gas safety UK

gas regulators and equipment catalogue

BJ's

PRODUCTS & SERVICES

OVERVIEW

- Gas Safety UK is a Division of BJ Industries Ltd.
- This Division was created to supplement the gas safety education provided by I.G.S. (Industrial Gas Safety).
- Our aim is to provide safety-related products for the users of compressed (cylinder) and cryogenic gases which are of good quality and are cost-effective.

ABOUT OUR PRODUCT RANGE

- Based on 10 years of experience in designing and delivering gas safety training, we have selected a core range of gas safety related products that help to solve and simplify the problems associated with gas usage, storage and handling.
- From regulating gas cylinder output pressure and flow, through to making tube or hose connections and personal protective equipment for handling cryogenic liquids - we have assembled a range of products and services with the needs of the user in mind.

APPLICATIONS

- We are extremely proud that our products and services have been adopted by so many gas users in both the public and private sectors.
- This achievement has only been possible because of our commitment to quality: quality safety training courses, the identification of issues and needs and the provision of quality solutions.

SERVICES

- Safety Training - gas cylinder handling and use, cryogenic safety, Hot Work Assessment and many more courses are available: high quality, cost-effective and independent.
- Consulting & Report Writing.
- Guidance Notes & Leaflets.
- Site Services - the testing and inspection of gas regulators, manifolds & pipelines.

gas safety UK **FOR MORE INFORMATION PLEASE CONTACT:**

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REGULATORS

Most laboratory gas users will have to use some equipment to control pressure and/or flow rate. A pressure regulator will usually be central to the safe delivery of the gas.

Regulators prevent system over pressurisation when valves are closed down-stream of supply.

TYPE

Regulators can be single-stage or multi-stage (two stage). A single stage regulator will accept a high variable inlet pressure and allow adjustment of a lower steady outlet pressure. Unfortunately, in the case of permanent and dissolved gases, single stage regulators can exhibit a tendency to rising outlet pressure as, the cylinder they are connected to empties.

As the cylinder empties, the regulator valve spring pushes the valve further open. If a steady outlet pressure is needed this can be, at least, troublesome. Liquefied gases have less tendency to this problem as the single stage regulator accepts vapour pressure, which varies with ambient temperature not cylinder contents.

Consequently, two-stage regulators are favoured for:

- **steady outlet pressure**
- **finer control over outlet pressure**

These benefits are achieved by having two regulators joined in series within one piece of equipment.

Tied diaphragm means that as the user closes the regulator down a positive (rather than passive) force is exerted automatically on the valve, ensuring positive shut-off.

SERVICE AND FUNCTION

Make sure you have the right regulator to do the job and to do it safely.

Take into consideration:

Inlet pressure
Filled pressures of cylinders can vary as can maximum rated inlet pressures of regulators. Our regulators are designed and constructed to safely accept up to 300 barg inlet pressures!

Material compatibilities
Check whether the regulator contains any materials that might react or degrade with the gas you intend to pass through it - the regulator should have the name of the gas to be used on it - they must not be interchanged.

Outlet pressure
Check whether the regulator will deliver the right pressure for the application. Regulators vary in their outlet pressures.

Heating
Check whether the regulator will need to be heated; whether gas sampling is required and whether an inlet pressure gauge or outlet pressure gauge is necessary.

GET THE RIGHT EQUIPMENT AT THE OUTSET
THE REGULATOR IS IMPORTANT
ENSURE ONGOING SAFETY BY CARE AND MAINTENANCE

CARE AND MAINTENANCE

Gas control equipment cannot be expected to last indefinitely and old regulators have failed in service.

Regulators are precision instruments and must not be handled violently or allowed to get dirty.

Proposed checking procedure

1. List the scheduled maintenance checks to be carried out at least annually. Keep a record and record alongside it any functional checks recommended by the supplier. Ensure that no unauthorised repairs have been carried out.
2. List scheduled replacement items.
   The manufacturer will have a safe working life for each item, which must be replaced according to their instructions.

For cylinder gases a regulator life of 5 years will generally be quoted*. A regulator will age irrespective of the amount of use it is put to. Our regulators are 'tagged' before despatch with Serial No., Date of Manufacture and Expiry Date.

FLOW CONTROL

The regulator controls pressure, but not flow. If you need flow control, connect a suitable flow gauge or flow meter. Such items should also have an appropriate care and maintenance programme.

Other items of gas control equipment may well be necessary in a laboratory gas system. If, for example, a fuel gas is mixed with an oxidising gas and the mixture is then burned, non-return valves and flame arresting elements such as flashback arrestors would be prudent.

Purging, and the mechanisms to allow this, may be necessary to ensure gas purity and, not least, safety to the person changing the cylinder.

Pressure relief could be considered. A pressure regulator failure may not only be a potentially serious safety issue but could also damage a sensitive piece of equipment. An additional fail-safe device such as an excess flow valve to detect the effect of a leak and automatically isolate the supply may be fitted.

** In corrosive gas service, this interval is reduced to two years. Stainless steel regulators for high purity and/or corrosive service are also available from Gas Safety UK.* *See page 3.*

PRICE LIST

Ⓐ *TWO-STAGE, TWO-GAUGE (Side Entry)*

Ⓐ *TWO-STAGE, TWO-GAUGE (Base Entry)*

Ⓑ *TWO-GAUGE, SINGLE-STAGE*

Full range of

MEDICAL REGULATORS

Details & Prices on request

Ⓐ TWO-STAGE, TWO-GAUGE, 300 BAR INLET

(Ideal for most laboratory applications)

