



Air Driven Pumps and Power Packs



KR & GX PUMPS
SUPPLYING PRESSURE TO INDUSTRY

The Company



HEYPAC is a world leader in the development, manufacture and marketing of a range of the most advanced air driven fluid pumps and hydraulic power units.

The company was established in 1978 and since then has developed a unique product line of hydraulic equipment to satisfy industrial requirements for "power on demand".

The rugged design and build quality of the range can provide a cost effective and energy efficient product for use with a variety of fluids in many industrial, mobile and marine applications.

The GX and KR series includes a wide range of flow and pressure options and can be supplied in either basic pump form, complete with an integral reservoir or as a fully assembled power unit.

The wide range of complimentary accessories ensures that the GX and KR series pumps can be tailored to fit a wide range of applications in the most demanding conditions.

HEYPAC air driven fluid pumps and hydraulic power units are designed and manufactured in the United Kingdom, under a quality management system approved by Lloyd's Register Quality Assurance to ISO 9000.

HEYPAC products have been sold throughout the world through our own associate companies and authorized distributors, who operate in Europe, North America, Africa, the Middle and Far East and Australia. All associate companies and distributors have been fully trained and are able to offer application advice, local product availability, after sales support and service facilities. Further details are available on request or from the web site at www.heypac.co.uk or www.heypac.com.

Contents

Principal Operation	Page 3
GX Range	Page 4
KR Range	Page 6
Sizes and Specifications	Page 8
Installation Considerations	Page 9
Applications, Accessories and Custom Solutions	Page 10
Ordering Codes	Page 12

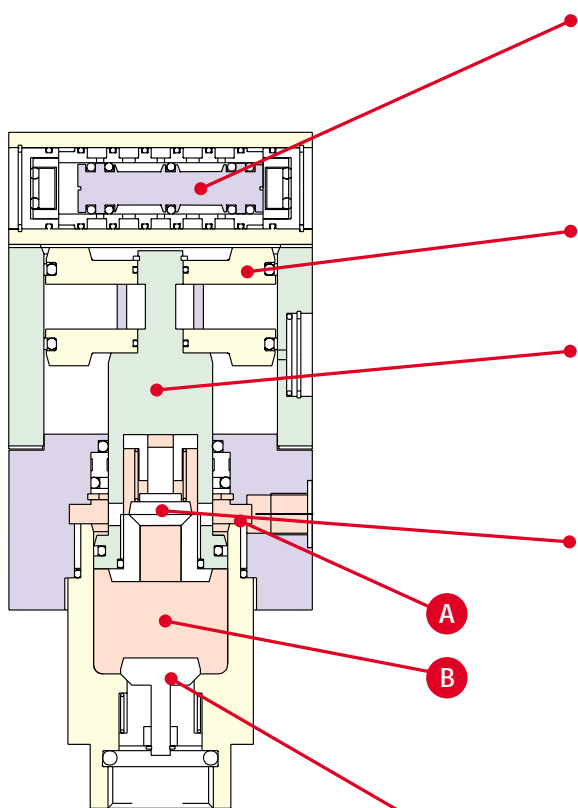




Principal Operation

The **HEYPAC** is a **double acting**, free piston, compressed air driven hydraulic pump of **infinitely variable** delivery for general use wherever a compressed air supply is available. The pump will **cycle automatically** according to system demand and stall under **zero flow** conditions with **minimal energy consumption**. The output flow and pressure depend upon the intensification ratio relative to the air supply pressure and volume.

The air operated fluid pumps and hydraulic power packs are currently available with fluid-to-air pressure ratios from 2.5:1 to 80:1. All models employ similar air drives with only the fluid end varying in size to produce the different pressure intensification ratios. Key areas of the pumps construction and operation are described below.



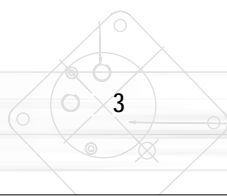
AIR VALVE - a self reciprocating valve that alternates the compressed air supply to the upper and lower sides of the drive piston assembly generating the pumping motion of the unit. A unique system of pilot control produces positive spool reversal.

AIR DRIVE - a lightweight drive piston complete with self lubricating seals allows the pump to operate on an unlubricated air supply.

PISTON ROD - transmits the compressed air power to the fluid being pumped. The cross sectional area of this piston in relation to the air drive piston provides the pump intensification ratio.

