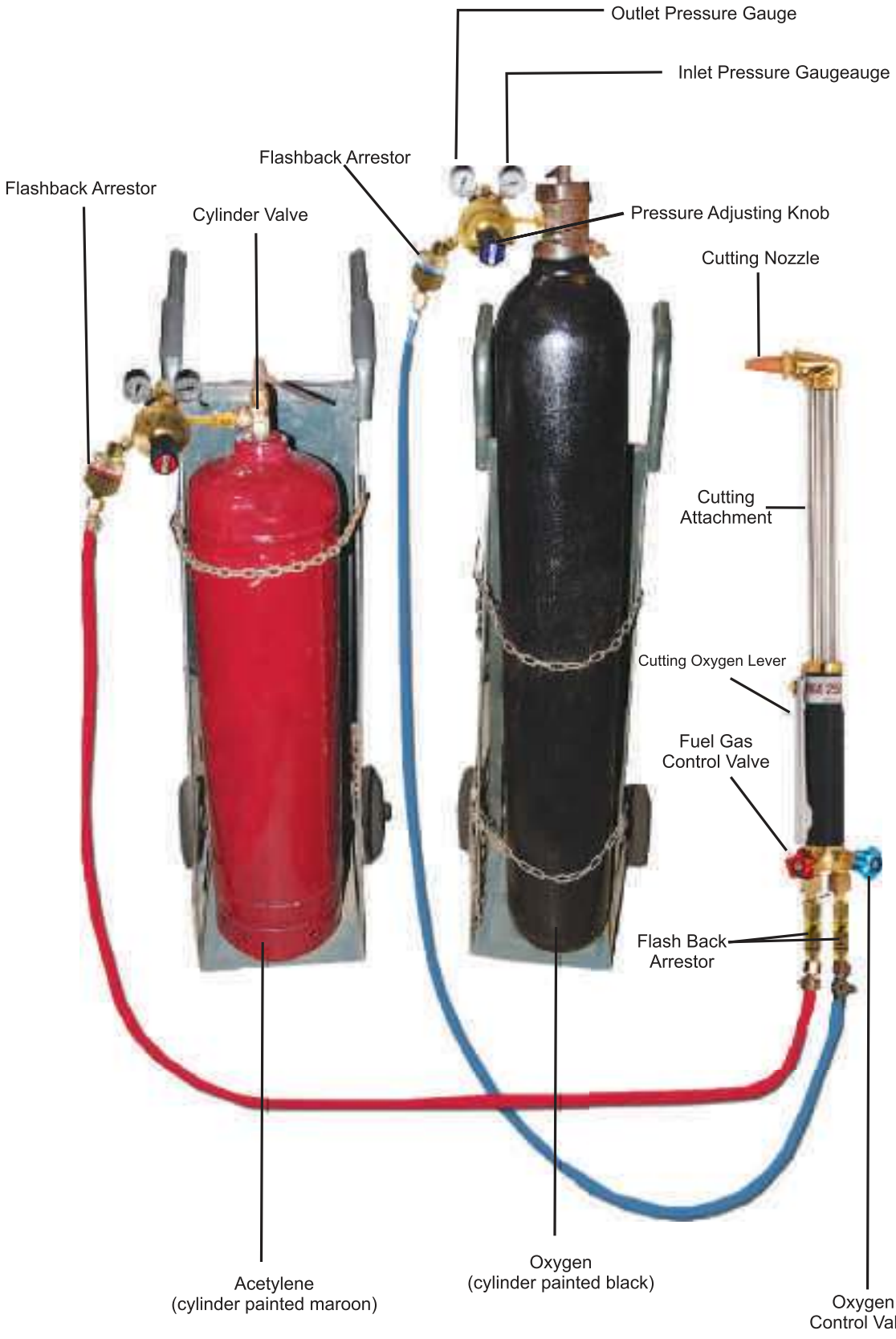
Industrial Gas Equipment

Inlet Pressure Gauge

A TYPICAL OXYFUEL GAS WELDING AND CUTTING SYSTEM



Oxy- Fuel Process

Oxy-fuel welding and oxy-fuel cutting are processes that use fuel gases and oxygen to weld and cut metals, respectively.

