information regarding handle installation.



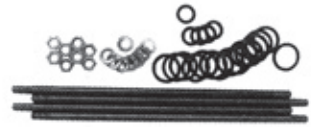
Extended Vertical Handle Assembly



Vertical Handle Assembly



Horizontal Handle Assembly



Assembly Stud Kit

V10 Section Stud Assembly Kits

| Item No. | Model Number | Part Number | Description |
|----------|------------------|-------------|---|
| 1 | K-10-1 | 13650755 | Stud Kit for One (1) Work Section |
| 2 | K-10-2 | 13650756 | Stud Kit for Two (2) Work Sections |
| 3 | K-10-3 | 13650757 | Stud Kit for Three (3) Work Sections |
| 4 | K-10-4 | 13650758 | Stud Kit for Four (4) Work Sections |
| 5 | K-10-5 | 13650759 | Stud Kit for Five (5) Work Sections |
| 6 | K-10-6 | 13650760 | Stud Kit for Six (6) Work Sections |
| 7 | K-10-7 | 13650761 | Stud Kit for Seven (7) Work Sections |
| 8 | K-10-8 | 13650762 | Stud Kit for Eight (8) Work Sections |
| 9 | K-10-9 | 13650763 | Stud Kit for Nine (9) Work Sections |
| 10 | K-10-10 | 13650764 | Stud Kit for Ten (10) Work Sections |
| 11 | K-10-11 | 13650765 | Stud Kit for Eleven (11) Work Sections |
| 12 | K-10-SECT-SEAL | 13650767 | Section Seal Kit |
| 13 | K-10-SOL-BRACKET | 26157088 | (Tall) Mounting Bracket - For use with V10 Solenoid Valve Assemblies |
| 14 | K-10-SOL-SEAL | 26157030 | Section Seal for Solenoid Pilot Passage (25 pieces of 21866001 Seal). |

Each Stud Kit includes (4) Studs, (8) Nuts, (2) Mounting Brackets and the required number of Section Seals.

V10 Work Port Relief/Anti-Cav Options

| Item No. | Model Number | Part Number | (A) Screw Adjustable | (N) Non-Adj. Tamper Resistant | Anti-Cav Check | Relief Valve | Relief Valve A/C Check | 500-5000 Set @ 3000 PSI c/p |
|----------|---------------|-------------|----------------------|-------------------------------|----------------|--------------|------------------------|-----------------------------|
| 1 | K-10-AC | 13650770 | | | • | | | |
| 2 | RP10A-3000 | 13650768 | • | | | • | | • |
| 3 | RP10N-3000 | 13650769 | | • | | • | | • |
| 4 | RP10A-AC 3000 | 13650771 | • | | | | • | • |
| 5 | RP10N-AC 3000 | 13650772 | | • | | | • | • |

Model RP10A (-AC) relief cartridges are externally adjustable. Model RP10N (-AC) relief cartridges are preset at specified setting and offer 'tamper resistant' cover.



RP10A Relief Cartridge

V10 Work Port No Relief 'NR' Plug Kit

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|---|
| 1 | K-10-NR-WP | 13650773 | Work Port Relief Cavity 'NR' Plug (Not for use in V10 Inlet Covers) |



No Relief Cavity Plug



Model V11 Control Valve Porting

SAE 10

SAE 8

Inlet Ports

Work Ports

Outlet Ports

V11

V11 1-Spool Valves with Machined Upper Option Cavities (Housing No. 23438)

| Item No. | Model Number | Part Number | Model RCM Main Relief Set @ 2500 PSI C/P | 4-Way, 3-Position (4) | 4-Way, 3-Position Free Flow (F4) | 4-Way, 4-Position Float [K4] | Spring Return to Neutral [0] | 3-Pos Detent (D) |
|----------|----------------|-------------|--|-----------------------|----------------------------------|------------------------------|------------------------------|------------------|
| 1 | V11XT-4-2500 | 13650792 | • | • | | | • | |
| 2 | V11XT-F4-2500 | 13650794 | • | | • | | • | |
| 3 | V11XT-D4-2500 | 13650796 | • | • | | | | • |
| 4 | V11XT-DF4-2500 | 13650798 | • | | • | | | • |
| 5 | V11XT-K4-2500 | 13650800 | • | | | • | | |

V11 valve assemblies do not include handles or brackets. They are supplied (LCHA) Less Complete Handle Assembly.

The valve assemblies listed above all have the upper work port relief option cavities machined and plugged. Also machined are the top outlet and end conversion port. The end conversion port may be used as and optional end outlet.

V11 1-Spool Valves Without Upper Option Cavities (Housing No. 23438)

| Item No. | Model Number | Part Number | Model RCM Main Relief Set @ 2500 PSI C/P | 4-Way, 3-Position (4) | 4-Way, 3-Position Free Flow (F4) | 4-Way, 4-Position Float [K4] | Spring Return to Neutral [0] | 3-Pos Detent (D) |
|----------|------------------|-------------|--|-----------------------|----------------------------------|------------------------------|------------------------------|------------------|
| 1 | V11XT-N-4-2500 | 13650791 | • | • | | | • | |
| 2 | V11XT-N-F4-2500 | 13650793 | • | | • | | • | |
| 3 | V11XT-N-D4-2500 | 13650795 | • | • | | | | • |
| 4 | V11XT-N-DF4-2500 | 13650797 | • | | • | | | • |
| 5 | V11XT-N-K4-2500 | 13650799 | • | | | • | | |

V11 valve assemblies do not include handles or brackets. They are supplied (LCHA) Less Complete Handle Assembly.

The 'N' in the valve assemblies listed above designates that the upper work port relief option cavities are NOT machined. If the application requires the use of work port option cartridges, (i.e. reliefs or anti-cavitation checks), do not select valve assemblies from this group. Machined are the top outlet and end conversion port. The end conversion port may be used as an optional end outlet.

V11 2-Spool Valves with Machined Upper Option Cavities (Housing No. 23537)

| Item No. | Model Number | Part Number | Model RCM Main Relief Set @ 2500 PSI C/P | 4-Way, 3-Position (4) | 4-Way, 3-Position Free Flow (F4) | 4-Way, 4-Position Float [K4] | Spring Return to Neutral [0] | 3-Pos Detent (D) |
|----------|--------------------|-------------|--|-----------------------|----------------------------------|------------------------------|------------------------------|------------------|
| 1 | V11XT-4-4-2500 | 13650808 | • | Both Spools | | | • | |
| 2 | V11XT-K4-4-2500 | 13650810 | • | Spool #2 | | Spool #1 | • | |
| 3 | V11XT-DF4-DF4-2500 | 13650812 | • | | Both Spools | | | • |

V11 valve assemblies do not include handles or brackets. They are supplied (LCHA) Less Complete Handle Assembly.

The valve assemblies listed above all have the upper work port relief option cavities machined and plugged. Also machined are the top outlet and end conversion port. The end conversion port may be used as and optional end outlet.

V11 2-Spool Valves Without Upper Option Cavities (Housing No. 23537)

| Item No. | Model Number | Part Number | Model RCM Main Relief Set @ 2500 PSI C/P | 4-Way, 3-Position (4) | 4-Way, 3-Position Free Flow (F4) | 4-Way, 4-Position Float [K4] | Spring Return to Neutral [0] | 3-Pos Detent (D) |
|----------|-------------------|-------------|--|-----------------------|----------------------------------|------------------------------|------------------------------|------------------|
| 1 | V11XT-N-4-4-2500 | 13650807 | • | Both Spools | | | • | |
| 2 | V11XT-N-K4-4-2500 | 13650809 | • | Spool #2 | | Spool #1 | • | |
| 3 | V11XT-N-DF4-2500 | 13650811 | • | | Both Spools | | | • |

V11 valve assemblies do not include handles or brackets. They are supplied (LCHA) Less Complete Handle Assembly.

The 'N' in the valve assemblies listed above designates that the upper work port relief option cavities are NOT machined. If the application requires the use of work port option cartridges, (i.e. reliefs or anti-cavitation checks), do not select valve assemblies from this group. Machined are the top outlet and end conversion port. The end conversion port may be used as an optional end outlet.

V11

V11 3-Spool Valves with Machined Upper Option Cavities (Housing No. 23146)

| Item No. | Model Number | Part Number | Model RCM Main Relief Set @ 2500 PSI C/P | 4-Way, 3-Position [4] | 4-Way 3-Position Free Flow [F4] | 4-Way 4-Position Float [K4] | Spring Return to Neutral [0] | 3-Pos Detent [D] |
|----------|------------------------|-------------|--|-----------------------|---------------------------------|-----------------------------|------------------------------|------------------|
| 1 | V11XT-4-4-4-2500 | 13650816 | • | All 3 Spools | | | • | |
| 2 | V11XT-DF4-DF4-DF4-2500 | 13650818 | • | | All 3 Spools | | | • |
| 3 | V11XT-K4-4-4-2500 | 13650820 | • | Spools 2 & 3 | | Spool #1 | • | |

V11 valve assemblies do not include handles or brackets. They are supplied (LCHA) Less Complete Handle Assembly.

The valve assemblies listed above all have the upper work port relief option cavities machined and plugged. Also machined are the top outlet and end conversion port. The end conversion port may be used as and optional end outlet.

V11 3-Spool Valves Without Upper Option Cavities (Housing No. 23146)

| Item No. | Model Number | Part Number | Model RCM Main Relief Set @ 2500 PSI C/P | 4-Way, 3-Position [4] | 4-Way 3-Position Free Flow [F4] | 4-Way 4-Position Float [K4] | Spring Return to Neutral [0] | 3-Pos Detent [D] |
|----------|--------------------------|-------------|--|-----------------------|---------------------------------|-----------------------------|------------------------------|------------------|
| 1 | V11XT-N-4-4-4-2500 | 13650815 | • | All 3 Spools | | | • | |
| 2 | V11XT-N-DF4-DF4-DF4-2500 | 13650817 | • | | All 3 Spools | | | • |
| 3 | V11XT-N-K4-4-4-2500 | 13650819 | • | Spools 2 & 3 | | Spool #1 | • | |

V11 valve assemblies do not include handles or brackets. They are supplied (LCHA) Less Complete Handle Assembly.

The 'N' in the valve assemblies listed above designates that the upper work port relief option cavities are NOT machined. If the application requires the use of work port option cartridges, (i.e. reliefs or anti-cavitation checks), do not select valve assemblies from this group. Machined are the top outlet and end conversion port. The end conversion port may be used as an optional end outlet.

V11 Main Relief Cartridges

| Item No. | Model Number | Part Number | 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 | 2500-3000 Set @ 3000 PSI c/p | 3001-3500 Set @ 3500 PSI c/p |
| 1 | RCM-1200 | 13650712 | • | | | | | |
| 2 | RCM-1700 | 13650713 | | • | | | | |
| 3 | RCM-1950 | 13650714 | | | • | | | |
| 4 | RCM-2550 | 13650715 | | | | • | | |
| 5 | RCM-3000 | 13650716 | | | | | • | |
| 6 | RCM-3500 | 13650774 | | | | | | • |
| 7 | K-10-NR | 13650718 | No Relief Cavity Plug | | | | | |

The above RCM relief cartridges are shim adjustable. Installing K-WH-A (listed below) will modify these relief cartridges to offer an external adjustment.



No Relief Cavity Plug

Relief External Adjustment Kit

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|---|
| 1 | K-WH-A | 8650381 | Screw Adjustment Option for RCM Relief Cartridges |



External Adjustment Kit

V11 Right End Conversion Port Option Kits

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|----------------------------|
| 1 | K-10-C | 13650722 | Closed Center Plug |
| 2 | K-10-08-Y | 13650723 | SAE 8 Power Beyond Sleeve |
| 3 | K-10-10-Y | 13650724 | SAE 10 Power Beyond Sleeve |



Closed Center Plug

Refer to the Model V11 Service Manual for procedures on selecting Closed Center and Power Beyond options.



Positioner Kit

V11 Spool Positioner Option Kits

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|---|
| 1 | K-10-A | 13650746 | Spring Extended Spool (Spool Biased to "B" Port Power)Ⓢ |
| 2 | K-10-D | 13650747 | 3-Position Detent |
| 3 | K-10-M | 13650748 | Manual Positioner (No Spring Centering) |
| 4 | K-10-S | 13650749 | Spring Center to Neutral |
| 5 | K-10-RI | 13650750 | Spool "In" Detent With Spring Return to Neutral |
| 6 | K-10-RO | 13650751 | ◆ Spool "Out" (also 'RIO' Spool 'In' and 'Out') Detent With Spring Return to NeutralⓈ |

Ⓢ The K-10-RO positioner detent sleeve may be reversed for 'RIO' ('In' and 'Out') detented positions.

◆ This positioner holds the spool in the 'B' Port Power (Spool 'Out') position and will limit the shifting of the spool to the neutral position only.

V11 Work Port Relief/Anti-Cav Options



RP10A Relief Cartridge

| Item No. | Model Number | Part Number | (A) Screw Adjustable | (N) Non-Adj. Tamper Resistant | Relief Valve | Relief/Anti-Cav | Anti-Cav Check | 500-5000 Set @ 3000 PSI c/p |
|----------|---------------|-------------|----------------------|-------------------------------|--------------|-----------------|----------------|-----------------------------|
| 1 | RP10A-3000 | 13650768 | • | | • | | | • |
| 2 | RP10N-3000 | 13650769 | | • | • | | | • |
| 3 | K-10-AC | 13650770 | | | | | • | |
| 4 | RP10A-AC-3000 | 13650771 | • | | | • | | • |
| 5 | RP10N-AC-3000 | 13650772 | | • | | • | | • |

Models RP10A (-AC) relief cartridges are externally adjustable.

Models RP10N (-AC) relief cartridges are preset at the specified setting and offer a tamper resistant cover.



No Relief Cavity Plug

V11 Work Port No Relief 'NR' Plug Kit

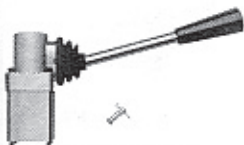
| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|--|
| 1 | K-10-NR-WP | 13650773 | No Relief (NR) Cavity Plug (For use in the workport relief cavity only). |



Vertical Handle Assembly



Horizontal Handle Assembly



Extended Vertical Handle Assembly

V11 Handle Option Kits

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|--|
| 1 | K-10-VH | 13650752 | Vertical Handle Assembly |
| 2 | K-10-HH | 13650753 | Horizontal Handle Assembly |
| 3 | K-10-VH-EXT | 13650786 | Extended Vertical Handle Kit — For use in V10/V11 valves using port reliefs on handle end. |
| 4 | K-10-HH-EXT | 13650948 | Extended Horizontal Handle Kit — For use in V10/V11 valves using port reliefs on handle end. |

Refer to Model V11 Service Catalog No. GSD-1111 for information regarding handle installation.

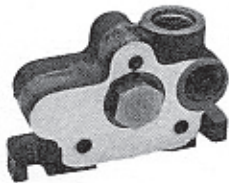
V12



V12P Left Cover



Model CRV-15B
Pilot Operated Relief
Valve Cartridge



V12E Right Cover

V12 INLET COVERS

| Item No. | Model Number | Part Number | SAE 10 Port Size [2] | SAE 8 Port Size [1] | Top & End Inlet [U] | Plastic Relief Cavity Plug [N] | Relief Position "B" [B] |
|----------|--------------|-------------|----------------------|---------------------|---------------------|--------------------------------|-------------------------|
| 1 | V12P-2UNB | 8650584 | • | | • | • | • |
| 2 | V12P-1UNB | 8650974 | | • | • | • | • |

All Left Covers are machined to accept Main Relief Cartridge.

V12 Main Relief Options

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|---|
| 1 | RCP-15A | 8650585 | No Relief Plug Kit (NR Option) |
| 2 | CRV-15B-2500 | 8650586 | Pilot Operated Relief Valve Cartridge set at 2500 PSI. Crack at 1 GPM |
| 3 | CRV-15F-2500 | 8650608 | Direct Acting Relief Valve Cartridge set at 2500 PSI. Crack at 1 GPM |

Above Relief Valves are screw adjustable from 500 to 3000 PSI.

V12 OUTLET COVERS

| Item No. | Model Number | Part Number | SAE 10 Port Size [2] | SAE 8 Port Size [1] | Top & End Outlet [U] | Machined from Opened Center [O] |
|----------|--------------|-------------|----------------------|---------------------|----------------------|---------------------------------|
| 1 | V12E-2UO | 8650587 | • | | • | • |
| 2 | V12E-1UO | 8650972 | | • | • | • |

Open Center part may be converted to Closed Center or Power Beyond using Option Kits below.

One SAE Port Plug is furnished with each outlet cover.

V12 Outlet Cover Option Kits

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|----------------------------|
| 1 | CBP-15C | 8650588 | Closed Center Plug |
| 2 | PBS-15N | 8650589 | SAE 8 Power Beyond Sleeve |
| 3 | PBS-15P | 8650590 | SAE 10 Power Beyond Sleeve |

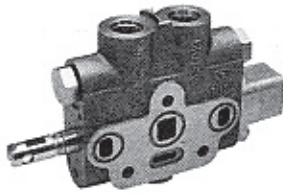
V12 'PARALLEL' WORK SECTIONS

| Item No. | Model Number | Part Number | Spring Centered [C] | 4-Way 3-Position [A] | 3-Way 3-Position [E] | 4-Way 4-Position Float [F]⊕ | 4-Way 3-Position Free Flow Spool [J] | Standard Low Section [S] | Relief Option Section [R ♦] | Lockout Section [L ♦ ♦] |
|----------|------------------|-------------|---------------------|----------------------|----------------------|-----------------------------|--------------------------------------|--------------------------|-------------------------------|---------------------------|
| 1 | V12W-1FBC-ES | 8650591 | • | | • | | | • | | |
| 2 | V12W-1FBC-ERNN | 8650971 | • | | • | | | | • | |
| 3 | V12W-1FBC-AS | 8650593 | • | • | | | | • | | |
| 4 | V12W-1FBC-ARNN | 8650970 | • | • | | | | | • | |
| 5 | V12W-1FBC-JS | 8650806 | • | | | | • | • | | |
| 6 | V12W-1FBC-FS ⊕ | 8650973 | • | | | • | | • | | |
| 7 | V12W-1FBC-FRNN ⊕ | 8650969 | • | | | • | | | • | |
| 8 | V12W-1FBC-JLEE | 8650807 | • | | | | • | | | • |

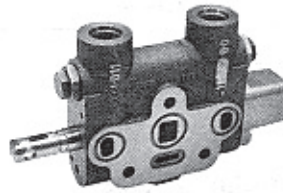
All work ports are SAE B.

All spools include female spool end located on "B" port end - Handle bracket and handle assembly not included.

- ♦ All relief option sections [R] include machined and plugged (plastic plugs) work port options [NN].
 - ♦ ♦ All lockout sections [L] include cylinder lock valves [EE].
- ⊕ Float Section(s) must be stacked next to the Inlet Cover to allow proper operation.



Relief Option Section [R]



Lockout Section [L]



Standard Low Section [S]

V12 Vertical Handle Kit

Handle Kit includes necessary hardware.

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|------------------------------------|
| 1 | LVR-15-HDA | 8650598 | Vertical Handle (includes bracket) |



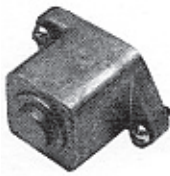
Vertical Handle

V12 Section Stud Assembly Kits

Includes Section Seals and Nuts.

| Item No. | Model Number | Part Number | Number of Work Sections |
|----------|--------------|-------------|-------------------------|
| 1 | TRK-15-3 ♦ | 8650599 | One Section |
| 2 | TRK-15-4 ♦ | 8650600 | Two Section |
| 3 | TRK-15-5 ♦ | 8650601 | Three Section |
| 4 | TRK-15-6 ♦ | 8650602 | Four Section |
| 5 | TRK-15-7 ♦ | 8650603 | Five Section |
| 6 | TRK-15-8 ♦ | 8650604 | Six Section |
| 7 | TRK-15-9 ♦ | 8650605 | Seven Section |
| 8 | TRK-15-10 ♦ | 8650606 | Eight Section |

♦ Total number of sections including inlet, work section(s) and outlet.



Spool Action Assembly (Bonnet)

V12 Spool Positioner Option Kit

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|-------------------|
| 1 | K-12-D | 8650607 | 3-Position Detent |

Cannot be used on Float Spool.

V12 Work Port Relief/Anti-Cav Options

| Item No. | Model Number | Part Number | Pressure Range PSI 500 to 3000 Set at 2500 | Description |
|----------|--------------|-------------|--|---|
| 1 | CRV-15F-2500 | 8650608 | • | Direct Acting Relief |
| 2 | CRV-15B-2500 | 8650586 | • | Pilot Operated Relief |
| 3 | CRV-15C-2500 | 8650609 | • | Combination Relief & Anti-Cav |
| 4 | CRA-15H | 8650610 | | Anti-Cavitation Check |
| 5 | RCP-15A | 8650585 | | No Relief Plug Kit (NR Option for "R" Body) |
| 6 | LCP-15P | 8650612 | | Lock Cavity Plug (for "L" Body) |

All above Relief Valves are screw adjustable.
Crack Pressure set at 1 GPM.



Model CRV-15B
Pilot Operated Relief
Valve Cartridge



8398 Left Cover



7736 Left Cover

V20 INLET COVERS (Housing No.'s 8398 & 7736)

| Item No. | Model Number | Part Number | End Inlet | End Outlet | Top Inlet | Top Outlet | 3/4" NPT Ports [75] | SAE 12 Ports [BSP] | (7736 Only) |
|----------|--------------|-------------|-----------|------------|-----------|------------|---------------------|--------------------|---------------------------------|
| | | | | | | | | | With 5-25 GPM Flow Control [FC] |
| 1 | 20-LC-75 | 8650030 | • | • | • | • | • | | |
| 2 | 20-LC-12 | 8650029 | • | • | • | • | | • | |
| 3 | 20-LC-12-FC | 8650028 | • | • | • | | | • | • |

All the above inlet covers are machined to accept the main relief cartridges listed below.
Two part plugs are furnished loose with each cover, one is machined for 1/4" NPTF gauge port.
Excess flow plug is furnished with all 7736 housings.

V20 Main Relief Options

All set at "crack" pressure of 1 GPM.



Model WH Relief Valve Cartridge



Model RP51 Relief Valve Cartridge

| Item No. | Model Number | Part Number | 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 @ 3000 PSI c/p |
| 1 | WH-1200 | 8650417 | • | | | | |
| 2 | WH-1700 | 8650418 | | • | | | |
| 3 | WH-1950 | 8650419 | | | • | | |
| 4 | WH-2550 | 8650420 | | | | • | |
| 5 | RP51A-3000 ♦ | 8650421 | | | | | • |
| 6 | K-20-NR | 8650382 | | | | | Relief Plug Kit (NR Option) |

All above Relief Valves have stainless steel springs.
WH Relief Valves are internal shim adjustable.
♦ RP51A Relief Valves are external screw adjustable.

Relief External Adjustment Kit

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|--|
| 1 | K-WH-A | 8650381 | External Screw Adjustable Option for WH Relief |

V20 OUTLET COVERS For Open Center (Housing No.'s 6770 & 8644)

| Item No. | Model Number | Part Number | SAE 10 Ports [10] | SAE 12 Ports [12] | 3/4" NPT Ports [75] | Hsg. 6770 End Outlet [E] | Hsg. 8644 Top Outlet [T] | Solenoid Pilot C'bores Machined [P] | Machined for End Power Beyond (6770 Only) [MY] | ① Machined for Top Power Beyond (8644 Only) [MY] | ② Includes 12 VDC Pressure Control Cartridge [SOL-12] | ③ Includes 24 VDC Pressure Control Cartridge [SOL-24] |
|----------|---------------------|-------------|-------------------|-------------------|---------------------|--------------------------|--------------------------|-------------------------------------|--|--|---|---|
| 1 | 20-RC-10-E | 13650145 | • | | | • | | | | | | |
| 2 | 20-RC-12-E | 13650146 | | • | | • | | | | | | |
| 3 | 20-RC-75-E | 13650147 | | | • | • | | | | | | |
| 4 | 20-RC-12-E-MY | 8650024 | | • | | • | | | • | | | |
| 5 | 20-RC-12-E-MY-P ① | 26157054 | | • | | • | | • | • | | | |
| 6 | 20-RC-75-E-MY | 8650027 | | | • | • | | | • | | | |
| 7 | 20-RC-12-ET-12-MY ① | 8650022 | | • | | | • | | | • | | |
| 8 | 20-RC-75-ET-75-MY ① | 8650023 | | | • | | • | | | • | | |
| 9 | 20-RC-12-E-SOL-12 ② | 8650026 | | • | | • | | | | | • | |
| 10 | 20-RC-12-E-SOL-24 ③ | 13650307 | | • | | • | | | | | | • |

① 8644 covers are supplied with the internal power beyond conversion plug installed. Plugging the top power beyond port will convert the valve to closed center with the internal plug installed.

