

# PW, PX, TY, BS

## Технические характеристики

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# Presses

## Manual and Automatic Hydraulic Presses

### CARVER

Versatile 2 and 4-column presses suitable for a wide range of applications including:-

- oil extraction from mineral and vegetable products
- briquetting and pelleting
- laminating
- moulding of rubber and plastic composites
- compression and flow testing within the laboratory, small scale production plant and quality control departments

◆ All models supplied with safety shield

#### Safety Shields

The shields fitted to Carver presses have heavy gauge, sheet steel sides and rear with a hinged, transparent, tough plastic front to allow access to the press area.

#### Hotplates/Cooling Plates

These are used for laminating, moulding and other applications requiring heat and pressure applied simultaneously.

#### Unheated and Heated Test Cylinders

These are used for a variety of applications including:

- moulding test specimens or production items
- pressing out extracts, fats or fluids
- tableting and pelleting
- compression strength test for ceramics, plastics, etc.
- powder metallurgy
- flow tests
- extrusion tests

#### Plate/Cloth and Cage Equipment

Used for the pressing of oils and liquids from fibrous and other materials and separating crystals from liquors.

#### Filter Pads and Stainless Steel Pan

Used with the unheated test cylinder outfits for oil extraction applications. The filter pads keep the material being compressed from escaping during compression and the pan captures the extracted oil or fluid.

#### Swivel Bearing Plate

The major use for this accessory is in crushing and breaking tests particularly with 50 x 50mm cement/concrete cubes and 50 x 100mm test cylinders.

#### Pellet Die and Buffer Plate

The 13mm evacuable die is used primarily in the preparation of KBr discs for IR spectrography. The die assembly is hardened stainless steel and the construction ensures high performance, economy and ease of maintenance.

The buffer plate is used with the 13mm die. It is 88mm diameter and mounts to the top head of the press where it prevents the plunger of the KBr die from damaging the press head.

#### AutoPak™ Power Units

Self-contained, electrically operated automatic power units are available for retrofit to existing manual presses.

#### Pellet Presses

Purpose built manual and automatic models for producing KBr pellets – see page 446 for details.



PW100-30



PW110-12

# Presses

## Manual Hydraulic Presses

Catalogue No.		<b>PW100-10</b> basic	<b>PW100-30</b> basic <b>PW100-37</b> heated	<b>PW100-60</b> basic <b>PW100-67</b> heated	<b>PW110-12</b> basic	<b>PW110-32</b> heated
Model		Mini C	Model C	Model M	Model 25-12	Model 25-12H
Clamping force (max. applied load)	tons* lbs kN	12 24000 106.8	12 24000 106.8	25 50000 222.4	25 50000 222.4	25 50000 222.4
Columns		2	2	2	4	4
Plates	mm	150 x 150	150 x 150	228 x 228	300 x 300	300 x 300
Ram stroke	mm	130	130	165	165	165
Daylight opening	mm	0 to 177	19 to 457	19 to 406	25 to 355	0 to 240
Hydraulic fluid capacity	ml	560	560	1120	1120	1120
Dimensions, W x D x H	mm†	260 x 205 x 560	410 x 380 x 915	485 x 485 x 1070	460 x 460 x 940	460 x 635 x 940
Weight, net	kg†	45	64	121	223	291

\*US ton equivalent to 0.893 Imperial ton. † For the basic machines only – see Accessories entries also.

### Two-Column, Manually Operated

All models supplied with pressure gauge, hydraulic fluid, instruction manual and safety shield.

#### Manual Hydraulic Press, Mini C basic

Maximum applied load 12 ton. Square unheated plates, 150 x 150mm.

**PW100-10** Mini C basic, ref. 3850

#### Manual Hydraulic Press, Model C basic

Maximum applied load 12 ton. Square unheated plates, 150 x 150mm.

**PW100-30** Model C basic, ref. 3851

#### Manual Hydraulic Press, Model CH heated

Maximum applied load 12 ton. Square heated plates, 150 x 150mm. With digital temperature indicating controls, range ambient to 340°C. For 220V 50/60Hz single phase supplies.

**PW100-37** Model CH heated, ref. 4386CE

Safety Eyeshields – see SA930-10.

#### Manual Hydraulic Press, Model M basic

Maximum applied load 25 ton. Square unheated plates, 228 x 228mm.

**PW100-60** Model M basic, ref. 3853

#### Manual Hydraulic Press, Model MH heated

Maximum applied load 25 ton. Square heated plates, 228 x 228mm. With digital temperature indicating controls, range ambient to 340°C. For 220V 50/60Hz single phase supplies.

**PW100-67** Model MH heated, ref. 4389CE

#### Spares

**PW125-05** Hydraulic fluid for all presses, 560ml

**PW125-10** Repair Kit for Mini C and Models C hydraulic units

**PW125-13** Repair Kit for Models M, Model 25-12 and Model 25-12H hydraulic units

**PW125-35** Hydraulic unit for Mini C and Model C presses, weight 12.5kg

**PW125-40** Hydraulic unit for Models M, Model 25-12 and Model 25-12H presses, weight 23kg

### Four-Column, Manually Operated

All models supplied with pressure gauge, hydraulic fluid, instruction manual and safety shield.

#### Manual Hydraulic Press, Model 25-12 basic

Maximum applied load 25 ton. Square unheated plates, 300 x 300mm.

**PW110-12** Model 25-12 basic, ref. 3855

#### Manual Hydraulic Press, Model 25-12H heated

Maximum applied load 25 ton. Square heated plates, 300 x 300mm. With digital temperature indicating controls, range ambient to 340°C. For 220V 50/60Hz single phase supplies.

**PW110-32** Model 25-12H heated, ref. 3856



**PW100-10**



**PW100-37**



**PW110-32**

# Presses

## Major Accessories for Hydraulic Presses

### Digital AutoPaks

Self-contained power units for converting manually operated presses to automatic operation. Comprising d.c. motor, two-stage pump, touchscreen interface for controlling pressure, cycle, time and temperature (where applicable) parameters automatically. Two-hand, anti-tie down controls protect the operator. Overall 590 x 330 x 610mm W x D x H. Weight 50kg. For 220V 50/60Hz single phase supplies.

- PW130-13** AutoPak 12. For Mini C, Models C  
**PW130-15** AutoPak 25. For Models M, Model 25-12

### Hot Plates/Cooling Plates

Steel, with digital thermostatic control over the range ambient to 340°C. For 220V 50/60Hz single phase supplies. Supplied per pair.

	Type	For Models	Size, mm	Weight, kg
<b>PW130-28</b>	Heating	Mini C, C	150 x 150	12
<b>PW130-29</b>	Heating/cooling	Mini C, C	150 x 150	15
<b>PW130-34</b>	Heating	M	228 x 228	26
<b>PW130-35</b>	Heating/cooling	M	228 x 228	30

### Cage Equipment

For extracting oils and liquids from fibrous materials. Minimum daylight opening of 410mm required. Includes felt discs, steel discs, tray, bulb type syringe and mounting hardware. For use with Model C unheated presses only.

- PW130-44** Cage equipment

This accessory cannot be used with the Model C press fitted with heated plates.

### Test Cylinders and Pellet Die

For moulding, briquetting and pressing fluids from plants and animal tissues.

