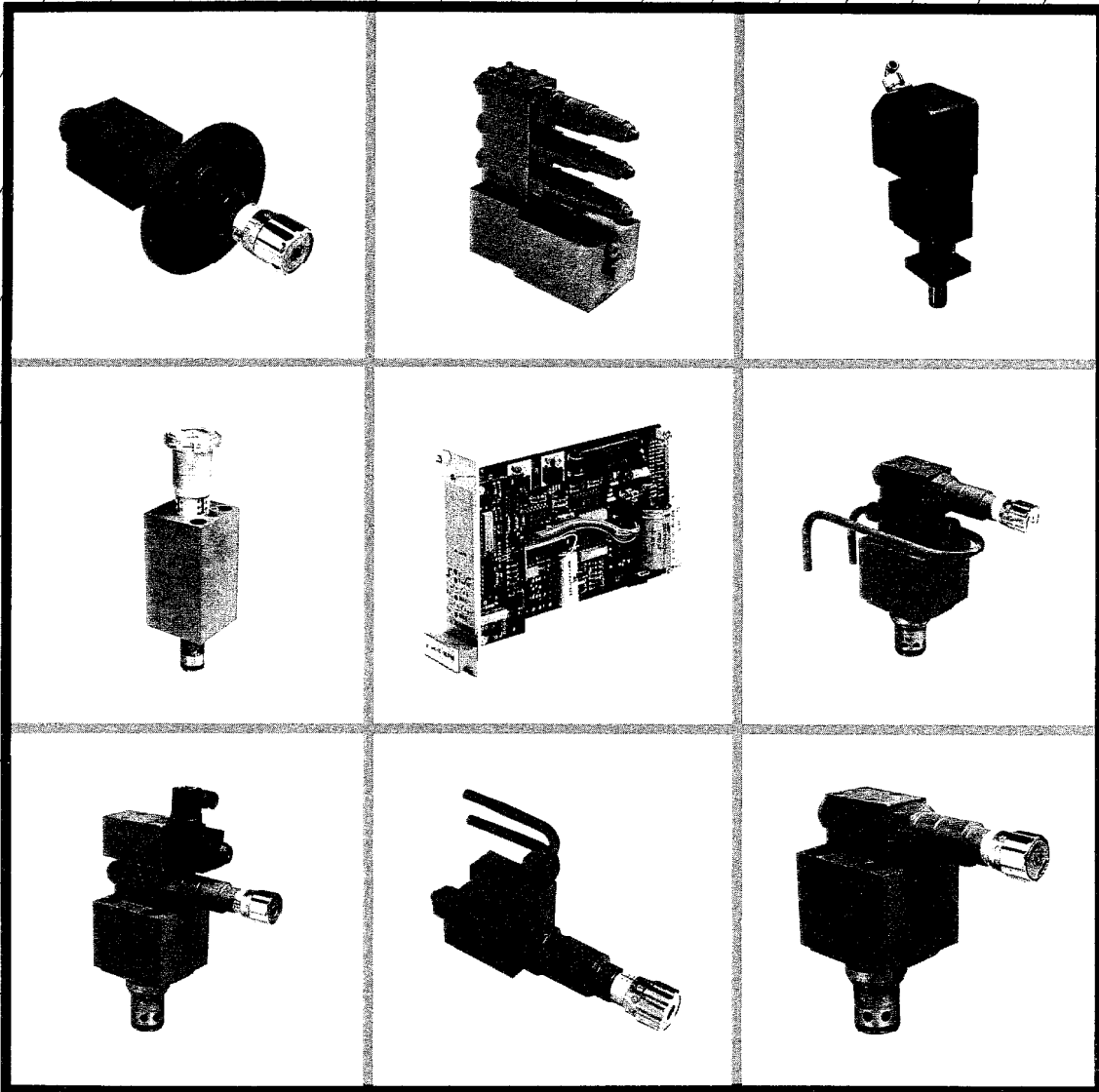


Oilgear Towler

VRM, VRD
PRESSURE CONTROLS.



Bulletin 80100

PERFORMANCE ASSURANCE IS STANDARD WITH EVERY OILGEAR TOWLER COMPONENT AND SYSTEM.

Every Oilgear Towler pressure control valve manufactured is shipped with a corporate commitment to support the component until it performs as specified.

This total dedication to performance is based upon experience gained since 1921 in matching fluid power equipment to a tremendous variety of machines and applications.

Performance Assurance is made possible because of experience gained over the years in supplying machinery builders and users with unique solutions to thousands of unusual fluid power problems.

Historically, Oilgear Towler has concentrated its energies on hydraulic equipment and systems. Every facility is staffed with factory trained and field experienced application engineers.

Performance Assurance doesn't stop with the design of the system or the sale of the component. Oilgear Towler engineers will be there, when they are needed, supplying the technical support, field service, parts and repairs, to make sure each component or system operates correctly.



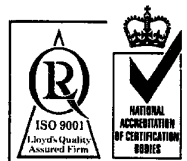
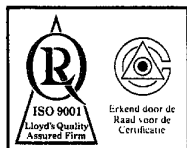
You the customer and user of the equipment, have a vital role to play in ensuring that components and systems are installed, operated and maintained in accordance with our recommendations. By doing this you will help us to achieve Performance Assurance, to our mutual benefit.

A major cause of damage to any system or component is FLUID CONTAMINATION. We take great care in specifying filtration in systems we design and for individual components. You are requested to consult our bulletin "General Guidelines for Filtration and Contamination" and contact us if you have any questions.

Data and information in this document may be changed at any time without notification, to incorporate new developments.

You are strongly recommended to check with Oilgear Towler that you have up-to-date information when designing with, specifying or purchasing equipment.

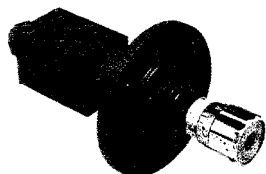
The final selection of components for use in systems and compliance with all operational, performance and safety requirements is the responsibility of the user.



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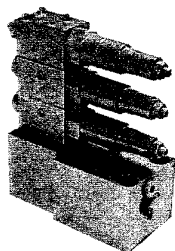
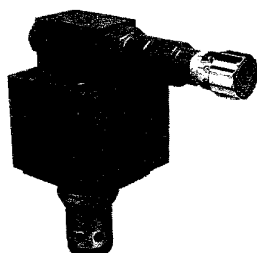
PRESSURE CONTROLS

2 STAGE PILOT OPERATED AND SINGLE STAGE DIRECT OPERATED RELIEF VALVES



Internationally known as a world class hydraulics company, Oilgear Towler specialises in the design, engineering technology and equipment needed to solve difficult hydraulic problems by supplying the right components to meet specific needs.

This wide range of pressure control valves is part of Oilgear Towler extensive range of hydraulic components. Collectively they present a range of valves from which to choose. Individually, each has a distinct application advantage.



CONTENTS	PAGE							
STANDARD RANGE								
2 Stage Pilot Operated Relief Valve	4-13							
Cartridge Mounting ISO7368								
Manifold Mounting ISO6264								
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Nom Flow Rating at 3,5 BAR Pressure Drop</th> <th style="text-align: left;">Pressure Ranges</th> </tr> </thead> <tbody> <tr> <td>06 100 L/min</td> <td rowspan="4" style="text-align: center;">5-480 BAR 5-240 BAR 5-120 BAR</td> </tr> <tr> <td>08 250 L/min</td> </tr> <tr> <td>09C 450 L/min</td> </tr> <tr> <td>10R 450 L/min</td> </tr> </tbody> </table>	Nom Flow Rating at 3,5 BAR Pressure Drop	Pressure Ranges	06 100 L/min	5-480 BAR 5-240 BAR 5-120 BAR	08 250 L/min	09C 450 L/min	10R 450 L/min	
Nom Flow Rating at 3,5 BAR Pressure Drop	Pressure Ranges							
06 100 L/min	5-480 BAR 5-240 BAR 5-120 BAR							
08 250 L/min								
09C 450 L/min								
10R 450 L/min								
<small>VRM TABLE 1</small>								
Single Stage Direct Operated	14-17							
Cartridge Mounting ISO7368 - size 08 only								
Manifold Mounting ISO6264 - size 08 only								
Nom Flow up to 140 L/MIN								
Max Working Pressure up to 1240 BAR								
Electronically Controlled Types	18-21							
NON STANDARD RANGE								
Single Stage Direct Operated For Line or Manifold Mounting	22							
Nom Flow up to 140 L/MIN								
Max Working Pressure up to 1240 BAR								
Pilot Operated 2 Stage Manifold Mounting	23							
Nom Flow up to 1300 L/MIN								
Max Working Pressure up to 480 BAR								
ANCILLARIES								
Manifold Conversion Blocks	24							
Specially Designed Blocks to convert ISO Cartridge Valves into simple easier to handle Manifold Versions								
DIMENSIONAL DATA								
General Overall Dimensions with Mounting Patterns and Centres	25-31							

VRM

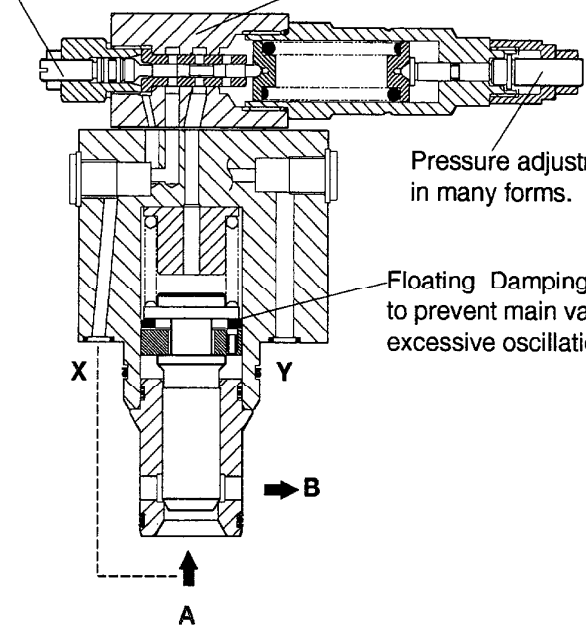
2 STAGE PILOT OPERATED RELIEF VALVES CARTRIDGE MOUNTED TO ISO7368

Oilgear Towler pilot operated relief valves are used for the control of maximum pressure in hydraulic systems. They can operate accurately over long periods without re-adjustment and have low pressure rise between minimum and maximum flow. The unique Oilgear Towler design allows the valve response to be adjusted so that excessive rate of pressure rise can be eliminated and thus shocks and pressure overshoot in the system can be minimised. Coupled with the proven traditional floating main stage damping the valve gives unsurpassed control and stability. In order to achieve a good and consistent performance the pilot drain line (Y or Y alt) should be connected to the drain separated from the main exhaust A. The valve has the ability of being unloaded by connecting port Z1 to tank line in the manifold or by an integral solenoid valve.

An additional important feature of the use of the unique master valve pilot control is the low leakage loss encountered prior to the main stage relieving. The graph on page 5 compares leakage, prior to full set pressure, between a master valve pilot controlled valve and a typical cone point type pilot controlled valve. Leakage from the master valve pilot controlled valve is very low, as shown in detail on page 13, whereas the cone point type has considerable leakage flow prior to the set pressure being reached. This leakage is a system loss, such that more pump power is required to move a cylinder at a given speed when working near to the maximum system pressure. Hence this loss incurs additional operating costs, increased wear in the pilot stage thus shortening relief valve life, and wasting valuable power.

Adjustment for rate of pressure rise. Used to trim valve for smooth system operation.