② (SOL.) covers are used in the downstream (V20) valve if a power beyond sleeve is used in the utility section of a solenoid upstream valve.

③ The Solenoid Pilot C'bores machined, designation letter [P], indicates that the pilot seal counterbores have been machined into the upstream side of the right end cover. This outlet cover must be used in V20 valve assemblies when having a solenoid work section next to the outlet cover (i.e. using an upstream Unloading Utility Section).



8644 Right Cover



Right Cover with Pressure Control Cartridge



6770 Right Cover

V20 OUTLET COVERS for Load Sensing (Housing No. 6770)

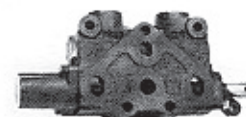
| Item No. | Model Number | Part Number | SAE 12 Ports [12] | End Outlet [E] | Includes Load Sense Bleed-Off Cartridge [LS] | SAE 4 Load Sense Port & Pilot Seal Cbores [P-NB] |
|----------|----------------------|-------------|-------------------|----------------|--|--|
| 1 | 20-RC-12-E-LS | 8650025 | • | • | • | |
| 2 | 20-RC-12-E-LS-P-NB ① | 13650169 | • | • | | • |

① Covers having the Load Sense Bleed-Off Cartridge [LS] may be converted to No-Bleed-Off. No Bleed-Off covers, however, may NOT be converted to Bleed-Off.

V20 Open Center Option Kits for 6770 'MY' Outlet Covers

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|------------------------------|
| 1 | K-20-C | 8650099 | Closed Center Plug |
| 2 | K-20-X | 8650100 | Conversion Plug |
| 3 | K-20-50-Y | 8650101 | 1/2" NPT Power Beyond Sleeve |
| 4 | K-20-08-Y | 8650102 | SAE 8 Power Beyond Sleeve |
| 5 | K-20-10-Y | 8650103 | SAE 10 Power Beyond Sleeve |

These option kits may not be used with 6770 LS (Load Sense) or 8644 covers.

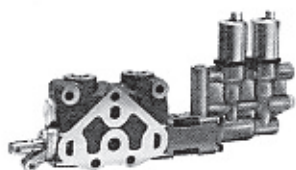


Model V20P
(8072 Section)

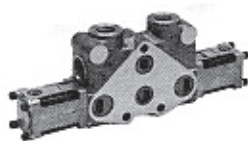
V20P 'PARALLEL' WORK SECTIONS (Housing No. 8072) Manually Operated

| Item No. | Model Number | Part Number | 3-Way 3-Pos [3] | 4-Way 3-Pos [4] | 4-Way 3-Pos Free Flow [F4] | 4-Way 4-Pos Float [K4] | 1/2" NPT Ports [50] | SAE 8 Ports [08] | SAE 10 Ports [10] | Spring Return to Neutral | Knock Out [K04] | Rotary Spool Act. [W] | 3-Pos Detent [D] | Stainless Steel Spool [SS] |
|----------|----------------|-------------|-----------------|-----------------|----------------------------|------------------------|---------------------|------------------|-------------------|--------------------------|-----------------|-----------------------|------------------|----------------------------|
| 1 | 20-50-03 | 8650017 | • | | | | • | | | • | | | | |
| 2 | 20-08-03 | 13650149 | • | | | | | • | | • | | | | |
| 3 | 20-10-03 | 8650016 | • | | | | | | • | • | | | | |
| 4 | 20-50-04 | 8650021 | | • | | | • | | | • | | | | |
| 5 | 20-08-04 | 13650148 | | • | | | | • | | • | | | | |
| 6 | 20-10-04 | 8650020 | | • | | | | | • | • | | | | |
| 7 | 20-50-F4 | 8650019 | | | • | | • | | | • | | | | |
| 8 | 20-08-F4 | 13650151 | | | • | | | • | | • | | | | |
| 9 | 20-10-F4 | 8650018 | | | • | | | | • | • | | | | |
| 10 | 20-08-DF4 | 13650838 | | | • | | | • | | | | | • | |
| 11 | 20-10-DF4 | 8650009 | | | • | | | | • | | | | • | |
| 12 | 20-50-K4 | 8650015 | | | | • | • | | | | | | | |
| 13 | 20-08-K4 | 13650150 | | | | • | | • | | | | | | |
| 14 | 20-10-K4 | 8650014 | | | | • | | | • | | | | | |
| 15 | 20-10-K04-2000 | 8650011 | | | | | | | • | | • | | | |
| 16 | 20-10-W4 ⊕ | 8650010 | | • | | | | | • | | | • | | |
| 17 | 20-10-W4-SS ⊕ | 8650638 | | • | | | | | • | | | • | | • |
| 18 | 20-10-WF4-SS ⊕ | 8650639 | | | • | | | | • | | | • | | • |

⊕ Bracket assembly not furnished with [W] Rotary Spool Options, Items 16, 17 & 18.



Solenoid Control
(SOL-E)



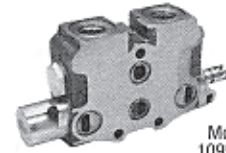
Hydraulic Remote Control
(HRO)

V20P 'PARALLEL' WORK SECTIONS (Housing No.8072) External Solenoid and Remote Pilot-Operated

| Item No. | Model Number | Part Number | 3-Way 3-Pos [3] | 4-Way 3-Pos [4] | 4-Way 3-Pos Free Flow [F4] | SAE 10 Ports [10] | Pneumatic Remote [PA1] | Hydraulic Remote with Override [HRO] | Hydraulic Remote with Handle [HRH] | 12 VDC External Pilot Solenoid [SOL-E] |
|----------|-------------------|-------------|-----------------|-----------------|----------------------------|-------------------|------------------------|--------------------------------------|------------------------------------|--|
| 1 | 20-10-03-PA1 | 13650963 | • | | | • | • | | | |
| 2 | 20-10-04-PA1 | 13650964 | | • | | • | • | | | |
| 3 | 20-10-04-HRO ⊕ | 8650578 | | • | | • | | • | | |
| 4 | 20-10-F4-HRO | 13650965 | | | • | • | | • | | |
| 5 | 20-10-04-HRH | 8650579 | | • | | • | | | • | |
| 6 | 20-10-03-SOL-E-12 | 13650280 | • | | | • | | | | • |
| 7 | 20-10-04-SOL-E-12 | 8650013 | | • | | • | | | | • |
| 8 | 20-10-F4-SOL-E-12 | 13650529 | | | • | • | | | | • |

⊕ Bracket assembly not furnished with [HRO] or [HRH] Hydraulic Remote Spool Option, Items 3, 4 & 5.

V20



Model V20R
10954 Section)

V20R 'PARALLEL' WORK SECTIONS (Housing No. 10954) Manually-Operated

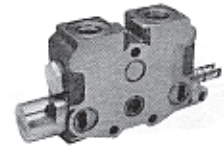
| Item No. | Model Number | Part Number | 3-Way 3-Pos [3] | 4-Way 3-Pos [4] | 4-Way Free Flow [F4] | 4-Way 4-Pos Float [K4] | SAE 10 Ports [10] | SAE 12 Ports [12] | Spring Return to Neutral | Knock Out (Set @ 2000 PSI) [K04] | 3-Pos Detent [D] | Hydraulic Remote with Override [HRO] | 'R' Detent [R] | Internal Pilot Thru-Passage [PILOT] | Pilot Seal Counter Bore [CBORE] |
|----------|------------------------------|-------------|-----------------|-----------------|----------------------|------------------------|-------------------|-------------------|--------------------------|----------------------------------|------------------|--------------------------------------|----------------|-------------------------------------|---------------------------------|
| 1 | 20R-10-03 | 13650856 | • | | | | • | | • | | | | | | |
| 2 | 20R-12-03 | 13650857 | • | | | | | • | • | | | | | | |
| 3 | 20R-10-R3 | 13650855 | • | | | | • | | | | | | • | | |
| 4 | 20R-12-R3 | 13650858 | • | | | | | • | | | | | • | | |
| 5 | 20R-10-04 | 8650613 | | • | | | • | | • | | | | | | |
| 6 | 20R-12-04 | 13650859 | | • | | | | • | • | | | | | | |
| 7 | 20R-10-F4 | 13650276 | | | • | | • | | • | | | | | | |
| 8 | 20R-12-F4 | 13650860 | | | • | | | • | • | | | | | | |
| 9 | 20R-10-DF4 | 13650861 | | | • | | • | | | | • | | | | |
| 10 | 20R-10-K4 | 13650862 | | | | • | • | | | | | | | | |
| 11 | 20R-10-04-PILOT [Ⓞ] | 13650863 | | • | | | • | | • | | | | | • | |
| 12 | 20R-10-04-CBORE [Ⓞ] | 13650962 | | • | | | • | | • | | | | | | • |

Ⓞ The 'PILOT' code designates that the internal through-passages have been machined for use when intermixing solenoid and manual work sections.
 Ⓞ The 'CBORE' designates that the pilot seal counterbores have been machined into the upstream side of the work section. This section must be used as the first manual section in V20 valve assemblies using an upstream Unloading Utility Section when having solenoid and manual sections downstream

V20T 'TANDEM' WORK SECTIONS (Housing No. 10762) Manually-Operated

| Item No. | Model Number | Part Number | 3-Way 3-Pos [3] | 4-Way 3-Pos [4] | 4-Way 3-Pos Free Flow [F4] | 4-Way 4-Pos Float [K4] | SAE 10 Ports [10] | SAE 12 Ports [12] | Spring Return to Neutral | Knock Out [K04] | 'R' Type Detent [R] |
|----------|------------------------------|-------------|-----------------|-----------------|----------------------------|------------------------|-------------------|-------------------|--------------------------|-----------------|---------------------|
| 1 | 20T-10-03 | 13650851 | • | | | | • | | • | | |
| 2 | 20T-12-03 | 13650966 | • | | | | | • | • | | |
| 3 | 20T-10-R3 | 13650852 | • | | | | • | | | | • |
| 4 | 20T-12-R3 | 13650853 | • | | | | | • | | | • |
| 5 | 20T-10-04 | 8650008 | | • | | | • | | • | | |
| 6 | 20T-10-K4 | 13650854 | | | | • | • | | | | |
| 7 | 20T-10-K04-2000 | 13650967 | | • | | | • | | | • | |
| 8 | 20T-10-04-PILOT [Ⓞ] | 13650943 | | • | | | • | | • | | |
| 9 | 20T-10-F4 | 26157027 | | | • | | • | | • | | |

Ⓞ The 'PILOT' code designates that the internal through-passages have been machined for use when intermixing solenoid and manual work sections.

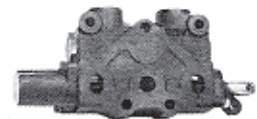


Model V20RT
(10762 Section)

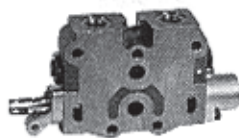
V20S 'SERIES' WORK SECTIONS (Housing No. 11483) Manually-Operated

| Item No. | Model Number | Part Number | SAE 10 Ports [10] | 4-Way 3-Pos. [4] | 4-Way 3-Pos. Free Flow [F4] | Spring Return to Neutral | 4-Way 4-Pos. Float [K4] |
|----------|--------------|-------------|-------------------|------------------|-----------------------------|--------------------------|-------------------------|
| 1 | 20S-10-04 | 8650637 | • | • | | • | |
| 2 | 20S-10-F4 | 13650850 | • | | • | • | |
| 3 | 20S-10-K4 | 8650640 | • | | | | • |

V20S (Series) sections may be stacked with V20P (Parallel) and V20 T (Tandem) sections. Refer to V20S product literature for stacking sequence restrictions.



Model V20S
(11483 Section)



Model V20LO
(11571 Section)

V20LO 'LOCKOUT' WORK SECTIONS (Housing No. 11571) Manually-Operated

| Item No. | Model Number | Part Number | Pilot-Operated Checks [L] | 4-Way 3-Pos [04] | 1/2" BSP Ports [BSP] | SAE 10 Ports [10] | Spring Return to Neutral |
|----------|--------------|-------------|---------------------------|------------------|----------------------|-------------------|--------------------------|
| 1 | 20-10-LO4 | 8650007 | • | • | | • | • |



Model V20C
(8364 Section)

V20C 'CLOSED CENTER' WORK SECTIONS (Housing No. 8364) Manually-Operated

| Item No. | Model Number | Part Number | 3-Way 3-Pos. [3] | 4-Way 3-Pos. [4] | 4-Way 3-Pos. Free Flow [F4] | 4-Way 4-Pos. Float [K] | Spring Return to Neutral | 3-Pos. Detent [D] | R-Type Detented [R] | SAE 10 Ports [10] | Internal Pilot-Thru Passage [PILOT] |
|----------|-----------------|-------------|------------------|------------------|-----------------------------|------------------------|--------------------------|-------------------|---------------------|-------------------|-------------------------------------|
| 1 | 20C-10-R3 | 13650839 | • | | | | | | • | • | |
| 2 | 20C-10-04 | 8650006 | | • | | | • | | | • | |
| 3 | 20C-10-F4 | 13650840 | | | • | | • | | | • | |
| 4 | 20C-10-DF4 | 13650841 | | | • | | | • | | • | |
| 5 | 20C-10-K4 | 13650842 | | | | • | | | | • | |
| 6 | 20C-10-04-PILOT | 13650843 | | • | | | | • | | • | • |

The "Pilot" code designates that the internal pilot through-passages have been machined for use when intermixing solenoid and manual sections.



Model V20LS
(8364 Section)

V20LS 'LOAD SENSING' WORK SECTIONS (Housing No. 8364) Manually-Operated

| Item No. | Model Number | Part Number | 3-Way 3-Pos [3] | 4-Way 3-Pos [4] | 4-Way 3-Pos Free Flow [F4] | 3-Pos Detent [D] | 4-Way 4-Pos Float [K] | Spring Return to Neutral | 'R' Type Detent [R] | SAE 10 Ports [10] | SAE 12 Ports [12] | O-Ring C'bore Machined [CBDR] | Internal Pilot Thru Passage [PILOT] |
|----------|------------------|-------------|-----------------|-----------------|----------------------------|------------------|-----------------------|--------------------------|---------------------|-------------------|-------------------|-------------------------------|-------------------------------------|
| 1 | 20LS-10-03 | 13650844 | • | | | | | • | | • | | | |
| 2 | 20LS-12-03 | 13650575 | • | | | | | • | | | • | | |
| 3 | 20LS-10-R3 | 13650572 | • | | | | | | • | • | | | |
| 4 | 20LS-12-R3 | 13650954 | • | | | | | | • | | • | | |
| 5 | 20LS-10-04 | 8650005 | | • | | | | • | | • | | | |
| 6 | 20LS-12-04 | 13650576 | | • | | | | • | | | • | | |
| 7 | 20LS-10-F4 | 13650277 | | | • | | | • | | • | | | |
| 8 | 20LS-12-F4 | 13650845 | | | • | | | • | | | • | | |
| 9 | 20LS-10-DF4 | 13650846 | | | • | • | | | | • | | | |
| 10 | 20LS-12-DF4 | 13650847 | | | • | • | | | | | • | | |
| 11 | 20LS-10-K4 | 13650848 | | | | | • | | | • | | | |
| 12 | 20LS-12-K4 | 13650849 | | | | | • | | | | • | | |
| 13 | 20LS-10-04-CBDR | 13650574 | | • | | | | • | | • | | • | |
| 14 | 20LS-10-04-PILOT | 13650170 | | • | | | | • | | • | | | • |

NOTES: The "Cbore" code designates that the pilot seal counterbores have been machined into the upstream side of the work section. This section must be used as the first manual section in V20 valve assemblies using an upstream Unloading Utility Section when having V20LS solenoid and manual sections downstream.

The "Pilot" code designates that the internal pilot through-passages have been machined for use when intermixing solenoid and manual sections.

Solenoid Cartridges & Coil Kits

Refer to page 83 in the Electronics Section

V20PC 'PRESSURE COMPENSATED' WORK SECTIONS (Housing No. 8364) Manually-Operated

Load Checks not available with V20PC Work Sections.

| Item No. | Model Number | Part Number | 3-Way 3-Pos. [03] | 4-Way 3-Pos. [04] | 4-Way 3-Pos. Free Flow [F4] | SAE 10 Work Ports [10] | Maximum Flow (GPM) | | |
|----------|------------------|-------------|-------------------|-------------------|-----------------------------|------------------------|--------------------|------|------|
| | | | | | | | [05] | [10] | [15] |
| 1 | 20PC-LS-10-04-05 | 13650001 | | • | | • | • | | |
| 2 | 20PC-LS-10-04-10 | 13650002 | | • | | • | | • | |
| 3 | 20PC-LS-10-04-15 | 13650003 | | • | | • | | | • |
| 4 | 20PC-LS-10-03-05 | 13650004 | • | | | • | • | | |
| 5 | 20PC-LS-10-03-10 | 13650005 | • | | | • | | • | |
| 6 | 20PC-LS-10-03-15 | 13650006 | • | | | • | | | • |
| 7 | 20PC-LS-10-F4-05 | 13650007 | | | • | • | • | | |
| 8 | 20PC-LS-10-F4-10 | 13650008 | | | • | • | | • | |
| 9 | 20PC-LS-10-F4-15 | 13650009 | | | • | • | | | • |

Load sensing sections may be used for closed center or load sensing applications. When used for non-load sensing applications, the load sensing passage must be blocked off at the right outlet cover.

V20PC 'PRESSURE COMPENSATED' WORK SECTIONS (Housing No. 8364) Solenoid-Operated

Proportional Solenoids (EPC)

Load Checks not available with V20PC Work Sections.

| Item No. | Model Number | Part Number | 3-Way 3-Pos [03] | 4-Way 3-Pos [04] | 4-Way 3-Pos Free Flow [F4] | 2-Way 2-Pos. [2] | 2-Way 2-Pos. Free Flow [F2] | SAE 10 Work Ports [10] | SAE 12 Work Ports [12] | Maximum Flow (GPM) | | | 12 VDC EPC Actuator [EPC-I-12] |
|----------|---------------------------|-------------|------------------|------------------|----------------------------|------------------|-----------------------------|------------------------|------------------------|--------------------|------|------|--------------------------------|
| | | | | | | | | | | [05] | [10] | [15] | |
| 1 | 20PC-LS-10-04-05-EPC-I-12 | 13650010 | | • | | | | • | | • | | | • |
| 2 | 20PC-LS-10-04-10-EPC-I-12 | 13650011 | | • | | | | • | | | • | | • |
| 3 | 20PC-LS-10-04-15-EPC-I-12 | 13650012 | | • | | | | • | | | | • | • |
| 4 | 20PC-LS-10-03-05-EPC-I-12 | 13650013 | • | | | | | • | | • | | | • |
| 5 | 20PC-LS-10-03-10-EPC-I-12 | 13650014 | • | | | | | • | | | • | | • |
| 6 | 20PC-LS-10-03-15-EPC-I-12 | 13650015 | • | | | | | • | | | | • | • |
| 7 | 20PC-LS-10-F4-05-EPC-I-12 | 13650016 | | | • | | | • | | • | | | • |
| 8 | 20PC-LS-10-F4-10-EPC-I-12 | 13650017 | | | • | | | • | | | • | | • |
| 9 | 20PC-LS-10-F4-15-EPC-I-12 | 13650018 | | | • | | | • | | | | • | • |
| 10 | 20PC-LS-10-02-05-EPC-I-12 | 13650058 | | | | • | | • | | • | | | • |
| 11 | 20PC-LS-10-02-10-EPC-I-12 | 13650059 | | | | • | | • | | | • | | • |
| 12 | 20PC-LS-10-02-15-EPC-I-12 | 13650060 | | | | • | | • | | | | • | • |
| 13 | 20PC-LS-12-02-15-EPC-I-12 | 13650865 | | | | • | | • | | | | • | • |
| 14 | 20PC-LS-10-F2-05-EPC-I-12 | 13650866 | | | | | • | • | | • | | | • |
| 15 | 20PC-LS-10-F2-10-EPC-I-12 | 13650867 | | | | | • | • | | | • | | • |
| 16 | 20PC-LS-10-F2-15-EPC-I-12 | 13650868 | | | | | • | • | | | | • | • |
| 17 | 20PC-LS-12-F2-15-EPC-I-12 | 13650869 | | | | | • | • | | | | • | • |

Load sensing sections may be used for closed center or load sensing applications. When used for non-load sensing applications, the load sensing passage must be blocked off at the right outlet cover.

All V20 internally piloted Solenoid Valve Bonnets are machined to accept the V20 Travel Limiter/Manual Override Kits.

V20PC 'PRESSURE COMPENSATED' WORK SECTIONS (Housing No. 8364) Solenoid-Operated

On/Off Solenoids (SOL)

Load Checks not available with V20PC Work Sections.

| Item No. | Model Number | Part Number | 3-Way 3-Pos [03] | 4-Way 3-Pos [04] | 4-Way 3-Pos Free Flow [F4] | SAE 10 Work Ports [10] | Maximum Flow (GPM) | | | 12 VDC SOL [SOL-I-12] |
|----------|---------------------------|-------------|------------------|------------------|----------------------------|------------------------|--------------------|------|------|-----------------------|
| | | | | | | | [05] | [10] | [15] | |
| 1 | 20PC-LS-10-04-05-SOL-I-12 | 13650061 | | • | | • | • | | | • |
| 2 | 20PC-LS-10-04-10-SOL-I-12 | 13650062 | | • | | • | | • | | • |
| 3 | 20PC-LS-10-04-15-SOL-I-12 | 13650063 | | • | | • | | | • | • |
| 4 | 20PC-LS-10-03-05-SOL-I-12 | 13650064 | • | | | • | • | | | • |
| 5 | 20PC-LS-10-03-10-SOL-I-12 | 13650065 | • | | | • | | • | | • |
| 6 | 20PC-LS-10-03-15-SOL-I-12 | 13650066 | • | | | • | | | • | • |
| 7 | 20PC-LS-10-F4-05-SOL-I-12 | 13650067 | | | • | • | • | | | • |
| 8 | 20PC-LS-10-F4-10-SOL-I-12 | 13650068 | | | • | • | | • | | • |
| 9 | 20PC-LS-10-F4-15-SOL-I-12 | 13650069 | | | • | • | | | • | • |

Load sensing sections may be used for closed center or load sensing applications. When used for non-load sensing applications, the load sensing passage must be blocked off at the right outlet cover.

All V20 internally piloted Solenoid Valve Bonnets are machined to accept the V20 Travel Limiter/Manual Override Kits.

V20PC 'PRESSURE COMPENSATED' WORK SECTIONS (Housing No. 8364) Solenoid-Operated

Proportional Solenoids With Handle (EPC-IH)

Load Checks not available with V20 PC Work Sections.

| Item No. | Model Number | Part Number | 3-Way 3-Pos. [03] | 4-Way 3-Pos. [04] | 4-Way 3-Pos. Free Flow [F4] | SAE 10 Work Ports [10] | Maximum Flow (GPM) | | | 12 VDC EPC with Handle [EPC-IH-12] |
|----------|----------------------------|-------------|-------------------|-------------------|-----------------------------|------------------------|--------------------|------|------|------------------------------------|
| | | | | | | | [05] | [10] | [15] | |
| 1 | 20PC-LS-10-04-05-EPC-IH-12 | 13650225 | | • | | • | • | | | • |
| 2 | 20PC-LS-10-04-10-EPC-IH-12 | 13650226 | | • | | • | | • | | • |
| 3 | 20PC-LS-10-04-15-EPC-IH-12 | 13650227 | | • | | • | | | • | • |
| 4 | 20PC-LS-10-03-05-EPC-IH-12 | 13650228 | • | | | • | • | | | • |
| 5 | 20PC-LS-10-03-10-EPC-IH-12 | 13650229 | • | | | • | | • | | • |
| 6 | 20PC-LS-10-03-15-EPC-IH-12 | 13650230 | • | | | • | | | • | • |
| 7 | 20PC-LS-10-F4-05-EPC-IH-12 | 13650231 | | | • | • | • | | | • |
| 8 | 20PC-LS-10-F4-10-EPC-IH-12 | 13650232 | | | • | • | | • | | • |
| 9 | 20PC-LS-10-F4-15-EPC-IH-12 | 13650233 | | | • | • | | | • | • |

Load sensing sections may be used for closed center or load sensing applications. When used for non-load sensing applications, the load sensing passage must be blocked off at the right outlet cover.