#### For Mini C, Models C, M and 25-12 only

- PW130-50** Test cylinder outfit, stainless steel, 1.125" i.d. (28.6mm). Weight 1.5kg  
**PW130-52** Set of 12 filter pads for above  
**PW130-54** Test cylinder outfit, stainless steel, 2.25" i.d. (57.2mm). Weight 4kg  
**PW130-57** Set of 12 filter pads for above  
**PW130-60** Stainless steel pan for use with PW130-50 or -54  
**PW130-68** Heated test cylinder outfit, 1.125" i.d. (28.6mm). Weight 3kg. 220V 50/60Hz  
**PW130-70** Heated test cylinder outfit, 2.25" i.d. (57.2mm). Weight 6kg. 220V 50/60Hz

#### For Mini C, Models C & M only

- PW130-80** Swivel bearing plate.  
**PW130-85** 13mm pellet die for KBr pellets. Requires PW130-87  
**PW130-87** KBr buffer plate. Please state for which press when ordered

## Pellet Presses

### CARVER

#### Manual Pellet Press, Model 4350CE

Compact, two-column, fully enclosed, manual hydraulic press designed primarily for KBr pellet pressing. Maximum applied load 12 US tons. Circular unheated plates, 100mm diameter. Supplied complete with 13mm evacuable die, safety shield and high-visibility pressure gauge. Ram stroke 130mm; daylight opening 0 to 146mm. Overall 267 x 605 x 572mm W x D x H. Weight net 55kg.

- PW190-20** Manual pellet press, ref. 4350CE

#### Automatic Pellet Press, Model 3887CE-4NE

Maximum applied load 25 US tons. Two-column, automatic press primarily for KBr pellet pressing.

- ◆ Touchscreen interface controller with display for pressure, speed, dwell time setting and press status
- ◆ Ten recipe storage of pressure and time settings
- ◆ 0.01sec to 99.9 hours timer
- ◆ Automatic platen opening on cycle completion
- ◆ Adjustable end of cycle alarm
- ◆ Units of measurement setting for kg, lbs or tons
- ◆ Integral safety enclosure with transparent door

With circular unheated plates, 125mm diameter. Ram stroke 25mm; daylight opening 38 to 184mm. Overall 605 x 250 x 600mm W x D x H. Weight net 120kg. For 230V 60Hz single phase supplies. Requires KBr pellet die for operation.

- PW190-60** Pellet press, ref. 3887CE-4NE  
**PW130-85** Accessory 13mm pellet die for KBr pellets



Digital AutoPaks



PW190-20



PW190-60



# Pumps, Carboy/Drum

## Carboy Pumps and Siphons



### Hand Pumps, Bürkle

Polypropylene. Robust pumps which are suitable for emptying a wide range of liquid containers. All parts in contact with the liquid are either polypropylene, Viton or PTFE so providing excellent chemical resistance against a wide range of liquids in common use. Supplied with a discharge pipe which can be screwed in firmly and turned upwards to prevent dripping. An accessory flexible discharge hose is available.

These pumps are not suitable for handling highly flammable liquids.

	Immersion tube length x diameter mm	Pump volume ml/stroke
<b>PX115-10</b>	500 x 32	200
<b>PX115-14</b>	650 x 32	230
<b>PX115-18</b>	800 x 32	260
<b>PX115-22</b>	1000 x 32	300

### Accessory

**PX115-60** Flexible discharge hose, PVC. For filling containers some distance away or at a higher level than the discharge vessel. With screw connection and shut-off valve

### Stainless Steel Barrel Pumps, Bürkle

Robust, manual pumps which are suitable for emptying a wide range of liquid containers. All parts in contact with the liquid are electroconductive, stainless steel and suitable for handling flammable liquids. Supplied with removable discharge nozzle. Immersion tube diameter 32mm.

	Submersible length, mm	Total Length, mm	Pump volume ml/stroke
<b>PX118-05</b>	360	480	220
<b>PX118-15</b>	570	690	350
<b>PX118-20</b>	910	1030	560

### Accessory adaptors, for connections as indicated

- PX118-60** Barrel screw joint, PP, R2" R2" internal steel barrel thread
- PX118-65** Barrel screw joint, PP Mauser R2" internal coarse thread
- PX118-70** Thread adaptors, PP, 2" BSP
- PX118-75** PVC barrel plug for 40-70mm diameter openings
- PX120-10** Anti-static set, containing 3 connecting copper cables with clamps in plastic carry case



PX115-10 and PX115-60 in use



PX118-05 in use, PX118-15/-20 are similar



PX118-60, -65 is similar



PX118-70



PX118-75



PX120-10

# Pumps, Carboy/Drum

## Carboy Pumps and Siphons continued Manual Drum Pumps

### Otal Pumps/Siphons, Bürkle

Polypropylene with PVC stopper. Available with either hand- or foot-operated squeeze bulb and release button to interrupt the flow. The down tube is extendible and this enables the pump to be used with various sizes of bottles. Liquid is forced into the collecting vessel by squeezing the bulb and the flow can be instantly interrupted by pressing the release button. Excess liquid can be sucked back by pumping and operating the release button. For use as a siphon additional tubing must be attached to the outlet tube and after pumping the liquid will flow continuously. Mounted on a 3-part stopper to fit openings as indicated. Not suitable for pumping highly flammable liquids.

	Flow rate litres/minute	Stopper size min./max. o.d. mm	Outlet diameter mm
<b>Hand Pumps</b>			
PX125-13	14	30/70	12
PX125-20	20	30/70	15
PX125-23	26	30/70	18
<b>Foot Pumps</b>			
PX127-13	20	30/70	15
PX127-20	26	30/70	18
PX127-23	30	30/70	22

Robust, polypropylene-bodied, manually operated piston drum pumps offering a choice of three seal options enabling use with a wide variety of fluids. In use the pump is positioned in the neck of the container using a tapered bung, a screwthreaded handwheel is tightened to form an airtight, evaporation-proof seal. Hand pumping pressurises the container forcing liquid up through the polypropylene sectional feeder pipe. The pump body has a built-in safety pressure relief valve. A dual action stainless steel sprung tap lever can be operated to dispense a measured volume or deliver continuous flow up to 20 litres/minute, and a snap-on flow restrictor enables small volumes to be dispensed.

### ◆ Colour codes\*

- Blue — With Nitrile valve and piston seals.  
Suitable for food, and oil-based fluids
- Red — With EPDM valve and piston seals.  
Suitable for non-food, aqueous solutions
- Green — With Viton valve and piston seals.  
Suitable for non-food, specialist applications

\*Specific chemical compatibility data – details on request.

### Manual Drum Pumps

As described. Supplied with four section feeder pipe, 1 metre long, three tapered bungs to fit sealed containers with internally or externally threaded neck openings of 49.5mm to 60.0mm diameter and outlet flow restrictor.

- PX130-20 Manual drum pump, code blue
- PX130-30 Manual drum pump, code red
- PX130-40 Manual drum pump, code green

### Accessory Extension Delivery Hose Kits

For liquid transfer, remote dispensing and siphoning. Flexible hose, 2 metres long, dual action tap lever, grip handle and nozzle guard all in materials suitable for handling fluids compatible with the corresponding pump.

- PX132-20 Extension hose, code blue, for PX130-20 only
- PX132-30 Extension hose, code red, for PX130-30 only
- PX132-40 Extension hose, code green, for PX130-40 only



PX127

PX125

### Static Electricity Hazards

Attention is drawn to the need to use correct procedures to prevent any potential ignition hazards due to the accumulation of static electricity charges during pumping. Correct procedures are described in BS5958 'Control of Undesirable Static Electricity': Part 1 'General Considerations' and Part 2 'Recommendations for Particular Industrial Situations'. In general there is a need to earth-clamp all metal parts of the pumping system, e.g. drum, pump tube and receiving vessel, using an earth conductor having a resistance to earth of not more than 10 Ohm. The use of plastic drums or vessels may increase the potential risks and their use in hazardous areas or with hazardous liquids should be carefully considered in the light of the recommendations of BS5958.



PX130 in use

# Pumps, Carboy/Drum

## Mechanical Drum Pumps, AccuOne



Flexible, convenient liquid transfer pumps comprising separate rechargeable battery, control/pump housing and tube set modules. For general laboratory and light industrial use.