TRANSFER VALVE - is closed as the piston rises, drawing fluid into the lower pump chamber **B** via the suction valve and at the same time the piston displaces fluid from the upper chamber **A** to the system. When the pump reverses and the piston rod begins to fall the suction valve is closed by the increase in pressure in the lower chamber and the transfer valve is opened. Fluid is then displaced through the transfer valve to the upper chamber where the excess fluid is again forced into the system.

SUCTION VALVE - opens to allow fluid to enter the pump as the piston assembly rises.



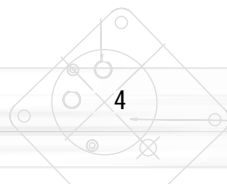
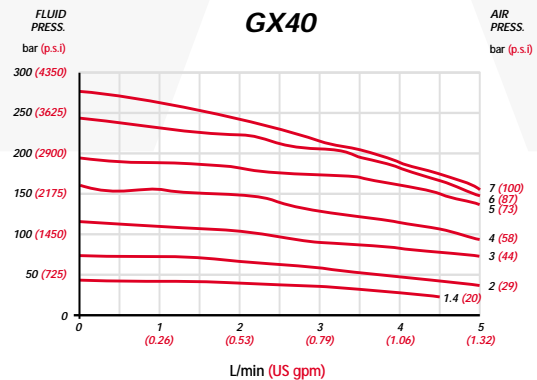
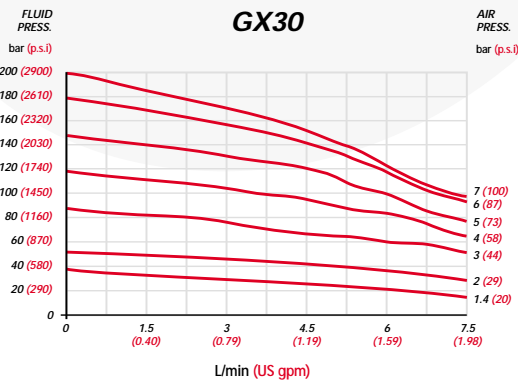
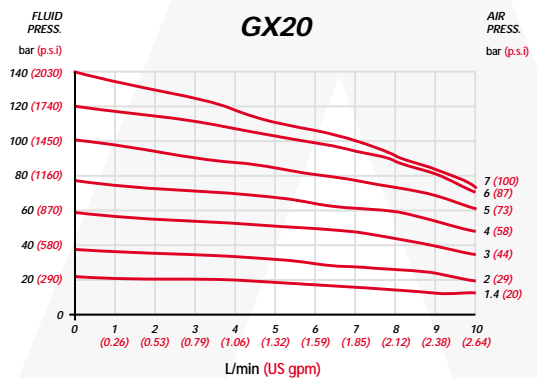
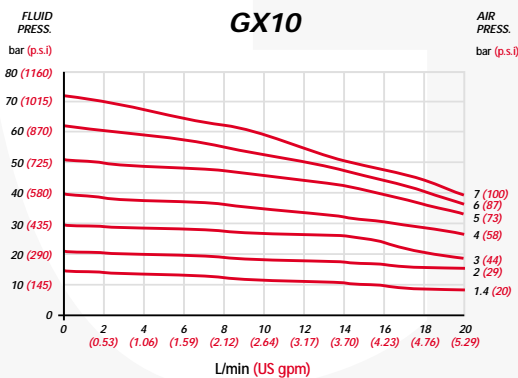
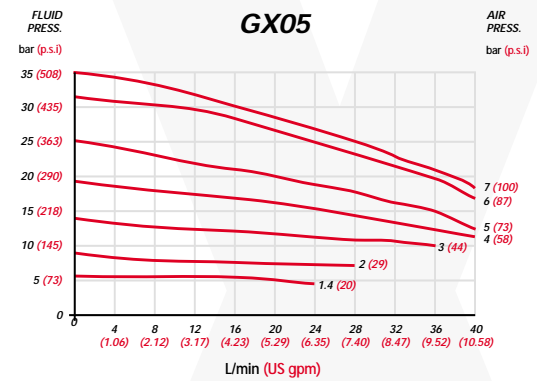
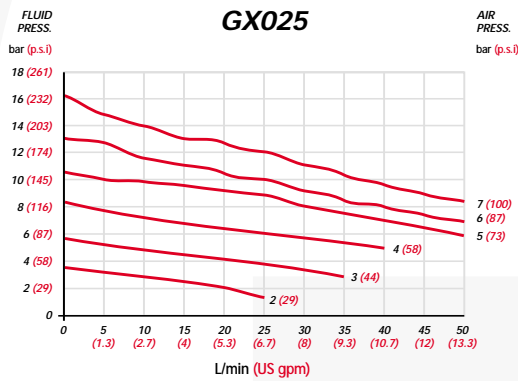
Performance Graphs