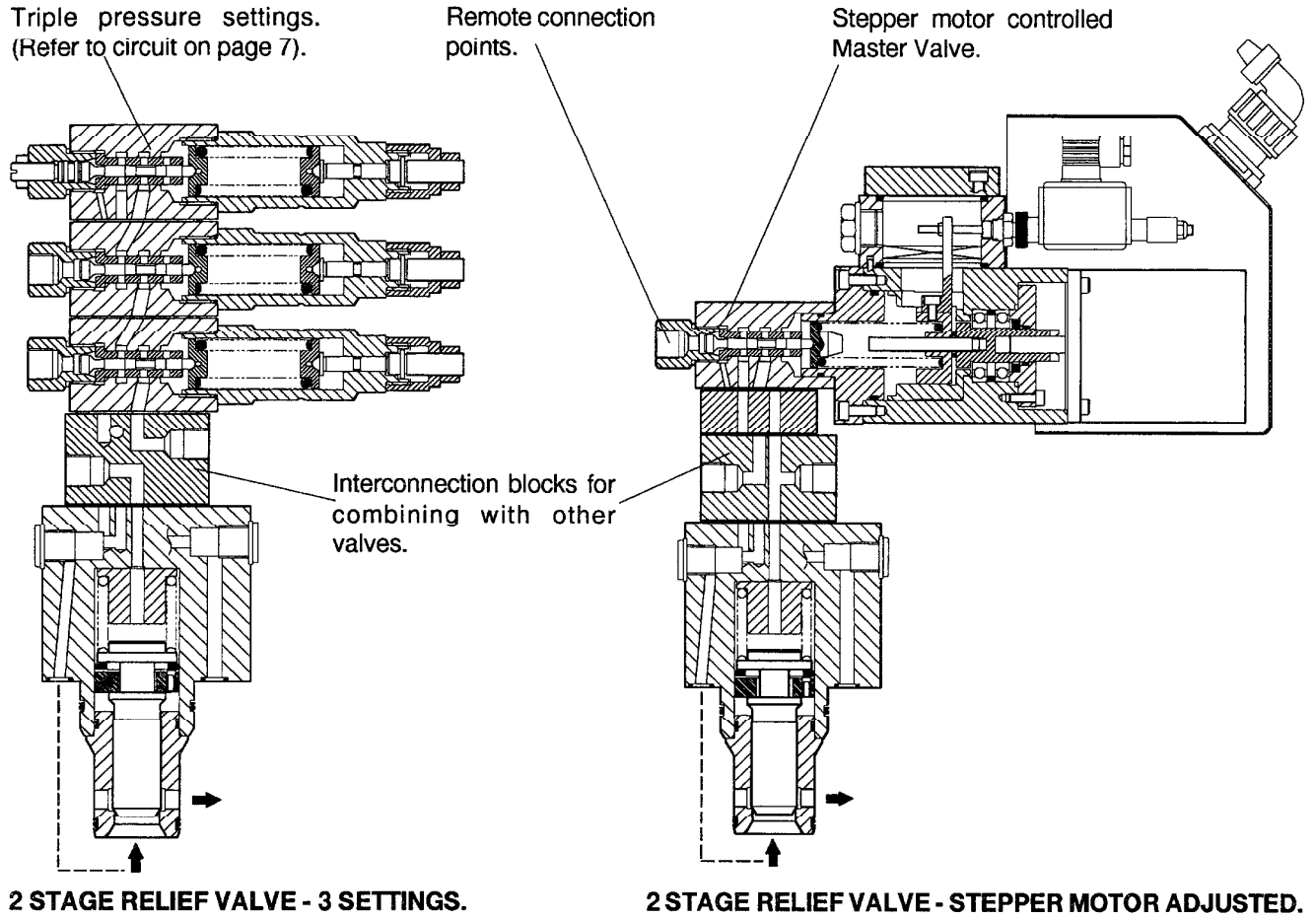
Unique Master Valve for pilot control.



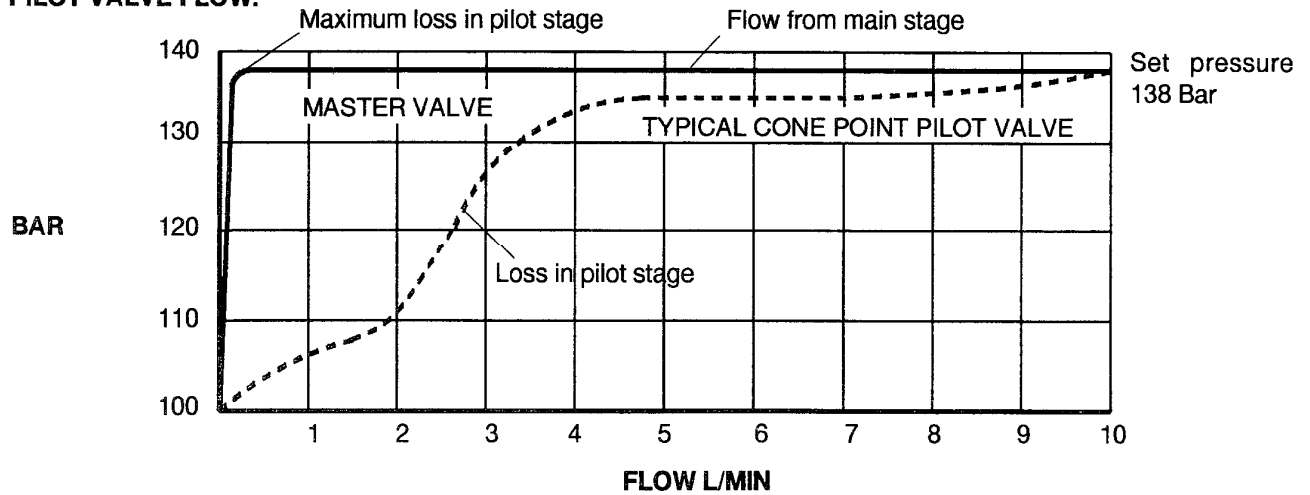
Pressure adjustment available in many forms.

Floating Damping arrangement to prevent main valve spool from excessive oscillation.

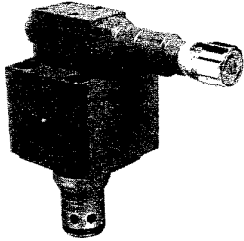
2 STAGE RELIEF VALVE FOR CARTRIDGE MOUNTING.



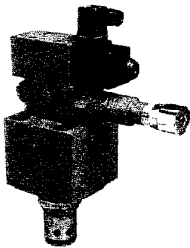
PILOT VALVE FLOW.



Comparison graph showing Pilot Stage leakage prior to full relief at set pressure.



The standard relief valve is the basis from which all others evolve. It comprises a main stage and a pilot controller. This basic controller is either fixed or variable but the whole unit may be changed to become stepper motor, electro proportional or piston operated.



By adding a 2 port solenoid operated valve it then becomes a solenoid operated loading valve. The code for the solenoid valve is :-

VDSHC03DU-2FA1ND * * A15BBA1

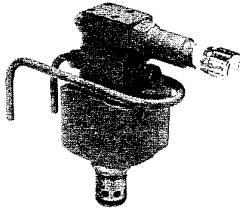
AA = 110 V ac

BA = 220 V ac

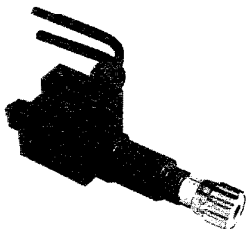
JL = 24 V dc

PL = 98 V dc

TL = 198 V dc

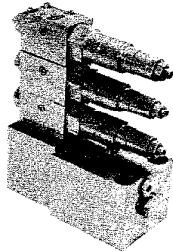


For remote operation, a sandwich block is added between the main stage and the pilot controller which takes fluid to and from an additional pilot controller situated remote from the main valve. With the addition of this sandwich block the valve has now become a dual pressure control.



The remote 03, mounted on a subplate, can be positioned anywhere within 6 metres distance from the main valve it is controlling. By simply adding a split mounting flange, it can be mounted in a control desk.

VRM

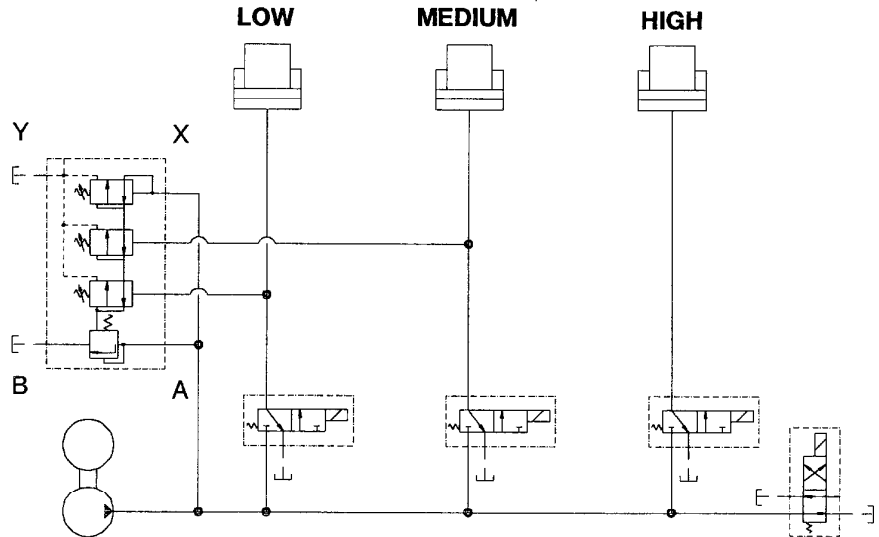


In some cases, up to three controllers can be mounted on this valve, with or without a sandwich block, to form a multi pressure unit.

A Stepper Motor controlled pilot stage may be added if required but this must be positioned at the bottom of the stack giving priority control of the main stage.

The maximum number of controllers in a stack is 3 if they are standard and preferably 2 if one of them is a stepper motor controlled valve.

The simple system shown below illustrates how a single valve may be used to control pressure on 3 cylinders but not simultaneously.



SPECIAL FLUIDS.

Due to the increased use in industry of High Water Based Fluids Oilgear Towler have adapted this range of valves for use with this fluid. They are slightly different in construction but still conform to International Standards. Consult Oilgear Towler for further information.

VRM

HOW TO ORDER - MAIN STAGE ONLY

The complete valve is built up from various stages, all of which must be fully coded in the right order to ensure correct processing, manufacture and assembly.

Block Number Explanation	1	2	3	4	5	6	7	8	9	10	11
Valve Example	V	R	M	B	**	*	*	*	B	*	A1

1 UNIT

V Valve

2 BASIC FORM

R Relief

3 VALVE TYPE

M Master Valve Controlled

4 DESIGN

B Seated spool with Damping effect

5 NOM SIZE

06 (16mm)

08 (25mm)

09 (32mm Cartridge - C)

10 (32mm Manifold - R)

6 MOUNTING PATTERN

C Slip in Cartridge to ISO 7368

R Manifold Mounting to ISO 6264

7 MAIN STAGE SPRING

S Heavy when used as relief only

V Light when used as relief and unloader

8 PILOT CONNECTIONS

H Ex Pilot Ex Drain

Always use on Cartridge Mounting Type

D Int Pilot Int Drain

L Int Pilot Ex Drain

F Ex Pilot Int Drain

9 DIMENSIONS

B Metric with BSP Port threads

10 SEALS

B Buna N

V Viton

E E.P.D.M

Z Special

11 DESIGN SERIES

A1 Assigned by factory

/ Indicates that code is incomplete and further information is required (Pilot Valve Code - Page 9) (Intermediate Block - Page 10)

VRM

HOW TO ORDER PILOT STAGE OR SEPARATE SINGLE CONTROLLERS

As previously mentioned all stages must be coded. There are, however, applications when a single valve is required. This code caters for either type.