Oxy-fuel is one of the oldest welding process, though in recent years it has become less popular in industrial applications. However, it is still widely used for welding pipes and tubes, as well as repair work. It is also frequently well-suited, and favoured, for fabricating some types of metal-based artwork. Oxyfel equipment is versatile, lending itself not only to some sorts of iron or steel welding but also to brazing, braze-welding, metal heating (for bending and forming), and also oxyfuel cutting.

In oxy-fuel welding, a welding torch is used to weld metals. Welding metal results when two pieces are heated to a temperature that products a shared pool of molten metal. The molten pool is generally supplied with additional metal called filler. Filler material depends upon the metals to be welded.

In oxy-fuel cutting, a cutting torch is used to heat metal to kindling temperature. A stream of oxygen then trained on the metal combines with the metal which then flows out of the cut as an oxide slag.

Apparatus

The apparatus used in gas welding consists basically of an oxygen source and a fuel gas source (usually cylinders), two pressure regulators and two flexible hoses (one of each for each cylinder), and a torch. This sort of torch can also be used for soldering and brazing. The cylinders are often carried in a special wheeled trolley.

Regulator

The regulator is used to control pressure from the tanks by reducing pressure and regulating flow rate. Oxy-gas regulators usually have two stages : The first stage of the regulator releases the gas at a constant rate from the cylinder despite the pressure in the cylinder becoming less as the gas in the cylinder is used, as in the first stage of a scuba-diving regulator. The second stage of the regulator controls the pressure reduction from the intermediate pressure to low pressure. It is constant flow. The valve assembly has two pressure gauges, one indicating cylinder pressure, the other indicating hose pressure.

Some oxy-gas regulators only have one stage, and one pressure gauge, and in them the gas flow becomes less as the cylinder pressure drops.

Gas Hoses

The hoses used are specifically designed for welding and cutting. The hose is usually a double hose design, meaning that there are two hoses joined together. The oxygen hose is blue and the fuel hose is red. The type of gas the hose will be carrying is important because the connections will have different threads for different types of gas. Fuel gases (red) will use left hand threads and a groove cut into the nut, while the oxygen (blue) will use right-hand threads.

Non-return valve

Between the regulator and hose, and ideally between hose and torch on both oxygen and fuel lines, a flashback arrestor and/or non-return valve should be installed to prevent flame or oxygen-fuel mixture being pushed back into either cylinder and damaging the equipment or making a cylinder explode.

The flashback arrestor (not to be confused with a check valve) prevents the shock waves from downstream coming back up the hoses and entering the cylinder (possibly rupturing it), as there are quantities of fuel/oxygen mixtures inside parts of the equipment (specifically within the mixer and blowpipe/nozzle) that may explode if the equipment is incorrectly shut down; and acetylene decomposes at excessive pressures or temperatures. The flashback arrestor will remain switched off until someone resets it, in case the pressure wave created a leak downstream of the arrestor.

Welding torch

A welding torch head is used to weld metals. It can be identified by having only one or two pipes running to the nozzle and no oxygen-blast trigger and two valve knobs at the bottom of the handle letting the operator adjust the oxygen flow and fuel flow.

Cutting torch

A cutting torch head is used to cut metal. It is similar to a welding torch, but can be identified by having three pipes that go to a 90 degree nozzle and by the oxygen-blast trigger.

Only iron and steel can be cut using this method, the metal is first heated by the flame until it is cherry red. Once this temperature is attained, oxygen is supplied to the heated parts by pressing the "oxygen-blast trigger". This oxygen reacts with the metal, forming iron oxide and producing heat. It is this heat which continuous the cutting process. The cutting torch only heats the metal to start the process; further heat is provided by the burning metal.