- ◆ Continuously adjustable pumping speed from 0.4 to 12 litres/minute
- ◆ Suitable for most liquids up to 500mPas viscosity
- ◆ All modules easily disconnected for cleaning or exchange
- ◆ Up to 600 litres can be pumped from one battery charge
- ◆ Latest generation, lithium ion technology with no memory effect and auto shut-off operating before full discharge
- ◆ Excellent chemical resistance, materials in contact with media: Hastelloy C, polypropylene and PTFE
- ◆ Choice of pump tube sets up to 1000mm long

### Mechanical Drum Pumps, AccuOne, Bürkle

As described. Supplied with rechargeable battery, rigid 3/4" diameter discharge tube set as indicated, and charger requiring a 230V 50/60Hz single phase supply.

- PX138-10** 500mm tube set
- PX138-25** 700mm tube set
- PX138-40** 1000mm tube set

### Accessories and Spares for PX138-series

- PX138-64** Spare rechargeable battery
- PX138-68** Spare discharge tube
- PX138-72** 500mm tube set only
- PX138-76** 700mm tube set only
- PX138-80** 1000mm tube set only
- PX138-84** Accessory discharge hose, flexible PVC with PP nozzle
- PX118-60** Barrel screw joint, PP, R2" internal steel barrel thread
- PX118-65** Barrel screw joint, PP Mauser R2" internal coarse thread
- PX118-70** Thread adaptors, PP, 2" BSP
- PX118-75** PVC barrel plug for 40-70mm diameter openings



PX138 in use

## Mechanical Drum Pumps, GLP25

Easy to use, precise, mains-driven, liquid transfer pumps for laboratory and general industrial use in handling a wide range of non-flammable liquids, including concentrated acids and bases inks, and emulsions.

- ◆ Steplessly adjustable pumping speed from 1 to 20 litres/minute
- ◆ Suitable for most liquids up to 500mPas viscosity
- ◆ Constructed in polypropylene, stainless steel and Viton®
- ◆ Motor and pump tube mechanism can be separated for cleaning
- ◆ Mains-driven motor ensures continuous performance with high torque
- ◆ Choice of pump feed tubes up to 1000mm long for dispensing from 220 litre drums, with rigid 250mm output tube and nozzle

### Mechanical Drum Pumps, GLP25

As described. Supplied with pump tube set as indicated, drum adapter for 40 to 58mm diameter necks and motor requiring a 230V 50Hz single phase supply. Rating 160W.

- PX144-10** 500mm tube set
- PX144-20** 700mm tube set
- PX144-30** 1000mm tube set

### Accessories and Spares for PX144-series

- PX144-72** Spare motor, 230V 50Hz
- PX144-74** Feed tube set, 500mm, with rigid output tube
- PX144-76** Feed tube set, 700mm, with rigid output tube
- PX144-78** Feed tube set, 1000mm, with rigid output tube
- PX144-82** Spare rigid output tube, 250mm
- PX144-84** Drum adapter for 65 to 70mm dia. necks
- PX144-86** Output tube, flexible PVC hose, 1500mm long with polypropylene nozzle

### Static Electricity Hazards

Attention is drawn to the need to use correct procedures to prevent any potential ignition hazards due to the accumulation of static electricity charges during pumping. Correct procedures are described in BS5958 'Control of Undesirable Static Electricity': Part 1 'General Considerations' and Part 2 'Recommendations for Particular Industrial Situations'. In general there is a need to earth-clamp all metal parts of the pumping system, e.g. drum, pump tube and receiving vessel, using an earth conductor having a resistance to earth of not more than 10 Ohm. The use of plastic drums or vessels may increase the potential risks and their use in hazardous areas or with hazardous liquids should be carefully considered in the light of the recommendations of BS5958.



PX144 in use



# Pumps, Filter

## Water Jet Filter Pump

Single pump providing a rough vacuum suitable for many filtration, distillation and aeration applications. With integral non-return valve to prevent suck-back and flooding.

Catalogue No.	<b>PX180-10</b>
Material	Polypropylene
Approx. vacuum	mbar 16
Water inlet connection:	
1) Flexible tubing	10 to 12mm bore
2) Other supplied	Sleeve nut R 3/4" Reduction adapter R 1/2"
Vacuum connection:	
flexible tubing	6 to 9mm bore can be unscrewed
Recommended water pressure	bar 3 to 6
Approx. water consumption	l/h 200

### Water Jet Filter Pump

As described. Without connecting tubing.

**PX180-10** Brand water jet pump

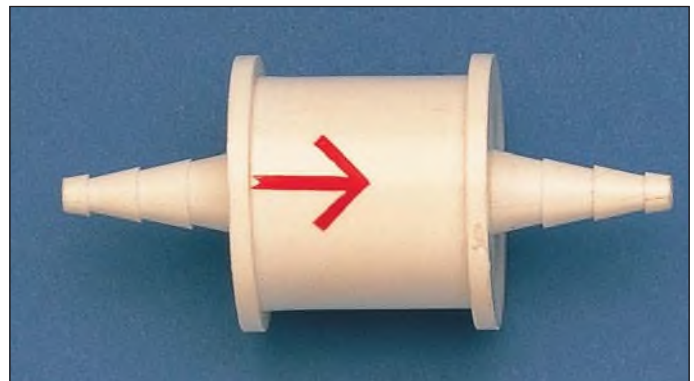


**PX180**

### Non Return Valves, Azlon

Polypropylene with neoprene disc. For insertion in vacuum lines and fluid handling systems. Useful for preventing back pressure in filter flasks. With tapered ridged side-arm to take a range of flexible tubing sizes. Can be dismantled for cleaning. An arrow printed on the body indicates direction of flow.

	Ref.	Arms o.d. mm
<b>PX185-10</b>	NWH902P	4 to 7
<b>PX185-17</b>	NWH905P	8 to 10
<b>PX185-20</b>	NWH906P	11 to 15



**PX185**



# Pumps, air/gas/vacuum

## Portable Vacuum Pump/Compressor, LLG uniVACUUPUMP 1

Simple, compact, portable, oil-free, piston pump housed in a lightweight plastic casing with handle for general duty applications requiring only a rough vacuum and moderate pressure. Ideal water jet or aspirator replacement. Not suitable for use with organic, basic or acidic vapours and gases. Free air displacement 9.2 litres/minute, ultimate vacuum 292mbar. Overall 191 x 194 x 114mm H x W x D. Weight 2.3kg. Supplied with 1.8 metre power supply cable. For 230V 50Hz single phase supplies.

**PX240-20** Model uniVACUUPUMP 1

## Dry Piston Pumps, WOB-L®



Oil-free, vacuum/pressure piston pumps ideal for air sampling, pressure or vacuum filtration, water aeration or for use with vacuum ovens or flame photometers. Not suitable for use with organic, basic or acidic vapours and gases.

- ◆ Built for continuous-duty operation
- ◆ All parts in contact with air are aluminium or stainless steel and corrosion-protected from moisture
- ◆ All pumps supplied with thermally protected motor, carrying handle and suction cup feet for stability

Catalogue No.	PX245-15	PX245-20	PX245-59
Model No.	2522C-02	2534C-02	2546C-02
Stages	1	1	1
Free air displacement litres/minute	18	28	38
Ultimate vacuum mbar	133	93	80
Pressure bar	1	0.5	1
Hose connections, i.d. mm	5	5	5
Overall			
H mm	254	254	254
W mm	224	224	191
D mm	206	206	229
Weight kg	5.3	5.3	6.3

As described. Supplied with mains lead. For 230V 50Hz single phase supplies.