SERVICE GAS	OUTPUT PRESSURE (RANGE)	ORIENTATION	PART NUMBER	PRICE (£)
CARBON DIOXIDE	0 - 2 BAR	Side Entry	99-0121	89.00
CARBON DIOXIDE	0 - 4 BAR	Side Entry	99-012	89.00
CARBON DIOXIDE	0 - 10 BAR	Side Entry	99-013	89.00
HELIUM	0 - 2 BAR	Side Entry	99-01010	101.00
HELIUM	0 - 4 BAR	Side Entry	99-010	101.00
HELIUM	0 - 10 BAR	Side Entry	99-0101	101.00
HIGH PURITY HELIUM	VARIOUS	Side Entry	99-0100	288.00
ARGON	0 - 2 BAR	Base Entry	99-0191	89.00
ARGON	0 - 2 BAR	Side Entry	99-0191S	89.00
ARGON	0 - 4 BAR	Base Entry	99-019	89.00
ARGON	0 - 4 BAR	Side Entry	99-019S	89.00
ARGON	0 - 10 BAR	Base Entry	99-018	89.00
ARGON	0 - 10 BAR	Side Entry	99-018S	89.00
NITROGEN / AIR	0 - 2 BAR	Base Entry	99-007	89.00
NITROGEN / AIR	0 - 2 BAR	Side Entry	99-008	89.00
NITROGEN / AIR	0 - 4 BAR	Base Entry	99-005	89.00
NITROGEN / AIR	0 - 4 BAR	Side Entry	99-005S	89.00
NITROGEN / AIR	0 - 10 BAR	Base Entry	99-006	89.00
NITROGEN / AIR	0 - 10 BAR	Side Entry	99-006S	89.00
ACETYLENE	0 - 1.5 BAR	Base Entry	99-016	89.00
HYDROGEN	0 - 2 BAR	Base Entry	99-0112	101.00
HYDROGEN	0 - 2 BAR	Side Entry	99-0112S	101.00
HYDROGEN	0 - 4 BAR	Base Entry	99-011	101.00
HYDROGEN	0 - 4 BAR	Side Entry	99-011S	101.00
HYDROGEN	0 - 10 BAR	Base Entry	99-0111	101.00
HYDROGEN	0 - 10 BAR	Side Entry	99-0111S	101.00
OXYGEN	0 - 2 BAR	Base Entry	99-01512	89.00
OXYGEN	0 - 2 BAR	Side Entry	99-01512S	89.00
OXYGEN	0 - 4 BAR	Base Entry	99-0151	89.00
OXYGEN	0 - 4 BAR	Side Entry	99-0151S	89.00
OXYGEN	0 - 10 BAR	Base Entry	99-015	89.00
OXYGEN	0 - 10 BAR	Side Entry	99-015S	89.00
HIGH PURITY OXYGEN	VARIOUS	Side Entry	99-0152	288.00
MEDICAL OXYGEN	0 - 10 BAR	Base Entry	99-0031	127.00
CARBON MONOXIDE	0 - 10 BAR	Side Entry	99-0132	127.00
NITROUS OXIDE	0 - 4 BAR	Side Entry	99-014	115.00

B SINGLE-STAGE REGULATORS

(Simple, robust & ideal where the stability of the outlet pressure is less critical)

SERVICE GAS	OUTPUT PRESSURE (RANGE)	ORIENTATION	PART NUMBER	PRICE (£)
MEDICAL AIR	4 BARG (fixed)	Base Entry	99-0042	86.10
MEDICAL OXYGEN	Click select flow 0-15 l/min	Base Entry	99-0044	121.49
MEDICAL OXYGEN	Click select flow 0-4 l/min	Base Entry	99-0043	121.49
MEDICAL OXYGEN	4 BARG (fixed)	Base Entry	99-201	60.00
MEDICAL OXYGEN	4 BARG (fixed) with 0-15 l/min	Base Entry	99-200	95.00
MEDICAL OXYGEN	4 BARG (fixed) with 0-30 l/min	Base Entry	99-2001	95.00
NITGROGEN	0 - 2 BARG	Base Entry	99-0065	55.65
NITGROGEN	0 - 4 BARG	Base Entry	99-0064	55.65
NITGROGEN	0 - 10 BARG	Base Entry	99-0063	55.65
HELIUM	0 - 2 BARG	Side Entry	99-0103	70.00
HELIUM	0 - 4 BARG	Side Entry	99-0104S	70.00
HELIUM	0 - 10 BARG	Side Entry	99-0102	70.00
CARBON DIOXIDE	0 - 2 BARG	Side Entry	99-0122	55.65
CARBON DIOXIDE	0 - 4 BARG	Side Entry	99-0131	55.65
CARBON DIOXIDE	0 - 10 BARG	Side Entry	99-0134	55.65
OXYGEN	0 - 2 BARG	Base Entry	99-01531	55.65
OXYGEN	0 - 2 BARG	Side Entry	99-01531S	70.00
OXYGEN	0 - 4 BARG	Base Entry	99-0153	55.65
OXYGEN	0 - 4 BARG	Side Entry	99-0153S	70.00
OXYGEN	0 - 10 BARG	Base Entry	99-0154	55.65
OXYGEN	0 - 10 BARG	Side Entry	99-0154S	70.00
ACETYLENE	0 - 1.5 BARG	Base Entry	99-0165	55.65
ARGON	0 - 2 BARG	Base Entry	99-0171	55.65
ARGON	0 - 10 BARG	Base Entry	99-017	55.65
ARGON	0 - 4 BARG	Side Entry	99-0194S	70.00
PROPANE	0 - 4 BARG (gaugeless)	Base Entry	99-210	55.65
PROPANE	0 - 4 BARG (2 gauge)	Base Entry	99-211	70.00

PIN-INDEX INLETS AVAILABLE FOR MEDICAL REGULATORS - DETAILS ON REQUEST

C REGULATORS FOR SPECIAL GASES

(High purity gases; up to 6 nines (99.9999%) and/or corrosive gases (e.g.. HCI, SO2,etc.))