The melting point of the iron oxide is around half of that of the metal; as the metal burns, it immediately turns to liquid iron oxide and flows away from the cutting zone. However, some of the iron oxide remains on the work piece, forming a hard "slag" which can be removed by gentle tapping, and/or a grinder.

Single Stage Regulators

ESAB Single Stage Regulators

Conform To : IS 6901-2009 & BSEN ISO 2503-1998

'B' Series single stage regulators continue the tradition of superior performance in single stage range. The latest materials and advanced component design make these regulators suitable to meet the stringent demands of use in shop-floor as well as outdoor conditions with enhanced safety. ESAB IOX-13B and ESAB IDA-4B are the toughest and most reliable units for oxy fuel gas service. These are provided with two pressure gauges one to indicate outlet pressure & other to inlet pressure. Also available are 'C' series single stage regulators with only one gauge to show the cylinder pressure. The working pressure calibrated on the bonnet can be set by the pressure adjusting knob. A low pressure LPG regulator suitable for Oxy-LPG cutting, Air-LPG equipment and heating applications is also available. The outlet adjustable pressure is 0-1 kg/cm2.

Imported safety pressure gauges designed for 300 bar service pressure, confirming to ISO 5171 standards.

Specifications

Type of Gas	Code Letter	Model	Max. Inlet Pressure (Bar)	Max. Outlet Pressure (Bar)	Max. Flow		Inlet Connection	Outlet Connection	Main Application
					Lit/min	ft^3/h			
Acetylene	"A"	IDA-4B IDA-4C	20	1	200	423.8	5/8" BSP L/H (Male)	3/8" BSP L/H (Male)	All Welding cutting & heating process
Oxygen	"O"	IOX-13B IOX-13C	300	10	1000	2119	5/8" BSP L/H (Male)	3/8" BSP L/H (Male)	Heavy cutting & heating process
LPG	"P"	LPG-18B	16	1	200	423.8	5/8" BSP L/H (Male)	3/8" BSP L/H (Male)	All Welding cutting & heating process
Nitrogen	"N"	INI-42B	300	10	1000	2119	5/8" BSP L/H (Male)	3/8" BSP L/H (Male)	Pressure, purging & refrigeration

Type of Gas	Code Letter	Model	Max. Inlet Pressure (Bar)	Flow		Inlet Connection	Outlet Connection	Main Application
				Lit/min	ft^3/h			
CO_2	"N"	ICO-32B	200	35	74	0.860 x 14 TPI R/H (Female)	3/8" BSP R/H (Male)	MIG
Argon	"N"	IAR-52B	300	25	53	5/8" BSP R/H (Male)	3/8" BSP R/H (Male)	MIG & TIG

* RH Connections for Oxygen & *LH Connections for Acetylene & Hydrogen.

ESAB IOX-14 Single Stage Oxygen Regulator

Conform To :IS 6901-2009

For extra high performance, this regulator is designed and engineered to a high standard of excellence. With the unique safety and sophistication, this regulator can meet service demands where high flow-oxygen is required. These regulators are suitable for heavy cutting, thermic lancing and light scarfing. Also they are suitable for use with cylinders and pipelines.

Imported safety pressure gauges designed for 300 bar service pressure, confirming to ISO 5171` standards.

- Maximum Inlet Pressure 300 bar
- Maximum Outlet Pressure 14 bar
- Maximum Flow (Cylinder) 3500 LPM
- Maximum Flow (Pipeline) 2594 LPM at 14 bar

Single Stage Argon Flowmeter Regulator

This is a single stage flowmeter regulator, which provides precise regulation and measurement of gas flow. This is well suited for a wide variety of industrial uses.