**PX245-15** Model 2522C-02, complete with vacuum and pressure gauges, regulators, silencer and water trap

**PX245-20** Model 2534C-02, complete with vacuum and pressure gauges, regulators, silencer and water trap

**PX245-59** Model 2546C-02, complete with vacuum and pressure gauges, regulators, silencer and water trap



**PX240**



**PX245-15/-20, PX245-59 is similar**

# Pumps, Air/Gas/Vacuum

## Diaphragm Vacuum Pump/Compressors

Oil-free diaphragm pump/compressors that provide a quiet and compact vacuum or pressure source for air, gas and vapour applications. They are ideal for the majority of laboratory duties requiring low vacuum, especially assisted filtration. They are an ideal replacement for water jet pumps.

All pumps conform to IEC 1010 safety requirements for electrical equipment for laboratory use.

### General purpose pumps

Housed in robust, splashproof polycarbonate cases. Each unit has a built-in inlet filter and silencer for quiet operation and is supplied with a long IEC mains lead. They are simple to use and are ideal for light general purpose duties, aeration and assisted filtration requirements. Model PX305-10 is particularly suitable for school and college laboratories.

Cat. No.	Vac mbar	Pressure Bar	Flow l/min	Inlet/Outlet
PX305	500	0.8	5	4mm
PX345	280	1.8	14	8mm

### General Purpose Pumps

As specified. In polycarbonate splashproof case. For 230V 50Hz single phase supplies. Dimensions given are overall H x W x L.

- PX305-10** Cased, 120 x 205 x 140mm
- PX345-10** Cased, 120 x 205 x 140mm

### Continuous use pumps

Housed in robust splashproof metal cases (except PX330 and PX365) complete with carrying handle. Each unit has a built-in inlet filter, silencer and is supplied with a long IEC mains lead. They can be run continuously making them ideal for circulating systems and long term experiments.

Cat. No.	Vac mbar	Pressure Bar	Flow l/min	Inlet/Outlet
PX330*	550	2.0	7.5	8mm
PX332	280	2.0	8.0	8mm
PX365*	80	2.5	18	8mm
PX367	80	2.5	18	8mm
PX368	80	2.5	35	8mm

\*These pumps are uncased for building into equipment.

### Continuous Use Pumps

As specified. In metal splashproof case where indicated. For 230V 50Hz single phase supplies. Dimensions given are overall H x W x L.

- PX330-10** Uncased, 140 x 88 x 158mm
- PX332-20** Cased, 212 x 136 x 265mm
- PX365-10** Uncased, 178 x 132 x 202mm
- PX367-10** Cased, 216 x 210 x 283mm
- PX368-10** Cased, 235 x 230 x 230mm

## Hand Vacuum Pumps

### Hand Operated Vacuum Pumps

Plastic bodied, portable, hand operated pumps suitable for many simple vacuum applications including aiding filtration and evacuating desiccators. Can attain a vacuum of approximately 170mbar. Nozzle accepts 6.4mm i.d. tubing. The gauge of PX220-15 is scaled 0 to 30 inches and 0 to 100kPa.

	Pumping rate	Gauge
<b>PX220-11</b>	16ml/stroke	No
<b>PX220-15</b>	16ml/stroke	Yes
<b>PX220-20</b>	36ml/stroke	No



PX305, PX345 is similar



PX332, PX367, PX368 are similar



PX220-15



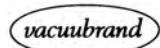
PX330



PX220-20, PX220-11 is similar

# Pumps, Air/Gas/Vacuum

## Diaphragm Pumps



A range of one, two and three stage, oil-free diaphragm pumps with excellent performance and low leak rate.

- ◆ Available in two versions:-
  - for general applications with pumped material in contact with aluminum and Viton® (FPM)
  - for chemical applications with pumped material in contact with PTFE, ETFE and similar fluoroplastics
- ◆ Compact drive gives very quiet operation with ultra-low vibration levels
- ◆ IP42 protection rating

### General Application Models

#### Diaphragm Pumps, Vacuubrand

As described. With fabric-reinforced Viton diaphragm. For 230V 50/60Hz single phase supplies.

- PX440-12** Model ME4NT
- PX440-23** Model ME4RNT complete with vacuum and pressure gauges
- PX440-32** Model MZ2NT

### Chemical Application Models

#### Diaphragm Pumps, Vacuubrand

As described. With gas/vapour path of fluoroplastics and PTFE sandwich design diaphragm. For 230V 50/60Hz single phase supplies.

- PX443-12** Model ME4CNT
- PX443-22** Model MZ2CNT
- PX443-32** Model MD4CNT

Catalogue No.	PX440-12	PX440-23	PX440-32
Model	ME4NT	ME4RNT	MZ2NT
Stages	1	1	2
Max. pumping speed	@ 50Hz m <sup>3</sup> /h 4.0 @ 60Hz m <sup>3</sup> /h 4.4	3.8 4.2	2.2 2.4
Ultimate vacuum	mbar 70	100	7
Inlet/outlet nozzles	mm 10*	10	10*
Overall H	mm 198	198	198
W	mm 242	242	242
D	mm 255	255	255
Weight	kg 11.1	11.1	11.1

\* The outlet nozzle is fitted with a silencer.

Catalogue No.	PX443-12	PX443-22	PX443-32
Model	ME4CNT	MZ2CNT	MD4CNT
Stages	1	2	3
Max. pumping speed	@ 50Hz m <sup>3</sup> /h 3.9 @ 60Hz m <sup>3</sup> /h 4.3	2.0 2.3	3.4 3.8
Ultimate vacuum (with gas ballast)	mbar 70	7 (12)	1.5 (3)
Inlet/outlet nozzles	mm 10	10	10
Overall H	mm 198	198	198
W	mm 242	243	243
D	mm 255	243	325
Weight	kg 11.1	11.1	14.3



PX440-12



PX440-32



PX443-22



PX440-23



PX443-12

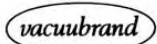


PX443-32



# Pumps, Air/Gas/Vacuum

## Vacuum Pumping Units, Vario



Compact, high performance pumping units comprising chemistry diaphragm vacuum pump, adaptive sensor and digital controller to maximise solvent recovery, reduce process times and offer fine control of complex evaporative applications.

- ◆ Automatically seeks optimum vacuum for process parameters (Distillation, drying etc.)
- ◆ Virtually 100% solvent recovery
- ◆ Bidirectional RS232 interface allows automatic process setting/control via the users' PC, if required
- ◆ Fuzzy logic and PID control offers easy, efficient and safe processing
- ◆ Built-in aeration valve provides fine, precise vacuum control
- ◆ Incorporate high performance diaphragm pump offering higher pumping speed, lower ultimate vacuum, low vibration and longer diaphragm life
- ◆ All parts in contact with gases and vapours are made of highly resistant plastics

### Vacuum Pumping units, Vario

As described. With gas/vapour path of PTFE and similar materials, vacuum sensor and controller with gauge head, inlet and outlet catchpots and exhaust separator. For 230V 50/60Hz single phase supplies.

- PX447-20** Model PC3001
- PX447-30** Model PC3002
- PX447-40** Model PC3003
- PX447-50** Model PC3004

Catalogue No.	<b>PX447-20</b>	<b>PX447-30</b>
Model	PC3001 Vario	PC3002 Vario
Pump	MD1C	MZ2CNT
Flow rate	m <sup>3</sup> /h 2.0	2.8
Ultimate vacuum	mbar 2	7
Inlet nozzle	mm 10 — both models	
Overall H	mm 400	516
W	mm 300	422
D	mm 306	258
Weight	kg 7.7	18.4

Catalogue No.	<b>PX447-40</b>	<b>PX447-50</b>
Model	PC3003 Vario	PC3004 Vario
Pump	MV2C	MD4C
Flow rate	m <sup>3</sup> /h 2.8	4.6
Ultimate vacuum	mbar 0.6	1.5
Inlet nozzle	mm 10 — both models	
Overall H	mm 516	516
W	mm 422	422
D	mm 258	258
Weight	kg 21.0	21.0



PX447-20



PX447-50

# Pumps, Air/Gas/Vacuum

## Diaphragm Vacuum Pumps/Compressors



A range of portable oil-free pumps which are quiet running and require the minimum of maintenance. Maximum permissible gas and air temperature is 40°C.