GX Range

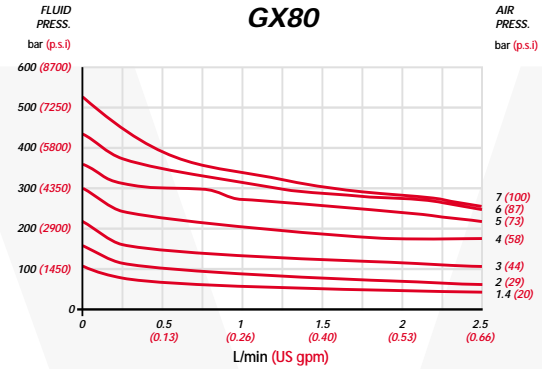
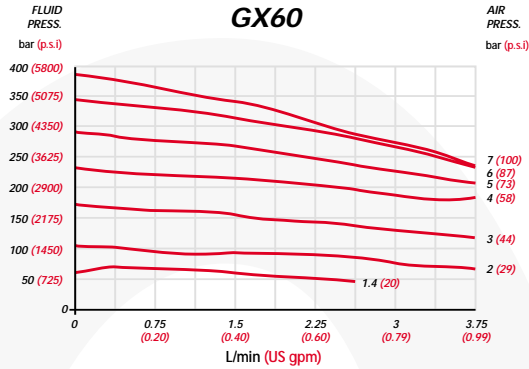


Model	GX025	GX05	GX10	GX20	GX30	GX40	GX60	GX80
Ratio fluid: air	2.5:1	5:1	10:1	20:1	30:1	40:1	60:1	80:1
P max-fluid bar (psi)	17.5 (254)	35 (508)	70 (1015)	140 (2030)	210 (3045)	280 (4060)	420 (6090)	560 (8120)
Q max fluid l.min (US gpm)	80 (21.1)	40 (10.6)	20 (5.3)	10 (2.6)	7.5 (1.98)	5.0 (1.3)	3.8 (1.0)	2.5 (0.66)
Q max avge fluid l.min (US gpm)	22 (5.8)	11 (2.9)	5.5 (1.45)	2.8 (0.74)	2.1 (0.55)	1.4 (0.37)	1.0 (0.26)	0.7 (0.18)

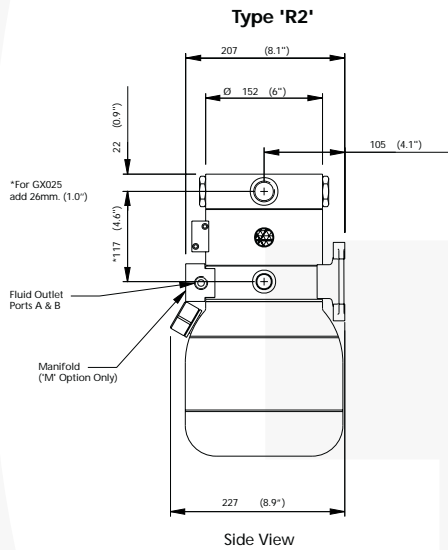
* For definitions of Q Max and Q Max avge see 'Technical Data' section on page 7.