All V20 internally piloted Solenoid Valve Bonnets are machined to accept the V20 Travel Limiter/Manual Override Kits.

V20PC 'PRESSURE COMPENSATED' WORK SECTIONS (Housing No. 8364) Solenoid-Operated

On/Off Solenoids With Handle (SOL-IH)

Load Checks not available with V20 PC Work Sections.

| Item No. | Model Number | Part Number | 3-Way 3-Pos. [03] | 4-Way 3-Pos. [04] | 4-Way 3-Pos. Free Flow [F4] | SAE 10 Work Ports [10] | Maximum Flow (GPM) | | | 12 VDC SOL with Handle [SOL-IH-12] |
|----------|----------------------------|-------------|-------------------|-------------------|-----------------------------|------------------------|--------------------|------|------|------------------------------------|
| | | | | | | | [05] | [10] | [15] | |
| 1 | 20PC-LS-10-04-05-SOL-IH-12 | 13650234 | | * | | * | * | | * | |
| 2 | 20PC-LS-10-04-10-SOL-IH-12 | 13650235 | | * | | * | * | | * | |
| 3 | 20PC-LS-10-04-15-SOL-IH-12 | 13650236 | | * | | * | * | * | * | |
| 4 | 20PC-LS-10-03-05-SOL-IH-12 | 13650237 | * | | | * | * | | * | |
| 5 | 20PC-LS-10-03-10-SOL-IH-12 | 13650238 | * | | | * | * | | * | |
| 6 | 20PC-LS-10-03-15-SOL-IH-12 | 13650239 | * | | | * | * | * | * | |
| 7 | 20PC-LS-10-F4-05-SOL-IH-12 | 13650240 | | | * | * | * | | * | |
| 8 | 20PC-LS-10-F4-10-SOL-IH-12 | 13650241 | | | * | * | * | | * | |
| 9 | 20PC-LS-10-F4-15-SOL-IH-12 | 13650242 | | | * | * | * | * | * | |

Load sensing sections may be used for closed center or load sensing applications. When used for non-load sensing applications, the load sensing passage must be blocked off at the right outlet cover.

All V20 internally piloted Solenoid Valve Bonnets are machined to accept the V20 Travel Limiter/Manual Override Kits.

V20R 'PARALLEL' WORK SECTIONS (Housing No. 10954) Solenoid-Operated

On/Off Solenoids (SOL)

| Item No. | Model Number | Part Number | 3-Way 3-Pos. [03] | 4-Way 3-Pos. [04] | 4-Way 3-Pos. Free Flow [F4] | SAE 10 Work Ports [10] | SAE 12 Work Ports [12] | 12 VDC SOL Actuator [SOL-I-12] |
|----------|-------------------|-------------|-------------------|-------------------|-----------------------------|------------------------|------------------------|--------------------------------|
| | | | | | | | | |
| 2 | 20-10-03-SOL-I-12 | 8650988 | * | | | * | * | |
| 3 | 20-10-F4-SOL-I-12 | 8650990 | | | * | * | * | |
| 4 | 20-12-03-SOL-I-12 | 13650879 | * | | | * | * | |
| 5 | 20-12-04-SOL-I-12 | 13650880 | | * | | * | * | |
| 6 | 20-12-F4-SOL-I-12 | 13650881 | | | * | * | * | |

All V20 internally piloted Solenoid Valve Bonnets are machined to accept the V20 Travel Limiter/Manual Override Kits.

V20T 'TANDEM' WORK SECTIONS (Housing No. 10762) Solenoid-Operated

On-Off Solenoids (SOL)

| Item No. | Model Number | Part Number | 3-Way 3-Pos. [03] | 4-Way 3-Pos. [04] | 4-Way 3-Pos. Free Flow [F4] | SAE 10 Ports [10] | SAE 12 Ports [12] | 12 VDC SOL Actuator [SOL-I-12] |
|----------|--------------------|-------------|-------------------|-------------------|-----------------------------|-------------------|-------------------|--------------------------------|
| | | | | | | | | |
| 2 | 20T-12-03-SOL-I-12 | 13650871 | * | | | * | * | |
| 3 | 20T-10-04-SOL-I-12 | 13650873 | | * | | * | * | |
| 4 | 20T-12-04-SOL-I-12 | 13650874 | | * | | * | * | |
| 5 | 20T-10-F4-SOL-I-12 | 13650876 | | | * | * | * | |
| 6 | 20T-12-F4-SOL-I-12 | 13650877 | | | * | * | * | |

Because of the internal porting of V20T tandem solenoid work sections, they may only be used in valve assemblies using an upstream Unloading Utility Section.

All V20 internally piloted Solenoid Valve Bonnets are machined to accept the V20 Travel Limiter/Manual Override Kits.

V20R 'PARALLEL' WORK SECTIONS (Housing No. 10954) Solenoid-Operated

Proportional Solenoids (EPC)

| Item No. | Model Number | Part Number | 3-Way 3-Pos. [03] | 4-Way 3-Pos. [04] | 4-Way 3-Pos. Free Flow [F4] | SAE 10 Work Ports [10] | SAE 12 Work Ports [12] | 12 VDC EPC Actuator [EPC-I-12] |
|----------|-------------------|-------------|-------------------|-------------------|-----------------------------|------------------------|------------------------|--------------------------------|
| 1 | 20-10-04-EPC-I-12 | 8650987 | | * | | * | | * |
| 2 | 20-10-03-EPC-I-12 | 8650989 | * | | | * | | * |
| 3 | 20-10-F4-EPC-I-12 | 8650991 | | | * | * | | * |
| 4 | 20-12-03-EPC-I-12 | 13650891 | * | | | | * | * |
| 5 | 20-12-04-EPC-I-12 | 13650892 | | * | | | * | * |
| 6 | 20-12-F4-EPC-I-12 | 13650893 | | | * | | * | * |

All V20 internally piloted Solenoid Valve Bonnets are machined to accept the V20 Travel Limiter/Manual Override Kits.

V20T 'TANDEM' WORK SECTIONS (Housing No. 10762) Solenoid-Operated

Proportional Solenoids (EPC)

| Item No. | Model Number | Part Number | 3-Way 3-Pos. [03] | 4-Way 3-Pos. [03] | 4-Way 3-Pos. Free Flow [F4] | SAE 10 Ports [10] | SAE 12 Ports [12] | 12 VDC EPC [EPC-I-12] |
|----------|--------------------|-------------|-------------------|-------------------|-----------------------------|-------------------|-------------------|-----------------------|
| 1 | 20T-10-03-EPC-I-12 | 13650882 | * | | | * | | * |
| 2 | 20T-12-03-EPC-I-12 | 13650883 | * | | | | * | * |
| 3 | 20T-10-04-EPC-I-12 | 13650885 | | * | | * | | * |
| 4 | 20T-12-04-EPC-I-12 | 13650925 | | * | | | * | * |
| 5 | 20T-10-F4-EPC-I-12 | 13650927 | | | * | * | | * |
| 6 | 20T-12-F4-EPC-I-12 | 13650889 | | | * | | * | * |

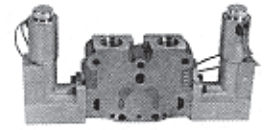
Because of the internal porting of V20T tandem solenoid work sections, they may only be used in valve assemblies using an upstream Unloading Utility Section.

All V20 internally piloted Solenoid Valve Bonnets are machined to accept the V20 Travel Limiter/Manual Override Kits.

V20LS 'LOAD SENSING' WORK SECTIONS (Housing No. 8364) Solenoid-Operated

On/Off Solenoids (SOL)

| Item No. | Model Number | Part Number | 3-Way 3-Pos. [03] | 4-Way 3-Pos. [04] | 4-Way 3-Pos. Free Flow [F4] | SAE 10 Work Ports [10] | 12 VDC On-Off SOL Actuator [SOL-I] |
|----------|---------------------|-------------|-------------------|-------------------|-----------------------------|------------------------|------------------------------------|
| 1 | 20LS-10-04-SOL-I-12 | 8650992 | | • | | • | • |
| 2 | 20LS-10-03-SOL-I-12 | 8650994 | • | | | • | • |
| 3 | 20LS-10-F4-SOL-I-12 | 8650996 | | | • | • | • |



V20 EPC Load Sensing Valve

Load Sensing sections may be used for Closed Center or Load Sensing applications. When used for non-load sensing applications, the load sensing passage must be blocked off at the right outlet cover.

All V20 internally piloted Solenoid Valve Bonnets are machined to accept the V20 Travel Limiter/Manual Override Kits.

V20LS 'LOAD SENSING' WORK SECTIONS (Housing No. 8364) Solenoid-Operated

Proportional Solenoids (EPC)

| Item No. | Model Number | Part Number | 3-Way 3-Pos. [03] | 4-Way 3-Pos. [04] | 4-Way 3-Pos. Free Flow [F4] | SAE 10 Work Ports [10] | 12 VDC EPC Actuator [EPC-I-12] |
|----------|---------------------|-------------|-------------------|-------------------|-----------------------------|------------------------|--------------------------------|
| 1 | 20LS-10-04-EPC-I-12 | 8650993 | | • | | • | • |
| 2 | 20LS-10-03-EPC-I-12 | 8650995 | • | | | • | • |
| 3 | 20LS-10-F4-EPC-I-12 | 8650997 | | | • | • | • |

Load Sensing sections may be used for Closed Center or Load Sensing applications. When used for non-load sensing applications, the load sensing passage must be blocked off at the right outlet cover.

All V20 internally piloted Solenoid Valve Bonnets are machined to accept the V20 Travel Limiter/Manual Override Kits.

V20R 'PARALLEL' WORK SECTIONS (Housing No. 10954) Solenoid-Operated

On/Off Solenoids with Handle (SOL-IH)

| Item No. | Model Number | Part Number | 3-Way 3-Pos. [03] | 4-Way 3-Pos. [04] | 4-Way 3-Pos. Free Flow [F4] | SAE 10 Work Ports [F4] | SAE 12 Work Ports [12] | 12 VDC SOL with Handle [SOL-IH-12] |
|----------|--------------------|-------------|-------------------|-------------------|-----------------------------|------------------------|------------------------|------------------------------------|
| 1 | 20-10-04-SOL-IH-12 | 13650183 | | • | | • | | • |
| 2 | 20-10-03-SOL-IH-12 | 13650185 | • | | | • | | • |
| 3 | 20-10-F4-SOL-IH-12 | 13650187 | | | • | • | | • |
| 4 | 20-12-03-SOL-IH-12 | 13650903 | • | | | | • | • |
| 5 | 20-12-04-SOL-IH-12 | 13650904 | | • | | | • | • |
| 6 | 20-12-F4-SOL-IH-12 | 13650905 | | | • | | • | • |

All V20 internally piloted Solenoid Valve Bonnets are machined to accept the V20 Travel Limiter/Manual Override Kits.

V20T 'TANDEM' WORK SECTIONS (Housing No. 10762) Solenoid-Operated

On/Off Solenoids with Handle (SOL-IH)

| Item No. | Model Number | Part Number | 3-Way 3-Pos. [03] | 4-Way 3-Pos. [04] | 4-Way 3-Pos. Free Flow [F4] | SAE 10 Ports [10] | SAE 12 Ports [12] | 12 VDC SOL with Handle [SOL-IH-12] |
|----------|---------------------|-------------|-------------------|-------------------|-----------------------------|-------------------|-------------------|------------------------------------|
| 1 | 20T-10-03-SOL-IH-12 | 13650894 | • | | | • | | • |
| 2 | 20T-12-03-SOL-IH-12 | 13650895 | • | | | | • | • |
| 3 | 20T-10-04-SOL-IH-12 | 13650897 | | • | | • | | • |
| 4 | 20T-12-04-SOL-IH-12 | 13650898 | | • | | | • | • |
| 5 | 20T-10-F4-SOL-IH-12 | 13650900 | | | • | • | | • |
| 6 | 20T-12-F4-SOL-IH-12 | 13650901 | | | • | | • | • |

Because of internal porting of V20T tandem solenoid work sections, they may only be used in valve assemblies using an upstream Unloading Utility Section.

All V20 internally piloted Solenoid Valve Bonnets are machined to accept the V20 Travel Limiter/Manual Override Kits.

V20

V20R 'PARALLEL' WORK SECTIONS (Housing No. 10954) Solenoid-Operated

Proportional Solenoids with Handle.

| Item No. | Model Number | Part Number | 3-Way 3-Pos. [03] | 4-Way 3-Pos. [04] | 4-Way 3-Pos. Free Flow [F4] | SAE 10 Work Ports [10] | SAE 12 Work Ports [12] | 12 VDC EPC with Handle [EPC-IH-12] |
|----------|--------------------|-------------|-------------------|-------------------|-----------------------------|------------------------|------------------------|------------------------------------|
| 1 | 20-10-04-EPC-IH-12 | 13650184 | | * | | * | | * |
| 2 | 20-10-03-EPC-IH-12 | 13650186 | * | | | * | | * |
| 3 | 20-10-F4-EPC-IH-12 | 13650188 | | | * | * | | * |
| 4 | 20-12-03-EPC-IH-12 | 13650915 | * | | | | * | * |
| 5 | 20-12-04-EPC-IH-12 | 13650916 | | * | | | * | * |
| 6 | 20-12-F4-EPC-IH-12 | 13650917 | | | * | | * | * |

All V20 internally piloted Solenoid Valve Bonnets are machined to accept the V20 Travel Limiter/Manual Override Kits.

V20T 'TANDEM' WORK SECTIONS (Housing No. 10762) Solenoid-Operated

Proportional Solenoids With Handle.

| Item No. | Model Number | Part Number | 3-Way 3-Pos. [03] | 4-Way 3-Pos. [04] | 4-Way 3-Pos. Free Flow [F4] | SAE 10 Ports [10] | SAE 12 Ports [12] | 12 VDC EPC with Handle [EPC-IH-12] |
|----------|---------------------|-------------|-------------------|-------------------|-----------------------------|-------------------|-------------------|------------------------------------|
| 1 | 20T-10-03-EPC-IH-12 | 13650906 | * | | | * | | * |
| 2 | 20T-12-03-EPC-IH-12 | 13650907 | * | | | | * | * |
| 3 | 20T-10-04-EPC-IH-12 | 13650909 | | * | | * | | * |
| 4 | 20T-12-04-EPC-IH-12 | 13650910 | | * | | | * | * |
| 5 | 20T-10-F4-EPC-IH-12 | 13650912 | | | * | * | | * |
| 6 | 20T-12-F4-EPC-IH-12 | 13650913 | | | * | | * | * |

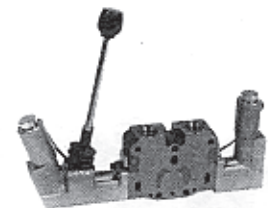
Because of the internal porting of V20T tandem solenoid work sections, they may only be used in valve assemblies using an upstream Unloading Utility Section.

All V20 internally piloted Solenoid Valve Bonnets are machined to accept the V20 Travel Limiter/Manual Override Kits.

V20LS 'LOAD SENSING' WORK SECTIONS (Housing No. 8364) Solenoid-Operated

On/Off Solenoids with Handle.

| Item No. | Model Number | Part Number | 3-Way 3-Pos. [03] | 4-Way 3-Pos. [04] | 4-Way 3-Pos. Free Flow [F4] | SAE 10 Work Ports [10] | 12 VDC SOL with Handle [SOL-IH-12] |
|----------|----------------------|-------------|-------------------|-------------------|-----------------------------|------------------------|------------------------------------|
| 1 | 20LS-10-04-SOL-IH-12 | 13650243 | | * | | * | * |
| 2 | 20LS-10-03-SOL-IH-12 | 13650245 | * | | | * | * |
| 3 | 20LS-10-F4-SOL-IH-12 | 13650247 | | | * | * | * |



V20 Load Sensing Valve with Handle and Manual Override

Load Sensing sections may be used for Closed Center or Load Sensing applications. When used for non-load sensing applications, the load sensing passage must be blocked off at the right outlet cover.

All V20 internally piloted Solenoid Valve Bonnets are machined to accept the V20 Travel Limiter/Manual Override Kits.

V20LS 'LOAD SENSING' WORK SECTIONS (Housing No. 8364) Solenoid-Operated Proportional Solenoids with Handle.

| Item No. | Model Number | Part Number | 3-Way 3-Pos. [03] | 4-Way 3-Pos. [04] | 4-Way 3-Pos. Free Flow (F4) | SAE 10 Work Ports (10) | 12 VDC EPC with Handle (EPC-IH-12) |
|----------|----------------------|-------------|-------------------|-------------------|-----------------------------|------------------------|------------------------------------|
| 1 | 20LS-10-04-EPC-IH-12 | 13650244 | | • | | • | • |
| 2 | 20LS-10-03-EPC-IH-12 | 13650246 | • | | | • | • |
| 3 | 20LS-10-F4-EPC-IH-12 | 13650248 | | | • | • | • |

Load Sensing sections may be used for Closed Center or Load Sensing applications. When used for non-load sensing applications, the load sensing passage must be blocked off at the right outlet cover.

All V20 internally piloted Solenoid Valve Bonnets are machined to accept the V20 Travel Limiter/Manual Override Kits.

V20 Travel Limiter/Manual Overrides

May be added to above Solenoid/EPC positioners

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|--|
| 1 | K-20-MO-P | 13650080 | Push type manual override for use with [SOL] and [EPC] Sections |
| 2 | K-20-TL-MO-S | 13650081 | Screw type travel limiter/manual override for use with [SOL] and [EPC] Sections |
| 3 | K-20-TL-IH | 13650937 | Screw type travel limiter for use with [SOL-IH] and [EPC-IH] sections, handle end only |

Each kit includes one assembly for one end of valve.



V20 Valve Utility Section

V20 UTILITY SECTIONS For Use With Internally Piloted Valves (Housing No. 7820)

For use with V20 Internally Piloted Solenoid Work Sections. (Not compatible with Externally Piloted Sections)

| Item No. | Model Number | Part Number | Description |
|----------|------------------|-------------|---|
| 1 | 20-SOL-I-UT-12 | 13650056 | Utility Section with 12 VDC Pressure Control Cartridge Installed. |
| 2 | 20-SOL-I-UT-24 | 13650308 | Utility Section with 24 VDC Pressure Control Cartridge Installed. |
| 3 | 20-SOL-I-UT-LS | 13650057 | Utility Section for use with Closed Center/Load Sensing valve assemblies. |
| 4 | 20-SOL-I-UT-MECH | 13650920 | Utility Section with Continuous-On Pressure Control Cartridge |
| 5 | 20-SOL-I-UT-PB | 13650921 | Utility Section for use with SAE #12 Power Beyond Sleeve |

Utility Section must be stacked directly upstream from the right outlet cover.



V20 Utility Section for Solenoid Option

V20 UTILITY SECTIONS For Use With Externally Piloted Valves (Housing No. 7820)

(Not for Use in Internally Piloted Valve Assemblies)

| Item No. | Model Number | Part Number | Description |
|----------|------------------|-------------|---|
| 1 | 20-SOL-E-UT-12 | 8650031 | Utility Section with 12 VDC Pressure Control Cartridge Installed. |
| 2 | 20-SOL-E-UT-24 | 13650309 | Utility Section with 24 VDC Pressure Control Cartridge Installed. |
| 3 | 20-SOL-E-UT-MECH | 13650922 | Utility Section with Continuous-On Pressure Control Cartridge |
| 4 | 20-SOL-E-UT-PB | 13650923 | Utility Section with SAE #12 Power Beyond Sleeve |

Tube Kit for Externally-Piloted Utility Sections

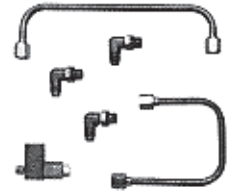
| | | | |
|---|-----------|---------|---|
| 1 | K-20-TUBE | 8650086 | Tube assembly between Utility Section and Solenoid Spool Actuator |
|---|-----------|---------|---|

V20

Fitting Kits For Externally Piloted V20 and V42 Solenoid Valves

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|--|
| 1 | K-20-S1 | 8650085 | For single spool solenoid valve |
| 2 | K-20-S2 | 8650082 | For First section (closest to valve inlet) in a multi-spool solenoid valve. (Last section for Model V42) |
| 3 | K-20-S3 | 8650083 | For the center section(s) in a multi-spool solenoid valve. |
| 4 | K-20-S4 | 8650084 | For the last section (closest to utility section) in a multi-spool solenoid valve. (First section for Model V42) |

Each kit contains one adjustable speed control fitting assembly and one non-adjustable fitting assembly for one actuator assembly.



External Tubing Kit

Optional Cartridges for the Utility Section

| Item No. | Model Number | Part Number | Description |
|----------|---------------|-------------|---------------------------------------|
| 1 | K-20-CONT-ON | 8650430 | Mechanical Pressure Control Cartridge |
| 2 | K-20-12-CNTRL | 13650938 | 12 VDC Pressure Control Cartridge |
| 3 | K-20-24-CNTRL | 13650939 | 24 VDC Pressure Control Cartridge |
| 4 | K-20-S12Y | 8650115 | Power Beyond Sleeve, SAE 12 |
| 5 | K-20-SC | 8650114 | Closed Center Plug |

V20 UNLOADING UTILITY SECTIONS (Housing No. 22952)

Allows closed center, load sensing and pressure compensated work sections to be used with a fixed displacement pump.

| Item No. | Model Number | Part Number | Description |
|----------|-----------------|-------------|---|
| 1 | 20-UV-12-LS | 13650683 | V20 Unloading Valve Section without Internal Pilot Pressure (Manual Valves) |
| 2 | 20-UV-12-PRV-LS | 13650684 | V20 Unloader Valve Section with Internal Pilot Pressure (Solenoid Valves) |
| 3 | K-20-UNL-PLUGS | 13650775 | Option Plugs for Utility Section with Unloading Valve (See Note 2) |

NOTE 1: The Unloading Valve section should be stacked next to the inlet cover unless priority sections are required. When priority is required, install unloading valve section downstream of priority pressure compensated sections. Open center, tandem and parallel sections should be stacked downstream of the unloading valve section.

NOTE 2: The following parts will be included to cover several application requirements:

| Part No. | Quantity | Description |
|----------|----------|----------------------------------|
| 21866001 | 3 | Pilot Hole Seals |
| 21857001 | 2 | Section Seals |
| 21733001 | 2 | Section Seals |
| 00017001 | 1 | 1/4" NPTF Plug |
| 22962001 | 3 | Expansion Plugs 6 mm – Old Style |
| 26095006 | 3 | Expansion Plugs 6 mm – New Style |
| 26291001 | 1 | Form No. 3933 |

} **K-20-UNL-PLUGS**

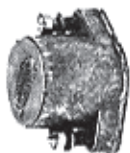
V20 Spool Positioner Option Kits

Will not fit Float [F] or Internal Hydraulic Detent Release [KO] Spools.

| Item No. | Model Number | Part Number | Description |
|----------|-----------------|-------------|--|
| 1 | K-20-A | 8650104 | Spring Extended Spool Positioner Kit |
| 2 | K-20-D | 8650105 | 3-Position Detent Kit |
| 3 | K-20-R | 8650106 | Spool "IN" Detent w/Spring Return to Neutral Positioner Kit |
| 4 | K-20-R0 | 26157043 | Spool "OUT" Detent w/Spring Return to Neutral Positioner Kit |
| 5 | ◆◆K-20-SOL-E-12 | 8650098 | 12VDC Solenoid Actuator (External Pilot Design) |
| 6 | ◆◆K-20-SOL-E-24 | 13650531 | 24 VDC Solenoid Actuator (External Pilot Design) |
| 7 | K-20-E | 8650119 | Electro Magnetic Spool Release Positioner Kit |
| 8 | ◆K-20-HR | 8650575 | Hydraulic Remote Spool Actuator Kit |
| 9 | ◆K-20-HR0 | 8650574 | Hydraulic Remote w/Override Spool Actuator Kit |
| 10 | K-20-PA1 | 8650630 | Pneumatic Spool Actuator Kit |
| 11 | K-20-PA2 | 8650631 | 12V DC Solenoid Operated Pneumatic Spool Actuator Kit |

◆ Contains both Bonnets needed.