Catalogue No.		PX470-15	PX470-35	PX474-35	PX474-80
Max. flow*	litres/min	16	30	20	34
Ult. vacuum	mbar	20	160	6	6
Max. pressure	bar	0.5	0.5	-	-
Hose connection o.d.	mm	9	9	9.5	9.5
Motor protection		IP20	IP20	IP30	IP30
Overall	H	mm	194	222	240
	W	mm	203	294	177
	D	mm	103	250	289
Weight, approx.	kg	3.95	3.95	8.8	11.3

\* At atmospheric pressure.

### For general tasks, such as filtration, SPE, degassing and fluid aspiration

- ◆ Polyphenylene sulphide (PPS) pump head with perfluoro-elastomer (FFPM) valves
- ◆ PTFE coated diaphragm
- ◆ All other parts in contact with gas are corrosion resistant PTFE/PVDF or similar materials
- ◆ All models supplied with on/off switch and hose connections

#### Diaphragm Pump, 16 litres/minute

As specified. For 240V 50Hz single phase supplies, 80W.

**PX470-15** Pump, N816.3KT.18

#### Diaphragm Pump, 30 litres/minute

As specified. For 240V 50Hz single phase supplies, 150W.

**PX470-35** Pump, N816.1.2KT.18

#### Accessory

**PX470-65** Filter/silencer for PX470-15. Vacuum or pressure outlet

### For heavier-duty tasks, such as rotary evaporation, distillation, vacuum ovens and for pumping moist gases

- ◆ PTFE pump head and FFPM valve bodies
- ◆ PTFE coated diaphragm
- ◆ All other parts in contact with gas are corrosion resistant PTFE/PVDF and similar materials
- ◆ All models supplied with on/off switch and hose connections

#### Diaphragm Pump, 20 litres/minute

As specified. Vacuum only. For 230V 50Hz single phase supplies. 120W.

**PX474-35** Pump, N820G

#### Diaphragm Pump, 34 litres/minute

As specified. Vacuum only. For 230V 50Hz single phase supplies. 200W.

**PX474-80** Pump, N840G

Flow indicators – see *FR200*.

Pump tubing – see *Tubing section*.

Personal protection – see *Safety section*.



**PX470-15**



**PX470-35**



**PX474**

# Pumps, Air/Gas/Vacuum

## Air Generators/Compressors



### Oil-lubricated Pump

Offering ultra high performance with ultra low noise. Deliver instrument quality air and will replace the use of pressurised gas cylinder air.

- ◆ Piston rings all but eliminate oil carryover into the air supply
- ◆ Fitted with integral outlet pressure regulator and gauge
- ◆ Very low particle, liquid or hydrogen contamination of the air produced

Catalogue No.	<b>PX485-20</b>	
Model	35/20	
Power	kW	0.34
Flow, approx. litres/minute		
	at 8 bar	31
	at atmospheric pressure	50
Noise output	db(A)	40
Air tank	litres	4
Outlet	1/4 inch BSP female thread	
Overall	H, mm	330
	W, mm	280
	D, mm	320
Weight	kg	18

As described. Supplied with 10m air line filter, outlet pressure regulator and gauge. For 220-240V 50Hz supplies.

**PX485-20** Model 35/20

### Oil-free Pumps

Innovative, ultra-quiet running pumps providing oil-free air for scientific instruments and numerous other applications requiring critical air quality, including gas generation, autosampling and laser cooling.

- ◆ 100% oil-free output
- ◆ Compact design allowing use where space is limited
- ◆ Fitted with outlet pressure regulator, 10m air line filter and condensate drain plug

Catalogue No.	<b>PX489-15</b>	<b>PX489-35</b>	<b>PX489-65</b>
Model	PT5	PT15	PT24
Power	kW	0.55 — all models	
Flow, approx. litres/minute			
	at 8 bar	37	37
	at atmospheric pressure	110	110
Noise output	db(A)	54 — all models	
Air tank	litres	4	15
Outlet	1/4 inch BSP female thread — both models		
Overall	H, mm	340	530
	W, mm	400	370
	D, mm	530	370
Weight	kg	17	23

As described. Supplied with outlet pressure regulator, 10m air line filter and gauge. For 220-240V 50Hz supplies.

**PX489-15** Model PT5

**PX489-35** Model PT15

**PX489-65** Model PT24



**PX485-20**



**PX489-15**



**PX489-65**



**PX489-35**



# Pumps, Liquid

## Diaphragm Liquid Pumps, LIQUIPORT®



Convenient, simple transfer or dosing pumps for corrosive or non-corrosive liquids.

- ◆ Self-priming and able to run dry
- ◆ PTFE-coated diaphragm and FFPM valves, with choice of pumphead material in contact with med - polypropylene, PVDF or PTFE
- ◆ Low maintenance design
- ◆ Continuously adjustable flow rate with dial control with LED indicators which illuminate sequentially as the rate is increased

Model		NF100**18S	NF1.100**18S	NF300**18S	NF1.300**18S
Flow rate	ml/min*	0.2 to 1.3	0.2 to 1.3	0.5 to 3.0	0.5 to 3.0
Pressure head	mWg	10	60	10	60
Suction head	mWg	3	3	3	3
Housing protection level		IP65	IP65	IP65	IP65
Hose connection	o.d. mm	8	8	12	12
Overall	H x W x D mm	180 x 100 x 130	180 x 100 x 130	190 x 110 x 160	190 x 110 x 160
Weight	kg	1	1	1.5	1.5

\*Using water at 20°C and zero pressure head

\*\*Pump head material code key: KT. = polypropylene TT. = PVDF FT. = PTFE

### Diaphragm Liquid Pumps, LIQUIPORT®

As described. For 100-230V, 50/60Hz single phase supplies. In pumphead material as indicated.

<b>PX587-06</b>	NF100KT.18S	<b>PX589-07</b>	NF300KT.18S
<b>PX587-12</b>	NF100TT.18S	<b>PX589-13</b>	NF300TT.18S
<b>PX587-18</b>	NF100FT.18S	<b>PX589-19</b>	NF300FT.18S
<b>PX587-24</b>	NF1.100KT.18S	<b>PX589-25</b>	NF1.300KT.18S
<b>PX587-30</b>	NF1.100TT.18S	<b>PX589-31</b>	NF1.300TT.18S
<b>PX587-36</b>	NF1.100FT.18S	<b>PX589-36</b>	NF1.300FT.18S



PX587- and PX589-series

# Pumps, Peristaltic

## Peristaltic Pumps

### Verderflex®

#### Model EV500

Compact, manual control pump with forward/reverse switch, fast prime button, rotary potentiometer speed control and two-roller, polycarbonate pump head.

- ◆ Range 2 to 185ml/minute
- ◆ Accepts 1.6mm wall tubing up to 4.8mm bore
- ◆ Permanent magnet drive motor
- ◆ IP30 protection rating, chemical resistant, epoxy coated housing

#### Performance

Tube bore, mm	Flow rate, ml/minute
1.6	2 to 23
3.2	50 to 82
4.0	7 to 115
4.8	11 to 185

#### Peristaltic Pump EV500

As described. Overall 205 x 110 x 195mm W x D x H. Weight 1.7kg. For 110, 230V 50/60Hz single phase supplies.