GX Range continued

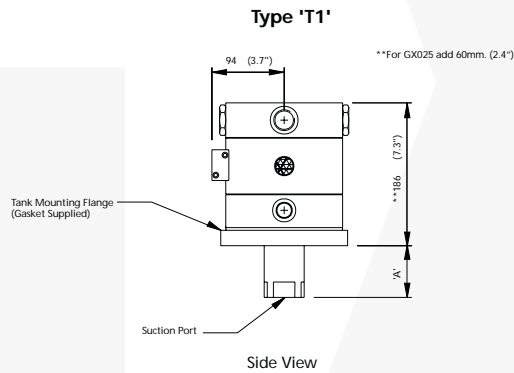


Dimension Diagrams

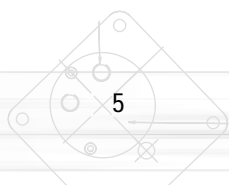
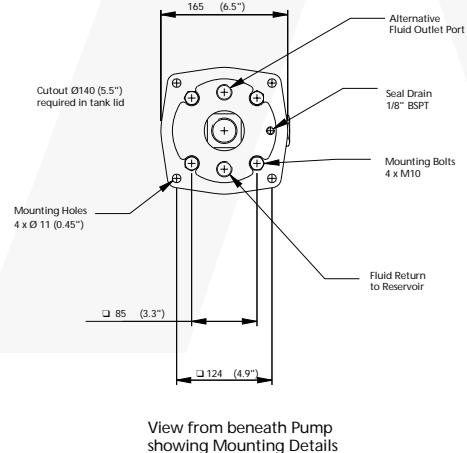
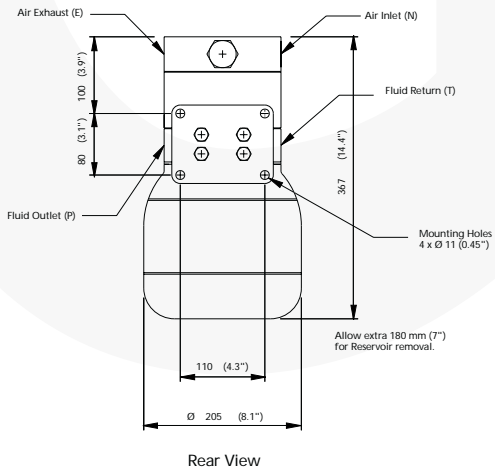


Other Option Dimensions :-

'OO' - As T1 but without Flange
'W1' - As R2 but without Reservoir
'R1' - As R2 but Reservoir \varnothing 152 (6")
'R3' - As R1 but for horizontal mounting
'R4' - As R2 but for horizontal mounting



Model	Dimension 'A'
GX025	28 (1.1")
GX05	97 (3.8")
GX10	80 (3.2")
GX20<80	71 (2.8")

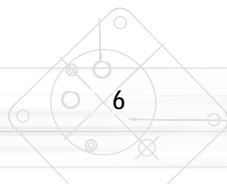
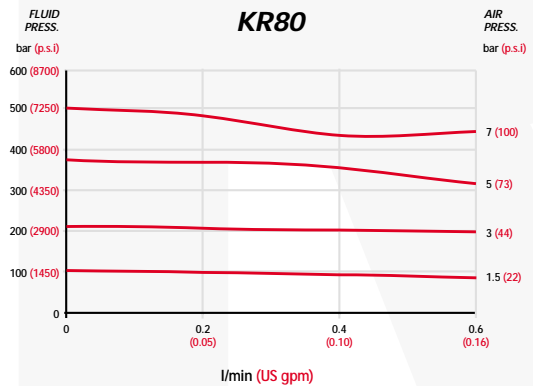
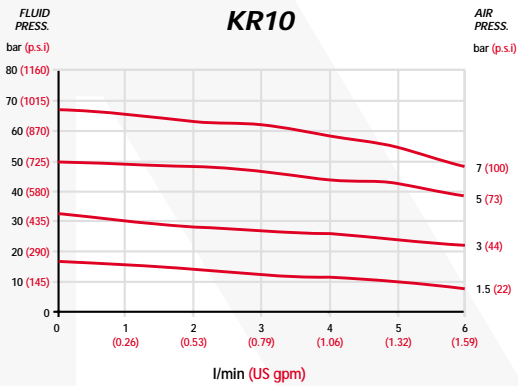
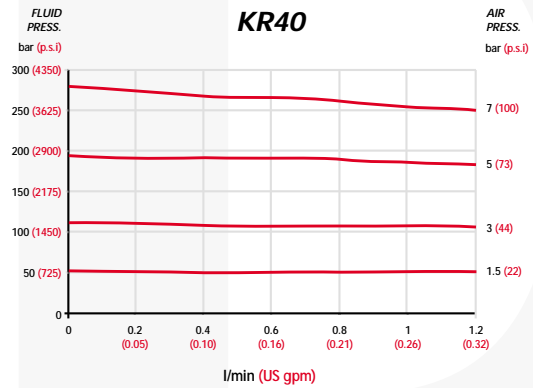
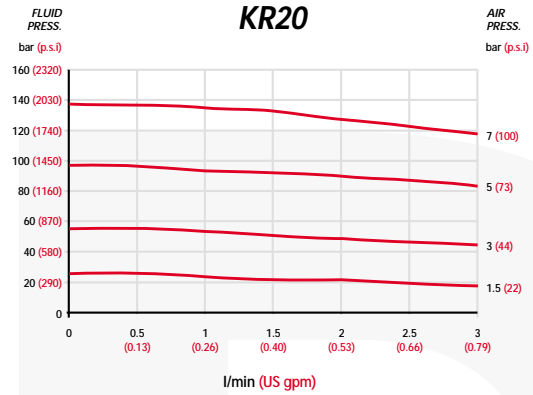
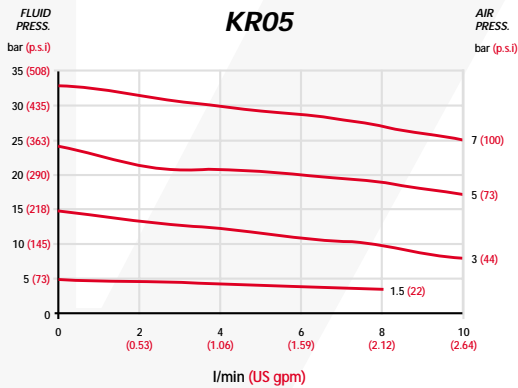