◆◆ Cannot be used with Float Spool (K4) or Standard Free Flow Spool (F4)



Spool Action Assembly
(Bonnets)

V20

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 Mechanical Joysticks

Includes the Spool Adapter Clevis.

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|---|
| 1 | MJA2-20L-NN | 13650688 | V20 Mechanical Joystick, Left-Hand Kit |
| 2 | MJA2-20R-NN | 13650689 | V20 Mechanical Joystick, Right-Hand Kit |
| 3 | K-20-MJA-O | 26157200 | V20 Mechanical Joystick 'Offset' Handle Kit |
| 4 | K-20-MJA-S | 26157201 | V20 Mechanical Joystick 'Straight' Handle Kit |

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 ♦ | 13650405 | Section seal for load sensing and/or solenoid pilot passages. |

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

♦ Kit includes 25 pieces of seal number 21866001.



Stud Assembly Kit



Model RC
Work Port Relief Valve



CRA Combination
Relief Anti-Cavitation
Check Valve



Anti-Cavitation
Check Valve

Work Port Options for use in V20P, V20R, V20T, V20C & V20LS Work Sections

| Item No. | 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 |
| 1 | RC-1200 | 8650394 | • | | | • | | | | |
| 2 | RC-1700 | 8650395 | • | | | | • | | | |
| 3 | RC-1950 | 8650396 | • | | | | | • | | |
| 4 | RC-2550 | 8650397 | • | | | | | | • | |
| 5 | RP20A-2500 | 8650975 | • | | | | | | | • |
| 6 | CRA-1200 | 8650387 | | • | | • | | | | |
| 7 | CRA-1700 | 8650388 | | • | | | • | | | |
| 8 | CRA-1950 | 8650389 | | • | | | | • | | |
| 9 | CRA-2550 | 8650390 | | • | | | | | • | |
| 10 | K-20-AC | 8650380 | | | • | | | | | |

Work Port Options for use in V20S Work Sections

| Item No. | Model Number | Part Number | Relief Valve | 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 |
| 1 | RCS-1200 | 8650632 | • | | • | | | |
| 2 | RCS-1700 | 8650633 | • | | | • | | |
| 3 | RCS-1950 | 8650634 | • | | | | • | |
| 4 | RCS-2550 | 8650635 | • | | | | | • |
| 5 | K-20-ACS | 8650636 | | • | | | | |

For use in V20S Series sections only.

Work Port Options for use in V20PC Work Sections

| Item No. | Model Number | Part Number | Relief Valve | 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 |
| 1 | RCPC-1200 | 13650930 | • | • | | | |
| 2 | RCPC-1700 | 13650931 | • | | • | | |
| 3 | RCPC-1950 | 13650932 | • | | | • | |
| 4 | RCPC-2550 | 13650933 | • | | | | • |

All above Relief Valves have stainless steel springs. Crack Pressures (c/p) set at 1 GPM.

RC, CRA, RCS, and RCPC Relief Valves are internal shim adjustable. RP20A Relief Valve is external screw adjustable.

Relief External Adjustment Kit

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|---|
| 1 | K-WH-A | 8650381 | External Screw Adjustable Option for RC, CRA, RCS, and RCPC Relief Valves |

V20

V20 MID-INLET SECTIONS (Housing No. 6825)

| Item No. | Model Number | Part Number | Split Flow [SF] | Combined Flow [CF] | 3/4" NPT Inlet Ports [75] | SAE 12 Inlet Ports [12] | Internal Pilot Thru-Passage Machined [PILOT] |
|----------|----------------|-------------|-----------------|--------------------|---------------------------|-------------------------|--|
| 1 | 20-75-SF | 8650002 | • | | • | | |
| 2 | 20-75-CF | 8650001 | | • | • | | |
| 3 | 20-12-SF | 8650004 | • | | | • | |
| 4 | 20-12-CF | 8650003 | | • | | • | |
| 5 | 20-12-SF-PILOT | 13650918 | • | | | • | • |
| 6 | 20-12-CF-PILOT | 13650919 | | • | | • | • |



V20
Mid-Inlet Section

Housing No. 6825 is rated to a maximum pressure of 2500 PSI.
Contact the factory with higher pressure requirements.

V20 TRANSITION SECTIONS (Housing No.'s 24707 and 12138)

| Item No. | Model Number | Part Number | Split Flow [SF] | Combined Flow [CF] | SAE 16 Inlet Port [16] | SAE 20 Outlet Port | Load Sense and Pilot Drain [LS] | Unloading Valve [UNL] | Pressure Reducing Cartridge [PRV] | Housing No. |
|----------|---------------------|-------------|-----------------|--------------------|------------------------|--------------------|---------------------------------|-----------------------|-----------------------------------|-------------|
| 1 | 20/40-16-SF | 26157015 | • | | • | • | | | | 24707 |
| 2 | 20/40-16-CF | 26157017 | | • | • | • | | | | 24707 |
| 3 | 20/40-16-CF-PRV | 26157018 | | • | • | • | | • | | 24707 |
| 4 | 20/40-16-LS | 26157019 | | • | • | • | • | | | 24707 |
| 5 | 20/40-16-LS-PRV | 26157020 | | • | • | • | • | • | | 24707 |
| 6 | 20/40-16-LS-UNL | 26157021 | | • | • | • | • | | • | 24707 |
| 7 | 20/40-16-LS-UNL-PRV | 26157022 | | • | • | • | • | • | • | 24707 |
| 8 | 20/50-16-SF | 8650798 | • | | • | | | | | 12138 |
| 9 | 20/50-16-CF | 8650797 | | • | • | | | | | 12138 |

All of the above Mid-Inlet and Transition Sections are machined to accept main relief cartridges .

V20/V40 and V20/V50 mid-inlet sections combine V20 work sections (upstream) with V40 or V50 work sections (downstream).

Standard V40 or V50 section stud kits are used for downstream V40 or V50 work sections.

Special V20 section stud kits listed below are used for upstream V20 work sections.

V20/V40 & V20/50 Section Stud Assembly Kits

For use with upstream V20 work sections in V20/V40 and V20/V50 Mid-Inlet Valve Assemblies. Includes section seals.

| Item No. | Model Number | Part Number | Number of Work Sections |
|----------|--------------|-------------|-------------------------|
| 1 | K-20/50-1 | 8650800 | One Section |
| 2 | K-20/50-2 | 8650801 | Two Section |
| 3 | K-20/50-3 | 8650802 | Three Section |
| 4 | K-20/50-4 | 8650803 | Four Section |



8089 Left Cover

25P INLET COVERS (Housing No. 8089)

Two Port Plugs are furnished with each Cover. One Plug is machined for 1/4" NPT gauge port. Gauge port will be plugged. All Left Covers machined to accept Main Relief Cartridges.

| Item No. | Model Number | Part Number | Top Inlet and Outlet | End Inlet and Outlet | 1" NPT Ports (100) | SAE 16 Ports (16) |
|----------|--------------|-------------|----------------------|----------------------|--------------------|-------------------|
| 1 | 25-LC-100 | 8650058 | • | • | • | |
| 2 | 40-LC-16 | 8650057 | • | • | | • |

8089 Left Cover with trepan grooves for use with 25P and V40 Valves

Main Relief Options For 25P, V40 and V42 Inlet Covers

| Item No. | Model Number | Part Number | Pressure Range and Setting | | |
|----------|--------------|-------------|--------------------------------|------------------------------|-----------------------------|
| | | | 400-1400 Set @ 1100 PSI c/p | 1401-2000 Set @ 2000 PSI c/p | 500-3500 Set @ 2500 PSI c/p |
| 1 | KC-LP-1100 | 8650391 | • | | |
| 2 | KC-HP-2000 | 8650392 | | • | |
| 3 | RP60A-2500 ♦ | 8650393 | | | • |
| 4 | K-40-NR | 8650379 | No Relief Plug Kit (NR option) | | |

For use in all 25P, V40 and V42 Inlet Covers

♦ KC and RP60A Relief Valves are external screw adjustable. Crack Pressure set at 1 GPM.



Model KC Relief Valve Cartridge



Model RP60 Relief Valve Cartridge

Note: Two internal holes identifies a turnaround or outlet cover. One internal hole identifies a power beyond or closed center cover.

25P OUTLET COVERS (Housing No.'s 1644 & 8090)

| Item No. | Model Number | Part Number | Housing No. 1644 End Outlet (E) | Housing No. 8090 Top Outlet (T) | 1644 End Power Beyond Outlet (EY) ⊙ | 1" NPT Port [100] | SAE 16 Port [16] | Machined for Conversion to Power Beyond or Closed Center (MY) ⊙ |
|----------|--------------|-------------|---------------------------------|---------------------------------|-------------------------------------|-------------------|------------------|---|
| 1 | 25-RC-100-E | 8650051 | • | | | • | | |
| 2 | 25-RC-16-E | 8650052 | • | | | | • | |
| 3 | 25-RC-100-EY | 8650053 | | | • | • | | |
| 4 | 25-RC-16-EY | 8650054 | | | • | | • | |
| 5 | 25-RC-100-MY | 8650327 | | • | | • | | • |
| 6 | 40-RC-16-TMY | 8650328 | | • | | | • | • |

3/4" NPT plug furnished with 8090 covers for conversion to power beyond.

⊙ Outlet must be located in the Inlet Cover when using Power Beyond or Closed Center in the Outlet Cover.



1644 Right Cover
No trepan grooves, for use with 25P Valves



8090 Right cover
No trepan grooves, for use with 25P Valves

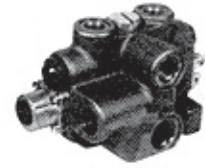
25P

25P INLET/INTEGRAL WORK SECTION (Housing No.'s 3000 & 3001)

Integral Work Section Includes Handle Bracket.

| Item No. | Model Number | Part Number | 3-Way 3-Pos. [3] | 4-Way 3-Pos. [4] | 1" NPT Inlet & Outlet Ports [100] | SAE 16 Inlet & Outlet Ports [16] | 3/4" NPT Work Ports [75] | SAE 12 Work Ports [12] | SAE 16 Work Ports [16] | Top Inlet/Outlet [T] | End Inlet/Outlet [E] | Rotary Spool Actuator [W] | Upper & Lower Work Port Options Machined & Plugged [UL] |
|----------|---------------------|-------------|------------------|------------------|-----------------------------------|----------------------------------|--------------------------|------------------------|------------------------|----------------------|----------------------|---------------------------|---|
| 1 | 25-L-T-100-75-04 | 8650372 | | • | • | | • | | | • | | | |
| 2 | 25-L-T-100-75-UL-04 | 13650133 | | • | • | | • | | | • | | | • |
| 3 | 25-L-T-16-12-UL-04 | 13650134 | | • | | • | | • | | • | | | • |
| 4 | 25-L-T-16-16-04 | 8650371 | | • | | • | | | • | • | | | |
| 5 | 25-L-E-100-75-04 | 8650370 | | • | • | | • | | | | • | | |
| 6 | 25-L-E-100-75-UL-04 | 13650131 | | • | • | | • | | | | • | | • |
| 7 | 25-L-E-16-16-04 | 8650369 | | • | | • | | | • | | • | | |
| 8 | 25-L-E-16-16-UL-04 | 13650132 | | • | | • | | | • | | • | | • |
| 9 | 25-L-E-100-75-W4 | 8650641 | | • | • | | • | | | | • | • | |
| 10 | 25-L-T-16-16-03 | 13650824 | • | | | • | | | • | • | | | |

Machined for Main Relief Options. Not machined for gauge port. Bracket Assembly not furnished with Rotary Spool Option [W].



3000 Left Cover

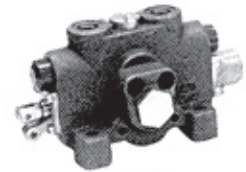


3001 Left Cover

25P OUTLET/INTEGRAL WORK SECTION (Housing No. 1624)

Integral Work Section includes Handle Bracket.

| Item No. | Model Number | Part Number | 4-Way 3-Pos [4] | 3/4" NPT Work Ports [75] | SAE 16 Work Ports [16] | 1" NPT Outlet [100] | SAE 16 Outlet [16] | Upper Work Port Options Machined & Plugged [U] | Machined for Power Beyond [MY] |
|----------|------------------|-------------|-----------------|--------------------------|------------------------|---------------------|--------------------|--|--------------------------------|
| 1 | 25-R-75-100-04 | 8650368 | • | • | | • | | | |
| 2 | 25-R-75-100-U-04 | 13650135 | • | • | | • | | • | |
| 3 | 25-R-75-MY-04 | 8650367 | • | • | | • | • | | • |
| 4 | 25-R-16-16-04 | 8650366 | • | | • | | • | | |
| 5 | 25-R-16-MY-04 | 8650365 | • | | • | | • | | • |
| 6 | 25-R-16-MY-U-04 | 13650136 | • | | • | | • | • | • |



1624 Right Integral Section

Option Kits for No. 1624 Outlet/Integral Work Section

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|----------------------------------|
| 1 | K-25-X | 8650109 | Conversion Plug Kit |
| 2 | K-25-C | 8650110 | Closed Center Plug Kit |
| 3 | K-25-12-Y | 8650081 | SAE 12 Power Beyond Sleeve Kit |
| 4 | K-25-75-Y | 8650111 | 3/4" NPT Power Beyond Sleeve Kit |



1614 3-Way or 4-Way

25P PARALLEL WORK SECTIONS (Housing No. 1614)

Includes Handle Bracket.

| Item No. | Model Number | Part Number | 3-Way 3-Pos. [3] | 4-Way 3-Pos. [4] | 4-Way 3-Pos. Free Flow [F4] | 4-Way 4-Pos. Float [K4] | 3/4" NPT Work Ports [75] | SAE 10 Work Ports [10] | SAE 12 Work Ports [12] | SAE 16 Work Ports [16] | Upper Work Port Options Machined & Plugged [U] | Upper & Lower Work Port Options Machined & Plugged [UL] | Rotary Spool Actuator [W] | Stainless Steel Spool [SS] |
|----------|----------------|-------------|------------------|------------------|-----------------------------|-------------------------|--------------------------|------------------------|------------------------|------------------------|--|---|---------------------------|----------------------------|
| 1 | 25-75-03 | 13650120 | • | | | | • | | | | | | | |
| 2 | 25-75-U-03 | 8650343 | • | | | | • | | | | • | | | |
| 3 | 25-12-03 | 13650123 | • | | | | | | • | | | | | |
| 4 | 25-12-U-03 | 13650128 | • | | | | | | • | | • | | | |
| 5 | 25-16-U-03 | 8650364 | • | | | | | | | • | • | | | |
| 6 | 25-75-04 | 8650341 | | • | | | • | | | | | | | |
| 7 | 25-75-U-04 | 13650121 | | • | | | • | | | | • | | | |
| 8 | 25-75-UL-04 | 8650339 | | • | | | • | | | | | • | | |
| 9 | 25-75-W4 | 8650941 | | • | | | • | | | | | | • | |
| 10 | 25-10-04 | 8650615 | | • | | | | • | | | | | | |
| 11 | 25-10-U-04 | 8650479 | | • | | | | • | | | • | | | |
| 12 | 25-12-04 | 13650122 | | • | | | | | • | | | | | |
| 13 | 25-12-U-04 | 13650129 | | • | | | | | • | | • | | | |
| 14 | 25-12-UL-04 | 13650130 | | • | | | | | • | | | • | | |
| 15 | 25-16-04 | 8650338 | | • | | | | | | • | | | | |
| 16 | 25-16-UL-04 | 8650340 | | • | | | | | | • | | • | | |
| 17 | 25-16-UL-W4-SS | 8650508 | | • | | | | | | • | | • | • | • |
| 18 | 25-75-F4 | 8650337 | | | • | | • | | | | | | | |
| 19 | 25-12-F4 | 13650124 | | | • | | | • | | | | | | |
| 20 | 25-16-F4 | 8650342 | | | • | | | | | • | | | | |
| 21 | 25-16-WF4-SS | 8650509 | | | • | | | | | • | | | • | • |
| 22 | 25-75-K4 ⊕ | 8650333 | | | | • | • | | | | | | | |
| 23 | 25-75-UL-K4 ⊕ | 8650331 | | | | • | • | | | | | • | | |
| 24 | 25-10-U-K4 ⊕ | 8650480 | | | | • | | • | | | • | | | |
| 25 | 25-12-K4 ⊕ | 13650125 | | | | • | | | • | | | | | |
| 26 | 25-12-U-K4 ⊕ | 13650126 | | | | • | | | • | | • | | | |
| 27 | 25-12-UL-K4 ⊕ | 13650127 | | | | • | | | • | | | • | | |
| 28 | 25-16-K4 ⊕ | 8650332 | | | | • | | | | • | | | | |
| 29 | 25-16-UL-K4 ⊕ | 8650330 | | | | • | | | | • | | • | | |

Bracket Assembly not furnished with Rotary Spool Option [W], Items 9, 17 and 21.

⊕ When using (K4) Float Sections in Model 25P Control Valve assemblies, it must be placed next to the inlet cover. Only ONE float section may be used in the valve assembly.

25P

Work Port Relief Cartridges for 25P and V42 Control Valves Relief Model 'YC'

| Item No. | Model Number | Part Number | Pressure Range and Setting | | |
|----------|--------------|-------------|-----------------------------------|------------------------------------|------------------------------------|
| | | | 500-1000 Set @ 1000 PSI c/p | 1001-1500 Set @ 1500 PSI c/p | 1501-3000 Set @ 3000 PSI c/p |
| 1 | YC-1000 | 8650399 | • | | |
| 2 | YC-1500 | 8650400 | | • | |
| 3 | YC-3000 | 8650401 | | | • |



YC Relief Valve Cartridge

'WH' and 'RP51' Relief Cartridges

| Item No. | Model Number | Part Number | 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 | 2501-3000 Set @ 3000 PSI c/p | 500-3500 Set @ 3000 PSI c/p |
| 1 | WH-1200 | 8650417 | • | | | | | |
| 2 | WH-1700 | 8650418 | | • | | | | |
| 3 | WH-1950 | 8650419 | | | • | | | |
| 4 | WH-2550 | 8650420 | | | | • | | |
| 5 | WH-3000 | 8650398 | | | | | • | |
| 6 | RP51A-3000 | 8650421 | | | | | | • |
| 7 | K-20-NR | 8650382 | Relief Cavity Plug Kit (NR Option) | | | | | |



WH Relief Valve Cartridge

Model 'YC' and 'WH' Relief Valves are internal shim adjustable. Model 'RP51' Relief Valves are external screw adjustable. Crack Pressure (c/p) set at 1 GPM.

Anti-Cavitation Check Cartridge Kits

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|-----------------------------|
| 1 | K-42-UAC | 8650378 | Upper Anti-Cavitation Check |
| 2 | K-42-LAC | 8650377 | Lower Anti-Cavitation Check |



Upper Anti-Cavitation Check

Relief External Adjustment Kit

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|--|
| 1 | K-WH-A | 8650381 | External Screw Adjustable Option for WH Relief |



Lower Anti-Cavitation Check

MID INLET SECTIONS FOR 25P AND V40 CONTROL VALVES (Housing No. 3953)

| Item No. | Model Number | Part Number | Combined Flow [CF] | Split Flow [SF] | 1" NPT Port [100] | SAE 16 Port [16] |
|----------|--------------|-------------|--------------------|-----------------|-------------------|------------------|
| 1 | 25-100-CF | 8650055 | • | | • | |
| 2 | 40-16-CF | 8650056 | • | | | • |
| 3 | 40-16-SF | 13650166 | | • | | • |



3953 Mid-Inlet Section

Machined to accept the same relief options as the Left Inlet Cover.

Mid Inlet Conversion Kits

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|--|
| 1 | K-40-SF | 8650080 | Mid-Inlet Split Flow Conversion Kit |
| 2 | K-40-CF | 13650929 | Mid-Inlet Combined Flow Conversion Kit |



Spool Action Assembly (Bonnet)

25P Spool Positioner Option Kits

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|---|
| 1 | K-25-D | 8650386 | 3-Position Detent Kit |
| 2 | K-25-R | 8650385 | Spool "IN" Detent w/Spring Return to Neutral Positioner Kit |
| 3 | K-25-W | 8650384 | Rotary Spool Positioner Kit |
| 4 | K-25-L | 8650159 | Spool Travel Limiter |
| 5 | K-PA100-25 | 13030001 | Pneumatic Spool Actuator Kit |

The above kits will not work with float or regenerative spools.



Vertical Handle



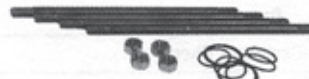
Horizontal Handle

25P Handle End Options

Handle Kits contain necessary links and pins.

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|------------------------------------|
| 1 | K-25-VH-B | 8650150 | Vertical Handle Assembly (Black) |
| 2 | K-25-VH-P | 8650148 | Vertical Handle Assembly (Plain) |
| 3 | K-25-HH-B | 8650147 | Horizontal Handle Assembly (Black) |
| 4 | K-25-HH-P | 8650145 | Horizontal Handle Assembly (Plain) |
| 5 | K-25-BOOT ♦ | 8650157 | Spool Boot Assembly (See Note) |
| 6 | K-25-MA | 8650158 | Male Spool Clevis |

♦ Special Order Only – Standard Distributor Stock sections do not have boot grooves in spools.



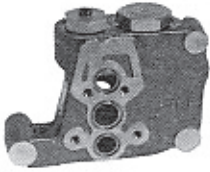
Section Stud Assembly Kit

25P Section Stud Assembly Kits

Includes section seals, studs and nuts.

| Item No. | Valve with 8089 Left Cover & 1644 Right | | Valve with 8089 Left cover & 8090 Right Cover | | Valve with 3000 or 3001 Left Integral Sect. & 1624 Right Integral Sect or 1644 Right Cover | | Valve with 3000 or 3001 Left Integral Sect & 8090 Right Cover | | Number of Valve spools & Mid-Inlet Sections |
|----------|---|-------------|---|-------------|--|-------------|---|---------|---|
| | Part Number | Part Number | Part Number | Part Number | Part Number | Part Number | Part Number | | |
| 1 | K-40-LRE-1 | 8650280 | K-40-LRT-1 | 8650288 | K-25-SLE-1 | 8650272 | K-25-SLT-1 | 8650264 | 1 |
| 2 | K-40-LRE-2 | 8650281 | K-40-LRT-2 | 8650289 | K-25-SLE-2 | 8650273 | K-25-SLT-2 | 8650265 | 2 |
| 3 | K-40-LRE-3 | 8650282 | K-40-LRT-3 | 8650290 | K-25-SLE-3 | 8650274 | K-25-SLT-3 | 8650266 | 3 |
| 4 | K-40-LRE-4 | 8650283 | K-40-LRT-4 | 8650291 | K-25-SLE-4 | 8650275 | K-25-SLT-4 | 8650267 | 4 |
| 5 | K-40-LRE-5 | 8650284 | K-40-LRT-5 | 8650292 | K-25-SLE-5 | 8650276 | K-25-SLT-5 | 8650268 | 5 |
| 6 | K-40-LRE-6 | 8650285 | K-40-LRT-6 | 8650293 | K-25-SLE-6 | 8650277 | K-25-SLT-6 | 8650269 | 6 |
| 7 | K-40-LRE-7 | 8650286 | K-40-LRT-7 | 8650294 | K-25-SLE-7 | 8650278 | K-25-SLT-7 | 8650270 | 7 |
| 8 | K-40-LRE-8 | 8650287 | K-40-LRT-8 | 8650295 | K-25-SLE-8 | 8650279 | K-25-SLT-8 | 8650271 | 8 |

V40

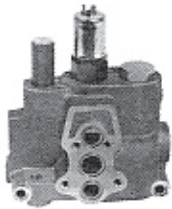


8089 V40 Left Cover

V40 INLET COVER (Housing No. 8089) For Manual Operation

| Item No. | Model Number | Part Number | End Inlet | End Outlet | Top Inlet | Top Outlet | SAE 16 Ports (16) | SAE 20 Ports (20) |
|----------|--------------|-------------|-----------|------------|-----------|------------|-------------------|-------------------|
| 1 | 40-LC-16 | 8650057 | • | • | • | • | • | |
| 2 | 40-LC-20 | 13650085 | • | • | • | • | | • |

Two Port Plugs are furnished with No. 8089 Covers, one Plug is machined for 1/4" NPT Gauge port. Gauge Port will be plugged. All 8089 Inlet Covers machined to accept the Main Relief Cartridge or NR Plug.