**PX710-10** EV500

#### Peristaltic Pump Tubing, Santoprene®

Highly resistant, medical grade, peristaltic pump tubing offering extended working life and wide chemical compatibility, with USP Class VI and EU 2003/11/EC approval. It is also autoclavable. For highest dispensing precision silicone tubing is recommended. All tubing has 1.6mm wall thickness and is supplied in packs of 15 metres.

	Bore x o.d., mm
<b>TY567-12</b>	0.5 x 3.7
<b>TY567-16</b>	0.8 x 4.0
<b>TY567-22</b>	1.6 x 4.8
<b>TY567-26</b>	3.2 x 6.4
<b>TY567-32</b>	4.8 x 8.0
<b>TY567-36</b>	6.4 x 9.6
<b>TY567-42</b>	8.0 x 11.2

Santoprene® is a registered trademark of ExxonMobil Chemical Company, USA.

#### Model Vantage 3000 P EZ

Fully programmable, flexible-use pumps providing highly accurate and repeatable flow rates with quick, easy set-up from on-board display and membrane keypad, or remotely via an analogue input (0 to 10V d.c., 4 to 20mA), potentiometer input (10kohm), or RS232 interface for connection to the user's PC.

- ◆ Ranges: 0.9 to 1310ml/minute, 10 to 250rpm
- ◆ Accepts 1.6mm wall tubing up to 8.0mm bore
- ◆ Brushless d.c. motor for continuous operation
- ◆ Self-priming
- ◆ Reversible pumping
- ◆ Single or repeat dose compatibility with user defined interval
- ◆ Accuracy when pumping viscous products can be achieved using the calibration mode
- ◆ Run-back option prevents spillages
- ◆ IP66 protection class housing
- ◆ Acetal and nylon pumphead with Nylatron rollers

#### Performance

Tube bore, mm	Flow rate, ml/minute
0.8	0.9 to 18.8
1.6	2.8 to 70.0
3.2	10.7 to 268.0
4.8	243.3 to 588.0
6.4	37.3 to 938.0
8.0	52.7 to 1310.0

#### Peristaltic Pump Vantage 3000 P EZ

As described. Overall 291 x 252 x 168mm W x D x H. Weight 4.5kg. For 110, 230V 50/60Hz single phase supplies.

**PX712-15** Vantage 3000 P EZ Programmable



**PX710**



**PX712**

# Pumps, Aspirator, Peristaltic, Syringe

## Aspirator Pump, FTA-1

### Grant bio

A compact, flexible-use, personal aspirator pump with integrated trap flask for the routine aspiration of supernatant alcohol and buffer in DNA/RNA purification, cell washing, tissue culture applications, ELISA, cell staining and excess removal of liquid from slides, petri dishes etc.

- ◆ Microprocessor controlled pumping unit, operating at 513mbar abs.
- ◆ Supplied with 1 litre trap flask for the collection of residues during aspiration
- ◆ Hydrophobic filter with 99.9% efficiency to trap bacteria, viruses and infected particulates, reducing the risk of contamination possible when compared with conventional vacuum pumping systems
- ◆ With choice of single- or multi-tip operation when using accessory 8-channel adapter

As described. Supplied with 1 litre trap flask, hydrophobic filter, aspiration tube and tip, and instructions. 340 x 160 x 210mm H x W x D. Weight 1.5kg. For use with 100-240V 50/60Hz single phase supplies.

**PX800-15** Aspirator pump, Grant-bio, FTA-1

#### Accessories

**PX815-05** FA-1 replacement hydrophobic filter

**PX815-10** FTA-B replacement cap with inlet/outlet fittings for 1 litre trap flask

**PX815-15** MA-8 8-channel adapter kit for use with microplates

**PR850-30** Spare tips, 200µl, yellow, pack of 1000

**BS445-30** Spare trap flask, 1 litre, with polypropylene cap

## Syringe Pumps

### Razel

For precise infusing of liquids, utilising standard glass or plastic syringes from 5ml to 50ml, and microlitre to 5ml syringes using the accessory adapter. 99 delivery speeds are selectable and can be adjusted during operation if required. A built in manual flow-rate calculator indicates the speed setting necessary to achieve specific flow rates when using 5, 10, 20, 30 or 50ml syringes. A separate flow rate chart is also provided for other sizes and indicates variation factors for different makes of syringe. An acoustic alarm activates when the syringe is empty, and halts infusion. Lifetime lubricated bronze bearings and critical parts constructed in stainless steel ensure dependable long-term service.

Model		R99-EF	R99-FJM
Flow rates, (using 50ml syringe)	max. ml/h	143	427
	min. ml/h	1.45	0.145
Accuracy	%	±2	±2
Repeatability	%	±0.5	±0.5
Power		230V 50Hz single phase supply — both models	
Dimensions W x D x H	mm	250 x 150 x 150 — both models	
Weight	kg	3.4 — both models	

#### Syringe Pumps, Razel

As described. Supplied with acoustic alarm. For 230V 50Hz single phase supplies. Without syringes.

**PX890-10** Model R99-EF

**PX890-60** Model R99-FJM

#### Micro syringe adapters

Enables PX890-series syringe pumps to be used with single place adapter to hold one micro syringe only

**PX890-85** Micro syringe adapter, single place

Enables PX890-series syringe pumps to be used with up to six microlitre volume to 3ml capacity syringes (maximum diameter 10mm).

**PX890-90** Micro syringe adapter, 6-place

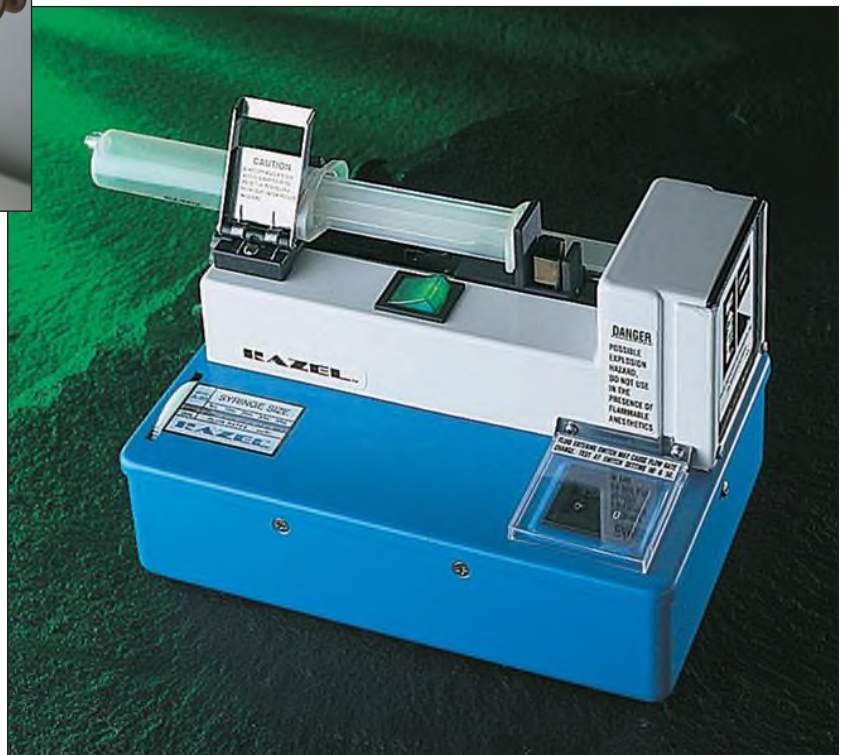
Syringe pipettors – see SY700 to SY720.

Syringes – see SY210 to SY638.



**Inset: PR850-30 in use with PX800-15**

**PX800-15 in use**



**PX890-series**



# Pumps, Vacuum

## Scroll Pumps



Innovative, portable, dry pumps designed to provide vacuum totally free of lubricants.