Performance Graphs

KR Range

Model:	KR05	KR10	KR20	KR40	KR80
Ratio fluid: air	5:1	10:1	20:1	40:1	80:1
P max-fluid bar (psi)	42.5 (615)	85 (1230)	170 (2460)	340 (4920)	680 (9840)
Q max fluid l.min (US gpm)	10 (2.65)	5 (1.32)	2.5 (0.65)	1.2 (0.32)	0.6 (0.16)
Q max ave fluid l.min (US gpm)	2.8 (0.74)	1.4 (0.37)	0.7 (0.18)	0.35 (0.09)	0.17 (0.04)

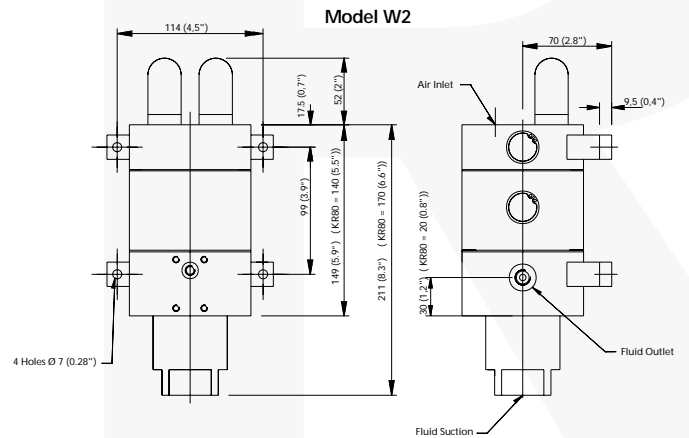
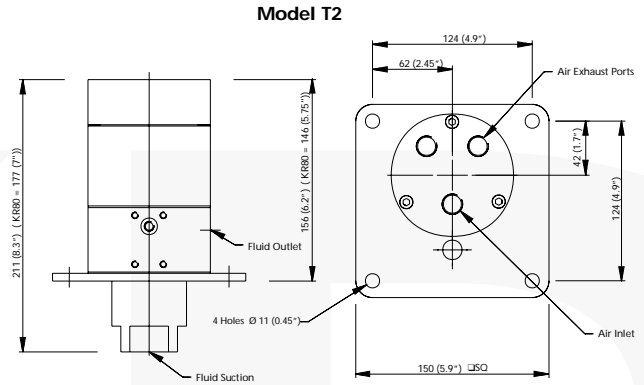
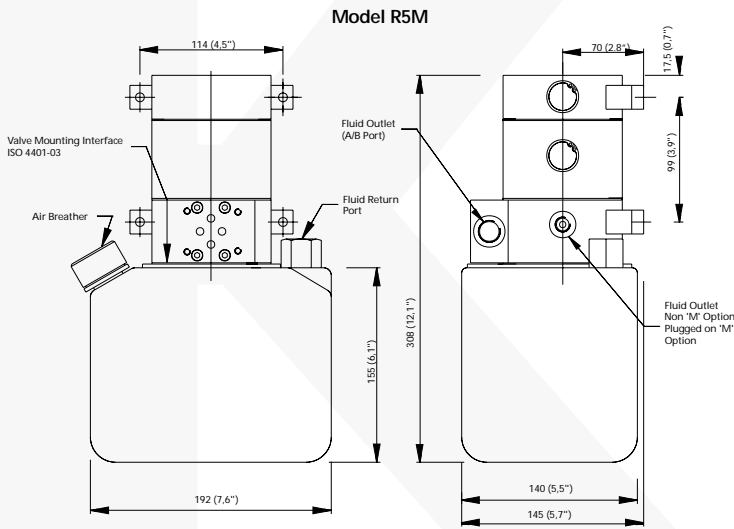
* For definitions of Q Max and Q Max ave see 'Technical Data' section on page 7.