MATERIAL	NO. OF STAGES	INLET PRESSURE	OUTLET PRESSURE	PART NUMBER	PRICE (£)
STAINLESS STEEL	2	Up to 300 BARG	0.1 - 3.0 BARG (range)	99-01521	538.00
STAINLESS STEEL	2	Up to 300 BARG	0.25 - 6.0 BARG (range)	99-01521	538.00
STAINLESS STEEL	2	Up to 300 BARG	0.5 - 12.0 BARG (range)	99-01521	538.00
PLATED BRASS	2	Up to 300 BARG	0.1 - 3.0 BARG (range)	99-0152	288.00
PLATED BRASS	2	Up to 300 BARG	0.25 - 6.0 BARG (range)	99-0152	288.00
PLATED BRASS	2	Up to 300 BARG	0.5 - 12.0 BARG (range)	99-0152	288.00
STAINLESS STEEL	1	Up to 300 BARG	0.1 - 3.0 BARG (range)	99-0167	423.80
STAINLESS STEEL	1	Up to 300 BARG	0.25 - 6.0 BARG (range)	99-0167	423.80
STAINLESS STEEL	1	Up to 300 BARG	0.5 - 12.0 BARG (range)	99-0167	423.80
PLATED BRASS	1	Up to 300 BARG	0.1 - 3.0 BARG (range)	99-0168	223.30
PLATED BRASS	1	Up to 300 BARG	0.25 - 6.0 BARG (range)	99-0168	223.30
PLATED BRASS	1	Up to 300 BARG	0.5 - 12.0 BARG (range)	99-0168	223.30

CYLINDER CONNECTION AND OUTLET CONNECTION REQUIRED ARE SPECIFIED WHEN ORDERING

ALL PRICES ARE STERLING (GB£). VAT WILL BE CHARGED AT THE CURRENT RATE.
CARRIAGE CHARGES WILL BE ADDED AT THE BJ'S RATE PER KILOGRAMME.

LOW COST, HIGH PURITY CYLINDER GAS REGULATORS

Special gases are expensive. True enough. Special gas regulators are expensive. Traditionally this has been the way of things. This solution from Gas Safety UK breaks the mould without sacrificing quality or safety.

- Cost-effective safety solutions for users of high purity (up to 99.999%) cylinder gases.
- P1 = 300 barG x P2 [range] 0.1 - 3 barG or 0.5 - 10 barG
- Constructed from plated brass with stainless steel diaphragms and PCTFE (Kel-F) valve seats EN 562 safety-pattern pressure gauges. Helium leak rate = 1 x 10-7.

LIST PRICE = £160.00 + VAT & Carriage.

PART NUMBER: 99-01524

As with all of our regulators each 'LCHP' regulator is shipped with a RegTag (including serial number, date of manufacture and date of expiry) and individual certification.

Compatibility: oxygen, nitrous oxide, helium, argon, nitrogen, air, carbon dioxide, methane, hydrogen, etc. and mixtures of these gases. The LCHP regulator is NOT for use with corrosive gases or acetylene.

D HIGH OUTPUT PRESSURE REGULATORS

SERVICE GAS	OUTPUT PRESSURE (RANGE)	ORIENTATION	PART NUMBER	PRICE (£)
NITROGEN	0 - 28 BARG (Single Stage)	Base Entry	99-00613	197.00
NITROGEN	0 - 41 BARG (Two Stage)	Base Entry	99-0061	450.00
NITROGEN	0 - 1500 BARG (Single Stage)	Base Entry	99-00611	197.00
NITROGEN	0 - 170 BARG (Single Stage)	Base Entry	99-0060	197.00
NITROGEN	0 - 250 BARG (Single Stage)	Base Entry	99-00612	197.00
HYDROGEN	0 - 28 BARG (Single Stage)	Base Entry	99-00613	197.00
HYDROGEN	0 - 1500 PSIG (Single Stage)	Base Entry	99-6012	197.00
HYDROGEN	0 - 2500 PSIG (Single Stage)	Base Entry	99-601	197.00
HELIUM	0 - 28 BARG (Single Stage)	Base Entry	99-00613	197.00
HELIUM	0 - 1500 PSIG (Single Stage)	Base Entry	99-00611	197.00
HELIUM	0 - 170 BARG (Single Stage)	Base Entry	99-0060	197.00
HELIUM	0 - 250 BARG (Single Stage)	Base Entry	99-00612	197.00
CARBON DIOXIDE	0 - 400 PSIG (Single Stage)	Side Entry	99-0120	197.00
ARGON	***SEE RANGE FOR NITROGEN SERVICE (ABOVE)***			
AIR	***SEE RANGE FOR NITROGEN SERVICE (ABOVE)***			
OXYGEN	***DETAILS AVAILBLE ON REQUEST***			
SPECIAL	***DETAILS AVAILBLE ON REQUEST***			

ALL PRICES ARE STERLING (GB£). VAT WILL BE CHARGED AT THE CURRENT RATE. CARRIAGE CHARGES WILL BE ADDED AT THE BJ'S RATE PER KILOGRAMME.

IMPORTANT NOTE **Our regulators are supplied with a 'RegTag' prior to shipping. The RegTag provides an obvious record of the item's serial number, date of manufacture and supply, date for next inspection and a do not use after date. The RegTag also includes a warning to end user to check the item each time before use. You can buy your own RegTags too (PART NUMBER: 99-103)**

FOR MORE INFORMATION PLEASE CONTACT:
DAVID BAYLISS, BJ INDUSTRIES (GAS SAFETY UK DIVISION) • E-mail: david@bj-industries.co.uk

KEY FEATURES OF THE RANGE

- Manufactured under BS EN ISO 9001 quality management systems
- Design & construction tailored to meet the requirements of BS EN ISO 2503
- Safety pattern pressure gauges
- 300 Bar valves
- Cone inlet filter
- Bottom or side entry available (PLEASE SPECIFY WHEN ORDERING). Bottom-entry regulators best suit top-outlet cylinder valves and side-entry regulators are better suited to side-outlet cylinder valves)

EasiDaptor

DON'T FORGET - LEAVE THE POOR OLD REGULATOR ALONE...

FIT AN **EasiDaptor**

AND THEN GET CONNECTED.

LEFT OR RIGHT HANDED, OXYGEN SAFE

The problem:

This photograph shows a typical example of the measures to which gas users sometimes have to resort. Regulators are, most often, supplied with a 3/8" BSP male, cone recessed outlet - this fitting doesn't easily lend itself to connecting up to gas applications which are supplied by 1/4" od tube, 8mm od tube, etc.

Hence, we find users removing the factory fitted outlet, building-up unsound 'Christmas trees', subjecting themselves to the dangers of gas leakage and unplanned chemical reactions.