- ◆ Ultimate vacuum 0.007, 0.02 or 0.03mbar, depending on model selected
- ◆ No oils or greases of any kind required, ideal for "clean" processes
- ◆ Meshing scroll mechanism
- ◆ Patented bearing shield isolates bearings from exposure to the vacuum environment
- ◆ Low noise and vibration levels
- ◆ Very low maintenance

Catalogue No.		PY260-10	PY260-30	PY260-45	PY260-60
Model No.		nXDS6i	nXDS10i	nXDS15i	nXDS20i
Ultimate vacuum (total pressure)	mbar torr	0.02 0.015	0.007 0.005	0.007 0.005	0.03 0.022
Displacement	m <sup>3</sup> /h	6.8	12.7	17.1	28.0
Maximum water vapour pumping rate	kg/h	0.11	0.14	0.28	0.22
Inlet/outlet connection		NW25/NW25	NW25/NW25	NW25/NW25	NW25/NW25
Noise level (at 1 metre)	db(A)	52	52	52	52
Vibration	mm/sec.(rms)	<4.5	<4.5	<4.5	<4.5
Overall, H x W x D	mm	302 x 265 x 432 — all models			
Weight	kg	26.2	25.8	25.2	26.6

### Scroll Pumps, nXDS series

As described. With direct drive motor. For 100-127V and 200-240V 50/60Hz single phase supplies. Supplied without mains lead.

- PY260-10 nXDS6i
- PY260-30 nXDS10i
- PY260-45 nXDS15i
- PY260-60 nXDS20i

### Accessories and Spares

- PY262-06 Tip seal service kit for PY260-series
- PY262-15 Silencer for PY260-series

### Accessory mains leads

With IEC60320 connector and plug as indicated for use with Edwards pumps, PY260/PY330 series.

- PY334-12 Without plug
- PY334-14 With UK plug
- PY334-18 With European Schuko plug

### Clamping Ring

Stainless steel. For connecting gauges, adapters and pipe flanges. Requires PY787-06 centring ring seal.

- PY785-06 NW25

### Centring Ring Seal

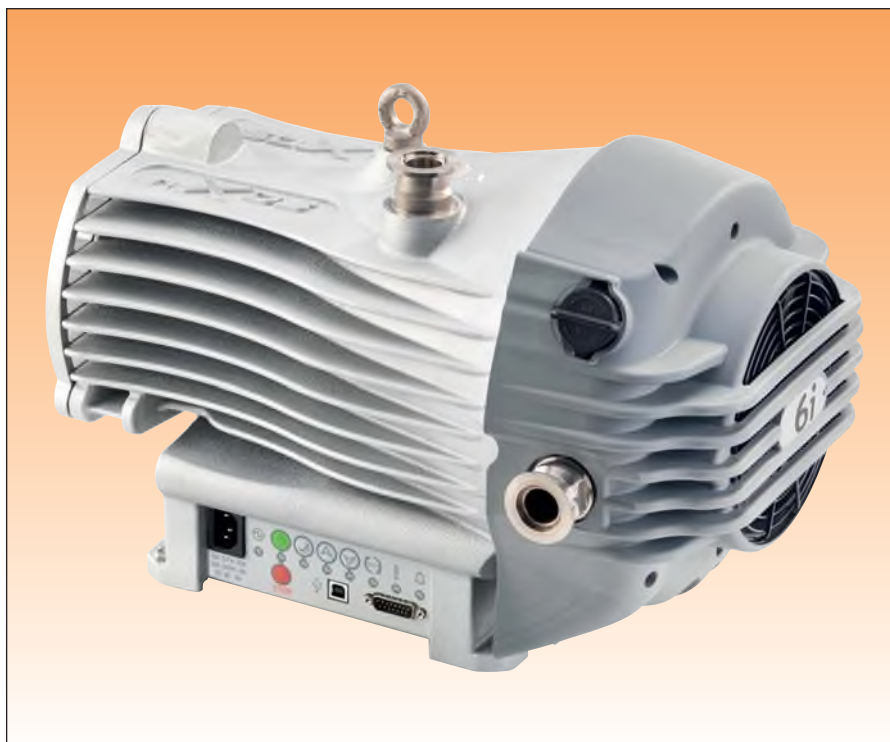
Polymer, with nitrile O-ring. For use with PY785-06 clamping ring.

- PY787-06 NW25

### Adapters

Aluminium. NW25 connection.

- PY789-10 Radiused elbow, 90°
- PY789-15 T-Piece, 3-way
- PY789-20 Cross, 4-way, 90° between limbs
- PY789-40 Nozzle, for 12mm i.d. tubing



PY260



# Pumps, Vacuum

## Vacuum Pumps



### Vacuum Pump, E2M0.7

Two stage, direct drive, rotary vacuum pump. Ultimate vacuums attainable:  $3 \times 10^{-3}$ mbar without gas ballast,  $2 \times 10^{-1}$ mbar with gas ballast. Displacement 0.9m<sup>3</sup>/hour (50Hz) 1.1m<sup>3</sup>/hour (60Hz). Vacuum outlet connection 11mm diameter. Supplied with nozzles and Ultragrade 15 oil charge, but without mains lead (requires PY334-for operation). Overall H x W x L 227 x 323 x 125mm. Weight 10kg. For 220-240V 50/60Hz single phase supplies.

**PY310-05** E2M0.7

**PY334-12** Mains lead without plug

### Vacuum Pump, E2M1.5

Two stage, direct drive, rotary vacuum pump. Ultimate vacuums attainable:  $3 \times 10^{-3}$ mbar without gas ballast,  $2.5 \times 10^{-2}$ mbar with gas ballast. Displacement 1.8m<sup>3</sup>/hour. Vacuum outlet connection 11mm diameter. Supplied with nozzles, spare seals and Ultragrade 15 oil charge. Without mains lead (requires PY334-for operation). requires PY334-for operation. Overall H x W x L 227 x 323 x 125mm. Weight 10kg. For 220-240V 50/60Hz single phase supplies.

**PY310-10** E2M1.5

**PY334-12** Mains lead without plug

Spares and accessories for E2M0.7 and E2M1.5 – see opposite page.



**PY310-05**



**PY310-10**



**PY330 series**

### Vacuum Pumps, RV Series

A series of two-stage, direct drive rotary vane pumps which are dual mode. Adjustment of a single control allows the pumps to be set for:

- High vacuum mode with ultimate vacuum up to  $2 \times 10^{-3}$ mbar
- High throughput mode to handle inlet pressures up to 80mbar

#### Other features include:

- ◆ Two levels of gas ballast
- ◆ Improved water vapour handling capability
- ◆ Suck back protection
- ◆ Quiet running
- ◆ Sight-glass to check oil level
- ◆ Dual voltage and frequency

Catalogue No.		<b>PY330-10</b>	<b>PY330-20</b>	<b>PY330-30</b>	<b>PY330-40</b>
Model		RV3	RV5	RV8	RV12
High vacuum mode mbar		$2 \times 10^{-3}$	$2 \times 10^{-3}$	$2 \times 10^{-3}$	$2 \times 10^{-3}$
Ultimate vacuum					
High throughput mode mbar		$3 \times 10^{-2}$	$3 \times 10^{-2}$	$3 \times 10^{-2}$	$3 \times 10^{-2}$
Ultimate vacuum					
Displacement, 50Hz	m <sup>3</sup> /h	3.7	5.1	8.5	12.0
60Hz	m <sup>3</sup> /h	4.5	6.2	10.0	14.2
Max. water vapour inlet pressure	mbar	80	50	50	32
Max. water vapour pumping rate	kg/h	0.22	0.22	0.22	0.29
Inlet/Outlet connection		NW25	NW25	NW25	NW25
Oil capacity	litres	0.7	0.7	0.75	1.0
Recommended oil		Edwards Ultragrade 19 — all models			
Overall H x W x D	mm	225 x 158 x 429	225 x 158 x 429	261 x 158 x 471	261 x 158 x 489
Weight	kg	22	22	27	29

Note: 1mbar = 0.75 torr = 0.75 Hg.