Block Number Explanation	1	2	3	4	5	6	7	8	9	10
Valve Example	V	M	*	03	**	**	**	B	*	A1

1 UNIT

V Valve

2 BASIC FORM

M Master Valve Controller

3 BASIC BLOCK TYPE

A Standard for 2 Stage control

B through Ports for Multi Stack

C through Ports for Stack with Solenoid Venting

4 BLOCK SIZE

03 To ISO 4401

5 SPOOL ARRANGEMENT To match main stage for mineral oil only, for other styles consult factory

06 For size 06 main stage

08 For size 08 main stage

09 For size 09 cartridge main stage

09 For size 10 manifold main stage

6 WORKING PRESSURE

12 5-120 Bar

24 5-240 Bar

48 5-480 Bar

7 PRESSURE ADJUSTMENT

FL Fixed with locknut

CH Calibrated handle

SM Stepper motor(vertical)*

SR Stepper -90 R.H*

SL Stepper -90 L.H*

*When viewed from the motor end of the valve

EP Electro Proportional

PO Pilot operated piston

SC Servo Controlled

CP Calibrated Panel Mounting

8 DIMENSIONS

B Metric with BSP Port threads

9 SEALS

B Buna N

V Viton

E E.P.D.M

Z Special

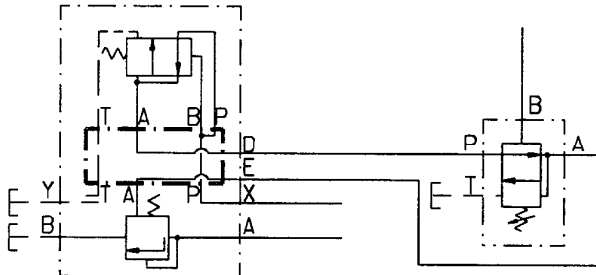
10 DESIGN SERIES

A1 Assigned by factory

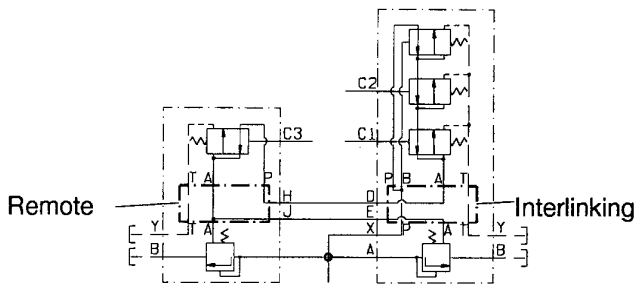
VRM

HOW TO ORDER

INTERMEDIATE SANDWICH BLOCKS



Typical circuit showing single main stage with maximum pressure valve fitted to it and remote desk mounted controller.



Typical circuit showing two main stages in parallel giving 4 separate operating pressures for a large volume of fluid.

On certain applications there can be a requirement for a remotely controlled valve or the controlling of two valves from a single or multi stack unit, in this instance an intermediate sandwich block will be required which fits between the main stage and control elements.

These sandwich blocks basically interrupt the pilot supply to the main stage.

Another application is that of using two main stage valves in parallel e.g. for increased flow capacity, where one of the valves is a main stage only.

In this case the sandwich block becomes simply a blanking plate and the effective connection between the two valves is by linking both vent ports.

The simple circuits shown illustrate when these blocks are used.

Block Number Explanation	1	2	3	4	5	6	7	8
Valve Example	V	M	SB	03	*	B	*	A1

1 UNIT

V Valve

2 BASIC FORM

M Master Controller

3 BLOCK TYPE

SB Sandwich Block

4 BLOCK SIZE

03 to ISO 4401

5 PORTING ARRANGEMENT

R Remote Operation

L Interlinking

Other styles are available

6 DIMENSIONS

B Metric with BSP Port threads

7 SEALS

B Buna N

V Viton

E E.P.D.M

Z Special

8 DESIGN SERIES

A1 Assigned by factory

/ Indicates that code is incomplete and further information is required.

(Pilot Valve Code - page 9)

VRM

HOW TO ORDER

COMPLETE VALVE BUILD UP EXAMPLES

When compiling a full code the most important point to remember is that it must be written in the actual order of valve build and the maximum working pressure must be on the top or primary stage. The remaining stage or stages can operate with any lower pressure.

If for instance, the valve required is a triple stack then the code order could be written as follows:-

MAIN STAGE/ AUXILIARY STAGE/ SECONDARY STAGE/PRIMARY STAGE

Expanding this into a full code:-

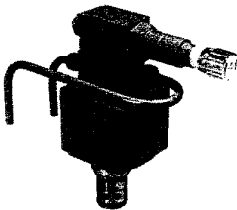
Manifold mounted - size 08 - standard seated relief - buna N seals. Auxiliary stage - fixed at up to 120 bar with locknut. Secondary stage - fixed at up to 240 bar with locknut. Primary stage - fixed at up to 480 bar with locknut.



VALVE CODE		VALVE BUILD
VRMB-08R-SHBB-A1/	(MAIN STAGE)	PRIMARY
VMB03-08-12FL-BB-A1/	(AUXILIARY)	SECONDARY
VMB03-08-24FL-BB-A1/	(SECONDARY)	AUXILIARY
VMA03-08-48FL-BB-A1	(PRIMARY)	MAIN

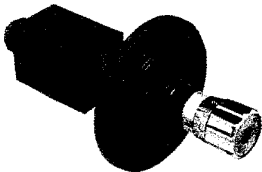
Another example:

Remote controlled - cartridge mounted - size 08 - standard seated relief - buna N seals. Primary stage (always known as this even on two stage valves). Variable up to 240 bar with callbrated handle.



Although the valve is only two-stage, as mentioned previously, for remote operation there must be a sandwich block fitted, so the code would become

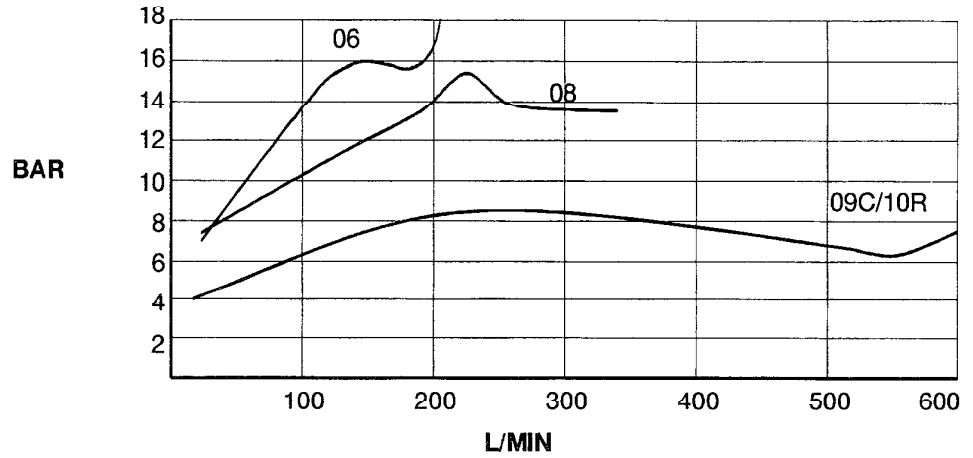
VALVE CODE		VALVE BUILD
VRMB-08C-SHBB-A1/	(MAIN STAGE)	PRIMARY
VMSB03-R-BB-A1/	(SECONDARY)	SANDWICH BLOCK
VMA03-08-24CH-BB-A1	(PRIMARY)	MAIN



The separate remote controller being panel mounted working up to 120 bar.

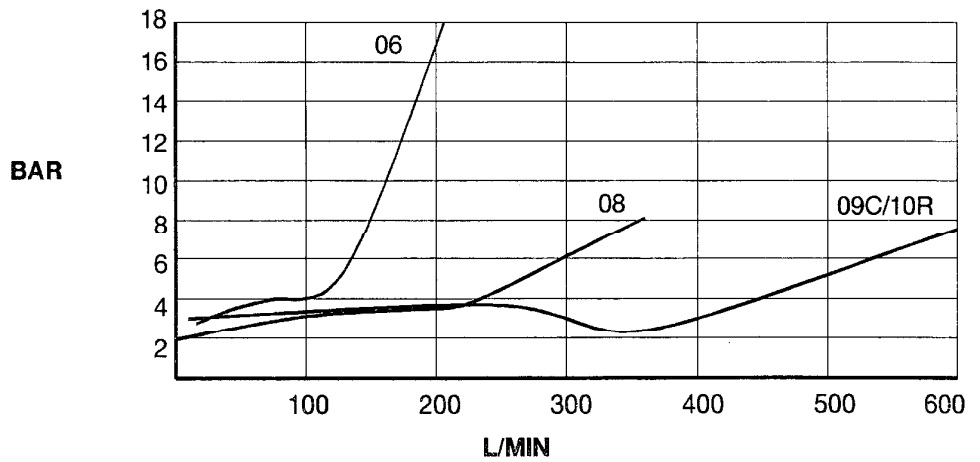
VMA03-08-12CP-BB-A1

VRM PERFORMANCE DATA



SET ZERO (HEAVY SPRING) Code S

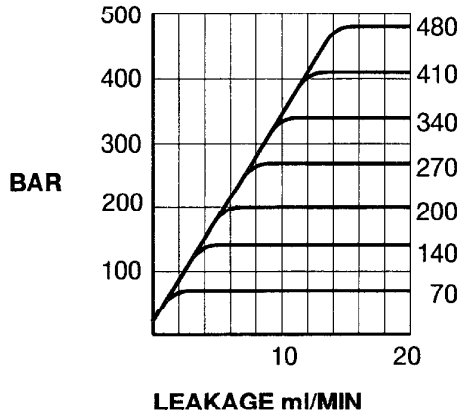
Typical graph showing flow / pressure drop for standard valves used only as relief function (minimum setting).



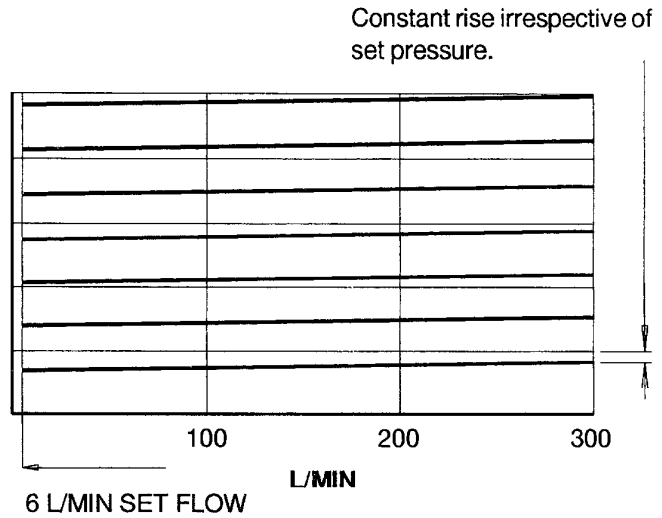
VENTED (LIGHT SPRING) Code V

Typical graph showing flow / pressure drop for valves with combined function of relief and unloading (vented).