The gas safety UK solution:

The photograph below, shows a regulator fitted with an EasiDaptor©. This new fitting has been developed to be easy to use, quick to fit and, above all, safe and reliable.

EasiDaptor is manufactured in the UK, quality assured, available threaded left or right handed & oxygen safe.

There is no need for thread tape, seals or rings. The EasiDaptor outlet is 1/4"BSP female - this enables easy and safe connection to most proprietary tubing systems.

EASIDAPTOR©

EasiDaptor©

EasiDaptor – Brass, Maximum Working Pressure 10 barg, Oxygen Safe, Specify right-hand threaded or left-hand threaded.

PART NUMBERS: 99-100 (R.H.) & 99-101 (L.H.) **£11.12 Each + VAT**

EasiDaptor Right-Hand

EasiDaptor Left-Hand

GETTING CONNECTED

1. Select a tubing material that is suitable for the intended task (sounds pretty obvious doesn't it?). *Think about:*

   PRESSURE - the working pressure of the tubing must match or exceed the maximum outlet pressure of the regulator to which it will be connected.

   CHEMICAL/MATERIAL COMPATIBILITY - ensure that the tubing material will not react/age/degrade/etc. with intended service gas.

   WORKING CONDITIONS - assess the area where the tubing will be installed. Will, for example, the tubing be subjected to harsh conditions? (heat/cold/external chemical or mechanical attack).

   TUBING PERFORMANCE IN THE EVENT OF AN EMERGENCY - consider how the tubing material will behave in the event of [say] fire. If the tube were to fail/melt/burst then will ensuing gas release enhance the impact of the fire? Metallic or metal armoured tubing may offer greater resistance to fire. Also, by fitting a re-settable flashback arrestor, fitted with a thermal cut-off valve, would stop the supply of gas at an ambient temperature of approximately 100° C.

   INTERNAL DIAMETER - Unless it is required to, the tubing should be so sized as to not restrict flow rate at the required working pressure. In most cases, a first approximation can be had from compressed air flow tables or nomograms. Hydrogen and helium will, however, tend to flow at greater rates for a given diameter than more 'air-like' gases.

2. Ensure that the tubing is properly fitted. Joints and connections, as a rule of thumb, should be kept to an absolute minimum; they're mechanical weaknesses and potential leak paths - joints or connections in tubing should always be kept well away from open sources of ignition, etc. Consider the options available and remember **DO NOT MODIFY THE REGULATOR OUTLET:**

- **HOSE BARBS** - for soft-walled plastic tubing (inerts/non-flammable/non-corrosive and [relatively] low pressure service), simply select a 3/8" BSP nut and a barb of suitable outside diameter to fit the inside diameter of the tubing to be used. See illustration below. We can supply brass hose barbs for 5mm, 6mm, 8mm and 10mm i.d. plastic tubing - these are £1.50 + VAT each including the 3/8" BSP nut. Tubing should, of course, be secured using a hose clip once it has been pushed [fully] onto the hose barb. If required, we can supply 'O' clip pliers and 'O' clips in a wide range of sizes - confusingly, it's the outside diameter of a hose that would be quoted when sizing a suitable clip!

- **PUSH FIT CONNECTORS** - for hard-walled plastic tubing. In this case (as is normally always the case) tubing size is specified in terms of outside diameter - it's pipe that specified in terms of it's i.d. and pipes are considerably bigger than tubes; but let's not worry about that now! The best way to do this with the less reactive gases at higher pressures is to use a push fit connector (see illustration below) in conjunction with our EasiDaptor©. Firstly, measure the outside diameter of your hard-walled tubing and let us know. We can then, secondly, fit a suitable push fit/quick release coupling for most metric AND imperial tubing sizes.

- **COMPRESSION FITTINGS** - These are, perhaps, the most obvious solution for metallic tubing. Metallic (or some very hard walled plastics) may be chosen for corrosive/toxic/flammable service &/or for high pressure &/or small bore instrument lines (e.g. hydrogen and helium supplies to chromatographs). For direct connection to your gas regulators we would, unsurprisingly, recommend that via an EasiDaptor© a suitable compression fitting can be selected with relative ease - whether in brass or stainless and for a range of sizes from 1/8" OD to 6mm OD - again metric or imperial, just let me know and we should be able to get the appropriate tube fitting you need.

NOTE:
Great care must be taken when setting up rigs or experiments with push fit, quick release couplings, as the mechanism for mis-connection (right cf. left handed threads) is quite effectively defeated! Anti-confusion techniques like colour banding for matching hoses to correct connectors may be employed.

REGULATOR TO TUBE CONNECTORS

ITEM		PART NUMBER	PRICE (£)
EASIDAPTOR	Right Handed x 1/4" BSPF OUTLET (BRASS)	99-100	11.12
EASIDAPTOR	Left Handed x 1/4" BSPF OUTLET (BRASS)	99-101	11.12
EASIDAPTOR	Right Handed x 1/4" NPTF OUTLET (BRASS)	99-105	11.12
EASIDAPTOR	Left Handed x 1/4" NPTF OUTLET (BRASS)	99-106	11.12
COMPRESSION FITTINGS: STAINLESS STEEL			
1/4" NPTMT x 1/8" O.D. (Tube Size)		99-075	7.20
1/4" NPTMT x 1/4" O.D. (Tube Size)		99-071	7.20
1/4" NPTMT x 1/16" O.D. (Tube Size)		99-14012	9.45
1/4" BSPMT x 1/8" O.D. (Tube Size)		99-140	8.82
1/4" BSPMT x 1/4" O.D. (Tube Size)		99-139	8.82
1/4" BSPMT x 1/16" O.D. (Tube Size)		99-14011	9.45
1/4" BSPMT x 3/16" O.D. (Tube Size)		99-1402	9.45
1/4" NPTMT x 6mm O.D. (Tube Size)		99-14201	8.82
1/4" BSPMT x 6mm O.D. (Tube Size)		99-142	8.82
1/4" BSPMT x 8mm O.D. (Tube Size)		99-1422	8.82
COMPRESSION FITTINGS: BRASS			
1/4" BSPMT x 1/16" O.D. (Tube Size)		99-1401	9.45
1/4" BSPMT x 1/8" O.D. (Tube Size)		99-143	5.00
1/4" BSPMT x 1/4" O.D. (Tube Size)		99-1421	5.00
1/4" BSPMT x 6mm O.D. (Tube Size)		99-138	7.50
1/4" NPTMT x 10mm O.D. (Tube Size)		99-141	7.00
(STAINLESS STEEL AND COPPER TUBE AVAILABLE TOO: PRICES & DETAILS AVAILABLE ON REQUEST)			
PUSH FIT CONNECTORS (Ni-PLATED BRASS)			
1/4" BSPMT x 1/8" O.D. (Tube)		99-0961	4.50
1/4" BSPMT x 1/4" O.D. (Tube)		99-096	4.50
1/4" BSPMT x 4mm O.D. (Tube)		99-095	4.50
1/4" BSPMT x 5mm O.D. (Tube)		99-0962	4.50
1/4" BSPMT x 6mm O.D. (Tube)		99-097	4.50
1/4" BSPMT x 8mm O.D. (Tube)		99-098	4.50
1/4" BSPMT x 10mm O.D. (Tube)		99-099	4.50
(FOR HARD-WALLED POLYMER TUBE)			
N.B TAPER THREADS REQUIRE P.T.F.E TAPE		99-135	1.50/Roll