20929 V40 Left Cover with Pressure Reducing Valve

V40 INLET COVERS (Housing No. 20929) For Solenoid Operation

| Item No. | Model Number | Part Number | End Inlet | End Outlet | Top Inlet | Top Outlet | SAE 16 Ports (16) | SAE 20 Ports (20) | SAE 4 Gauge Port Machined (Plugged) | With Pressure Reducing Valve and 12 VDC Pressure Control Cartridge [P-12] | With Pressure Reducing Valve and 24 VDC Pressure Control Cartridge [P-24] | With Pressure Reducing Valve and Mechanical Pressure Control Cartridge [P-MECH] |
|----------|-----------------|-------------|-----------|------------|-----------|------------|-------------------|-------------------|-------------------------------------|---|---|---|
| 1 | 40-LC-16-P-12 | 13650086 | • | • | • | • | | | • | • | | |
| 2 | 40-LC-20-P-12 | 13650087 | • | • | • | • | | • | • | | | |
| 3 | 40-LC-16-P-24 | 13650287 | • | • | • | • | | | | | • | |
| 4 | 40-LC-20-P-24 | 13650288 | • | • | • | • | | | | | • | |
| 5 | 40-LC-16-P-MECH | 13650944 | • | • | • | • | | | | | | • |
| 6 | 40-LC-20-P-MECH | 13650945 | • | • | • | • | | | | | | • |

One Port Plug is furnished with No. 20929 Covers. All 20929 Inlet Covers machined to accept the Main Relief Cartridge or NR Plug.

No. 20929 Pilot Inlet Cover Options

| Item No. | Model Number | Part Number | Description |
|----------|------------------------------|-------------|--|
| 1 | K-40-CONT-ON | 13650108 | Mechanical Pressure Control Cartridge |
| 2 | K-40-24-CNTRL | 13650109 | 24 VDC Pressure Control Cartridge |
| 3 | K-40-12-CNTRL | 13650940 | 12 VDC Pressure Control Cartridge |
| 4 | K-40-LC-CC-PLUG [Ⓞ] | 13650947 | Closed Center Plug - For use in Closed Center and Load Sensing Systems |

For use in place of the standard 12 VDC pressure control cartridge.
[Ⓞ] In addition to this plug, the 20931 Right End Cover must also be converted to closed center.



Continuous-On Pressure Control Cartridge

V40 INLET COVERS (Housing No.'s 8089 & 20929) For Load Sensing

| Item No. | Model Number | Part Number | End Inlet | Top Inlet | End Outlet | Top Outlet | SAE 16 Ports (16) | SAE 20 Ports (20) | SAE 4 Gauge Port (Plugged) | With PRV Cartridge [P] | SAE 6 External Pilot Ports [WEP] |
|----------|------------------------------|-------------|-----------|-----------|------------|------------|-------------------|-------------------|----------------------------|------------------------|----------------------------------|
| 1 | 40-LC-16-LS | 13650584 | • | • | • | • | • | | | | |
| 2 | 40-LC-20-LS | 13650585 | • | • | • | • | | • | | | |
| 3 | 40-LC-16-P-LS | 13650586 | • | | • | • | | | • | • | |
| 4 | 40-LC-20-P-LS | 13650587 | • | | • | • | | | • | • | |
| 5 | 40-LC-16-LS-WEP [Ⓞ] | 26157086 | • | • | • | • | • | | | | • |
| 6 | 40-LC-20-LS-WEP [Ⓞ] | 26157087 | • | • | • | • | | • | | | • |

[Ⓞ] These [WEP] covers may be used in load sense and open center applications where an external pilot source is available. (2) SAE 6 Pilot Ports are machined into this cover for external pilot connection. These covers also include the seal counterbores for both solenoid pilot and load sense passages.

Main Relief Options for 25P, V40 and V42 Inlet Covers

| Item No. | Model Number | Part Number | Pressure Range and Setting 500-3500 Set @ 2500 PSI c/p |
|----------|--------------|-------------|---|
| 1 | RP60A-2500 | 8650393 | • |
| 2 | K-40-NR | 8650379 | Relief Plug Kit (NR Option) |

For use in 25P, V40 and V42 Inlet Covers.



RP60 Relief Cartridge

V40 OUTLET COVERS for Open Center, Closed Center or Power Beyond Applications (Housing No.'s 8090 & 20931)

| Item No. | Model Number | Part Number | SAE 16 Ports [16] | SAE 20 Ports [20] | End Outlet (20931 Only) [E] | Top Outlet (8090 Only) [T] | End Power Beyond (20931 Only) [EY] | Machined for Top Power Beyond (8090 Only) [MY] |
|----------|---------------------------|-------------|-------------------|-------------------|-----------------------------|----------------------------|------------------------------------|--|
| 1 | 40-RC-16-TMY [Ⓢ] | 8650328 | • | | | • | | • |
| 2 | 40-RC-16-E | 13650960 | • | | • | | | |
| 3 | 40-RC-20-E | 13650088 | | • | • | | | |
| 4 | 40-RC-16-EY | 13650961 | • | | | | • | |
| 5 | 40-RC-20-EY | 13650089 | | • | | | • | |

Ⓢ A 3/4" NPT Plug is furnished with 8090 Covers for internal conversion to Power Beyond or Closed Center. If Power Beyond or Closed Center options are utilized, the outlet port must be located in the inlet cover. 8090 Covers are NOT intended for use in SOL/EPC valves.



8090 Right Cover
(No trepan grooves, for use with 25P and V40 Valves.)



20931 Right Cover
(No trepan grooves, for use in V40 Valves.)

V40 OUTLET COVERS (Housing No. 20931) For Load Sensing

| Item No. | Model Number | Part Number | End Outlet [E] | SAE 16 Port [16] | SAE 20 Port [20] |
|----------|---------------|-------------|----------------|------------------|------------------|
| 1 | 40-RC-16-LS-E | 13650588 | • | • | |
| 2 | 40-RC-20-LS-E | 13650651 | • | | • |

With load sensing port.

NOTE: Two internal holes identifies a turnaround or outlet cover. One hole identifies a power beyond or closed center cover.

V40P 'PARALLEL' WORK SECTIONS with machined and plugged upper option cavities (Housing No. 20645 and 21105) Manual and Hydraulic Remote Piloted

| Item No. | Model Number | Part Number | 3-Way, 3-Pos. [03] | 4-Way, 3-Pos. [04] | 4-Way, 3-Pos. Free Flow [F4] | 4-Way, 4-Pos. Float [K4] | 4-Way, 4-Pos. Regenerative [R4] | SAE 12 Ports [12] | SAE 16 Ports [16] | Spring Return to Neutral | 3-Pos. Detent [D] | Rotary Spool Act. [W] | Knock Out Set @ 2000 PSI [K04-2000] | Hydraulic Remote Actuator w/Over-ride [HRO] | Stainless Steel Spool [SS] |
|----------|----------------|-------------|--------------------|--------------------|------------------------------|--------------------------|---------------------------------|-------------------|-------------------|--------------------------|-------------------|-----------------------|-------------------------------------|---|----------------------------|
| 1 | 40-12-03 | 13650653 | * | | | | | * | | * | | | | | |
| 2 | 40-16-03 | 13650090 | * | | | | | | * | * | | | | | |
| 3 | 40-12-04 | 13650654 | | * | | | | * | | * | | | | | |
| 4 | 40-16-04 | 13650091 | | * | | | | | * | * | | | | | |
| 5 | 40-12-F4 | 13650655 | | | * | | | * | | * | | | | | |
| 6 | 40-16-F4 | 13650092 | | | * | | | | * | * | | | | | |
| 7 | 40-16-DF4 | 13650093 | | | * | | | | * | | * | | | | |
| 8 | 40-12-K4 | 13650656 | | | | * | | * | | | | | | | |
| 9 | 40-16-K4 | 13650094 | | | | * | | | * | | | | | | |
| 10 | 40-16-K04-2000 | 13650095 | | * | | | | | * | | | | * | | |
| 11 | 40-12-04-HRO | 13650657 | | * | | | | * | | | | | | * | |
| 12 | 40-16-04-HRO | 13650096 | | * | | | | | * | | | | | * | |
| 13 | 40-16-W4-SS | 13650098 | | * | | | | * | | | * | | | | * |
| 14 | 40-16-WF4-SS | 13650099 | | | * | | | * | | | * | | | | * |
| 15 | 40-16-RG4 | 13650100 | | | | | * | | * | | | | | | |

Bracket assembly not furnished with Rotary Spool Option [W], Items 13 & 14.

V40P 'PARALLEL' WORK SECTIONS without upper option cavities (Housing No. 20645 and 21105) Manual and Hydraulic Remote Piloted

| Item No. | Model Number | Part Number | 3-Way, 3-Pos. [3] | 4-Way, 3-Pos. [4] | 4-Way, 3-Pos. Free Flow [F4] | 4-Way, 4-Pos. Float [K4] | SAE 12 Ports [12] | SAE 16 Ports [16] | Spring Return to Neutral | 3-Pos. Detent [D] | Knock Out Set @ 2000 PSI [K04] | Hydraulic Remote Actuator w/Over-ride [HRO] |
|----------|------------------|-------------|-------------------|-------------------|------------------------------|--------------------------|-------------------|-------------------|--------------------------|-------------------|--------------------------------|---|
| 1 | 40-12-N-03 | 26157028 | * | | | | * | | * | | | |
| 2 | 40-16-N-03 | 26157029 | * | | | | | * | * | | | |
| 3 | 40-12-N-04 | 26157031 | | * | | | * | | * | | | |
| 4 | 40-16-N-04 | 26157032 | | * | | | | * | * | * | | |
| 5 | 40-12-N-F4 | 26157034 | | | * | | * | | * | | | |
| 6 | 40-16-N-F4 | 26157035 | | | * | | | * | * | | | |
| 7 | 40-16-N-DF4 | 26157037 | | | * | | | * | | * | | |
| 8 | 40-12-N-K4 | 26157038 | | | | * | * | | | | | |
| 9 | 40-16-N-K4 | 26157039 | | | | * | * | | | | | |
| 10 | 40-16-N-K04-2000 | 26157040 | | * | | | | * | | | * | |
| 11 | 40-12-N-04-HRO | 26157041 | | * | | | * | | | | | * |
| 12 | 40-16-N-04-HRO | 26157042 | | * | | | | * | | | | * |

The 'N' in the valve assemblies listed above designates that the upper work port relief option cavities are NOT machined. If the application requires the use of work port option cartridges (i.e. reliefs or anti-cavitation checks), do not select valve assemblies from the group.

V40 'PARALLEL' WORK SECTIONS With Machined And Plugged Upper Option Cavities (Housing No. 20645) Solenoid-Operated

On/Off Solenoids (SOL)

| Item No. | Model Number | Part Number | 3-Way, 3-Pos. [03] | 4-Way, 3-Pos. [04] | 4-Way, 3-Pos. Free Flow [F4] | SAE 12 Work Ports [12] | SAE 16 Work Ports [16] | 12 VDC SOL Actuator [SOL-12] |
|----------|-----------------|-------------|--------------------|--------------------|------------------------------|------------------------|------------------------|------------------------------|
| 1 | 40-12-04-SOL-12 | 13650659 | | • | | • | | • |
| 2 | 40-16-04-SOL-12 | 13650102 | | • | | | • | • |
| 3 | 40-12-03-SOL-12 | 13650661 | • | | | • | | • |
| 4 | 40-16-03-SOL-12 | 13650104 | • | | | | • | • |
| 5 | 40-12-F4-SOL-12 | 13650663 | | | • | • | | • |
| 6 | 40-16-F4-SOL-12 | 13650106 | | | • | | • | • |
| 7 | 40-12-04-SOL-12 | 13650665 | | • | | • | | • |

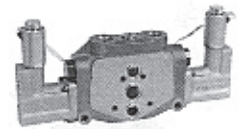
Because of the internal pilot porting, these sections must be stacked directly downstream from the No. 20929 Inlet Cover.

V40 'PARALLEL' WORK SECTIONS With Machined And Plugged Upper Option Cavities (Housing No. 20645) Solenoid-Operated

Proportional Solenoids

| Item No. | Model Number | Part Number | 3-Way, 3-Pos. [03] | 4-Way, 3-Pos. [04] | 4-Way, 3-Pos. Free Flow [F4] | SAE 12 Work Ports [12] | SAE 16 Work Ports [16] | 12 VDC EPC Actuator [EPC-12] |
|----------|-----------------|-------------|--------------------|--------------------|------------------------------|------------------------|------------------------|------------------------------|
| 1 | 40-12-04-EPC-12 | 13650660 | | • | | • | | • |
| 2 | 40-16-04-EPC-12 | 13650103 | | • | | | • | • |
| 3 | 40-12-03-EPC-12 | 13650662 | • | | | • | | • |
| 4 | 40-16-03-EPC-12 | 13650105 | • | | | | • | • |
| 5 | 40-12-F4-EPC-12 | 13650664 | | | • | • | | • |
| 6 | 40-16-F4-EPC-12 | 13650107 | | | • | | • | • |

Because of the internal pilot porting, these sections must be stacked directly downstream from the No. 20929 Inlet Cover.



V40 EPC Work Section

Solenoid Cartridges & Coil Kits

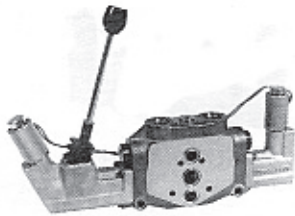
Refer to page 83 in the Electronics Section

V40 'PARALLEL' WORK SECTIONS With Machined And Plugged Upper Option Cavities (Housing No. 20645) Solenoid-Operated

(On/Off Solenoids with Handle)

| Item No. | Model Number | Part Number | 3-Way, 3-Pos. [03] | 4-Way, 3-Pos. [04] | 4-Way, 3-Pos. Free Flow [F4] | SAE 12 Work Ports [12] | SAE 16 Work Ports [16] | 12 VDC SOL with Handle [SOL-12-H] |
|----------|-------------------|-------------|--------------------|--------------------|------------------------------|------------------------|------------------------|-----------------------------------|
| 1 | 40-12-04-SOL-12-H | 13650671 | | • | | • | | • |
| 2 | 40-16-04-SOL-12-H | 13650295 | | • | | | • | • |
| 3 | 40-12-03-SOL-12-H | 13650673 | • | | | • | | • |
| 4 | 40-16-03-SOL-12-H | 13650297 | • | | | | • | • |
| 5 | 40-12-F4-SOL-12-H | 13650675 | | | • | • | | • |
| 6 | 40-16-F4-SOL-12-H | 13650299 | | | • | | • | • |

Because of the internal pilot porting, these sections must be stacked directly downstream from the No. 20929 Inlet Cover.



V40 EPC Work Section with Handle

V40 'PARALLEL' WORK SECTIONS With Machined And Plugged Upper Option Cavities (Housing No. 20645) Solenoid-Operated

(Proportional Solenoids with Handle)

| Item No. | Model Number | Part Number | 3-Way, 3-Pos. [03] | 4-Way, 3-Pos. [04] | 4-Way, 3-Pos. Free Flow [F4] | SAE 12 Work Ports [12] | SAE 16 Work Ports [16] | 12 VDC EPC with Handle [EPC-12-H] |
|----------|-------------------|-------------|--------------------|--------------------|------------------------------|------------------------|------------------------|-----------------------------------|
| 1 | 40-12-04-EPC-12-H | 13650672 | | • | | • | | • |
| 2 | 40-16-04-EPC-12-H | 13650296 | | • | | | • | • |
| 3 | 40-12-03-EPC-12-H | 13650674 | • | | | • | | • |
| 4 | 40-16-03-EPC-12-H | 13650298 | • | | | | • | • |
| 5 | 40-12-F4-EPC-12-H | 13650676 | | | • | • | | • |
| 6 | 40-16-F4-EPC-12-H | 13650300 | | | • | | • | • |

Because of the internal pilot porting, these sections must be stacked directly downstream from the No. 20929 Inlet Cover.

V40LS 'LOAD SENSING' WORK SECTIONS (Housing No. 24054) Manually-Operated

| Item No. | Model Number | Part Number | 3-Way, 3-Pos. [03] | 4-Way, 3-Pos. [04] | 4-Way, 3-Pos. [F4] | Spring Return to Neutral | SAE 12 Work Ports [12] | SAE 16 Work Ports [16] |
|----------|--------------|-------------|--------------------|--------------------|--------------------|--------------------------|------------------------|------------------------|
| 1 | 40LS-12-03 | 26157089 | • | | | • | • | |
| 2 | 40LS-16-03 | 26157090 | • | | | • | | • |
| 3 | 40LS-12-04 | 26157091 | | • | | • | • | |
| 4 | 40LS-16-04 | 26157092 | | • | | • | | • |
| 5 | 40LS-12-F4 | 26157093 | | | • | • | • | |
| 6 | 40LS-16-F4 | 26157094 | | | • | • | | • |

V40LS 'LOAD SENSING' WORK SECTIONS (Housing No. 24054) Solenoid-Operated (On/Off Solenoid-SOL)

| Item No. | Model Number | Part Number | 3-Way, 3-Pos. [03] | 4-Way, 3-Pos. [04] | 4-Way, 3-Pos. [F4] | SAE 12 Work Ports [12] | SAE 16 Work Ports [16] | 12VDC On-off Solenoid Actuator [SOL] |
|----------|-------------------|-------------|--------------------|--------------------|--------------------|------------------------|------------------------|--------------------------------------|
| 1 | 40LS-12-04-SOL-12 | 13650596 | | • | | • | | • |
| 2 | 40LS-16-04-SOL-12 | 13650597 | | • | | | • | • |
| 3 | 40LS-12-03-SOL-12 | 13650600 | • | | | • | | • |
| 4 | 40LS-16-03-SOL-12 | 13650601 | • | | | | • | • |
| 5 | 40LS-12-F4-SOL-12 | 13650604 | | | • | • | | • |
| 6 | 40LS-16-F4-SOL-12 | 13650605 | | | • | | • | • |

V40LS 'LOAD SENSING' WORK SECTIONS (Housing No. 24054) Solenoid-Operated

Proportional Solenoid-EPC

| Item No. | Model Number | Part Number | 3-Way, 3-Pos. [03] | 4-Way, 3-Pos. [04] | 4-Way, 3-Pos. [F4] | SAE 12 Work Ports [12] | SAE 16 Work Ports [16] | 12 VDC EPC Actuator [EPC-12] |
|----------|-------------------|-------------|--------------------|--------------------|--------------------|------------------------|------------------------|------------------------------|
| 1 | 40LS-12-04-EPC-12 | 13650598 | | • | | • | | • |
| 2 | 40LS-16-04-EPC-12 | 13650599 | | • | | | • | • |
| 3 | 40LS-12-03-EPC-12 | 13650602 | • | | | • | | • |
| 4 | 40LS-16-03-EPC-12 | 13650603 | • | | | | • | • |
| 5 | 40LS-12-F4-EPC-12 | 13650606 | | | • | • | | • |
| 6 | 40LS-16-F4-EPC-12 | 13650607 | | | • | | • | • |

V40 'PARALLEL' WORK SECTIONS, (Housing No. 20645) Solenoid-Operated

On/Off Solenoids with Handle (SOL-H)

| Item No. | Model Number | Part Number | 3-Way, 3-Pos. [03] | 4-Way, 3-Pos. [04] | 4-Way, 3-Pos. [F4] | SAE 12 Work Ports [12] | SAE 16 Work Ports [16] | 12 VDC SOL with Handle [SOL-12-H] |
|----------|--------------------|-------------|--------------------|--------------------|--------------------|------------------------|------------------------|-----------------------------------|
| 1 | 40LS-12-04-SOL-12H | 13650620 | | • | | • | | • |
| 2 | 40LS-16-04-SOL-12H | 13650621 | | • | | | • | • |
| 3 | 40LS-12-03-SOL-12H | 13650624 | • | | | • | | • |
| 4 | 40LS-16-03-SOL-12H | 13650625 | • | | | | • | • |
| 5 | 40LS-12-F4-SOL-12H | 13650628 | | | • | • | | • |
| 6 | 40LS-16-F4-SOL-12H | 13650629 | | | • | | • | • |

V40LS 'LOAD SENSING' WORK SECTIONS (Housing No. 24054) Solenoid-Operated

Proportional Solenoids-EPC with Handle (EPC-H)

| Item No. | Model Number | Part Number | 3-Way, 3-Pos. [03] | 4-Way, 3-Pos. [04] | 4-Way, 3-Pos. [F4] | SAE 12 Work Ports [12] | SAE 16 Work Ports [16] | 12VDC EPC with Handle [EPC-12-H] |
|----------|--------------------|-------------|--------------------|--------------------|--------------------|------------------------|------------------------|----------------------------------|
| 1 | 40LS-12-04-EPC-12H | 13650622 | | • | | • | | • |
| 2 | 40LS-16-04-EPC-12H | 13650623 | | • | | | • | • |
| 3 | 40LS-12-03-EPC-12H | 13650626 | • | | | • | | • |
| 4 | 40LS-16-03-EPC-12H | 13650627 | • | | | | • | • |
| 5 | 40LS-12-F4-EPC-12H | 13650630 | | | • | • | | • |
| 6 | 40LS-16-F4-EPC-12H | 13650631 | | | • | | • | • |

V40 TRAVEL LIMITER/MANUAL OVERRIDE

May be added to above Solenoid/EPC Positioners.

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|---|
| 1 | K-40-MO-P | 13650118 | Push Type Manual Override |
| 2 | K-40-TL-MO-S | 13650119 | Screw Type Travel Limiter/Manual Override |
| 3 | K-40-TL-IH | 13650936 | Screw Type Travel Limiter for use with Manual Handle Option (Handle End Only) |

Each kit includes one assembly for one end of valve.



K-40-TL-MO-S
Manual Override

25P and V40 MID-INLET SECTIONS (Housing No. 3953)

| Item No. | Model Number | Part Number | SAE 16 Ports [16] | Combined Flow with Top Inlet [CF] | Split Flow with Top Inlet [SF] | Select Flow with Top Inlet [SF/CF] ① |
|----------|--------------|-------------|-------------------|-----------------------------------|--------------------------------|--------------------------------------|
| 1 | 40-16-CF | 8650056 | • | • | | |
| 2 | 40-16-SF | 13650166 | • | | • | |
| 3 | 40-16-SF/CF | 26157025 | • | | | • |

① The 40-16-SF/CF Select Flow Mid-Inlet is spring loaded to Split Flow as ordered above. Shifting the spool will select Combined Flow. The internal spool positioner parts may be repositioned so that the Mid-Inlet is spring-loaded to Combined Flow.



3953
Mid-Inlet Section

V40 Mid Inlet Option Kits

Also used with 25P and V42 Valves.

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|---|
| 1 | K-40-SF | 8650080 | Mid-Inlet Conversion Kit to Split Flow |
| 2 | K-40-CF | 13650929 | Mid-Inlet Conversion Kit to Combined Flow |

V40 Work Port Relief Cartridges and Anti-Cavitation Check Kits

Model RD30 differential poppet type relief valves are best suited for flows below 25GPM. Model RP30 pilot operated Relief Valves are recommended for applications requiring flows greater than 25GPM.