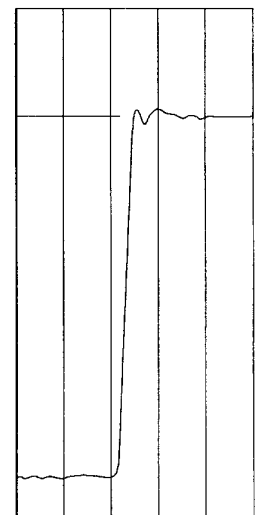
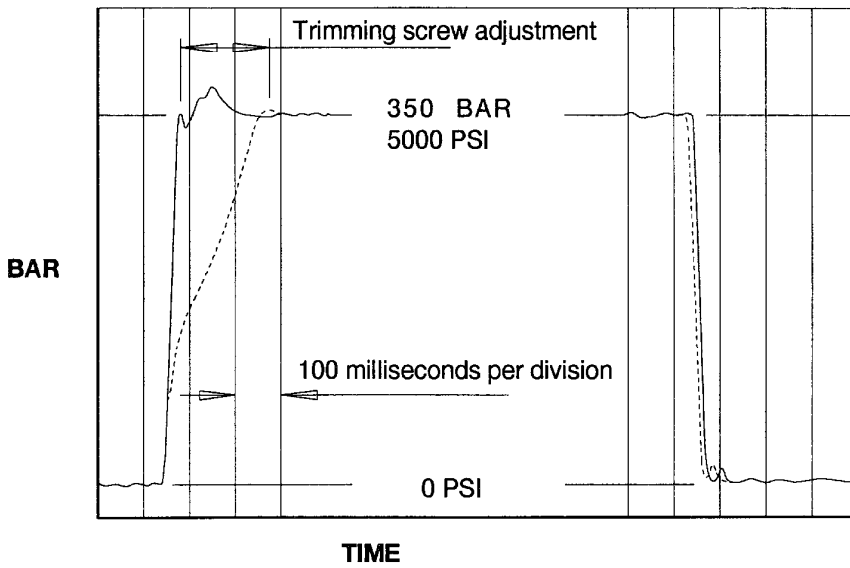
VRM PERFORMANCE DATA



Typical graph showing leakage from complete valve at set flow of 6 L/MIN.



Typical graph showing rise above set pressure for increase in flow. Size 08 valve shown.



Optimum setting 3% overshoot

Typical recording showing rate of build up of pressure and the effect of trimming on pilot

VRD

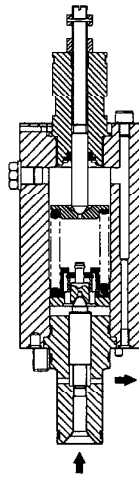
DIRECT OPERATED RELIEF VALVES

Oilgear Towler range of direct operated relief valves are available to international centres but only in two forms:- cartridge mounted "C" series size 08 and surface mounted "R" series size 06.

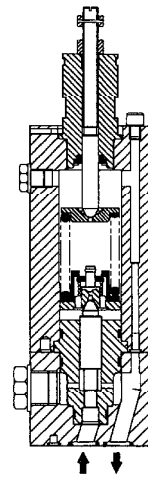
However, the most important feature is the ability to operate at high pressures. The cartridge type will operate up to 11,000 PSI (760 bar) and the surface mounted 18,000 PSI (1240 bar).

This maximum working pressure is dependent on the combination of spool and main spring and is shown in the table on page 17.

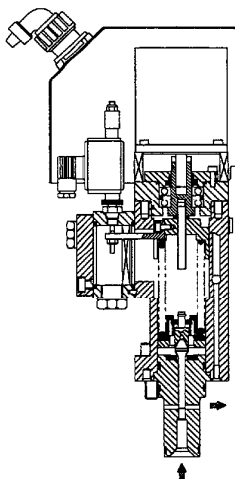
The nominal flow rating of the spool/seat should also be considered.



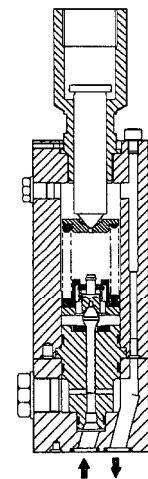
Cartridge Mounting 08C



Manifold Mounting 06R

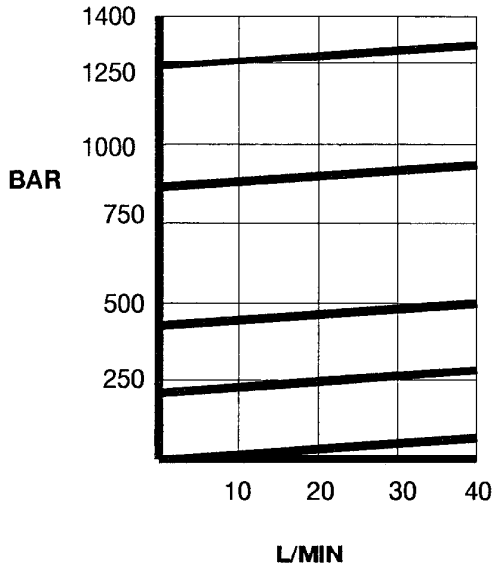


Stepper Motor Operated 08C

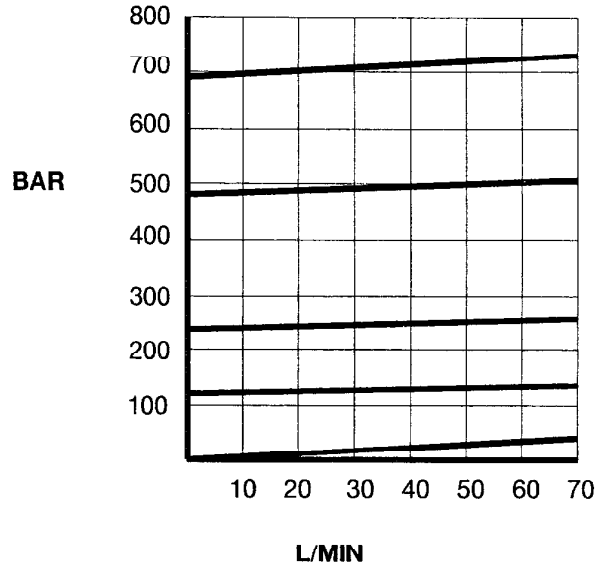


Remote Pilot Pressure Operated 06R

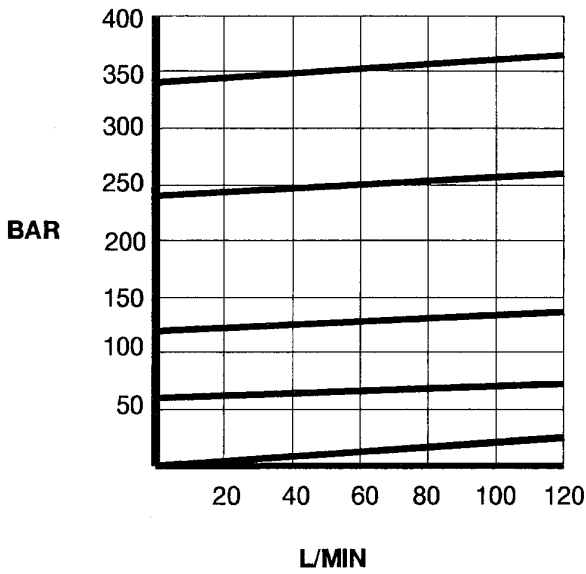
VRD PERFORMANCE DATA



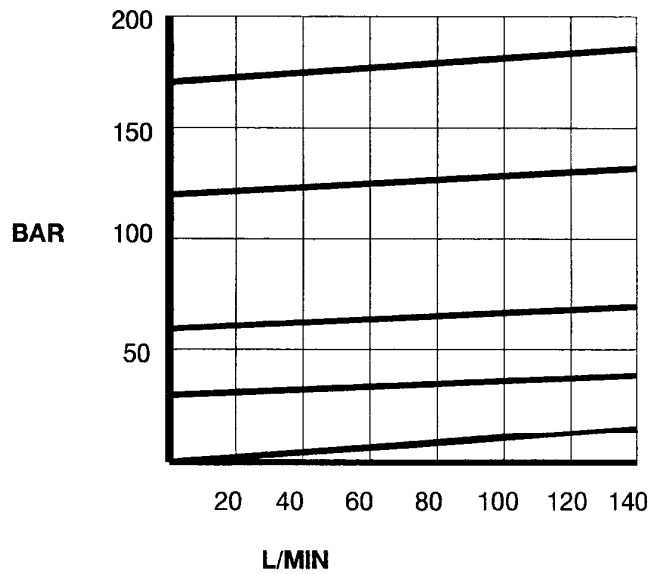
Pressure / Flow characteristic with seat "B" set at working pressures see page 16.



Pressure / Flow characteristic with spool / seat "C" set at working pressures see page 16.



Pressure / Flow characteristic with spool / seat "D" set at working pressures see page 16.



Pressure / Flow characteristic with spool / seat "E" set at working pressures see page 16.

VRD

HOW TO ORDER

COMPLETE VALVE

Block Number Explanation	1	2	3	4	5	6	7	8	9	10	11	12	13
Valve Example	V	R	D	*	**	*	*	***	*	**	B	*	A1

1 UNIT

V Valve

2 BASIC FORM

R Relief

3 VALVE TYPE

D Direct Operated

4 DESIGN

A Spool Type with Damping effect

B Seated Type with damping

5 NOM SIZE

06 Manifold Only

08 Cartridge Only

6 MOUNTING PATTERN

C Slip in Cartridge to ISO 7368

R Manifold Mounting to ISO 6264

7 SPOOL/SEAT DIAMETER

B 4.76 DIA Design Type B Only

C 6.35 DIA

D 9.0 DIA

E 12.7 DIA

8 MAX WORKING PRESSURES

124 1240 BAR **024** 240 BAR

086 860 BAR **021** 210 BAR

069 690 BAR **017** 170 BAR

048 480 BAR **012** 120 BAR

043 430 BAR **006** 60 BAR

034 340 BAR **003** 30 BAR

9 DRAIN PORT

L External

Always on Cartridge Mounting

D Internal

10 PRESSURE ADJUSTMENT

FL Fixed with locknut

CH Calibrated handle

SM Stepper motor

HL High pressure casing

PO Pilot operated piston

11 DIMENSIONS

B Metric with BSP Port threads

12 SEALS

B Buna N

V Viton

E E.P.D.M

Z Special

13 DESIGN SERIES

A1 Assigned by factory

VRD

HOW TO ORDER

COMPLETE VALVE BUILD UP EXAMPLES

Spool / Seat Diameter	"B" (Seated)		"C"		"D"		"E"	
	4,76 mm	3/16 "	6,3 mm	1/4 "	9 mm	0,354 "	12,7 mm	1/2 "
	BAR	PSI	BAR	PSI	BAR	PSI	BAR	PSI
Maximum Working Pressure	1240	18000	690	10000	340	5000	170	2500
	860	12500	480	7000	240	3500	120	1750
	430	6250	240	3500	120	1750	60	875
	210	3125	120	1750	60	875	30	438

VRM TABLE 2

Taking the following as an example:-

Cartridge mounted 08 - calibrated handle - seated spool - external drain - Buna N seals - working up to 330 bar.

Taking this maximum working pressure of 330 bar it can be seen from the table above that there is a choice of combinations of spools and springs. This is where the flow requirement and pressure rise have to be taken into account. If a large flow is required then the choice would be for the largest spool size i.e. code D.

If it has a low flow then the choice would be for the smallest spool size i.e. code B.

Pressure rise due to increase in flow over set pressure is dependent on spring rate. As all the springs deflect the same amount then that spring which gives the lowest working pressure will also give the lowest pressure rise.

Reference should be made to the graphs on the data sheet for correct selection of spool size and for the required flow and pressure values.

The code could then be written



VRDB-08C-D034-LCH-BB-A1

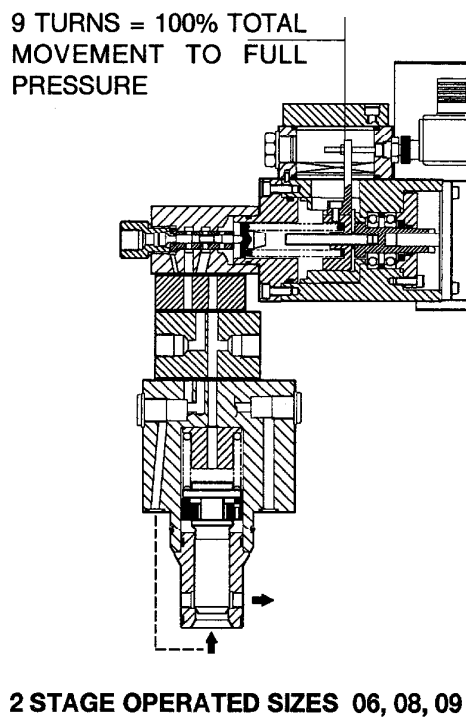
Another example:-Surface mounted 06R - Stepper controlled up to 480 bar - spool type 6,3mm nominal - external drain - Buna N seals.