HOSE BARBS, HOSES & ASSEMBLIES

ITEM		PART NUMBER	PRICE (£)
3/8" BSP NUTS (TO FIT REGULAR OUTLET) AND BARBS : BRASS			
HOSES ARE SIZED BY INTERNAL DIAMETER			
FOR 5mm I.D. HOSE	Right Hand Nut	99-029R	1.61
FOR 5mm I.D. HOSE	Left Hand Nut	99-029L	1.61
FOR 6mm I.D. HOSE	Right Hand Nut	99-028R	1.61
FOR 6mm I.D. HOSE	Left Hand Nut	99-028L	1.61
FOR 8mm I.D. HOSE	Right Hand Nut	99-0281R	1.61
FOR 8mm I.D. HOSE	Left Hand Nut	99-0281L	1.61
FOR 10mm I.D. HOSE	Right Hand Nut	99-0280R	1.61
FOR 10mm I.D. HOSE	Left Hand Nut	99-0280L	1.61
1/4" NPTMT HOSE BARB (BRASS)			
FOR 5mm I.D. HOSE		99-154	1.09
FOR 6mm I.D. HOSE		99-155	1.09
FOR 8mm I.D. HOSE		99-156	1.09
FOR 10mm I.D. HOSE		99-157	1.09
EN 559 HOSE ASSEMBLIES (20 BARG MAWP)			
5 METRE BLACK HOSE FOR INERT GAS SERVICE		99-043	31.50
5 METRE BLUE HOSE FOR OXYGEN SERVICE		99-042	26.25
5 METRE RED HOSE FOR ACETYLENE		99-041	26.25
5 METRE ORANGE HOSE FOR LPG		99-0412	26.25
LIQUID NITROGEN HOSE ASSEMBLIES (STAINLESS STEEL CONVOLUTE WITH S/S OVERBRAID)			
4 FEET LENGTH C/W 1/2" BSP END-FITTINGS		99-040	148.05
10 METRE LENGTH C/W END-FITTINGS		99-053	250.00
(MANY SIZES AND ED-FITTING COMBINATIONS AVAILABLE: CONTACT US WITH YOUR REQUIREMENT)			

LEAK DETECTIVE

Testing for gas leaks is a central plank of working safely with cylinders, manifolds, regulators, etc. Moreover, the use of a leak detection solution that is approved for use with all compressed gases including oxygen is vital. Our new leak detection spray is non-corrosive, oxygen safe, ozone friendly and very economical; offering up to 1,000 applications per 400ml can!

Such products are relatively few and far between. There are many leak detection products on the market but so many of them are aimed at those working on compressed air, natural gas, refrigerant, etc. systems and, as such, these products would not always be oxygen safe.

Our leak detection spray is manufactured in Germany and consists of de-ionised water and small quantity of an approved tenside [anionic] surfactant to act the foaming agent; the propellant is air. N.B. Some other products, deemed to be oxygen safe, use nitrous oxide as the propellant and this, we believe, is less desirable.

Please note: if you would like more information relating to this product or it's counterpart which has been designed for very low temperature use (e.g. MSDS) then please give me a call:

Office Tel: **01909 501771** Mobile: **07973 158287** or E-mail: **david@bj-industries.co.uk**

LEAK DETECTIVE

Leak detection spray - Oxygen safe. For use with all compressed gases. Application of small amount quickly reveals small leaks.

ITEM	PART NUMBER	PRICE (£)
PLEASE BE AWARE OF NEW PRICES		
FOR 1 LEAK SPRAY	99-130	10.22 – 10.22 Each
FOR 2 LEAK SPRAY	99-130	18.50 – 9.75 Each
FOR 3 LEAK SPRAY	99-130	27.00 – 9.25 Each
FOR 4 LEAK SPRAY	99-130	35.00 – 8.75 Each
FOR 5 LEAK SPRAY	99-130	42.50 – 8.50 Each
THERE AFTER SELL AT £8.50 Per Can		

FLOW METERS

These flow meters are designed to fit directly onto the regulator outlet (max. 100 psig inlet pressure).

FLOW METERS

Two (right-handed) flow meters are available:

ITEM	PART NUMBER	PRICE (£)
Zero to fourteen (0-14) litres per minute	99-032	31.50
Zero to forty (0-40) litres per minute	99-033	31.50

In both cases, the flow-meter outlet is 3/8" BSPM (cone recessed). Hence, it will take a hose barb (for soft-walled tubing) or an EasiDaptor - in order to connect onto a push-fit adaptor or a compression fitting.