RD30



RP30A

| Item No. | Model Number | Part Number | Relief Valve | Combination Relief Valve & Anti-Cav. Check | Anti-Cav. Check | Pressure Range and Setting | | | | |
|----------|---------------|-------------|--------------------------------|--|-----------------|----------------------------|--------------------|--------------------|--------------------|--------------------|
| | | | | | | 500-1249 | 1250-1749 | 1750-1999 | 2000-2599 | 500-3500 |
| | | | | | | Set @ 1200 PSI c/p | Set @ 1700 PSI c/p | Set @ 1950 PSI c/p | Set @ 2500 PSI c/p | Set @ 2500 PSI c/p |
| 1 | RD30-1200 | 8650779 | • | | | • | | | | |
| 2 | RD30-1700 | 8650780 | • | | | | • | | | |
| 3 | RD30-1950 | 8650781 | • | | | | | • | | |
| 4 | RD30-2550 | 8650782 | • | | | | | | • | |
| 5 | RP30A-2500 | 8650776 | • | | | | | | | • |
| 6 | RP30A-AC-2500 | 8650777 | | • | | | | | | • |
| 7 | K-30-AC | 8650778 | | | • | | | | | |
| 8 | K-30-NR | 8650733 | No Relief Plug Kit (NR OPTION) | | | | | | | |

Model RD30 not available with Anti-Cavitation Check.
Above Relief Valves set at crack pressure (c/p) of 1 GPM.



3-Position Detent

V40 Spool Positioner Option Kits

| Item No. | Model Number | Part Number | Description |
|----------|----------------------|-------------|---|
| 1 | K-40-A | 13650112 | Spring Extended Spool Positioner Kit |
| 2 | K-40-D | 13650113 | 3-Position Detent Kit |
| 3 | K-40-R | 13650114 | Spool "IN" Detent w/Spring Return to Neutral Positioner Kit |
| 4 | K-PA100-40 | 13082001 | Pneumatic Spool Actuator Kit |
| 5 | K-40-HR [Ⓞ] | 13650953 | Hydraulic Remote Actuator Kit |

The above kits will not work with Float, Hydraulic Detent Release (KD), or Regenerative Spools.

Ⓞ K-40-HR actuators are not interchangeable with factory ordered sections having hydraulic remote positioners. The spools are different as well as some of the positioner parts.

V40 Handle End Options

Handle Kit contains necessary Links and Pins.



Vertical & Horizontal Handles

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|------------------------------|
| 1 | K-40-VH | 13650115 | Vertical Handle |
| 2 | K-40-HH | 13650116 | Horizontal Handle |
| 3 | K-40-IH | 13650117 | Inverted Handle |
| 4 | K-30-RET | 8650757 | Standard Seal Retainer Plate |
| 5 | K-30-BOOT | 8650758 | Spool Boot Assembly |

V40 Section Stud Assembly Kits

Includes Section Seals, Studs and Nuts. Also used with 25P and V42 Valves. (Stud Kits do not include 9000112 Solenoid Pilot Passage Seals. This seal must be purchased separately, if required. (See Below.)

| Item No. | Valve with 20931 Right End Outlet | Part Number | Number of Valve Spools & Mid-Inlet Sections | Valve with 8090 Right Top Outlet | Part Number |
|----------|-----------------------------------|-------------|---|----------------------------------|-------------|
| 1 | K-40-LRE-1 | 8650280 | One Section | K-40-LRT-1 | 8650288 |
| 2 | K-40-LRE-2 | 8650281 | Two Sections | K-40-LRT-2 | 8650289 |
| 3 | K-40-LRE-3 | 8650282 | Three Sections | K-40-LRT-3 | 8650290 |
| 4 | K-40-LRE-4 | 8650283 | Four Sections | K-40-LRT-4 | 8650291 |
| 5 | K-40-LRE-5 | 8650284 | Five Sections | K-40-LRT-5 | 8650292 |
| 6 | K-40-LRE-6 | 8650285 | Six Sections | K-40-LRT-6 | 8650293 |
| 7 | K-40-LRE-7 | 8650286 | Seven Sections | K-40-LRT-7 | 8650294 |
| 8 | K-40-LRE-8 | 8650287 | Eight Sections | K-40-LRT-8 | 8650295 |



Stud Kit

| Item No. | Model Number | Part Number | Description |
|----------|----------------|-------------|--|
| 1 | K-40-SECT-SEAL | 13650406 | Section Seal for Solenoid Pilot Passages |

Kit Includes 25 pieces of Seal Number 9000112.

V42



8089 Left Cover



8288 Left Cover
Trepan grooves not machined.
Use with V42 Valves

V42 INLET COVERS (Housing No.'s 8089 & 8288)

| Item No. | Model Number | Part Number | Top Inlet & Outlet | End Inlet & Outlet | SAE 20 [20] | With Pressure Reducing Valve for Solenoid Option |
|----------|--------------|-------------|--------------------|--------------------|-------------|--|
| 1 | 42-LC-20 | 8650032 | • | • | • | |
| 2 | 42-LC-20-P | 8650033 | • | • | • | • |

Two Port Plugs are furnished with each cover.
One Plug is machined for 1/4" NPT gauge port.
Gauge port will be plugged.
All inlet Covers machined to accept Relief Cartridges.



RP60A
Relief Valve Cartridge

Main Relief Options for 25P, V40 and V42 Inlet Covers

| Item No. | Model Number | Part Number | Pressure Range and Setting 500-3500 Set @ 2500 PSI c/p |
|----------|--------------|-------------|---|
| 1 | RP60A-2500 | 8650393 | • |
| 2 | K-40-NR | 8650379 | Relief Plug Kit (NR Option) |

Above Relief Valve has stainless steel spring and is external screw adjustable.
Crack Pressure (c/p) set at 1 GPM.

Note: Two internal holes identifies a turnaround or outlet cover.
One internal hole identifies a Power Beyond or Closed Center Cover.



20931 Right Cover
Trepan grooves machined
for use with V42 Valves



8287 Right cover
Trepan grooves machined
for use with V42 Valves



8090 Right Cover
Trepan grooves machined
for use with V42 Valves

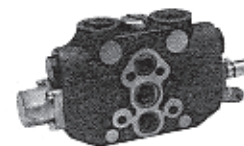
V42 OUTLET COVERS (Housing No.'s 8090, 20931 & 8287)

| Item No. | Model Number | Part Number | SAE 16 Port [16] | SAE 20 Port [20] | 20931 End Outlet [E] | 8287 & 8090 Top Outlet [T] | 20931 End Power Beyond [EY] | (8090) Machined for Conversion Top Power Beyond or Closed Center [MY] | (8287) With 12 VDC Pressure Build-Up Valve for Solenoid [P-12] | (8287) With 24 VDC Pressure Build-Up Valve for Solenoid [P-24] | (8287) With Mechanical Pressure Build-Up Valve for Solenoid [PM] |
|----------|--------------------------|-------------|------------------|------------------|----------------------|----------------------------|-----------------------------|---|--|--|--|
| 1 | 42-RC-20-E | 8650034 | | • | • | | | | | | |
| 2 | 42-RC-20-EY | 8650036 | | • | | | • | | | | |
| 3 | 42-RC-16-MY [Ⓞ] | 8650582 | • | | | | | • | | | |
| 4 | 42-RC-16-TP-24 | 13650282 | • | | | • | | | | • | |
| 5 | 42-RC-16-TP-12 | 8650583 | • | | | • | | | • | | |
| 6 | 42-RC-16-TPM | 8650964 | • | | | • | | | | | • |

[Ⓞ] A 3/4" NPT Plug is furnished with 8090 Covers for Internal Conversion to Power Beyond or Closed Center.
If the Power Beyond or Closed Center Option is utilized, the Outlet Port must be located in the Inlet Cover.



8045
3-Way Work Section

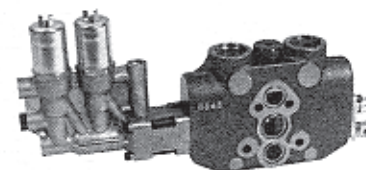


8045
4-Way Work Section

V42 'PARALLEL' WORK SECTIONS (Housing No. 8045) Manually-Operated

| Item No. | Model Number | Part Number | 3-Way 3-Pos [03] | 4-Way 3-Pos. [04] | 4-Way 3-Pos. Free Flow [F4] | 4-Way 4-Pos. Float [K4] | 4-Way 4-Pos. Regenerative- [R4] | 3-Pos. Detent [D] | Hydraulic Detent (Set at 2000 PSI) [K0] | Rotary Spool Pos [W] | Spring Return to Neutral | SAE 12 Work Port [12] | SAE 16 Work Port [16] | Upper Options Machined & Plugged [U] | Upper & Lower Options Machined & Plugged [UL] | Stainless Steel Spool [SS] |
|----------|-----------------------------|-------------|------------------|-------------------|-----------------------------|-------------------------|---------------------------------|-------------------|---|----------------------|--------------------------|-----------------------|-----------------------|--------------------------------------|---|----------------------------|
| 1 | 42-12-03 | 13650138 | • | | | | | | | | • | • | | | | |
| 2 | 42-12-U-03 | 13650142 | • | | | | | | | | • | • | | • | | |
| 3 | 42-16-U-03 | 08650038 | • | | | | | | | | • | | • | • | | |
| 4 | 42-12-04 | 13650137 | | • | | | | | | | • | • | | | | |
| 5 | 42-12-U-04 | 13650140 | | • | | | | | | | • | • | | • | | |
| 6 | 42-12-UL-04 | 13650141 | | • | | | | | | | • | • | | | • | |
| 7 | 42-12-F4 | 13650139 | | | • | | | | | | • | • | | | | |
| 8 | 42-12-K4 | 13650143 | | | | • | | | | | | • | | | | |
| 9 | 42-16-F4 | 8650040 | | | • | | | | | | • | | • | | | |
| 10 | 42-16-UL-04 | 8650041 | | • | | | | | | | • | | | | • | |
| 11 | 42-16-DF4 | 8650050 | | | • | | | • | | | | | • | | | |
| 12 | 42-16-U-K04-2000 | 8650616 | | | | | | | • | | | | • | • | | |
| 13 | 42-16-UL-DF4 | 8650047 | | | • | | | • | | | | | • | | • | |
| 14 | 42-16-04 | 8650481 | | • | | | | | | | • | | • | | | |
| 15 | 42-16-U-04 | 8650617 | | • | | | | | | | • | | • | • | | |
| 16 | 42-16-UL-W4-SS [Ⓞ] | 8650511 | | • | | | | | | • | | | • | | • | • |
| 17 | 42-16-WF4-SS [Ⓞ] | 8650510 | | | • | | | | | • | | | • | | | • |
| 18 | 42-16-W4 [Ⓞ] | 8650642 | | • | | | | | | • | | | • | | | |
| 19 | 42-16-U-F4 | 13650284 | | | • | | | | | | • | | • | • | | |
| 20 | 42-16-UL-F4 | 13650285 | | | • | | | | | | • | | • | | • | |

Ⓞ Handle Bracket assembly not furnished with Rotary Spool Option[W] Sections (Items 16, 17 and 18).



8045
External Solenoid
Controlled Work Section

V42 'PARALLEL' WORK SECTIONS (Housing No. 8045) Remote-Operated

| Item No. | Model Number | Part Number | 4-Way, 3-Pos. [04] | SAE 16 Work Ports [16] | Hydraulic Remote with Override [HRO] | Hydraulic Remote with Handle [HRH] | 12 VDC Solenoid Cartridge [SOL-12] | 24 VDC Solenoid Cartridge [SOL-24] |
|----------|-----------------|-------------|--------------------|------------------------|--------------------------------------|------------------------------------|------------------------------------|------------------------------------|
| 1 | 42-16-04-HRO | 8650581 | • | • | • | | | |
| 2 | 42-16-04-HRH | 8650580 | • | • | | • | | |
| 3 | 42-16-04-SOL-12 | 8650044 | • | • | | • | | |
| 4 | 42-16-04-SOL-24 | 13650281 | • | • | | | • | |

V42 SPECIAL WORK SECTIONS, (Housing No.'s 8046, 8138 & 8675)

Includes Handle Bracket.



8138 Regenerative Work Section
or
8046 Float Section

| Item No. | Model Number | Part Number | 4-Way, 3-Pos. [4] | 4-Way, 4-Pos. [K4] | 4-Way 4-Pos Regenerative [RG4] | SAE 16 Work Ports [16] | Parallel Circuit | Tandem Circuit [T] | Upper Options Machined & Plugged [U] | Upper & Lower Options Machined & Plugged [UL] |
|----------|--------------|-------------|-------------------|--------------------|--------------------------------|------------------------|------------------|--------------------|--------------------------------------|---|
| 1 | 42-16-UL-K4 | 8650045 | | • | | • | • | | | • |
| 2 | 42-16-RG4 | 8650046 | | | • | • | • | | | |
| 3 | 42T-16-U-04 | 8650039 | • | | | • | | • | • | |

V42 MID-INLET SECTIONS (Housing No. 3953)



3953 Mid Inlet Section

| Item No. | Model Number | Part Number | SAE 16 Ports [16] | Combined Flow with Top Inlet [CF] | Split Flow with Top Inlet [SF] | Select Flow with Top Inlet [SF/CF] ① |
|----------|--------------|-------------|-------------------|-----------------------------------|--------------------------------|--------------------------------------|
| 1 | 42-16-CF | 8650048 | • | • | | |
| 2 | 42-16-SF | 8650049 | • | | • | |
| 3 | 42-16-SF/CF | 26157026 | • | | | • |

① The 42-16-SF/CF Select Flow Mid-Inlet is spring loaded to Split Flow as ordered above. Shifting the spool will select Combined Flow. The internal spool positioner parts may be repositioned so that the Mid-Inlet is spring-loaded to Combined Flow.

V42 Spool Positioner Option Kits



Spool Action Assembly (Bonnet)

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|---|
| 1 | K-42-A | 8650162 | Spring Extended Spool Positioner Kit |
| 2 | K-42-D | 8650163 | 3-Position Detent Kit |
| 3 | K-42-R | 8650164 | Spool "IN" Detent w/Spring Return to Neutral Positioner Kit |
| 4 | K-42-W | 8650165 | Rotary Spool Positioner Kit |
| 5 | K-42-SOL-12 | 8650166 | 12VDC Solenoid Actuator |
| 6 | K-42-SOL-24 | 13650283 | 24VDC Solenoid Actuator |
| 7 | K-42-HR | 8650576 | Hydraulic Remote Spool Actuator Kit ② |
| 8 | K-42-HRO | 8650577 | Hydraulic Remote Spool Actuator Kit w/Override ② |
| 9 | K-PA100-42 | 13028001 | Pneumatic Spool Positioner Kit |

The above kits will not work with Float, Hydraulic Detent Release (KD), or Regenerative spools.
② Contains both Bonnets Required.

Work Port Relief Cartridges for 25P and V42 Control Valves Relief Model 'YC'

| Item No. | Model Number | Part Number | Pressure Range and Setting | | |
|----------|--------------|-------------|-----------------------------------|------------------------------------|------------------------------------|
| | | | 500-1000 Set @ 1000 PSI c/p | 1001-1500 Set @ 1500 PSI c/p | 1501-3000 Set @ 3000 PSI c/p |
| 1 | YC-1000 | 8650399 | • | | |
| 2 | YC-1500 | 8650400 | | • | |
| 3 | YC-3000 | 8650401 | | | • |

'WH' and 'RP51' Relief Cartridges

| Item No. | Model Number | Part Number | 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 | 2501-3000 Set @ 3000 PSI c/p | 500-3500 Set @3000 PSI c/p |
| 1 | WH-1200 | 8650417 | • | | | | | |
| 2 | WH-1700 | 8650418 | | • | | | | |
| 3 | WH-1950 | 8650419 | | | • | | | |
| 4 | WH-2550 | 8650420 | | | | • | | |
| 5 | WH-3000 | 8650398 | | | | | • | |
| 6 | RP51A-3000 | 8650421 | | | | | | • |
| 7 | K-20-NR | 8650382 | Relief Cavity Plug Kit (NR Option) | | | | | |



WH Relief Valve Cartridge

The above Relief Valves have stainless steel springs.
Model 'WH' Relief Valves are internal shim adjustable. Model 'RP51' Relief Valves are external screw adjustable.
Crack Pressure (c/p) set at 1 GPM.

Anti-Cavitation Check Kits

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|--|
| 1 | K-42-UAC | 8650378 | Upper Anti-Cavitation Check Assembly (For use in the "upper" option cavity only) |
| 2 | K-42-LAC | 8650377 | Lower Anti-Cavitation Check Assembly (For use in the "lower" option cavity only) |



Upper Anti-Cavitation Check

Relief External Adjustment Kit

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|--|
| 1 | K-WH-A | 8650381 | External Screw Adjustable Option for WH Relief |



Lower Anti-Cavitation Check



Vertical Handle



Horizontal Handle

V42 Handle End Option

Handle Kit contains necessary Links and Pins.

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|------------------------------------|
| 1 | K-42-VH-B | 8650174 | Vertical Handle Assembly (Black) |
| 2 | K-42-VH-P | 8650172 | Vertical Handle Assembly (Plain) |
| 3 | K-42-HH-B | 8650171 | Horizontal Handle Assembly (Black) |
| 4 | K-42-HH-P | 8650169 | Horizontal Handle Assembly (Plain) |
| 5 | K-42-RET | 8650175 | Standard Seal Retainer Plate |
| 6 | K-42-BOOT | 8650176 | Spool Boot Assembly |
| 7 | K-42-MA | 8650177 | Male Spool Clevis |

V42 Section Stud Assembly Kits

Includes Section Seals, Studs and Nuts.



Section Stud Assembly Kit

| Item No. | Valve with 8089 Left Cover and 20931 Right End Out | Part Number | Number of Valve Spools & Mid-Inlet Sections | Valve with 8090 or 8287 Right Top Out | Part Number |
|----------|--|-------------|---|---------------------------------------|-------------|
| 1 | | 8650280 | One Section | K-40-LRT-1 | 8650288 |
| 2 | | 8650281 | Two Sections | K-40-LRT-2 | 8650289 |
| 3 | | 8650282 | Three Sections | K-40-LRT-3 | 8650290 |
| 4 | | 8650283 | Four Sections | K-40-LRT-4 | 8650291 |
| 5 | | 8650284 | Five Sections | K-40-LRT-5 | 8650292 |
| 6 | | 8650285 | Six Sections | K-40-LRT-6 | 8650293 |
| 7 | | 8650286 | Seven Sections | K-40-LRT-7 | 8650294 |
| 8 | | 8650287 | Eight Sections | K-40-LRT-8 | 8650295 |
| 9 | | 13650957 | Nine Sections | | |
| 10 | | 13650958 | Ten Sections | | |

Solenoid Tubing Kit

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|---|
| 1 | K-42-TUBE | 8650486 | Tubing assembly between Utility Section and Solenoid Spool Actuator |



8916 Left Cover

V50 INLET COVERS (Housing No. 8916)

| Item No. | Model Number | Part Number | End Inlet [E] | Top Inlet [T] | End Outlet [E] | Top Outlet [T] | 1/4" NPT Gauge Port Plugged | SAE 20 Port Size [20] |
|----------|--------------|-------------|---------------|---------------|----------------|----------------|-----------------------------|-----------------------|
| 1 | 50-LC-20-E | 8650535 | • | | • | | • | • |
| 2 | 50-LC-20-T | 8650536 | | • | | • | • | • |

All Left Covers are machined to accept Main Relief Valve, Model RP50A.



Model RP50A Relief Valve Cartridge

V50 Main Relief Options

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|--|
| 1 | K-50-NR | 8650561 | No Relief Plug Kit (NR Option) |
| 2 | RP50A-2500 | 8650560 | 500 to 3500 PSI Pilot-Operated Relief Cartridge (Set @ 2500 PSI) |



22691 Right Cover

V50 OUTLET COVERS (Housing No. 22691)

| Item No. | Model Number | Part Number | End Outlet [E] | Top Outlet [T] | SAE 20 Port Size [20] | Machined for Power Beyond [Y] |
|----------|--------------|-------------|----------------|----------------|-----------------------|-------------------------------|
| 1 | 50-RC-20-ETY | 13650650 | • | • | • | • |

Top Port plugged. End port may be converted to Closed Center or Power Beyond using Option Kits below.

V50 Outlet Cover Conversion Kits

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|----------------------------|
| 1 | K-SAE-20 | 8650302 | Conversion Plug |
| 2 | K-50-C | 8650563 | Closed Center Plug |
| 3 | K-50-16Y | 8650564 | SAE 16 Power Beyond Sleeve |

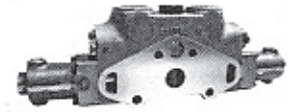
V50

V50 WORK SECTIONS (Housing No.'s 8917 & 8918)

3-Way or 4-Way Sections include Handle Brackets ♦ and drilled and plugged work port options.

| Item No. | Model Number | Part Number | 3-Way 3-Pos. [3] | 4-Way 3-Pos. [4] | Free Flow Motor Spool [F4] | 4-Way Float [K4] | SAE 16 Work Ports [16] | 3-Position Detent [D] | Hydraulic Remote Spool Actuator [HR] | Tandem Circuit [T] | Series Circuit [S] | Parallel Circuit |
|----------|--------------|-------------|------------------|------------------|----------------------------|------------------|------------------------|-----------------------|--------------------------------------|--------------------|--------------------|------------------|
| 1 | 50-16-03 | 8650538 | • | | | | • | | | | | • |
| 2 | 50-16-04 | 8650540 | | • | | | • | | | | | • |
| 3 | 50-16-F4 | 8650541 | | | • | | • | | | | | • |
| 4 | 50-16-DF4 | 8650542 | | | • | | • | • | | | | • |
| 5 | 50-16-K4 | 8650543 | | | | • | • | | | | | • |
| 6 | 50-16-04-HR | 8650544 | | • | | | • | | • | | | • |
| 7 | 50-16-F4-HR | 8650545 | | | • | | • | | • | | | • |
| 8 | 50T-16-03 | 8650546 | • | | | | • | | | • | | |
| 9 | 50T-16-04 | 8650547 | | • | | | • | | | • | | |
| 10 | 50T-16-K4 | 8650548 | | | | • | • | | | • | | |
| 11 | 50T-16-04-HR | 8650549 | | • | | | • | | • | • | | |
| 12 | 50S-16-04 | 13650144 | | • | | | • | | | | • | |

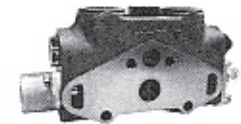
Items 6, 7 and 11 do not include handle brackets.



Section with Hydraulic Remote Spool Actuator (HR)



8918 3-Way, 4-Way or 4-Way Float Tandem Section



8917 3-Way, 4-Way or 4-Way Float Parallel Section

V50 MID-INLET SECTIONS (Housing No.'s 12138, 8918 & 8917)

| Item No. | Model Number | Part Number | Split [SF] | Combined [CF] | SAE 16 Inlet [16] | Description | Housing No. |
|----------|--------------|-------------|------------|---------------|-------------------|--|-------------|
| 1 | 20/50-16-SF | 8650798 | • | | • | V20/V50 Split Flow Transition Mid Inlet | 12138 |
| 2 | 20/50-16-CF | 8650797 | | • | • | V20/V50 Combined Flow Transition Mid Inlet | 12138 |
| 3 | 50-16-SF | 13650941 | • | | • | V50 Split Flow Mid Inlet | 8917 |
| 4 | 50-16-CF | 13650942 | | • | • | V50 Combined Flow Mid Inlet | 8918 |

Sections machined to accept RP50 main relief cartridges.

V20/V50 mid-inlet sections combine V20 work sections (upstream) with V50 work sections (downstream)

Standard V50 section stud kits are used for downstream V50 work sections. Special V20/V50 section stud kits are listed in the V20 section.

V50 Handle End Options

Handle Kits contain necessary Links and Pins.

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|---------------------|
| 1 | K-50-VH | 8650567 | Vertical Handle |
| 2 | K-50-HH | 8650566 | Horizontal Handle |
| 3 | K-50-BOOT | 8650565 | Spool Boot Assembly |



Horizontal Handle



Vertical Handle

V50 Section Stud Assembly Kits

Includes Section Seals and Nuts.

| Item No. | Model Number | Part Number | Number of Work Sections |
|----------|--------------|-------------|-------------------------|
| 1 | K-50-1L | 13650644 | One Section |
| 2 | K-50-2L | 13650645 | Two Section |
| 3 | K-50-3L | 13650646 | Three Section |
| 4 | K-50-4L | 13650647 | Four Section |
| 5 | K-50-5L | 13650648 | Five Section |
| 6 | K-50-6L | 13650649 | Six Section |



Spool Action Assembly (Bonnet)

V50 Spool Positioner Option Kits

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|--|
| 1 | K-50-D | 8650562 | 3-Position Detent |
| 2 | K-PA100-50 | 13044001 | Pneumatic Spool Positioner Kit |
| 3 | K-50-HR | 13650949 | Hydraulic Remote Spool Actuator Kit [Ⓞ] |
| 4 | K-50-HRO | 13650950 | Hydraulic Remote with Override Spool Actuator Kit [Ⓞ] |

Cannot be used on Float Spool.
[Ⓞ] Contains both bonnets needed.