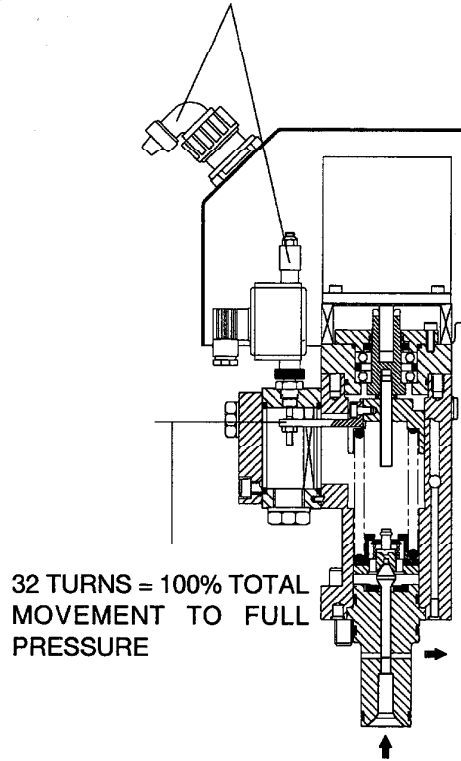
VRDA-08C-C048-LSM-BB-A1

VR* STEPPER MOTOR CONTROLLED VALVES

Oilgear Towler Stepper motor controlled relief valves are used to remotely control the working pressure in a hydraulic system by an electrical signal. The advantage of using these types of valves is that in the event of any interruption of electrical supply the valves will remain in the last set position. Proportional and Servo controlled valves do not retain position. Being of an all steel construction for robust reliability they are designed for the least possible hysteresis between motor counts and resultant set pressure.



CLOSED LOOP CONTROL
AVAILABLE ON ALL SIZES



VR*

ELECTRONIC DRIVE CONTROL UNIT

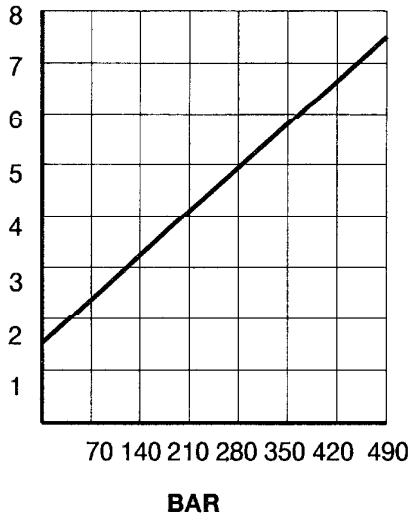
Oilgear Towler Stepper motor drive control,
for use with :-

OTL Relief valve or Reducer V80xxx Series,

OTL Stepper motor Pump Control,

Oilgear HSR-802 series Relief valve

**DEMAND
VOLTS**



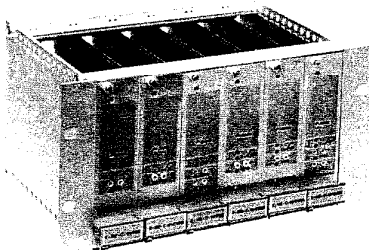
The Oilgear Towler Stepper Motor Drive Unit is a custom built unit for converting standard analogue or digital signals to position the pressure control valve / pump swash plate. When the valve/pump is in the correct position then the power to the motor is switched off until the next change in position is required. The unit mounted in an open 19" 3U rack arranged for either front or rear mounting, (a wall mounted enclosure is available as an optional extra), with all necessary interconnections wired to a terminal block or front connector. The drive is complete with logic and drive motor power supplies fed from either a 110v ac or 220v ac mains supply, (please state supply voltage when ordering). Multiple drive units may be supplied in the same rack unit but above two it may be preferable to have a common relay plate mounted drive motor power supply. A panel mounted digital voltmeter with selector switch for pre-wired signals and a wander lead is available as an optional extra.

There are two possible methods of position setting available,

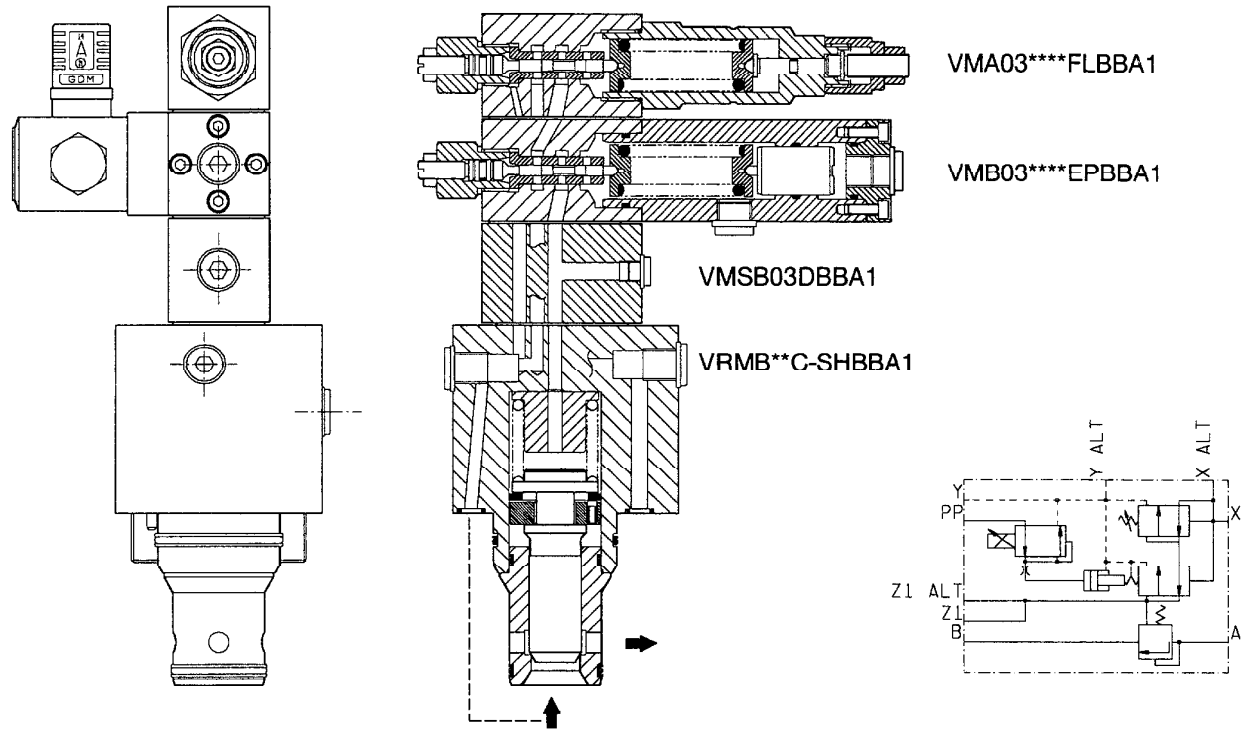
A Analogue setting. 0-10v signal from a potentiometer with the valve/pump mounted LVDT being used by the Oilgear Towler control system as position feedback.

A.1 Analogue setting. 0-10v signal from the customers control system. This option provides an APV1 so that the LVDT signal can be made available via a scaling amplifier to give a 0-10v signal for the customers own use. Closed loop pressure transducer feedback is available as an optional extra. It should be noted that the minimum pressure change possible is approx. 0.5% of full range of setting device or valve range. The maximum stepping rate is approx. 400 steps per second (1 rev/sec).

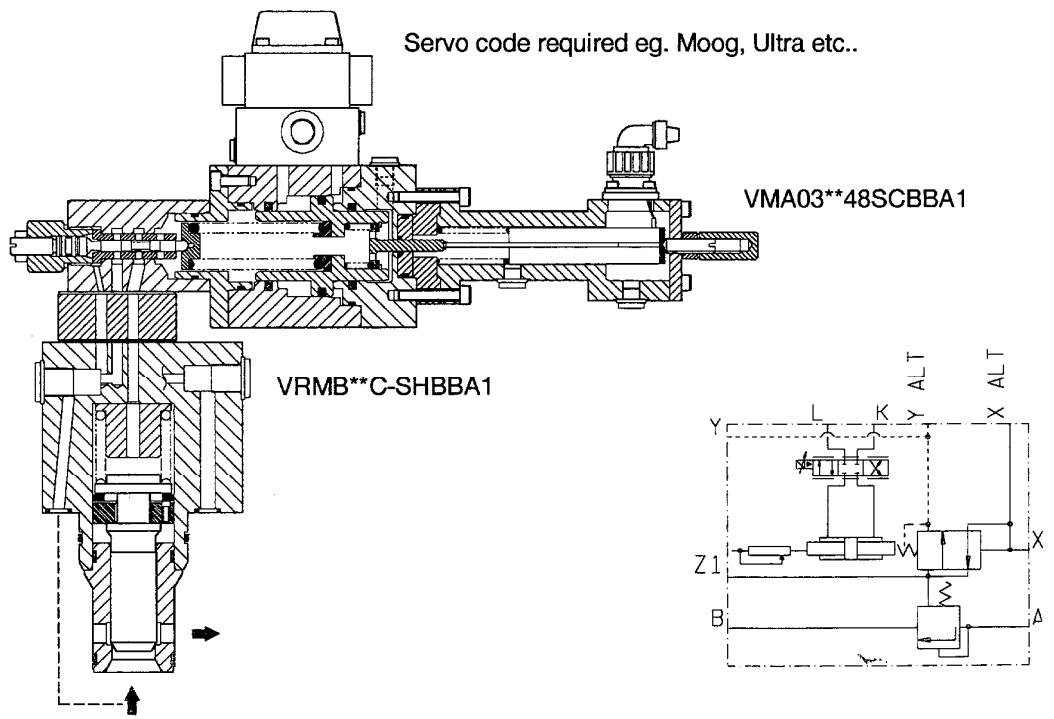
B Customers Digital signals (max. 24v dc), two signals are required, the 1st for direction (1=fwd., 0=rev) and the 2nd (1-0-1 max. rate 600Hz) for directly stepping the motor. The Oilgear Towler control system includes a monostable to shape and time the pulse signal for the valve driver. The valve mounted LVDT signal can be made available via a scaling amplifier to give a signal (0-10v max) for the customers own use.



VR*
PROPORTIONAL CONTROL
SERVO CONTROL



PROPORTIONAL 2 STAGE CARTRIDGE VALVE WITH ADDITIONAL MAXIMUM PRESSURE SETTING.

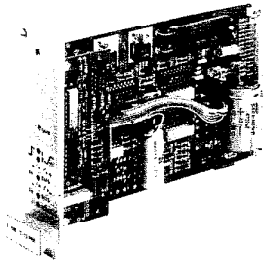


SERVO CONTROLLED 2 STAGE CARTRIDGE VALVE

VR*

ELECTRONIC DRIVE CONTROL UNITS

Oilgear Towler Proportional Valve Control Unit is a custom built unit accepting standard 0-10v dc analogue signals to position the proportional valve. The cards can be supplied loose for fitting into a 3U rack or alternatively can be supplied mounted in an open 19" 3U rack arranged for either front or rear mounting. The 19" rack would include signal scaling, proportional amplifiers and power supplies with all necessary interconnections wired to a terminal block or front connector. The rack would require either a 110v ac or 220v ac mains supply, (please state supply voltage when ordering). Multiple proportional cards may be supplied in the same rack unit.