FLASHBACK ARRESTORS

FLASHBACK ARRESTORS

ITEM		PART NUMBER	PRICE (£)
SUPER '55' RESETTABLE FLASHBAC ARRESTOR			
3/8" BSP LOOSE NUT INLET x 3/8" BSPG OUTLET			
FOR OXYGEN UP TO 20 BARG	Right Handed	99-131	55.65
FOR AIR UP TO 20 BARG	Right Handed	99-131	55.65
FOR HYDROGEN UP TO 3 BARG	Left Handed	99-132	55.65
FOR ACETYLENE UP TO 1.5 BARG	Left Handed	99-132	55.65
FOR METHANE UP TO 5 BARG	Left Handed	99-132	55.65
FOR PROPANE UP TO 5 BARG	Left Handed	99-132	55.65
AUTOMATIC FLASHBACK ARRESTOR FOR HYDROGEN			
UP TO 3 BARG	Left Handed	99-121	65.00
AUTOMATIC FLASHBACK ARRESTORS			
FOR OXYGEN UP TO 10 BARG	Right Handed	99-122	27.00
FOR ACETYLENE UP TO 1.5 BARG	Left Handed	99-123	27.00
FOR PROPANE UP TO 1.5 BARG	Left Handed	99-123	27.00

Part Nos. 99-122 / 99-123

Part No. 99-121

Part Nos. 99-131 / 99-132

GAS CYLINDER MANIFOLD SPARES

In many laboratory applications gases from cylinders or insulated liquid tanks are piped via static systems to the point of use. From a safety perspective this can eliminate free-standing cylinders in the workplace, avoid the requirement for difficult cylinder handling operations and generally cut down on the number of cylinder handling movements and the numbers of people involved in those movements as well as reducing the likelihood of running out of gas mid-process.

It is essential that the system is correctly installed and maintained and that the operators are correctly trained in its safe operation and actions to be taken in an emergency.

SUPPLY SYSTEMS

The installation from the cylinder to the main pressure regulator must be gas compatible and capable of withstanding cylinder fill pressure.

From the cylinder valve, connection to the header is made by a 'pigtail' which may be flexible hose or tubing fitted with the appropriate valve specific connector. Each pigtail should have a non-return valve or isolating valve. The header is fed from the pigtail. This may incorporate purge points, isolation valves, bursting discs, heaters, vaporisers etc.

The pressure in the distribution system is controlled by a main regulator (typically two-stage unless the cylinder supply is low pressure from a liquefied supply such as propane). The main regulator is carried on a mounting block and should be positioned so that the operator can see the HP and LP gauges.

DISTRIBUTION SYSTEMS

The specific components in a distribution system depend on the gas for which the system is designed. However, certain components are essential. For example, following the main regulator on the supply "the distribution system shall be protected against over-pressurisation resulting from regulator malfunction or other abnormal circumstance" (BCGA CP4). This can take the form of a pressure relief valve or bursting discs. It is a wise precaution to provide a piped vent away from the operator and the system (usually up the side of the building and not terminating near windows etc).

As the system enters a building there should be a main isolating valve and there should be isolation and non-return valves fitted to each outlet point on the bench or wall.

Manual manifold

Automatic manifold

All dimensions in mm

OPERATION

Instruction cards must be in place to indicate correct and safe operation of the system controls. It is good practice to have a system flow sheet available. Such information is provided by the supplier (usually the system installer). All operators must receive adequate training and instruction before operating manifolds and pipelines.

NOTE:

Many installations have two banks of cylinders to feed the supply system; one in use, the other on reserve. Loss of pressure and/or flow will indicate when the cylinders need changing. Change-over can be achieved by having two regulators set at slightly different pressures, as one side empties the other automatically takes over. Alternatively, the system may have a manually or automatically operated change-over valve. Such equipment can be connected to a remote alarm panel which shows that change-over has occurred and the empty cylinders need to removed and replaced with full ones.

In the case of manually operated changeover the full cylinders on reserve can be connected but their valves must be left closed. As part of the changeover procedure they can be opened and the connections to them leak tested.

MAINTENANCE

WEEKLY INSPECTION (ACCORDING TO BCGA CP4)

Each week check that:

- the equipment looks to be in good order, is being used correctly and all necessary equipment is fitted
- the manifold framework and chains are in good condition
- the pigtails are in good condition
- valves shut off and reopen correctly
- the regulators are correctly identified for the gas(es) and pressure(s)
- the system is operating normally and no defects have been reported
- the manifold house is clean and is not being used as a general store

ANNUAL INSPECTION

Check that:

- any repairs or modifications have been carried out in accordance with the appropriate code
- any changes near the pipework do not affect operation or safety
- the pipework is marked properly in yellow ochre and carries the name of the gas
- the system is free from leaks by testing at designated operating pressure
- the filters are in good condition and not blocked

Maintenance in accordance with the written scheme - contact us for more information.

As you will, no doubt, be aware, the high pressure flexible hoses ('pigtails') that are used to connect gas cylinders to your manifolds should be routinely replaced every 5 years (non-metallic) and possibly more frequently (~annually) in the case of metallic 'pigtails' used for oxygen due to work hardening and cracking problems.

For some time we have recommended that such [high pressure] flexible hoses be fitted with an 'anti-whip' cable in accordance with BS EN ISO 14113. Clearly, the purpose of the anti-whip cable is to minimise the extent of personal injury occurring in the event of one of these lines bursting. An example of such a hose is shown in the photograph below:

The second photograph (inset) illustrates how the anti-whip cable is secured to the hose end nuts.

These parts are available in 4 standard lengths: **600mm, 900mm, 1,800mm and 3,500mm.**

However, for most typical manifold applications, the 600mm and 900mm lengths would be most appropriate (the longer hoses are mainly used for connecting cylinder packs to manifolds).

FIND OUT MORE

If you require further information on these products, our other manifold spares or our manifold inspection & testing services, then please feel free to get in touch - we would, of course always be delighted to help.

SMART HOSE™

FAIL-SAFE, HIGH PRESSURE (325 BARG), GAS HOSE FOR CYLINDER MANIFOLDS.

The logical step forward from anti-whip, high pressure hoses.

Photograph 1.
The Smart Hose™ safety cable runs through the centre of the hose (see cutaway above). This cable is, in turn attached to a valve at each end of the Smart Hose™. Hence, should the hose fail (see Photograph 2, below) then the Smart Hose™ will fail safe – simultaneously isolating the upstream supply (high pressure cylinder) and the downstream equipment (manifold).