Dimension Diagrams

Other Option Dimensions :-
'OO' - As T2 but without Flange
R5 - As R5M but without Manifold



Technical Data

Air consumption

For details on air consumption please contact **HEYPAC** or your local distributor.

Maximum hydraulic power

GX series - 1.5 kW (2.0 hp)

KR series - 0.37kW (0.5 hp)

Maximum cycle speed

500 cycles/minute (intermittent).

For continuous duty maximum cycle speed should be reduced to approx. 50 - 60 cycles/minute.

Applications involving continuous pumping should be referred to **HEYPAC**.

Maximum air pressure

GX series - 7.0 bar (100 psi) **KR series** - 8.5 bar (125 psi)

Minimum air pressure

GX and KR series - 1.4 bar (20 psi)

Fluid temperature range

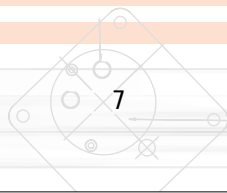
Minus 5 deg C to plus 70 deg C

"Q max."

Is defined as the maximum pump flow at 500 cycles/minute - intermittent duty only.

"Q max. avge"

Is defined as the maximum average allowable flow over complete system operating cycle including both periods of pressure holding (stall condition) and fluid delivery.



Port Thread Sizes



GX Range

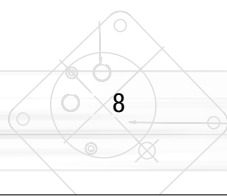
Model: OO, T1, W1	Fluid Suction		Fluid Outlet		Fluid Outlet M Option		Alternative Outlet		Air Inlet	
	BSP	SAE	BSP	SAE	BSP	SAE			BSP	SAE
GX025	2" NPT	2" NPT	G 1"	1" NPT	N/A	N/A	N/A	N/A	G 3/4"	3/4" NPT
GX05	G 2"	2" NPT	G 3/4"	12 SAE	N/A	N/A	G 1/2"	N/A	G 3/4"	3/4" NPT
GX10	G 1 1/2"	1 1/2" NPT	G 3/4"	12 SAE	N/A	N/A	G 1/2"	8 SAE	G 3/4"	3/4" NPT
GX20/30/40	G 1"	16 SAE	G 1/2"	8 SAE	G 3/8"	6 SAE	G 1/2"	8 SAE	G 3/4"	3/4" NPT
GX60/80	G 1"	16 SAE	G 3/8"	6 SAE	G 3/8"	6 SAE	G 3/8"	6 SAE	G 3/4"	3/4" NPT
Model: R1, R2, R4							Fluid Return			
							BSP	SAE		
GX05	N/A	N/A	G 3/4"	12 SAE	N/A	N/A	G 3/4"	12 SAE	G 3/4"	3/4" NPT
GX10	N/A	N/A	G 3/4"	12 SAE	N/A	N/A	G 3/4"	12 SAE	G 3/4"	3/4" NPT
GX20/30/40	N/A	N/A	G 1/2"	8 SAE	G 3/8"	6 SAE	G 1/2"	8 SAE	G 3/4"	3/4" NPT
GX60/80	N/A	N/A	G 3/8"	6 SAE	G 3/8"	6 SAE	G 3/8"	6 SAE	G 3/4"	3/4" NPT