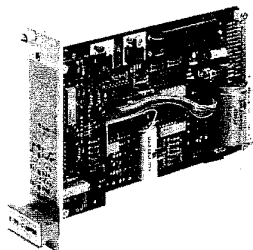
Optional Extras

1. A panel mounted digital voltmeter with selector switch for prewired signals and a wander lead.
2. Enclosure for 19" rack.
3. Alternative input signals e.g 4-20mA, 0-5v dc.
4. Valve mounted LVDT signal made available as a 0-10v signal for use by the customers monitoring system.

Oilgear Towler Servo Valve Amplifier is of 3U Eurocard design, accepting standard +/-10v dc analogue signals to position the servo valve. Two versions are available, the first for control of a single stage valve without electrical feedback, the second for control of a two stage valve with electrical feedback.

The card can be supplied loose for fitting into a 3U rack or alternatively can be supplied mounted in an open 19" 3U rack arranged for either front or rear mounting.

The 19" rack would include signal scaling, servo amplifiers and power supplies with all necessary interconnections wired to a terminal block or front connector. The rack would require either a 110v ac or 220v ac mains supply, (please state supply voltage when ordering). Multiple servo cards may be supplied in the same rack unit.



Options available

1. Enclosure for 19" rack.
2. Alternative input signals e.g 4-20mA, 0-10v dc.
3. 2nd Stage Valve mounted LVDT signal (where applicable) made available as a +/-10v signal for use by the customers monitoring system.

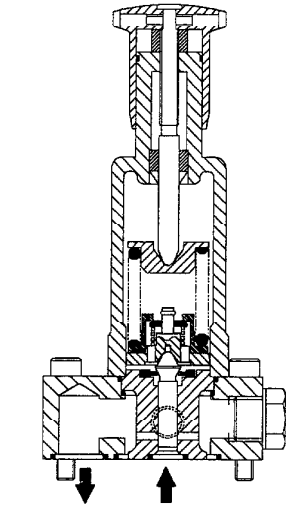
VRD

DIRECT OPERATED RELIEF VALVES

NON STANDARD MANIFOLD AND TRADITIONAL RANGE

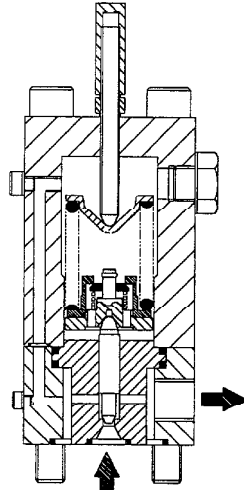
UP TO 18,000 PSI.

Note:- These valves are supplied to special order only - as replacements / spares for existing systems. New systems will utilise the latest design VRD valves to ISO standard mountings as shown in the beginning of this bulletin.



VRDA08T-****DCHBBA1

Traditional manifold mounting relief valve.



VRDB08T-****DHLBBA1

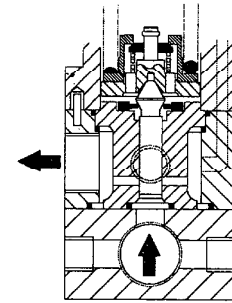
Valve shown with high pressure casing (HL).

Rating as new VRD valves code shown on page 16 but use 08 for size and

L for Line mount

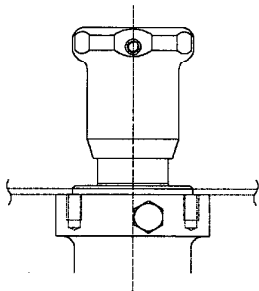
T for Manifold mount

in block 6 mounting pattern.

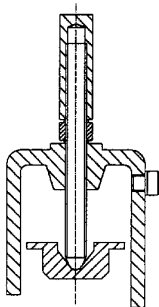


VRDA08L-****D**BBA1

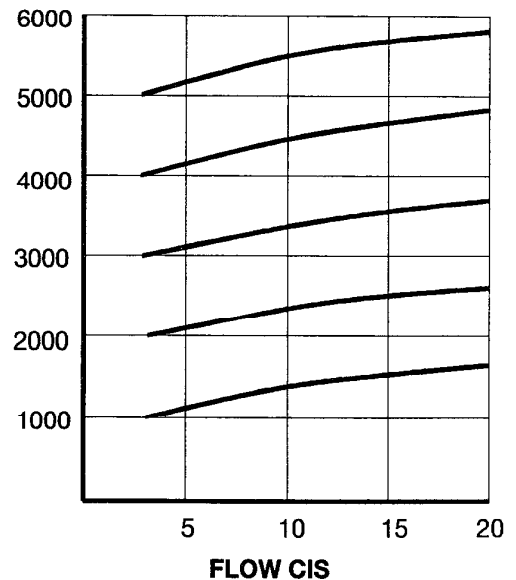
Line connections.



Valve casing with head for panel mounting (CH).



Fixed adjustment (FL).

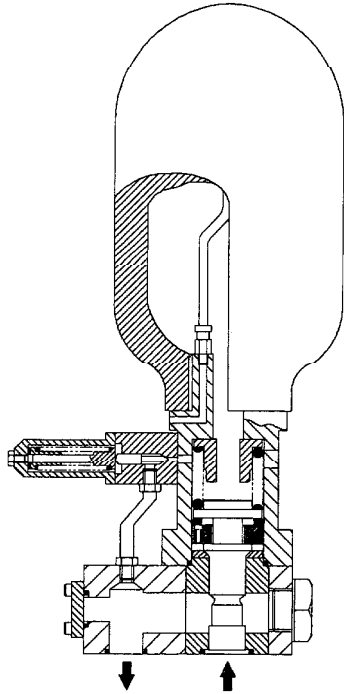


Typical graph showing rise above set pressure for increase in flow. See also page 15.

Type shown is Dia 1/4" spool. 7000 PSI Spring.

VRM PRESSURE RISE RELIEF VALVE

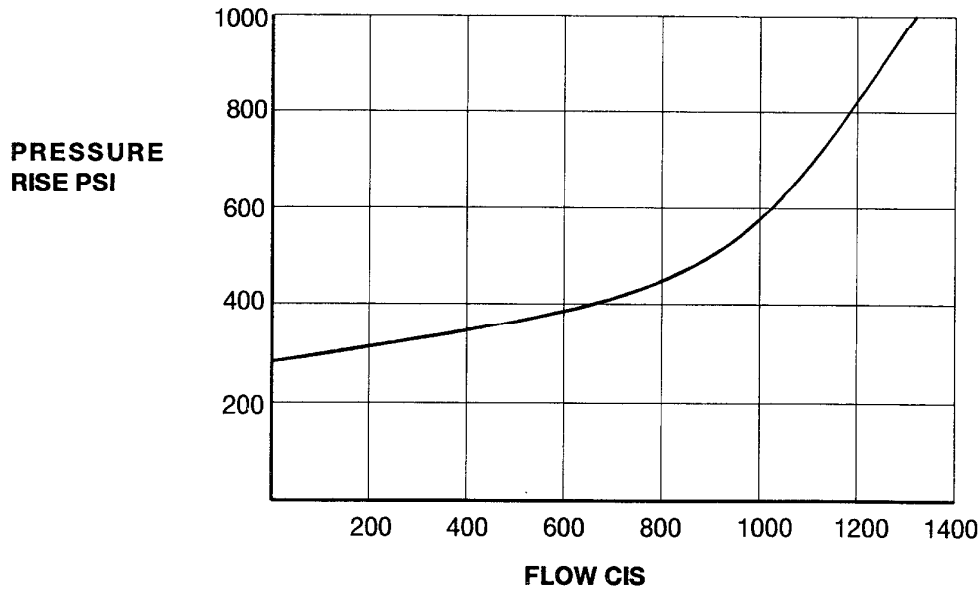
Note:- These valves are supplied to special order only - as replacements / spares for existing systems. New systems will utilise the latest design VRM valves to ISO standard mountings as shown in the beginning of this bulletin.



Traditional manifold mounting pressure rise valve.

Type shown includes in built capacity cylinder and safety overblow valve and is always matched to a master valve mounted separately.

Consult Oilgear Towler for details or refer to existing system documents. Sizes 08 and 16 only.



Typical graph showing rise above set pressure for increase in flow.

Type shown is No.16 Pressure Rise Valve at minimum setting.

MANIFOLD CONVERSION BLOCKS

TO CONVERT CARTRIDGE MOUNTING ISO7368 TO MANIFOLD MOUNTING

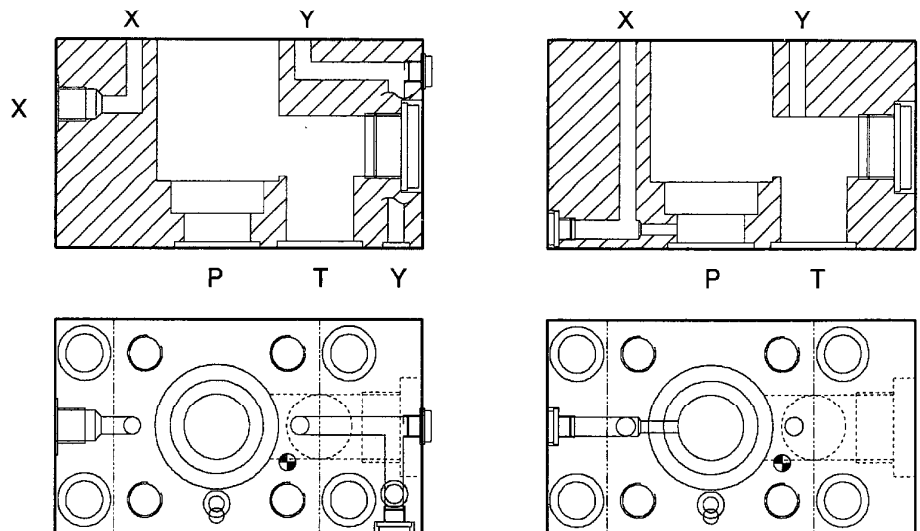
These blocks are used to convert standard cartridge valves of ISO7368 form into non-standard manifold mounting versions.

They are intended for use at higher pressures than are allowed by the standard manifold centres of ISO6264.

Oilgear Towler have produced these blocks with a view to easier manufacture of the mating manifold if boring facilities are limited. The precise machining of cartridge bores is no longer required so the manifold is simply a drilled component but with good surface finishes on mating faces.

All inter connecting drillings are done in the conversion block and each port sealed using square section joint rings to minimise leakage. Pilot and drain ports are spaced at one end of the block for ease of drilling in main manifold. These blocks are only available for cartridge valves to ISO7368 and up to and including size 10 (NG40).

Oilgear Towler do not recommend the using of surface mounted valves for high pressures in sizes over 63mm.