### Vacuum Pumps, RV series

As described. With direct drive motor. For 110-120V and 220-240V 50/60Hz single phase supplies. Supplied with Ultragrade 19 oil charge but without mains lead.

- PY330-10** RV3
- PY330-20** RV5
- PY330-30** RV8
- PY330-40** RV12

### Accessory mains leads

With IEC60320 connector and plug as indicated for use with Edwards pumps, PY250/PY350 series.

- PY334-12** Mains lead without plug
- PY334-14** With UK plug
- PY334-18** With European Schuko plug

Ultragrade 19 oil – see next page.

# Pumps, Vacuum

## Vacuum Pump Accessories and Spares



### Oil Mist Filters

For fitting directly to the pump outlet. Flange connection sizes as indicated.

- PY400-20** EMF3 for E2M0.7 and E2M1.5 pumps. NW10 flange
- PY400-30** EMF10 for RV3, RV5 and RV8 pumps. NW25 flange
- PY400-40** EMF20 for RV12 pumps only. NW25 flange

### Pump Oils

Supplied in packs of 4 litres.

	<i>Grade/Type</i>
<b>PY417-60</b>	TW. A distilled hydrocarbon without additives
<b>PY417-63</b>	Ultragrade 15. A straight mineral oil for cold start applications
<b>PY417-67</b>	Ultragrade 19. A low viscosity mineral oil
<b>PY417-72</b>	Ultragrade 20. A medium viscosity mineral oil

Graduated jugs for charging pumps with oil – see MD749.

### APG 100 Active Pirani Gauge

Measures down to  $10^{-3}$  mbar, with accuracy  $\pm 15\%$  (at <100mbar). NW25 connection. Requires separate display/controller unit for operation.

- PY752-10** APG100-XM/NW25
- PY752-13** Cable for connecting PY752-10 to PY752-25, 1 metre

### TIC Display/Controller

Range 2000 to  $6.6 \times 10^{-10}$  mbar. Automatically recognises PY752-10. With 128 x 64mm backlit graphics display with switchable units (Torr, Pa, Volts). Up to 3 gauges can be monitored at the same time, with alarm setting and RS232/RS485 output for full monitoring and control via the users' PC using software provided. For 90-264V 47/63Hz single phase supplies. Requires a gauge and connection/supply cables for operation.

- PY752-25** TIC display unit
- PY752-27** Mains supply cable for PY752-25
- PY752-29** RS232 interface cable for connection to the users' PC

### Dial Gauges

Capsule type, barometrically compensated. Accuracy  $\pm 5\%$  fsd. In a metal case with 90mm dia dial. With NW16 flange vacuum connection. For panel or pipeline mounting.

- PY760-20** 0 to 50mbar
- PY760-25** 0 to 125mbar

### Clamping Rings

Stainless steel. For connecting gauges, adapters and pipe flanges. Require centring ring seals (PY787) of the same size.

- PY785-04** NW10/16
- PY785-06** NW25

### Centring Ring Seals

Polymer, with nitrile O-ring. For use with PY785-clamping rings of the same size.

- PY787-04** NW10/16
- PY787-06** NW25

### Adapters

Aluminium. NW25 connection.

- PY789-10** Radiused elbow, 90°
- PY789-15** T-Piece, 3-way
- PY789-20** Cross, 4-way, 90° between limbs
- PY789-40** Nozzle, for 12mm i.d. tubing

### Valves

NW25 connection. Type and materials as indicated.

- PY792-05** Diaphragm valve, aluminium body, PTFE cup seal
- PY792-09** Ball valve, stainless steel body, PTFE cup seal



**PY400-30, -20 and -40 are similar**



**PY752-10**



**PY760**



**PY792-09**



**PY417**



**PY752-25**



**PY792-05**

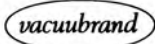


**Adapters, seals, rings**



# Pumps, Vacuum

## Vacuum Pumps



A range of high performance quiet running rotary vane pumps.

- ◆ Simple maintenance and servicing including oil draining
- ◆ Integral gas ballast valve
- ◆ Gas tight with O-ring sealing and double shaft seal

Catalogue No.	PY850-15	PY850-40	PY850-55	PY850-80	
Model	RE2.5	RE6	RZ2.5	RZ6	
Stages	1	1	2	2	
Ultimate vacuum, without gas ballast					
mbar	$3 \times 10^{-1}$	$1 \times 10^{-1}$	$2 \times 10^{-3}$	$2 \times 10^{-3}$	
Ultimate vacuum, with gas ballast					
mbar	$8 \times 10^{-1}$	$6 \times 10^{-1}$	$1 \times 10^{-2}$	$1 \times 10^{-2}$	
Max. tolerable water vapour intake pressure					
mbar	40	40	40	40	
Displacement	$m^3/h^*$	2.3	5.7	2.3	5.7
Inlet flange	NW16	NW16	NW16	NW16	
Outlet nozzle	mm	10	10	10	10
Oil capacity	litres	0.51	0.93	0.28	0.73
Overall height	mm	190	207	190	207
width	mm	125	142	125	142
depth	mm	316	370	316	370
Weight	kg	10.2	15.4	11.4	16.4

\*Running on 50Hz supplies, add 0.5m<sup>3</sup>/h for 60Hz supplies.

### Vacuum Pumps, Vacuubrand

As described. With direct drive motor, overload cut-out inlet, centring and clamping rings. For 230V 50/60Hz single phase supplies.

- PY850-15** Model RE2.5
- PY850-40** Model RE6
- PY850-55** Model RZ2.5
- PY850-80** Model RZ6



PY850

### Oil Mist Filter

With pressure relief valve and disposable filter element.

- PY856-40** Oil mist filter for all models
- PY856-42** Disposable filter element for PY856-40

### Condensate Catch-Pots

For removing condensate in the suction line. With drain.

- PY856-60** For RE2.5 and RZ2.5 pumps
- PY856-64** For RE6 and RZ6 pumps

### Inlet/Outlet Components

- PY858-12** Clamping ring DN10/16
- PY858-14** Centring ring DN10/16
- PY858-26** Nozzle adapter for DN16 flange. Accepts 10mm bore vacuum hose

Pump oil – see PY417 series.

## Digital Vacuum Gauges

### Vacuum Gauge, Piezo Resistive

Ranges 1 to 1080mbar (hPa), 1 to 810 torr. Accuracy  $\pm 1$ mbar ( $\pm 0.75$  torr)  $\pm 1$  digit. Analogue and digital display, with trend indication and selectable readout in either mbar, hPa or torr. With integrated pressure transducer for long term stability and corrosion resistance, NW16 vacuum connection and screw in, stepped nozzle for 6 to 10mm i.d. vacuum tubing. Overall 115 x 115 x 66mm L x W x H. Weight 0.4kg. Powered by 1 x 9V alkaline battery.

- PY940-20** Digital Vacuum Gauge, DVR2pro
- BL610-25** 9V PP3 battery, spare

### Vacuum Gauge, Pirani

Range 1000 to  $10^{-3}$ mbar, 750 to  $10^{-3}$  torr; accuracy  $\pm 15\%$  of displayed value within 100 to  $10^{-2}$  mbar range. Analogue and digital display with trend indication, 32000 reading datalogger and RS232 interface. Overall 115 x 124 x 138mm H x W x D. Weight 0.44kg. Supplied with DN10/16 connection, separate Pirani gauge head on a 2 metre lead and 24V d.c. communication system. For 100-230V 50/60Hz single phase supplies.

- PY940-55** Vacuum gauge, DCP3000 + VSP3000



PY940-20



PY940-55

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