Photograph 2.
Constructed from PTFE (liner), stainless steel over-braid and safety cable with Admiralty Brass end-fittings and safety valves. Oxygen cleaned and each Smart Hose™ fully pressure test certified.

Part Number: 99-054; 100 cm in length complete with inlet cylinder connection and 3/8" BSP loose nut outlet connection. Price: £84.21 + VAT & carriage.

'The World's Safest Hose Assembly'

CRYOGENIC BURNS

EFFECTS

As the living skin tissue is rapidly cooled local pain may be experienced. This may be transient. Affected areas can become pale yellow and waxy because local blood circulation closes down and skin lipids solidify. When cold burns thaw, intense pain can occur and, if the area affected is large, the person injured may go into shock. Contact with surfaces at cryogenic temperatures tends to cause the flesh to "stick", so do not remove clothing or free hands or limbs from uninsulated equipment.

FIRST AID

The aim is to slowly raise the temperature of the area affected back to normal. For minor injuries, make the injured person comfortable and loosen any clothing that may restrict blood circulation. Do not pull clothing away from the burned or frozen area. Place the affected part in tepid water (<40°C). The skin should gradually change colour; back to pink via blue. Use a sterile burn dressing to protect the injury and get the patient to the nearest hospital casualty department.

DO NOT

Permit smoking or alcohol consumption
Give analgesics (aspirin, paracetamol etc)
Use a direct heat source eg a radiator

For major injuries, send for an ambulance. Apply first aid measures as far as possible. Provide medical staff with a copy of the MSDS by way of guidance.

In areas where the air temperature is low there is a risk of hypothermia. Also, breathing cold vapour could provoke an attack of asthma. Actual freeze-burn damage to the lungs themselves could follow severe exposure that has frost bitten the mouth, pharynx and airway.

SAFE HANDLING OF CRYOGENIC GASES

AWARENESS AND TRAINING

Make sure users are aware of the properties, hazards and procedures associated with cryogenic gases and that they have the appropriate first aid skills and a knowledge of the emergency procedures.
Put in place the relevant safety signs and notices and have readily available the standard operating procedure for the equipment.
Make sure users have received practical instruction in its safe and proper use.

PERSONAL PROTECTIVE EQUIPMENT

Check that it is appropriate and available. For the hands provide non-absorbent, insulated gloves; for the face and throat a flip-up visor; for the body an apron, ideally of a non-woven fabric to avoid liquid penetration. Splashes must not be trapped against the body so avoid gauntlet style gloves, pull sleeves down over glove wristbands, avoid open pockets and put trouser bottoms over the tops of safety shoes or boots.

CONTAINER MOVEMENT

Before moving a dewar, assess the route and consider:

- rest stops
- movement through populated work areas
- clutter
- lifts (never travel in lift with dewar)
- stairs (hazardous due to slips, trips and, hence, spills)
- paths and roadways (are they sound and even?)
- kerbs (can be a problem for the small wheels fitted to dewar trolleys)
- whether the destination for the gas is ready to accept it

A All cream hide cryogenic gloves, fully lined with 3M 'Thinsulate'. Knitted wrist, vein patch. Welted front seams. Moisture-resistant.

IDEAL FOR HANDLING LIQUID TRANSFER HOSES

- AS ISSUED TO GAS COMPANY TANKER DRIVERS **ONLY £16.75** + VAT per pair
- PART NUMBER: 99-001

B Cream hide cryogenic gloves with blue-coated nylon backs. Hide reinforced finger-tips and back straps. 3M 'Thinsulate' lined. Knitted wrist & hide vein patch. Moisture-resistant leather.

- A 'HANDY' VERSION OF THE GLOVE ILLUSTRATED ABOVE
- FOR LIGHTER DUTY
- HOSPITAL & LABORATORY USE
- PART NUMBER: 99-002

ONLY £16.01 + VAT per pair

BROWGUARD & POLYCARBONATE FACE-SHIELD
£15.50 (PART NUMBER: 99-110)

FULL-LENGTH, ANTI-SPLASH DECANTING APRON
£13.50 (PART NUMBER: 99-111)

Cryogenic Phase Separators

◆ CUT DOWN ON SPLASHING
◆ CUT DOWN FOGGING

Phase Separator Sizes available to fit standard cryogenic transfer hoses are:

- 1/2" BSP (male)... £40.00* + VAT each
  PART NUMBER: 99-031
- 3/8" BSP (male)... £40.00* + VAT each
  PART NUMBER: 99-030

[In each case the phase separator just screws directly into your existing stainless steel transfer hose outlet]
4' liquid nitrogen decanting hose (all stainless steel, 1/2 " BSPM to 1/2" BSPF)
PART NUMBER: 99-040. £141.00 + VAT

● COMBINATION VALVE KEY & REGULATOR SPANNER

PART NUMBER: 99-146

● HOSE CLIPS AND PLIERS

● BODOK WASHERS

PART NUMBER: 99-102

● CARBON DIOXIDE WASHERS

◆ CYLINDER TROLLEYS

Cylinders vary considerably in size and mass (and hence stability). Purpose designed cylinder trolleys are the safest way of moving them and must be used over any but the shortest distances and over any even slightly uneven surface.

You may need different trolleys for different sizes of cylinder. The wheels and tyres must be suitable for the ground or floor conditions. Always use suitable restraining chains or straps to hold the cylinder in place as firmly as possible.

Make sure that your cylinder trolleys are strong enough for the job, easy to manoeuvre and adequately maintained.

◆ ASSESS THE TASK

Make sure the people who will be using or handling the cylinders have been trained. Understand what

is in the cylinder(s), its properties, hazards and emergency actions. Examine the cylinders and decide whether you can manage alone or need assistance.

PLAN AND CHECK THE ROUTE

Check whether it is accessible with a trolley and if there are any obstacles or slippery areas or whether any are likely to appear (due to leaves, frost, temporarily stored materials etc). Check whether the route is well lit throughout and whether there are any site roadways to cross. If there are any inclines establish whether you need powered mechanical assistance. In particular, think what would happen if you lost control of the trolley on a slope and what risk this would pose to other people. Be frank and assess your strength and fitness and whether you will need to rest. Make sure you will not exceed the Manual Handling Regulations. If you have to move the cylinder via a stairway, close it to pedestrians and get assistance. If you use a passenger lift or goods lift, close it to all passengers. Never travel in a lift with the gas (unless the cylinder(s) contain breathable air). Instead, get an assistant to meet the lift at its destination.