DIMENSIONAL DATA

GENERAL OVERALL DIMENSIONS

MOUNTING PATTERNS AND CENTRES

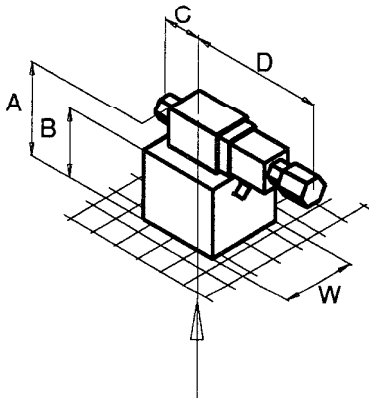
CONTENTS	PAGE
GENERAL OVERALL DIMENSIONS	26-27
CARTRIDGE MOUNTING ISO 7368	28
MANIFOLD MOUNTING ISO 6264	29
MANIFOLD CONVERSION BLOCKS	30
TRADITIONAL RANGE OF MANIFOLD MOUNTING	31

GENERAL DIMENSIONAL DATA

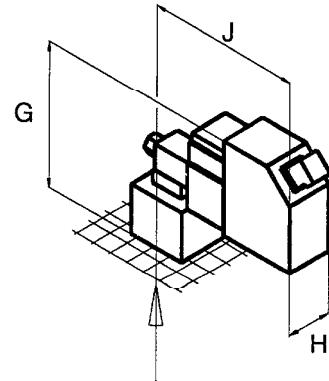
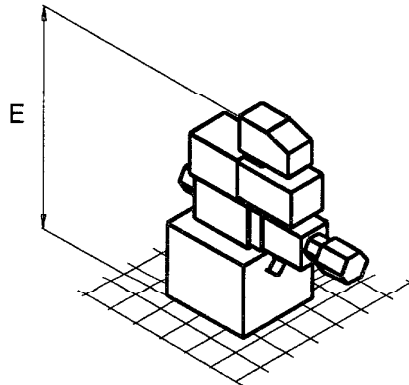
VRM - C

VRM - R

MULTI STAGE VALVES



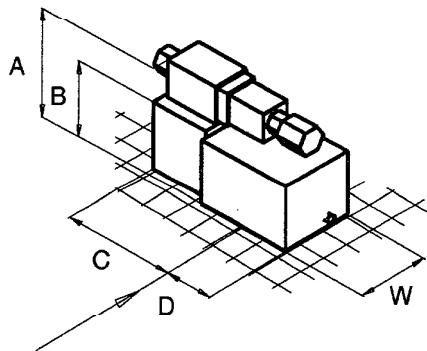
C/L Cartridge Valves



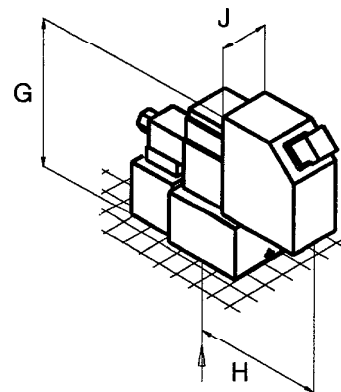
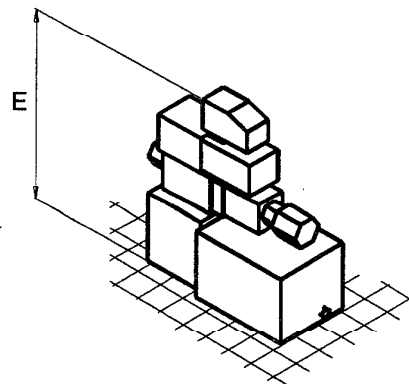
C/L Cartridge Valves

	A	B	C	D	E	G	H	J	W
C06	126	74	75	184	226	258	289	94	64
C08	138	86	79	180	238	270	285	94	85
C09	147	95	70	189	247	279	294	94	102

DIM TABLE 1



P Port on Manifold Valves



P Port on Manifold Valves

	A	B	C	D	E	G	H	J	W
R06	137	85	139	37	235	280	196	94	80
R08	149	97	175	45	248	282	162	94	102
R10	163	111	210	60	261	296	124	94	127

DIM TABLE 2

GENERAL DIMENSIONAL DATA

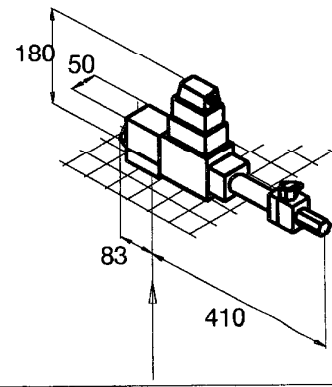
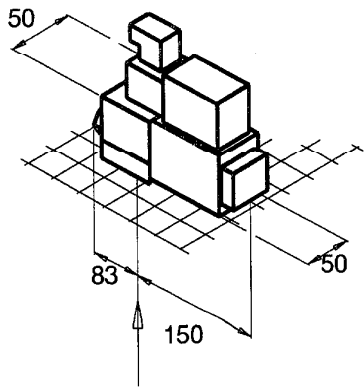
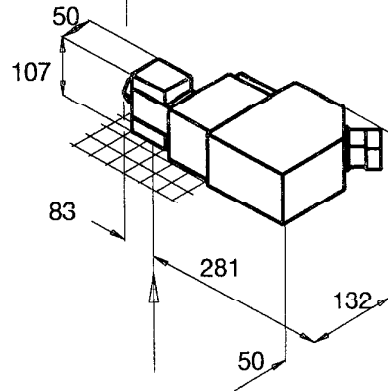
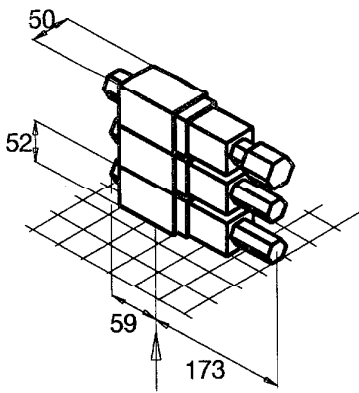
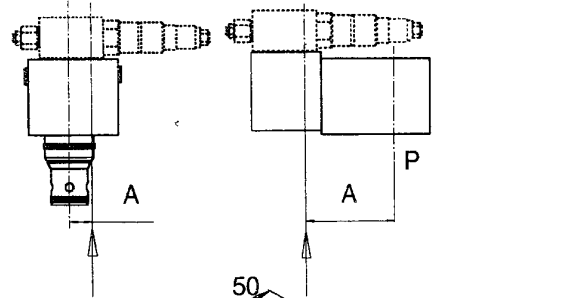
VRM - C

VRM - R

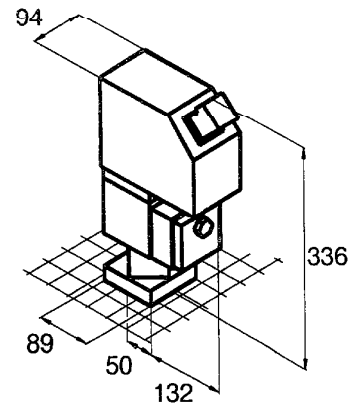
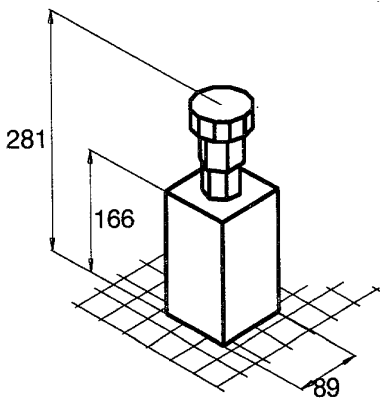
Pilot Valve Location