KR Range

Model: OO, R5, T2, W2	Fluid Suction		Fluid Outlet		Fluid Outlet M Option		Fluid Return R5 Only		Air Inlet	
	BSP	SAE	BSP	SAE	BSP	SAE	BSP	SAE	BSP	SAE
KR05	G 1"	16 SAE	G 3/8"	6 SAE	G 3/8"	6 SAE	G 3/8"	6 SAE	G 3/8"	3/8" NPT
KR10	G 1"	16 SAE	G 3/8"	6 SAE	G 3/8"	6 SAE	G 3/8"	6 SAE	G 3/8"	3/8" NPT
KR20	G 1"	16 SAE	G 1/4"	4 SAE	G 3/8"	6 SAE	G 3/8"	6 SAE	G 3/8"	3/8" NPT
KR40	G 1"	16 SAE	G 1/4"	4 SAE	G 3/8"	6 SAE	G 3/8"	6 SAE	G 3/8"	3/8" NPT
KR80	G 1"	16 SAE	G 1/4"	4 SAE	N/A	N/A	G 3/8"	6 SAE	G 3/8"	3/8" NPT

SAE Thread Designation

SAE	Thread
16 SAE	1 5/16" - 12UN-2B
12 SAE	1 1/16" - 12UN-2B
8 SAE	3/4" - 16UNF-2B
6 SAE	9/16" - 18UNF-2B
4 SAE	7/16" - 20UNF-2B



Installation Considerations



The **HEYPAC GX and KR series pumps** are rugged and high quality products and their long service life can be increased by correct installation.

Filtration

Suction strainers (125 or 40 micron depending on model) are supplied in all units fitted with a reservoir but not included with 00, T and W configuration pumps.

Additional system filtration to 25 micron or better is recommended. An extended suction tube kit, complete with suction strainer, can be supplied for T configuration pumps that are to be tank mounted.

Air supply - an auto drain filter/regulator (25 micron) should be fitted as close as possible to the air inlet and be of sufficient size for the air consumption anticipated. The air drives of the pumps are greased on assembly and therefore should not be used on lubricated air supplies as this will wash out the grease and shorten service life.



Fluids

The pumps will handle a wide range of fluids including those with little or no lubricating properties.

Fluids which have been satisfactorily pumped include:

- Mineral Oils
- Vegetable Oils
- High water-based fluids
- Water Glycol solutions
- Water in Oil emulsions
- Phosphate Esters
- Silicate Esters
- Grease
- Liquified Gases

Water (For applications involving water, the option W should be inserted in the pump model number).

Valves and Sytem Components

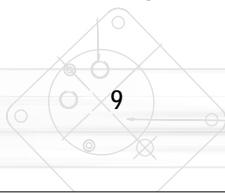
Due to **HEYPAC's** ability to maintain pressure at zero flow, consideration should be given to fitting ultra low or no leakage valves, such as poppet construction, and by so doing, the pump will be protected from excessive cycling. A range of suitable valves are available.

Mounting Orientation

Pumps can be mounted in any orientation with the exception of all R configuration pumps. The R1, R2 and R5 models must be mounted vertically with the reservoir beneath the pump while the R3 and R4 models should be mounted horizontally.

Flow Control

A suitable flow control must be used if the pump is to be operated at or near maximum flow rate to prevent overspeeding.



Accessories & Custom Solutions

Reservoir Kits

In addition to the integral R series of reservoirs **HEYPAC** is able to offer larger reservoirs with 10 or 30 litre usable capacity suitable for mounting T1 or T2 option pumps.

The reservoirs are epoxy powder - coated inside and out and are supplied complete with fluid level gauge, air breather/filler and pump suction tube and strainer.

The 30 litre reservoir includes a return line filter as standard, which is an optional extra on the 10 litre reservoir. The 10 litre reservoir will accept a single GX or KR series pump and the 30 litre reservoir will accept single or twin pump installation from either GX or KR series or a mix of both series.



A fluid level switch is an optional extra on either size of reservoir. Larger capacity reservoirs are available on request.

Manifold Options



The GX and KR series of pumps are available with an integral manifold conforming to ISO standards to enable the direct mounting of control valves.

The GX20 to GX80 and KR05 to KR40 pumps can be supplied fitted with a manifold conforming to ISO 4401-03-02-0-94 and the KR05 to KR40 pumps can also be fitted with a manifold conforming to ISO 4401-02-01-94.

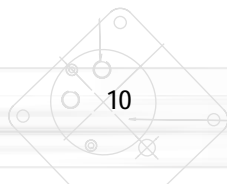
The manifolds are available with both BSP and SAE (UNF) service port threads.

System Accessories

Smoothing Kits to suppress the slight pressure pulsations generated by the reciprocating pump mechanism when perfectly smooth flow is required.

Fluid Level Switches for use with R1, R2, R5, 10 and 30 litre reservoirs to warn of low fluid level, supplied complete with DIN connector.