NB *All free-standing cylinders are liable to topple over. Large cylinders require special care because of their greater mass and size.*

Upright cylinders must be secure. If they are not physically restrained, they must be under the user's direct control. **NEVER** turn your back on a free-standing cylinder. And if a cylinder falls over - NEVER attempt to stop or catch it; **GET OUT OF THE WAY!**

Never roll cylinders along the floor on their sides because the valve could be damaged and the cylinder will be out of control.

Do not attempt to move cylinders with regulators attached and/or when connected to a system i.e. when the cylinder valve is open.

Large gas cylinders can be moved by churning but do not churn cylinders fitted with hand-wheel operated valves. Only churn over short distances on firm and even surfaces.

Don't churn too quickly
Don't tilt the cylinder too far over
Never try to churn two cylinders at once

KEY SAFETY ISSUES - CYLINDER STORAGE

- Drain and duct openings
- Adequate ventilation
- Signs and notices (hazard warnings and prohibitions)
- Space, lighting (safety of electrical fittings around flammable gases) and cleanliness
- Facilities to prevent cylinders from falling (chains or straps)
- Well made, well drained and even concrete floor surfaces
- Extremes of temperature
- Weather protection (including direct sunlight)
- Authorisation of access
- Contents inventory
- Emergency actions: fire fighting, evacuation etc. (inform the emergency services which gases and in what quantities you are keeping)
- Emergency equipment (extinguishers, breathing apparatus etc.)

Our large, single cylinder trolley has undergone a redesign - affectionally known as a 'Cardiff Trolley' - the new version is more stable and more robust. The maximum load capacity for this trolley is 150kg and it is designed for 50 litre water capacity, high pressure type cylinders of ~2 metres in height.

LARGE CYLINDER TROLLEY
£264.00 +VAT & Shipping (PART NUMBER: 99-112)

'UNIVERSAL' SINGLE CYLINDER WALL-BRACKET
"One size fits (virtually) all cylinders"

Thanks to the woven nylon securing strap and locking arrangement, this bracket may be safely used to restrain cylinders from 'D' and 'E' sizes through the 1m tall (F's, V's and X sizes) to the ~2m tall x 250mm diameter high pressure cylinders. Fix (screw or bolt) the stainless steel bracket to a suitable wall at approximately two-thirds of cylinder's height from the floor. Put the cylinder into position, tighten the securing strap and you are ready to go.

£24.50 +VAT & Carriage (PART NUMBER: 99-0220)

KEEPING CYLINDERS IN THE LABORATORY

Recommendations

- Only keep the absolute minimum in the laboratory. Separate the cylinders from populated workspaces
- As far as possible, segregate oxidants from fuels (eg nitrous oxide from dissolved acetylene where atomic absorption spectrophotometry is being carried out)
- **DO NOT** keep very toxic or pyrophoric gases indoors
- Partitions should be fire resistant and suitable forced ventilation (10 air changes/hour) may be necessary
- Gas detection and alarms (oxygen deficiency, oxygen enrichment, explosimetry, toxic gas warning etc) should be seriously assessed
- Your 'Risk Assessments' will establish what (if any) emergency equipment will be needed.

● REGULATOR MOUNTED NEEDLE VALVES (10 BAR CAPACITY, RIGHT-HANDED OR LEFT-HANDED)

(99-144) (99-145)

PRICING & AVAILABILITY

- Prices are available on request, simply telephone, E-mail or fax us.
- Prices are normally quoted in GB£ (Euro prices are available on request too) excluding VAT and packing/carriage costs.
- Packing & carriage are charged at the current BJ Industries rate.
- Where no part number is quoted, don't worry just ask about or describe the item you need.
- We aim to get your orders processed and delivered within 5 working days of official purchase order receipt.

BS 341 British Standard cylinder valve outlets and connections

Outlet Connection

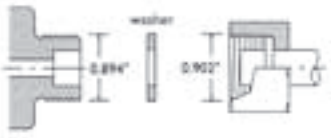
BS 341 No 3
⅝" BSP rh internal accepting bullet shaped nipple

NON-TOXIC / NON-FLAMMABLE COMPRESSED GASES

BS 341 No 4
⅝" BSP lh internal accepting bullet shaped nipple

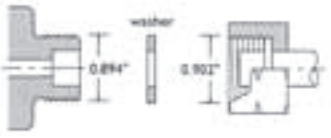
FLAMMABLE / NON-TOXIC COMPRESSED GASES

BS 341 No 6
⅝" BSP rh external using flat seat with washer



HALOGENS & HALOGENATED GASES

BS 341 No 7
5/8" BSP lh external using flat seat with washer



TOXIC & FLAMMABLE COMPRESSED GASES

Outlet Connection

BS 341 No 8
0.860" x 14tpi rh external using flat seat with washer

CARBON DIOXIDE

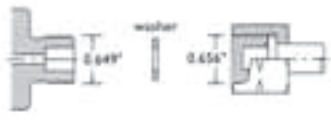
BS 341 No 13
$^{11}/_{16}$" x 20tpi rh external using flat seat with washer

MEDICAL NITROUS OXIDE

BS 341 No 14
⅜" BSP rh external using flat seat with washer

CORROSIVE GAS MIXTURES

BS 341 No 15
⅜" BSP lh external using flat seat with washer



CORROSIVE / FLAMMABLE GAS MIXTURES

GAS SAFETY SOLUTION PROVIDER

gas safety UK

Installation of Regulators - Manifolds - Pipelines

Testing & Inspection of Regulators Manifolds Pipelines

Safety Training

Safety Training

BJ INDUSTRIES LTD (GAS SAFETY UK DIVISION)

CLAYLANDS AVENUE, DUKERIES INDUSTRIAL ESTATE,

WORKSOP, NOTTS. S81 7DJ

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