Model RP50A Relief Valve Cartridge

V50 Work Port Relief and Anti-Cavitation Cartridges

| Item No. | Model Number | Part Number | Pressure Range, 500-3500 PSI Set @ 2500 PSI c/p | Description |
|----------|---------------|-------------|---|---------------------------------|
| 1 | RP50A-2500 | 8650560 | • | Pilot-Operated Relief Cartridge |
| 2 | RP50A-AC-2500 | 8650966 | • | Combination Relief & Anti-Cav. |
| 3 | K-50-AC | 8650558 | | Anti-Cavitation Check |
| 4 | K-50-NR | 8650561 | | No Relief Plug Kit (NR Option) |

All above Relief Valves have stainless steel springs and are external screw adjustable. Crack Pressure (c/p) set at 1 GPM.

V70



8565 Left Cover

V70 INLET COVERS (Housing No. 8565)

| Item No. | Model Number | Part Number | 1-1/2" Split Flange [150] | SAE 24 Ports [24] | End Inlet | End Outlet | Top Inlet | Top Outlet | 1/4" NPT Gauge Port (Plugged) |
|----------|--------------|-------------|---------------------------|-------------------|-----------|------------|-----------|------------|-------------------------------|
| 1 | 70-LC-150-E | 8650068 | • | | • | • | | | • |
| 2 | 70-LC-150-T | 8650066 | • | | | | • | • | • |
| 3 | 70-LC-24-E | 8650069 | | • | • | • | | | • |
| 4 | 70-LC-24-T | 8650067 | | • | | | • | • | • |

All 8565 Inlet Covers are machined to accept the Main Relief Options listed below.



RP70A Relief Valve Cartridge

V70/V90 Main Relief Options

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|--|
| 1 | K-70-NR | 8650376 | No Relief Plug Kit (NR Option) |
| 2 | RP70A-2500 | 8650968 | 500 to 3500 PSI Pilot-Operated Relief Cartridge (Set @ 2500 PSI) |

Above Relief Valve has stainless steel spring and is external screw adjustable. Also used in the V90 Control Valve.



8545 Right Cover

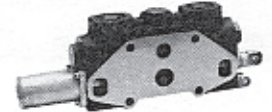
V70 OUTLET COVERS (Housing No.8545)

| Item No. | Model Number | Part Number | 1-1/2" Split Flange [150] | SAE 24 Ports [24] | End Outlet [E] | Top Outlet [T] | End Power Beyond (SAE 24) [Y] | End Power Beyond (1-1/4" S.F.) [Y] |
|----------|------------------|-------------|---------------------------|-------------------|----------------|----------------|-------------------------------|------------------------------------|
| 1 | 70-RC-24-TY⊙ | 8650427 | | • | | • | • | |
| 2 | 70-RC-150T-125Y⊙ | 8650426 | • | | | • | | • |
| 3 | 70-RC-150-T | 8650059 | • | | | • | | |
| 4 | 70-RC-24-ET ⊙ | 8650060 | | • | • | • | | |
| 5 | 70-RC-150-E ⊙ | 8650061 | • | | • | | | |

⊙ Includes Internal Power Beyond Conversion Plug.

⊙ Includes External Port Plug Only. Does **NOT** include the Internal Power Beyond Conversion Plug.

V70P 'PARALLEL' WORK SECTIONS (Housing No. 8566)



8566
Work Section

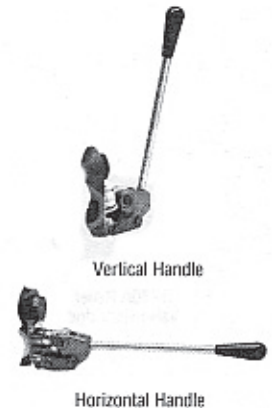
| Item No. | Model Number | Part Number | 3-Way 3-Pos [3] | 4-Way 3-Pos [4] | 4-Way 3-Pos Free Flow [F4] | 4-Way 4-Pos Float [K4] | Spring Return to Neutral [O] | 3-Position Detent [D] | Hydraulic Remote Spool Actuator [HR] | 1" Split Flange Ports [100] | SAE 20 Ports [20] |
|----------|--------------|-------------|-----------------|-----------------|----------------------------|------------------------|------------------------------|-----------------------|--------------------------------------|-----------------------------|-------------------|
| 1 | 70-100-03 | 08650449 | • | | | | • | | | • | |
| 2 | 70-20-03 | 08650071 | • | | | | • | | | | • |
| 3 | 70-100-04 | 08650073 | | • | | | • | | | • | |
| 4 | 70-20-04 | 08650074 | | • | | | • | | | | • |
| 5 | 70-100-F4 | 08650075 | | | • | | • | | | • | |
| 6 | 70-20-F4 | 08650076 | | | • | | • | | | | • |
| 7 | 70-20-DF4 | 08650079 | | | • | | | • | | | • |
| 8 | 70-100-04-HR | 08650524 | | • | | | | • | • | | |
| 9 | 70-20-04-HR | 08650525 | | • | | | | • | | | • |
| 10 | 70-100-F4-HR | 08650522 | | | • | | | • | • | | |
| 11 | 70-20-F4-HR | 08650523 | | | • | | | • | | | • |
| 12 | 70-100-K4 | 08650077 | | | | • | | | | • | |
| 13 | 70-20-K4 | 08650078 | | | | • | | | | | • |

The above work sections are all machined for work port relief option.
With the exception of sections 8, 9, 10 & 11 all are supplied with the handle bracket.

V70T 'TANDEM' WORK SECTIONS (Housing No. 8567)

| Item No. | Model Number | Part Number | 4-Way 3-Pos [4] | 1" Split Flange Ports [100] | SAE 20 Ports [20] | Spring Return to Neutral [O] | Hydraulic Remote Spool Actuator [HR] |
|----------|---------------|-------------|-----------------|-----------------------------|-------------------|------------------------------|--------------------------------------|
| 1 | 70T-100-04 | 13650990 | • | • | | • | |
| 2 | 70T-20-04 | 13650991 | • | | • | • | |
| 3 | 70T-100-04-HR | 13650992 | • | • | | | • |
| 4 | 70T-20-04-HR | 13650993 | • | | • | | • |

The above work sections are all machined for work port relief option.
With the exception of sections 3 & 4 all are supplied with the handle bracket.



V70/V90 Handle End Options

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|-------------------|
| 1 | K-70-VH | 8650120 | Vertical Handle |
| 2 | K-70-HH | 8650121 | Horizontal Handle |

Also used in the V90 Control Valve.

V70 Section Stud Assembly Kits

Includes Section Seals and Nuts.

| Item No. | Model Number | Part Number | Number of Work Sections |
|----------|--------------|-------------|-------------------------|
| 1 | K-70-1 | 8650123 | One Section |
| 2 | K-70-2 | 8650124 | Two Section |
| 3 | K-70-3 | 8650125 | Three Section |
| 4 | K-70-4 | 8650126 | Four Section |
| 5 | K-70-5 | 8650127 | Five Section |
| 6 | K-70-6 | 8650128 | Six Section |

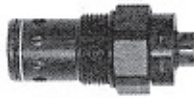


Spool Action Assembly
(Bonnet)

V70/V90 Spool Positioner Option Kits

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|---|
| 1 | K-70-D | 8650129 | 3-Position Detent |
| 2 | K-70-PA1 | 8650622 | Pneumatic Spool Positioner Kit |
| 3 | ◆ K-70-HR | 13650951 | Hydraulic Remote Spool Actuator Kit |
| 4 | ◆ K-70-HRD | 13650952 | Hydraulic Remote with Override Spool Actuator Kit |

Cannot be used on Float Spool.
Also used in the V90 Control Valve.
◆ Contains both bonnets needed.



RP70A Relief
Valve Cartridge

V70/V90 Work Port Option Kit

| Item No. | Model Number | Part Number | Pressure Range, PSI 500 to 3500 Set @ 2500 PSI c/p | Description |
|----------|---------------|-------------|--|---|
| 1 | RP70A-2500 | 8650968 | • | Pilot-operated Relief Cartridge, Adjustable |
| 2 | RP70A-AC-2500 | 8650967 | • | Combination Relief & Anti-Cav, Adjustable |
| 3 | K-70-AC | 8650375 | | Anti-Cavitation Check |
| 4 | K-70-NR | 8650376 | | No Relief Plug Kit (NR Option) |

All above Relief Valves have stainless steel springs and are external screw adjustable.
Also used in the V90 Control Valve.



Left Cover

V90 INLET COVERS (Housing No. 8565)

| Item No. | Model Number | Part Number | 1-1/2" Split Flange [150] | SAE 24 Ports [24] | End Inlet | End Outlet | Top Inlet | Top Outlet | 1/4" NPT Gauge Port (Plugged) |
|----------|--------------|-------------|---------------------------|-------------------|-----------|------------|-----------|------------|-------------------------------|
| 1 | 90-LC-150-E | 13650022 | • | | • | • | | | • |
| 2 | 90-LC-150-T | 13650023 | • | | | | • | • | • |
| 3 | 90-LC-24-E | 13650024 | | • | • | • | | | • |
| 4 | 90-LC-24-T | 13650025 | | • | | | • | • | • |

All Left Covers are machined to accept Main Relief Valve, Model RP70A.

V70/V90 Main Relief Options

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|--|
| 1 | K-70-NR | 8650376 | No Relief Plug Kit (NR Option) |
| 2 | RP70A-2500 | 8650968 | 500 to 3500 PSI Pilot-Operated Relief Cartridge (Set @ 2500 PSI) |

Above Relief Valve has stainless steel spring and is external screw adjustable. Also used in the V70 Control Valve. Relief Valve Cartridge set at 2500 PSI crack (c/p) at 1 GPM.



Right Cover

V90 OUTLET COVERS (Housing No. 8545)

| Item No. | Model Number | Part Number | 1-1/2" Split Flange [150] | SAE 24 Ports [24] | End Outlet [E] | Top Outlet [T] | End Power Beyond (SAE 24) [Y] | End Power Beyond (1-1/4" S.F.) [Y] |
|----------|---------------------------|-------------|---------------------------|-------------------|----------------|----------------|-------------------------------|------------------------------------|
| 1 | 90-RC-24-TY [Ⓢ] | 13650026 | | • | | • | • | |
| 2 | 90-RC-150-TY [Ⓢ] | 13650027 | • | | | • | | • |
| 3 | 90-RC-150-T | 13650028 | • | | | • | | |
| 4 | 90-RC-24-ET [Ⓢ] | 13650029 | | • | • | • | | |
| 5 | 90-RC-150-E [Ⓢ] | 13650030 | • | | • | | | |

[Ⓢ] Includes Internal Power Beyond Conversion Plug.

[Ⓣ] Outlet Cover Only. Does NOT include the Internal Power Beyond Conversion Plug or the External BSP Port Plug.

V90

V90P 'PARALLEL' WORK SECTIONS (Housing No. 8566)

| Item No. | Model Number | Part Number | 3-Way 3-Pos [3] | 4-Way 3-Pos [4] | Free Flow Motor Spool [F4] | 4-Way 4-Pos. Float [K4] | 1" Split Flange Work Ports [100] | SAE 20 Work Ports [20] | Spring Return to Neutral | Hydraulic Remote Spool Actuator [HR] | 3-Pos Detent [D] |
|----------|--------------|-------------|-----------------|-----------------|----------------------------|-------------------------|----------------------------------|------------------------|--------------------------|--------------------------------------|------------------|
| 1 | 90-100-03 | 13650031 | • | | | | • | | • | | |
| 2 | 90-20-03 | 13650032 | • | | | | | • | • | | |
| 3 | 90-100-04 | 13650035 | | • | | | • | | • | | |
| 4 | 90-20-04 | 13650036 | | • | | | | • | • | | |
| 5 | 90-100-F4 | 13650037 | | | • | | • | | • | | |
| 6 | 90-20-F4 | 13650038 | | | • | | | • | • | | |
| 7 | 90-100-F4-HR | 13650039 | | | • | | • | | | • | |
| 8 | 90-20-F4-HR | 13650040 | | | • | | | • | | • | |
| 9 | 90-100-K4 | 13650041 | | | | • | • | | | | |
| 10 | 90-20-K4 | 13650042 | | | | • | | • | | | |
| 11 | 90-100-04-HR | 13650043 | | • | | | • | | | • | |
| 12 | 90-20-04-HR | 13650044 | | • | | | | • | | • | |
| 13 | 90-100-DF4 | 13650045 | | | • | | • | | | | • |
| 14 | 90-20-DF4 | 13650046 | | | • | | | • | | | • |

Items 7, 8, 11 and 12 do not include Handle Brackets.

The above work sections are all machined for work port relief option.

With the exception of sections 7, 8, 11 & 12 all are supplied with the handle bracket.



8566 Work Section

V90T 'TANDEM' WORK SECTIONS (Housing No. 8567)

| Item No. | Model Number | Part Number | 4-Way 3-Pos [04] | 1" Split Flange Work Ports [100] | SAE 20 Ports [20] | Spring Return to Neutral | Hydraulic Remote Spool Actuator [HR] |
|----------|---------------|-------------|------------------|----------------------------------|-------------------|--------------------------|--------------------------------------|
| 1 | 90T-100-04 | 13650994 | • | • | | • | |
| 2 | 90T-20-04 | 13650995 | • | | • | • | |
| 3 | 90T-100-04-HR | 13650996 | • | • | | | • |
| 4 | 90T-20-04-HR | 13650997 | • | | • | | • |

The above work sections are all machined for work port relief option.

With the exception of sections 3 & 4 all are supplied with the handle bracket.

V90 Section Stud Assembly Kits

Includes Section Seals and Nuts.

| Item No. | Model Number | Part Number | Number of Work Sections |
|----------|--------------|-------------|-------------------------|
| 1 | K-90-1 | 13650050 | One Section |
| 2 | K-90-2 | 13650051 | Two Section |
| 3 | K-90-3 | 13650052 | Three Section |
| 4 | K-90-4 | 13650053 | Four Section |
| 5 | K-90-5 | 13650054 | Five Section |
| 6 | K-90-6 | 13650055 | Six Section |

V70/V90 Handle End Options

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|-------------------|
| 1 | K-70-VH | 8650120 | Vertical Handle |
| 2 | K-70-HH | 8650121 | Horizontal Handle |

Also used in the V70 Control Valve.

V70/V90 Spool Positioner Option Kits

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|---|
| 1 | K-70-D | 8650129 | 3-Position Detent |
| 2 | K-70-PA1 | 8650622 | Pneumatic Spool Positioner Kit |
| 3 | K-70-HR | 13650951 | Hydraulic Remote Spool Positioner Kit |
| 4 | K-70-HRO | 13650952 | Hydraulic Remote with Override Spool Positioner Kit |

Cannot be used on Float Spool.
Also used in the V70 Control Valve.

V70/V90 Work Port Option Kit

| Item No. | Model Number | Part Number | Pressure Range, PSI 500 to 3500 Set @ 2500 PSI c/p | Description |
|----------|---------------|-------------|--|---|
| 1 | RP70A-2500 | 8650968 | • | Pilot-operated Relief Cartridge, Adjustable |
| 2 | RP70A-AC-2500 | 8650967 | • | Combination Relief & Anti-Cav, Adjustable |
| 3 | K-70-AC | 8650375 | | Anti-Cavitation Check |
| 4 | K-70-NR | 8650376 | | No Relief Plug Kit (NR Option) |

All above Relief Valves have stainless steel springs and are external screw adjustable.
Also used in the V70 Control Valve.

HCJ HCS HCF



HCJ Hydraulic Controller

Model HCJ and HCJ2 Hydraulic Joystick Controllers

| Item No. | Model Number | Part Number | SAE 6 Side 'P' and 'T' Ported Housing [HCJ] | SAE 6 Side and Bottom 'P' and 'T' Ported Housing [HCJ2] | Pressure Control Range 55 PSI to 205 PSI | Standard Handle | Molded Handle Without Switches [MH-NS] | Molded Handle With Push Button Switch [MH-PB] | Marine Duty Version [SS] |
|----------|--------------|-------------|---|---|--|-----------------|--|---|--------------------------|
| 1 | HCJ | 08650551 | • | | • | • | | | |
| 2 | HCJ-SS | 08650552 | • | | • | • | | | • |
| 3 | HCJ2 | 26157095 | | • | • | • | | | |
| 4 | HCJ2-MH-NS | 26157096 | | • | • | | • | | |
| 5 | HCJ2-MH-PB | 26157097 | | • | • | | | • | |

HCJ2 Hydraulic Controllers offer both side and bottom Pressure 'P' and Tank 'T' porting. Two SAE Plugs will be supplied with each HCJ2 controller (side 'P' and 'T' ports plugged). All porting is SAE 6.



HCS Hydraulic Controller

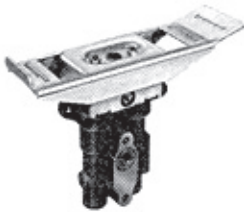
Model HCS (Sectional) Hydraulic Controllers

| Item No. | Model Number | Part Number | Sectional Left Hand or Single [HCS-L] | Sectional Right Hand or Center [HCS-R] | Pressure Control Range 55 PSI to 205 PSI | Standard Handle | Marine Duty Version [SS] |
|----------|--------------|-------------|---------------------------------------|--|--|-----------------|--------------------------|
| 1 | HCS-L | 8650555 | • | | • | • | |
| 2 | HCS-L-SS | 8650556 | • | | • | • | • |
| 3 | HCS-R | 8650553 | | • | • | • | |
| 4 | HCS-R-SS | 8650554 | | • | • | • | • |

HCS-L (Left Hand) sectional hydraulic controller should be used when only one function is required.

HCS Hydraulic Controllers can be panel mounted as received. For foot mounting, order K-HCSF Foot Mount Kit and appropriate K-HC-'X' Stud Kit.

All porting is SAE 6.



HCF Hydraulic Controller

Model HCF (Foot - Operated) Hydraulic Controller

| Item No. | Model Number | Part Number | Hydraulic Controller with Foot Treadle [HCF] | Pressure Control Range 55 PSI to 205 PSI |
|----------|--------------|-------------|--|--|
| 1 | HCF | 8650557 | • | • |

All porting is SAE 6.

Section Stud Assembly Kits

Includes Section Seals, Studs, and Nuts.

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|---------------|
| 1 | K-HC-1 | 8650320 | One Section |
| 2 | K-HC-2 | 8650321 | Two Section |
| 3 | K-HC-3 | 8650322 | Three Section |
| 4 | K-HC-4 | 8650323 | Four Section |
| 5 | K-HC-5 | 8650324 | Five Section |
| 6 | K-HC-6 | 8650325 | Six Section |

Spacer Option

Provides additional 1-1/16" space between handles. (1/2 of section width)

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|---------------------------|
| 1 | K-HCS-SPACER | 8650550 | Section Spacer (HCS only) |

When adding K-HCS-SPACER's to the HCS assembly, use the following information to help select the proper Stud Assembly Kits.

- For an even number of spacers, select from the studs kits listed above.
- When adding an odd number of spacers, refer to Gresen HC Service Manual No. GSD-4001 for help in choosing the proper studs.

Positioner Option

Includes boot and required hardware.

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|---|
| 1 | K-HCS-FD | 8650533 | Friction Detent, Infinite Position (HCS only) |

H CJ Handle Option Kits

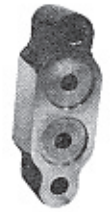
Includes Boot and boot retainer.

| Item No. | Model Number | Part Number | Description |
|----------|---------------|-------------|--|
| 1 | K-HCJ-GRIP-NS | 26157052 | Grip Handle Only (no Electric Switch) |
| 2 | K-HCJ-GRIP-PM | 26157053 | Grip Handle with Top Push Button (Momentary) Electric Switch |
| 3 | K-HCJ-GRIP | 8650532 | Old Style Handle Grip with Top Electric Switch |

Mounting Option

Includes 2 mounting plates. Mounting bolts are not included.

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|--|
| 1 | K-HCSF | 8650451 | Mounting Plate, Foot (HCS or HCF only) |



HCS Spacer



Foot Mounting Plate

SP SPK SSK



Model SP Monoblock Directional Control Valves

SPK 3-Spool Monoblock

SP Single-Spool Valves (Housing No. 2701)

| Item No. | Model Number | Part Number | Conversion Port Machined [Ⓞ] [X] | Top Outlet [T] | End Outlet [E] | 3-Way, 3-Pos [3] | 4-Way, 3-Pos [4] | 4-Way 3-Pos Free Flow [F4] | Spring Return to Neutral (Standard) | 3-Pos Detent [D] | Rotary Spool Positioner [W] | Stainless Steel Spool(s) [SS] | Optional SAE Porting [G] |
|----------|----------------|-------------|---|----------------|----------------|------------------|------------------|----------------------------|-------------------------------------|------------------|-----------------------------|-------------------------------|--------------------------|
| 1 | SP-3-HP | 8650668 | | | • | • | | | • | | | | |
| 2 | SPXTE-3-HP | 8659665 | • | • | • | • | | | • | | | | |
| 3 | SP-4-HP | 8650674 | | | • | | • | | • | | | | |
| 4 | GSP-4-HP | 8650667 | | | • | | • | | • | | | | • |
| 5 | SPXTE-4-HP | 8650670 | • | • | • | | • | | • | | | | |
| 6 | GSPXTE-4-HP | 8650666 | • | • | • | | • | | • | | | | • |
| 7 | SPXTE-4-HP-SS | 8650936 | • | • | • | | • | | • | | | • | |
| 8 | SP-D4-HP | 8650673 | | | • | | • | | | • | | | |
| 9 | SPXTE-F4-HP | 8650938 | • | • | • | | | • | • | | | | |
| 10 | SP-W4-HP | 8650671 | | | • | | • | | | | • | | |
| 11 | SPXTE-W4-HP-SS | 8650937 | • | • | • | | • | | | | • | • | |

Ⓞ When the valve housing is machined with the conversion port (XTE), the top outlet port will be plugged.

SP Two-Spool Valves (Housing No. 2702)

| Item No. | Model Number | Part Number | Conversion Port Machined [Ⓞ] [X] | Top Outlet [T] | End Outlet [E] | 3-Way, 3-Pos [3] | 4-Way, 3-Pos [4] | Spring Return to Neutral (Standard) | Stainless Steel Spool(s) [SS] | Optional SAE Porting [G] |
|----------|-----------------|-------------|---|----------------|----------------|------------------|------------------|-------------------------------------|-------------------------------|--------------------------|
| 1 | SPXTE-3-4-HP | 8650659 | • | • | • | Spool #1 | Spool #2 | • | | |
| 2 | SPXTE-4-3-HP | 8650660 | • | • | • | Spool #2 | Spool #1 | • | | |
| 3 | SP-4-4-HP | 8650664 | | | • | | Both Spools | • | | |
| 4 | SPXTE-4-4-HP | 8650663 | • | • | • | | Both Spools | • | | |
| 5 | GSPXTE-4-4-HP | 8650661 | • | • | • | | Both Spools | • | | • |
| 6 | SPXTE-4-4-HP-SS | 8650662 | • | • | • | | Both Spools | • | • | |

Ⓞ When the valve housing is machined with the conversion port (XTE), the top outlet port will be plugged.