Return Line Filters 20 micron nominal rated for use with GX20, 30 and 40 pumps when fitted to R1, R2 and 10 litre reservoirs.





Valves

A wide range of directional control and pressure reducing valves are available to suit all air driven pumps. The valves have been selected for their no or ultra-low leakage characteristics and are typically of poppet construction.

Directional Control Valves are available in 3 or 4 port configurations for the control of single or double acting cylinders or other diverting functions. The range of valve operators include direct solenoid, in most popular voltages and also an EEx rated option for explosive environments, air pilot and lever operated. The valve mountings conform to ISO 4401-03-02-0-94 and therefore the valve may be directly fitted to all pumps with options M or M3 or on to manifolds conforming to the ISO 4401-03-02-0-94 standard. The lever operated valve is also available in a body ported version with 1/4" NPT port threads. The solenoid and air operated valves are rated to a maximum pressure of 315 bar while the lever operated valve is rated to 400 bar. Maximum flow rates should not exceed 20 litres per minute.



Pressure Reducing Valves conforming to ISO 4401 are available in flange or stackable mount configuration and compliment the directional valve range. Maximum inlet pressure is 315 bar and five reduced pressure ranges between 1 - 31.5 and 5 - 315 bar are available. Adjustment is by socket head screw or hand knob.

Extended Suction Tube Kit including suction strainer for use where basic pumps are being installed in customer's reservoir.

Noise Muffler Kit to reduce exhausting air noise to a lower level than the standard exhaust silencer fitted to every pump.

Further details of all these accessories are available from HEYPAC or your local distributor.

Custom Solutions - While the standard range of our air driven pumps covers a wide range of applications we are always happy to look at developing pumps for specific applications not covered by standard products. In the past specials have been produced for underground mine operation, NACE approved units for sour gas and pumps in stainless steel. If you should have a special application then please contact the technical staff at **HEYPAC** or your local distributor who will be pleased to assist you.

Ordering Information

GX PUMP RANGE

GX40- B S N- 00 M-W- DM**

Fluid/air pressure ratio:

GX025 - 2.5:1 **GX05** - 5:1 **GX10** - 10:1
GX20 - 20:1 **GX30** - 30:1 **GX40** - 40:1
GX60 - 60:1 **GX80** - 80:1

Port threads:

N - NPT (*GX025 only*)
B - BSP
S - SAE (*US Standard*)

Dynamic fluid seals:

C - Carbon filled PTFE
S - Polyethylene
P - Polyurethane (*Standard on GX40, GX60 and GX80*)
O - Special options upon request

Static fluid seals:

N - Nitrile
V - Viton
E - EPDM Ethylene Propylene

Pump configuration:

00 - Basic Pump
T1 - As 00 Plus Tank Mounting Flange
W1 - As 00 Plus Wall Mounting Bracket
R1 - Power Pack Including 2.5 l Reservoir & Mounting Bracket
R2 - Power Pack Including 4.5 l Reservoir & Mounting Bracket
R3 - Horizontal Mounting Version of R1
R4 - Horizontal Mounting Version of R2

Manifold options:

M - Pump With ISO 4401-03-02-0-94
 Manifold fitted (*GX20 to 80 only*)

Water option:

W - Pump for use with water (*GX05 to 80 only*)
 Standard GX025 is water compatible

Design modifications:

DM** (*e.g DM14 - Low Temperature Seals.*)
 Other options upon request

KR PUMP RANGE

KR40- B P V- 00 M- DM**

Fluid/air pressure ratio:

KR05 - 5:1 **KR10** - 10:1
KR20 - 20:1 **KR40** - 40:1
KR80 - 80:1

Port threads:

B - BSP
S - SAE (*US Standard*)

Dynamic fluid seals:

P - Polyurethane
C - Carbon Filled PTFE

Static fluid seals:

V - Viton (*Standard*)
E - EPDM Ethylene Propylene

Pump configuration:

00 - Basic pump
T2 - As 00 Plus Tank Mounting Flange
W2 - As 00 Plus Wall Mounting Brackets
R5 - 2.5 l Reservoir & Mounting Bracket

Manifold options:

M2 - Pump with
 ISO 4401-02-01-0-94 Manifold Fitted
M3 - Pump with
 ISO 4401-03-02-0-94 Manifold Fitted
 (*M Option not available on KR80*)

Design modifications:

DM** (*e.g DM27 - Liquid Gas Application Pump*)
 Other options upon request.



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