	C06	C08	C09	R06	R08	R10
A	8	4	13	86	123	158

DIM DATA TABLE 1



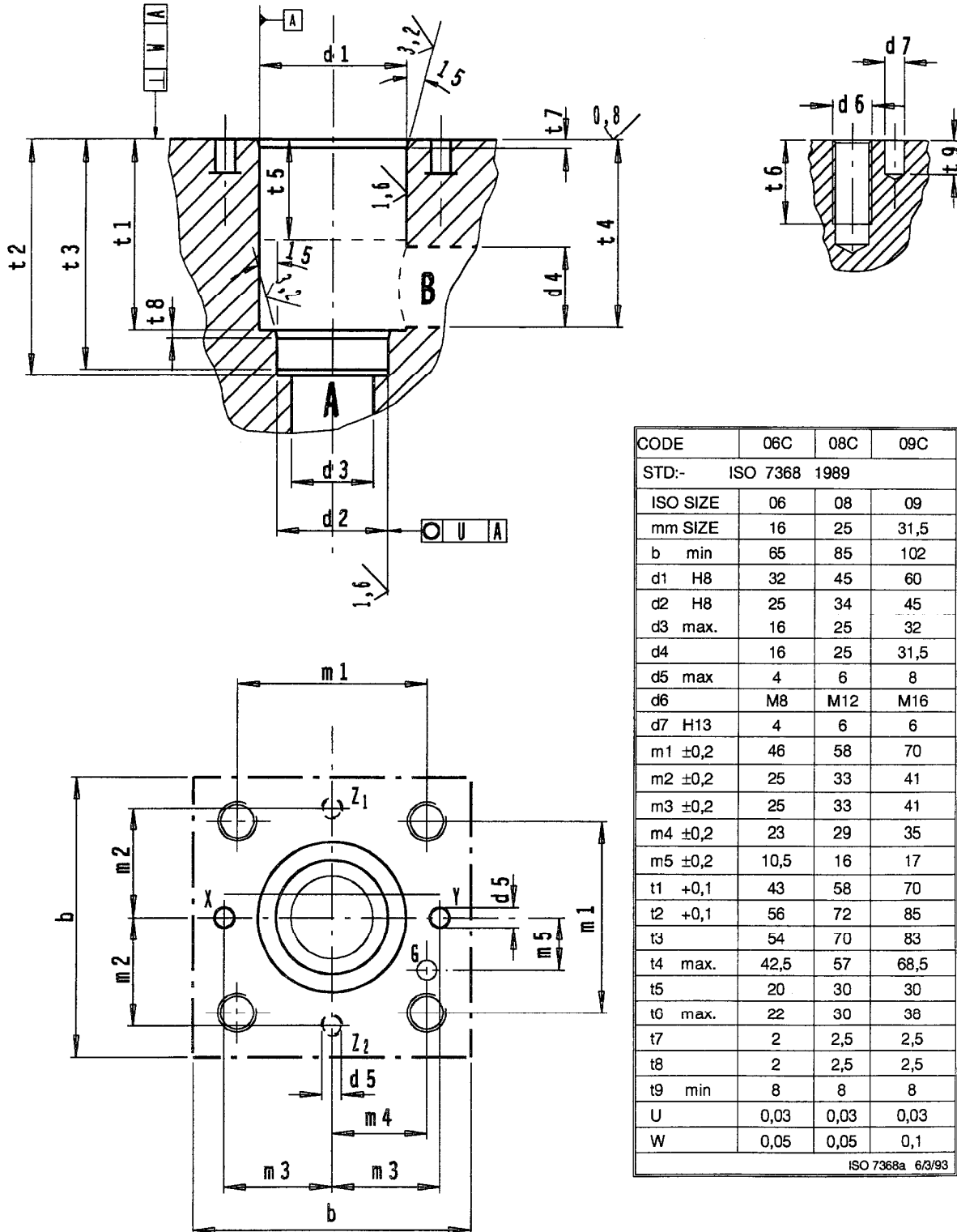
Direct Valves



MOUNTING PATTERN

SINGLE AND MULTI STAGE RELIEF VALVES

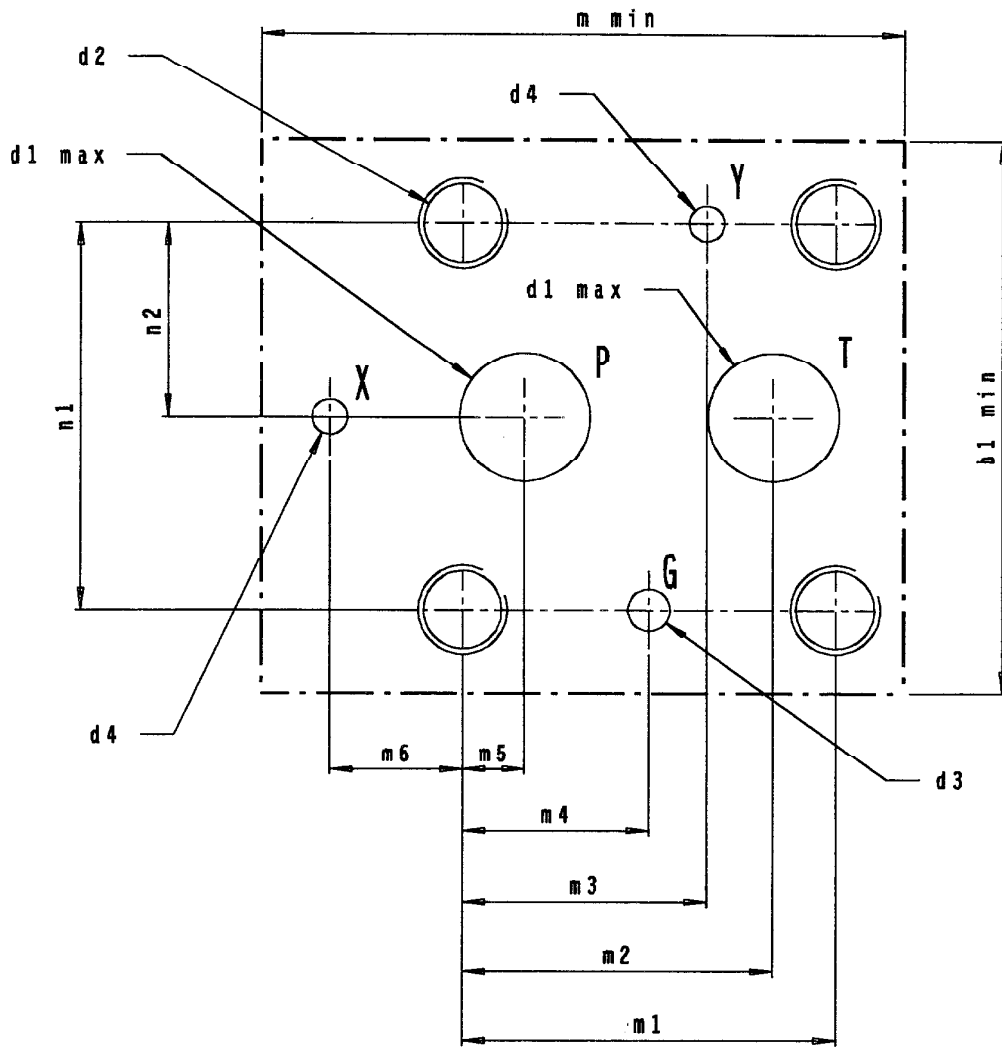
CARTRIDGE MOUNTING TO ISO7368



MOUNTING PATTERN

SINGLE AND MULTI STAGE RELIEF VALVES

MANIFOLD MOUNTING TO ISO6264



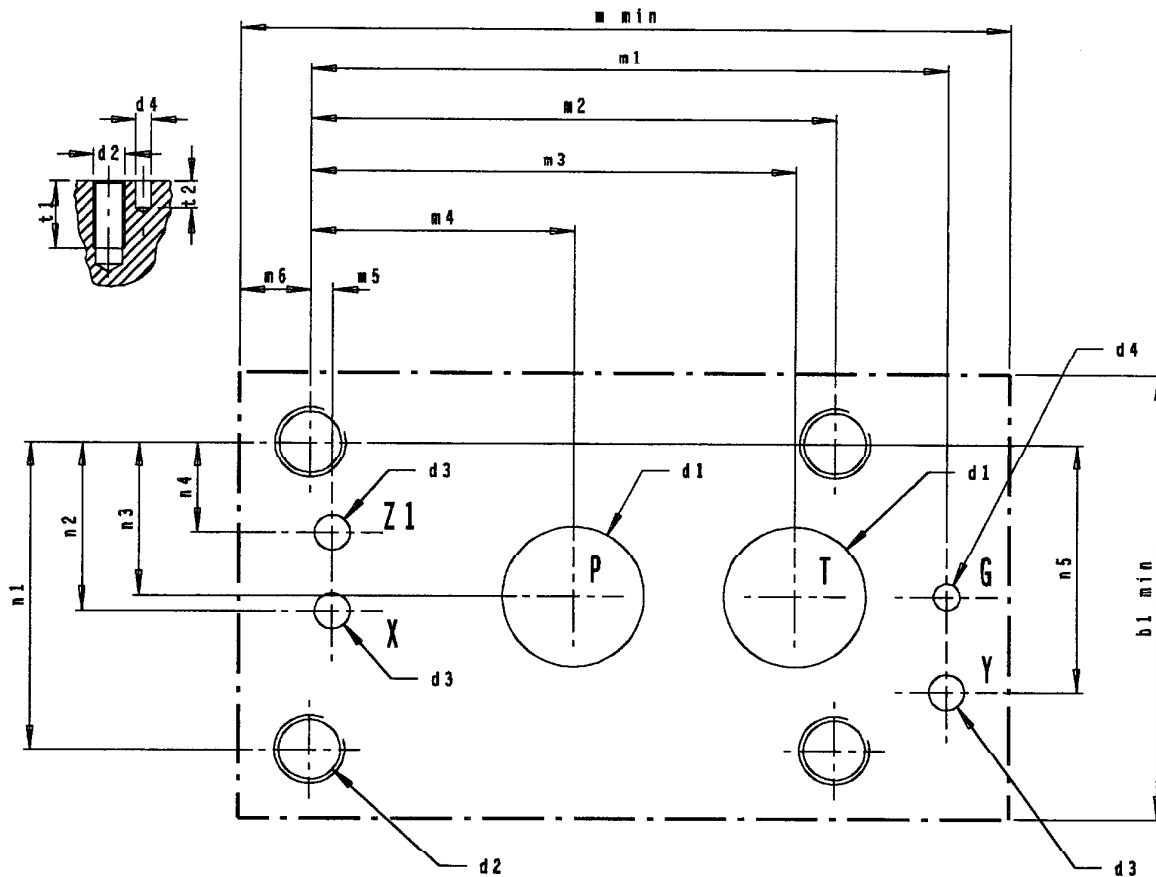
CODE / SIZE		STD:- ISO 6264 1987																	
O / T	ISO	mm	b1 min	d1 max.	d2	d3	d4	m min	m1 ±0,1	m2 ±0,2	m3 ±0,1	m4 ±0,2	m5 ±0,2	m6 ±0,2	n1 ±0,1	n2 ±0,2	t1	t2 min	
06R	06	16	80	14,7	M12	7,5	4,8	80	53,8	47,5	31,8	22,1	22,1	0	53,8	26,9	30	8	
08R	08	25	100	23,4	M16	7,5	6,3	115	66,7	55,6	43,7	33,4	11,1	23,8	70	35	38	8	
10R	10	32	120	32	M18	7,5	6,3	150	89,9	76,2	54,9	44,5	12,7	31,8	82,6	41,3	42	8	

ISO6264 6/3/93

MANIFOLD PATTERN

SINGLE AND MULTI STAGE RELIEF VALVES

MANIFOLD CONVERSION BLOCKS



This table does **NOT** cover all variations and is subject to change, please consult Oilgear Towler (Engineering) prior to use.

CODE / SIZE		CONVERSION BLOCKS																			
O / T	ISO	mm	b1 min	d1 max.	d2	d3	d4	m min	m1 ±0,1	m2 ±0,2	m3 ±0,1	m4 ±0,2	m5 ±0,2	m6 ±0,2	n1 ±0,1	n2 ±0,2	n3 ±0,2	n4 ±0,2	n5 ±0,2	t1	t2 min
06	06	16	65	16	M8	5	6	115	93	78	69	39	2	11	46	26	23	11	36,5	12	8
08	08	25	76,2	25	M12	6	6	147	120	100	90	50	3	13	58	32	29	17	46,5	18	8
09	09	31,5	101,6	32	M16	8	6	170	140	118	109	59	5	16	70	38,5	35	20,5	56,5	24	8

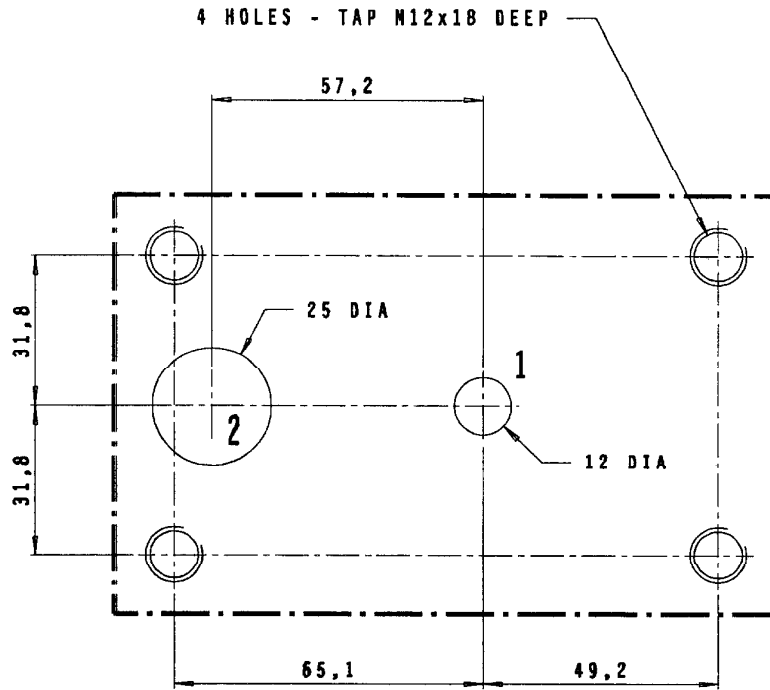
OGT_CNVR 5/5/93

MANIFOLD PATTERN

SINGLE AND MULTI STAGE RELIEF VALVE

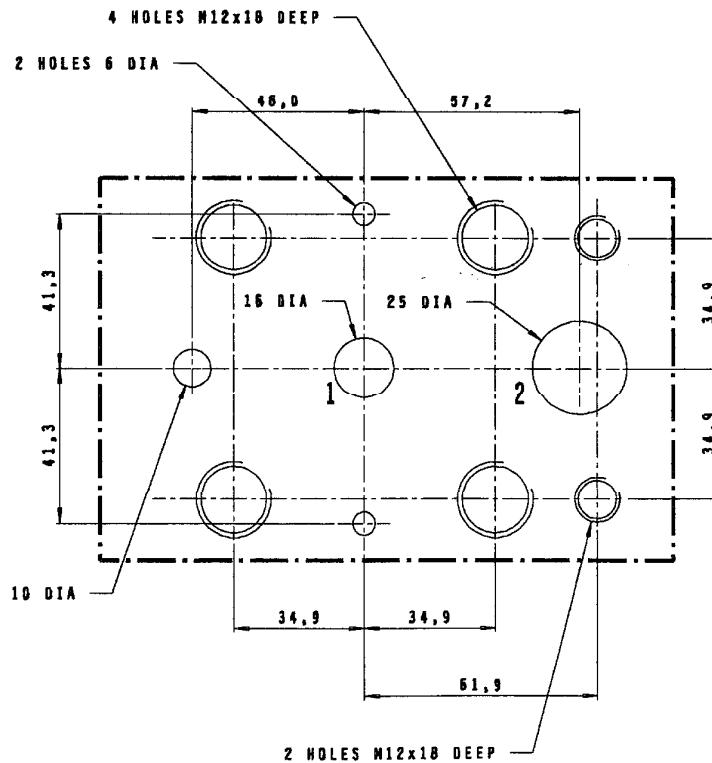
NON - STANDARD MANIFOLD MOUNTING

Direct Valves.



Note:- Port 1 will change to Dia 8 if valve has 3/16" spindle.

Pressure Rise Valves.



Oilgear Towler

VRD , VRM
PRESSURE CONTROLS.

The Oilgear Company

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Milwaukee, WI USA 53219
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In WI call (414) 327-1700
Fax (414) 327-0532
Telex 2-69411