SP Three-Spool Valves (Housing No. 2703)

| Item No. | Model Number | Part Number | Conversion Port Machined [Ⓞ] [X] | Top Outlet [T] | End Outlet [E] | 3-Way, 3-Pos [3] | 4-Way, 3-Pos [4] | Spring Return to Neutral (Standard) | Stainless Steel Spool(s) [SS] | Optional SAE Porting [G] |
|----------|-------------------|-------------|---|----------------|----------------|------------------|------------------|-------------------------------------|-------------------------------|--------------------------|
| 1 | SPXTE-3-4-4-HP | 8650658 | • | • | • | Spool #1 | Spools 2 & 3 | • | | |
| 2 | SPXTE-4-4-4-HP | 8650655 | • | • | • | | All 3 Spools | • | | |
| 3 | SP-4-4-4-HP | 8650657 | | | • | | All 3 Spools | • | | |
| 4 | GSPXTE-4-4-4-HP | 8650653 | • | • | • | | All 3 Spools | • | | • |
| 5 | SPXTE-4-4-4-HP-SS | 8650939 | • | • | • | | All 3 Spools | • | • | |

All of the above SP valves are shipped with complete handle assembly with exception of the two valves offering the Rotary "W" spool positioner.

Ⓞ When the valve housing is machined with the conversion port (XTE), the top outlet port will be plugged.

All of the above SP valves include the adjustable 'J-HP' relief valve set @ 1500 PSI (104 bar).

Model SPK Monoblock Directional Control Valves

SPK Single-Spool Valves (Housing No. 2711)

| Item No. | Model Number | Part Number | Conversion Port Machined [⊙] [X] | Top Outlet [T] | End Outlet [E] | 4-Way, 4-Pos Float [K-4] | 4-Way, 3-Pos [4] | Spring Return to Neutral (Standard) | Optional SAE Porting [G] |
|----------|--------------|-------------|---|----------------|----------------|--------------------------|------------------|-------------------------------------|--------------------------|
| 1 | SPK-4-HP | 8650652 | | | • | • | | | |
| 2 | SPKXTE-4-HP | 8650651 | • | • | • | • | | | |
| 3 | GSPKXTE-4-HP | 8650650 | • | • | • | • | | | • |

⊙ When the valve housing is machined with the conversion port (XTE), the top outlet port will be plugged.

SPK Two-Spool Valves (Housing No. 2712)

| Item No. | Model Number | Part Number | Conversion Port Machined [⊙] [X] | Top Outlet [T] | End Outlet [E] | 4-Way, 4-Pos Float [K-4] | 4-Way, 3-Pos [4] | Spring Return to Neutral (Standard) | Optional SAE Porting [G] |
|----------|----------------|-------------|---|----------------|----------------|--------------------------|------------------|-------------------------------------|--------------------------|
| 1 | SPK-4-4-HP | 8650649 | | | • | Spool #1 | Spool #2 | Spool #2 | |
| 2 | SPKXTE-4-4-HP | 8650648 | • | • | • | Spool #1 | Spool #2 | Spool #2 | |
| 3 | GSPKXTE-4-4-HP | 8650647 | • | • | • | Spool #1 | Spool #2 | Spool #2 | • |

⊙ When the valve housing is machined with the conversion port (XTE), the top outlet port will be plugged.

SPK Three-Spool Valves (Housing No. 2753)

| Item No. | Model Number | Part Number | Conversion Port Machined [⊙] [X] | Top Outlet [T] | End Outlet [E] | 4-Way, 4-Pos Float [K-4] | 4-Way, 3-Pos [4] | Spring Return to Neutral (Standard) | Optional SAE Porting [G] |
|----------|------------------|-------------|---|----------------|----------------|--------------------------|------------------|-------------------------------------|--------------------------|
| 1 | SPK-4-4-4-HP | 8650646 | | | • | Spool #1 | Spools 2 & 3 | Spools 2 & 3 | |
| 2 | SPKXTE-4-4-4-HP | 8650645 | • | • | • | Spool #1 | Spools 2 & 3 | Spools 2 & 3 | |
| 3 | GSPKXTE-4-4-4-HP | 8650644 | • | • | • | Spool #1 | Spools 2 & 3 | Spools 2 & 3 | • |

All of the above SPK valves are shipped with complete handle assembly.

Spool No. 1 of SPK valve assemblies is always a 4-way, 4-position Float (K4).

All of the above SPK valves include the adjustable 'J-HP' relief valve set @ 1500 PSI (104 bar).

⊙ When the valve housing is machined with the conversion port (XTE), the top outlet port will be plugged.

Model SSK Monoblock Directional Control Valves

SSK Two-Spool Valves (Housing No. 2822)

| Item No. | Model Number | Part Number | Conversion Port Machined [⊙] [X] | Top Outlet [T] | End Outlet [E] | 4-Way, 4-Pos Float [K-4] | 4-Way, 3-Pos [4] | Spring Return to Neutral (Standard) |
|----------|--------------|-------------|---|----------------|----------------|--------------------------|------------------|-------------------------------------|
| 1 | SSKXT-4-4-HP | 8650643 | • | • | | Spool #1 | Spool #2 | Spool #2 |

The above SSK valve assembly is shipped with complete handle assembly.

Spool No. 1 of SSK valve assemblies is always a 4-way, 4-position Float (K4).

All of the above SSK valves include the adjustable 'J-HP' relief valve set @ 1500 PSI (104 bar).

⊙ Model SSK valves may be converted to power beyond but cannot be converted to closed center operation.

SP SPK SSK

SP Porting Options

| Porting (Standard) | Optional SAE Porting (G) |
|-----------------------|--|
| Inlet - 3/4" NPT | Inlet - SAE 12 |
| Work Ports - 1/2" NPT | Work Ports - SAE 10 |
| Outlets - 3/4" NPT | Outlet - Standard, SAE 12 End With Optional Conversion Machining (X) SAE 10 (Top or End) |

SP OPTION KITS



Power Beyond Sleeve

Right End Modification Kits

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|----------------------------------|
| 1 | K-SP-75-Y | 8650130 | 3/4" NPT Power Beyond Sleeve Kit |
| 2 | K-SP-10-Y | 8650131 | SAE 10 Power Beyond Sleeve Kit |
| 3 | K-SP-12-Y | 8650132 | SAE 12 Power Beyond Sleeve Kit |
| 4 | K-SP-C | 8650133 | Closed Center Plug Kit |
| 5 | K-SP-X | 8650134 | Conversion Plug Kit |

SP Spool Action Option Kits

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|---|
| 1 | K-SP-D | 8650135 | 3-Position Detent Kit |
| 2 | K-SP-DS | 8650136 | Detent Stop for Neutral & Spool Out or Spool In |
| 3 | K-SP-A | 8650137 | Spring Extended Spool |
| 4 | K-SP-L | 8650138 | Spool "IN" Travel Limiter, Adjustable |



SP Handle

SP Handle End Option Kits

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|---------------------------------|
| 1 | K-SP-HB ♦ | 8650117 | Standard Handle (Black) |
| 2 | K-SP-HP ♦ | 8650072 | Standard Handle (Plain) |
| 3 | K-SP-LINK | 13650946 | Link and Pin Kit for SP Handles |

♦ Does not include Links or Pins.

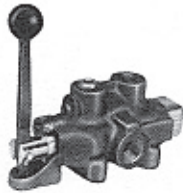
SP Relief Kit

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|-------------------------------|
| 1 | K-SP-NR | 8650211 | No Relief Conversion Plug Kit |

Porting Options

| NPT Porting | SAE Porting |
|-------------------|---------------------|
| Inlet = 3/4" | Inlet = SAE 12 |
| Work Ports = 1/2" | Work Ports = SAE 10 |
| Outlet = 3/4" | Outlet = SAE 12 |

300 Single-Spool Valves (Housing No. 20011)



300 Valve

| Item No. | Model Number | Part Number | (Standard) NTP Porting | 3-Way 3-Pos | Spring Return to Neutral | 3-Pos. Detent | Open Center Spool | Shim Adjustable Main Relief ⊙ |
|----------|--------------|-------------|------------------------|-------------|--------------------------|---------------|-------------------|-------------------------------|
| 1 | 300 | 8650682 | • | • | • | | • | • |
| 2 | 310 | 8650683 | • | • | | • | • | • |

⊙ Shim Adjustable Relief Set @ 1500 PSI @ 7.6 GPM (103 bar @ 29 lpm). The above Model 300 valves are shipped with complete handle assembly.

400 Single-Spool Valves (Housing No. 20011)



400 Valve

| Item No. | Model Number | Part Number | (Standard) NTP Porting | (Optional) SAE Porting | 4-Way 3-Pos | 4-Way 3-Pos. Free Flow | Spring Return to Neutral | 3-Pos. Detent | Open Center Spool | Closed Center Spool | Shim Adjustable Main Relief | No Relief Valve Plug |
|----------|--------------|-------------|------------------------|------------------------|-------------|------------------------|--------------------------|---------------|-------------------|---------------------|-----------------------------|----------------------|
| 1 | 400 | 8650681 | • | | • | | • | | • | | • | |
| 2 | G400 | 7239146 | | • | • | | • | | • | | • | |
| 3 | G-400-NR | 7239171 | | • | • | | • | | • | | | • |
| 4 | 410 | 8650680 | • | | • | | | • | • | | • | |
| 5 | 410-40 | 8650679 | • | | | • | | • | • | | • | |
| 6 | 430 | 8650678 | • | | • | | • | | | • | • | |
| 7 | 440 | 8650677 | • | | | • | • | | • | | • | |

⊙ Shim Adjustable Relief Set @ 1500 PSI @ 7.6 GPM (103 bar @ 29 lpm). The above Model 400 valves are shipped with complete handle assembly.

300/400 Spool Action Option Kits

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|--|
| 1 | K-400-D | 8650141 | Three Position Detent for Models 300 and 400 |
| 2 | K-400-A | 8650143 | Spring Extended Spool for Models 300 and 400 |

Port Plugs



NPT Plug



SAE Plug

PORT PLUGS

For use with all directional control valves.

| Item No. | Model Number | Part Number | Description |
|----------|--------------|-------------|-----------------------|
| 1 | K-NPT-13 | 8650306 | 1/8" NPTF Pipe Plug |
| 2 | K-NPT-25 | 8650307 | 1/4" NPTF Pipe Plug |
| 3 | K-NPT-38 | 8650308 | 3/8" NPTF Pipe Plug |
| 4 | K-NPT-50 | 8650309 | 1/2" NPTF Pipe Plug |
| 5 | K-NPT-75 | 8650310 | 3/4" NPTF Pipe Plug |
| 6 | K-NPT-100 | 8650305 | 1" NPTF Pipe Plug |
| 7 | K-NPT-125 | 8650304 | 1-1/4" NPTF Pipe Plug |
| 8 | K-SAE-6 | 8650296 | SAE 6 Plug |
| 9 | K-SAE-8 | 8650297 | SAE 8 Plug |
| 10 | K-SAE-10 | 8650298 | SAE 10 Plug |
| 11 | K-SAE-12 | 8650299 | SAE 12 Plug |
| 12 | K-20-X | 8650100 | SAE 14 Plug |
| 13 | K-SAE-16 | 8650301 | SAE 16 Plug |
| 14 | K-SAE-20 | 8650302 | SAE 20 Plug |
| 15 | K-SAE-24 | 8650303 | SAE 24 Plug |

Solenoid Cartridge Kits

For use in Model V10, V20 and V40 Internally-Piloted Solenoid Work Sections.
For simple coil conversions from 12 VDC to 24 VDC, refer to **Solenoid Coil Kits** for coil selection.

| Item No. | Model Number | Part Number | Proportional Cartridge [E] | On/Off Solenoid Cartridge [S] | 12 VDC Coil [12] | 24 VDC Coil [24] | Flying Leads [F] | 43650 D/N Connector [D] | Weather Pack® Connector [W] | 1/4" Spade Terminals [S] | With Deutsch® DT04-2P [H] |
|----------|-----------------|-------------|----------------------------|-------------------------------|------------------|------------------|------------------|-------------------------|-----------------------------|--------------------------|---------------------------|
| 1 | K-CRT-E12F | 21226001 | * | | * | | * | | | | |
| 2 | K-CRT-E24F | 21226002 | * | | | * | * | | | | |
| 3 | K-CRT-E12D | 21226006 | * | | * | | | * | | | |
| 4 | K-CRT-E24D | 21226007 | * | | | * | | * | | | |
| 5 | K-CRT-E12W | 21226008 | * | | * | | | | * | | |
| 6 | K-CRT-E24W | 21226009 | * | | | * | | | * | | |
| 7 | K-CRT-E12S | 21226004 | * | | * | | | | | * | |
| 8 | K-CRT-E24S | 21226005 | * | | | * | | | | * | |
| 9 | K-CRT-E12H | 21226015 | * | | * | | | | | | * |
| 10 | K-CRT-E24H | 21226016 | * | | | * | | | | | * |
| 11 | K-CRT-S12F | 21246001 | | * | * | | * | | | | |
| 12 | K-CRT-S24F | 21246002 | | * | | * | * | | | | |
| 13 | K-CRT-S12D | 23535001 | | * | * | | | * | | | |
| 14 | K-CRT-S24D | 23535002 | | * | | * | | * | | | |
| 15 | K-CRT-S12W | 22969001 | | * | * | | | | * | | |
| 16 | K-CRT-S24W | 22969002 | | * | | * | | | * | | |
| 17 | K-CRT-S12S | 24102001 | | * | * | | | | | * | |
| 18 | K-CRT-S24S | 24102002 | | * | | * | | | | * | |
| 19 | K-CRT-S12H | 25479001 | | * | * | | | | | | * |
| 20 | K-CRT-S24H | 25479002 | | * | | * | | | | | * |
| 21 | K-10-CRT-S12F ① | 26157048 | | * | * | | * | | | | |
| 22 | K-10-CRT-S24F ① | 26157049 | | * | | * | * | | | | |
| 23 | K-10-CRT-S12S ① | 26157050 | | * | * | | | | | * | |
| 24 | K-10-CRT-S24S ① | 26157051 | | * | | * | | | | * | |

① These ON/Off Solenoid Cartridge Kits must be used in the Model V10 On/Off Solenoid-Operated Work Sections.

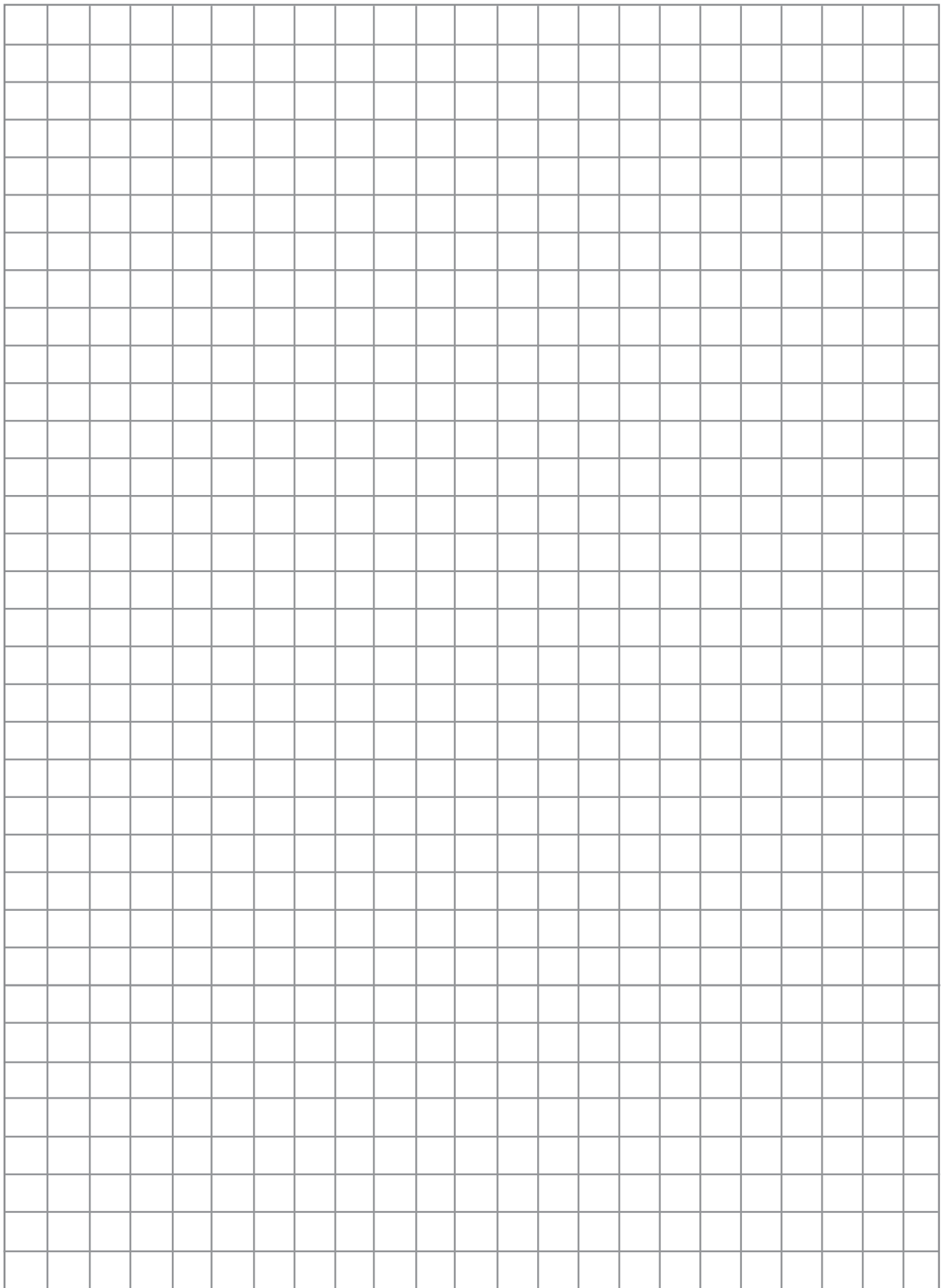
Solenoid Coil Kits

For simple in-field coil conversions from 12 VDC to 24 VDC.
Coils are not interchangeable from On/Off to EPC or from EPC to On/Off. Refer to **Solenoid Cartridge Kits** for cartridge selection.

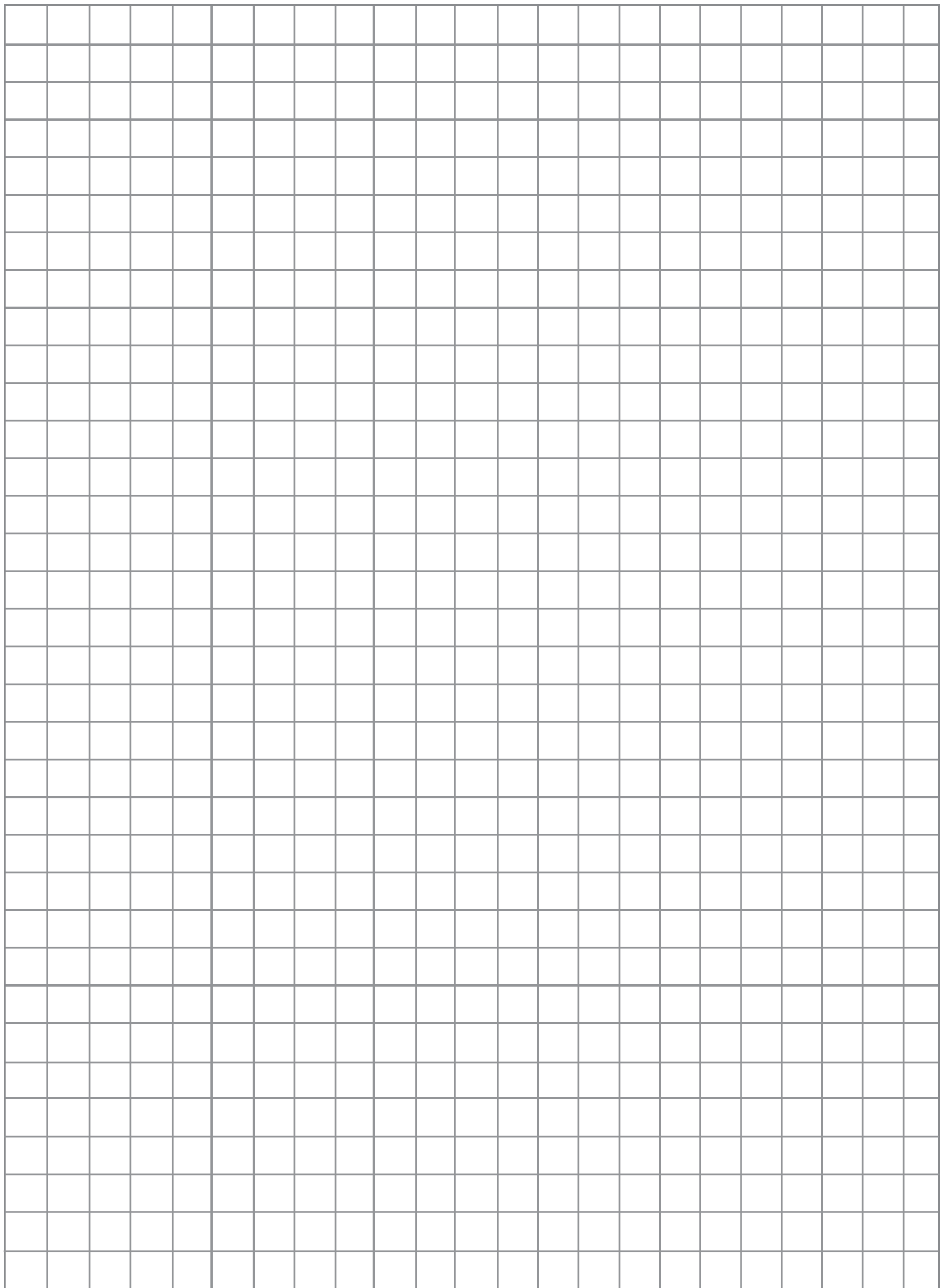
| Item No. | Model Number | Part Number | Proportional [EPC] Coil [E] | On/Off [SOL] Coil [S] | 12 VDC [12] | 24VDC [24] | With Flying Leads [F] | With 43650 D/N Connector [D] | With Weather Pack® Connector [W] | With 1/4" Spade Terminals [S] | With Deutsch® Connector® DT04-2P [H] |
|----------|------------------|-------------|-----------------------------|-----------------------|-------------|------------|-----------------------|------------------------------|----------------------------------|-------------------------------|--------------------------------------|
| 1 | K-COIL-E12F | 26157062 | * | | * | | * | | | | |
| 2 | K-COIL-E24F | 26157063 | * | | | * | * | | | | |
| 3 | K-COIL-E12D | 26157064 | * | | * | | | * | | | |
| 4 | K-COIL-E24D | 26157065 | * | | | * | | * | | | |
| 5 | K-COIL-E12W | 26157066 | * | | * | | | | * | | |
| 6 | K-COIL-E24W | 26157067 | * | | | * | | | * | | |
| 7 | K-COIL-E12S | 26157068 | * | | * | | | | | * | |
| 8 | K-COIL-E24S | 26157069 | * | | | * | | | | * | |
| 9 | K-COIL-E12H | 26157070 | * | | * | | | | | | * |
| 10 | K-COIL-E24H | 26157071 | * | | | * | | | | | * |
| 11 | K-COIL-S12F | 26157072 | | * | * | | * | | | | |
| 12 | K-COIL-S24F | 26157073 | | * | | * | * | | | | |
| 13 | K-COIL-S12D | 26157074 | | * | * | | | * | | | |
| 14 | K-COIL-S24D | 26157075 | | * | | * | | * | | | |
| 15 | K-COIL-S12W | 26157076 | | * | * | | | | * | | |
| 16 | K-COIL-S24W | 26157077 | | * | | * | | | * | | |
| 17 | K-COIL-S12S | 26157078 | | * | * | | | | | * | |
| 18 | K-COIL-S24S | 26157079 | | * | | * | | | | * | |
| 19 | K-COIL-S12H | 26157080 | | * | * | | | | | | * |
| 20 | K-COIL-S24H | 26157081 | | * | | * | | | | | * |
| 21 | K-10-COIL-S12F ① | 26157082 | | * | * | | * | | | | |
| 22 | K-10-COIL-S24F ① | 26157083 | | * | | * | * | | | | |
| 23 | K-10-COIL-S12S ① | 26157084 | | * | * | | | | | * | |
| 24 | K-10-COIL-S24S ① | 26157085 | | * | | * | | | | * | |

① These ON/Off Solenoid Coil Kits must be used in the Model V10 On/Off Solenoid-Operated Work Sections.

Notes



Notes





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Bulletin HY14-2700/US,
3.5M, 4/03, Hecks