- Service Pressure: 200 bar
- Rated flow : 25 lit/min.
- Inlet connection : Thread EXT-5/8" BSP RH.
- Outlet connection : Thread EXT-3/8" BSP RH.
- Preset Type : Provides accurate control of gas pressure to the flowmeter.
- Imported safety pressure gauges designed for 250 bar pressure,confirming to ISO 5171 standards.
- Body : Chrome plated

Double Stage Regulators

DURA Series Regulators

Conform To : IS 6901-2009 & BSEN ISO 2503-1998

Salient Features

- First time in India a regulator suitable for 300 bar intel pressure and imported safety pressure gauges designed for 400 bar pressure, confirming to ISO 5171 standards.

- Much more rugged.
- Longer life.
- Much bigger plenum chamber (2nd stage plenum chamber is 5 times the volume of 1st stage plenum chamber) ensures :
  - Outlet pressure stability.
  - Steady flow of gases.
- Fire-retardant valve material.
- Stainless Steel Diaphragm in 1st stage
  - can withstand stock of full cylinder pressure.
- Neoprene valve in 2nd stage
  - Gives flexibility and better pressure regulation.

  Look For Seal of Safety
- "ISI" certification.

Flowmeter Regulators have proven performance in MIG Welding and TIG Welding applications. Here the outlet gauge is replaced with flow calibrated gauge to show flow rate in lit/min. This eliminates additional glass flow meter, which prone to get damaged.

1. Safety valve
2. Plenum chamber
3. Captive P.A. knob- Can not be lost of change with unsuitable type.
4. Bonnet-Manufactured from high strength die cast alloy material.
5. Diaphragm neoprene rubber
6. Forged body
7. S.S. valve pin
8. Forged-cap spring
9. Non-bursting S.S. diaphragm
10. Valve made of fire retardant polymer
11. High strength bull nose nipple
12. Inlet filter prevents foreign matter

'B' Series Regulators

Conform To : IS 6901-2009 & BSEN ISO 2503-1998

Esab Multi Stage Regulators **IOX63B** & **IDA50B** continues the tradition of superior performance in the Double Stage range. The latest materials and advanced component design make these regulators suitable to meet the stringent demands of use in shop-floor as well as in outdoor conditions with enhanced safety. This regulators is provided with two pressure gauges one to indicate the Inlet Pressure and the other to indicate the Outlet Pressure. The working pressure can be adjusted by the Pressure Adjusting Knob.

Salient Features

- Steady flow of gas at the outlet irrespective of cylinder gas volume
- Pressure reduction from manifold or cylinder is achieved in two stages
- Much bigger plenum chamber ensures steady flow of gas
- Forged brass body & cap spring
- Fire retardant valve
- Safety valve
- Inlet filter

Specifications

Type of Gas	Code Letter	Model	Max. Inlet Pressure (Bar)	Max. Outlet Pressure (Bar)	Max. Flow		Inlet Connection	Outlet Connection	Main Application
					Lit/min	ft^3/h			
Acetylene	"A"	DURA "A-1.5"	40	1.5	250	529.7	5/8" BSP L/H (Male)	3/8" BSP L/H (Male)	All Welding cutting & heating process
Oxygen	"O"	DURA "O-10"	300	10	1000	2119	5/8" BSP R/H (Male)	3/8" BSP R/H (Male)	Heavy cutting & heating process
Oxygen	"O"	DURA "O-2"	300	2	450	953.5	5/8" BSP R/H (Male)	3/8" BSP R/H (Male)	Medium cutting & heating process
Nitrogen	"N"	DURA "N-10"	300	10	1000	2119	5/8" BSP R/H (Male)	3/8" BSP R/H (Male)	Pressure, purging & refrigeration
Hydrogen	"H"	DURA "H-10"	300	10	1000	2119	5/8" BSP L/H (Male)	3/8" BSP L/H (Male)	Pressure, purging & refrigeration
Oxygen	"O"	IOX-63B	300	10	1000	2119	5/8" BSP R/H (Male)	3/8" BSP R/H (Male)	Heavy cutting & heating process
Acetylene	"A"	IDA-50B	40	1.5	250	529.7	5/8" BSP LH (Male)	3/8" BSP L/H (Male)	All Welding, cutting & heating process

Gas Flow Regulator

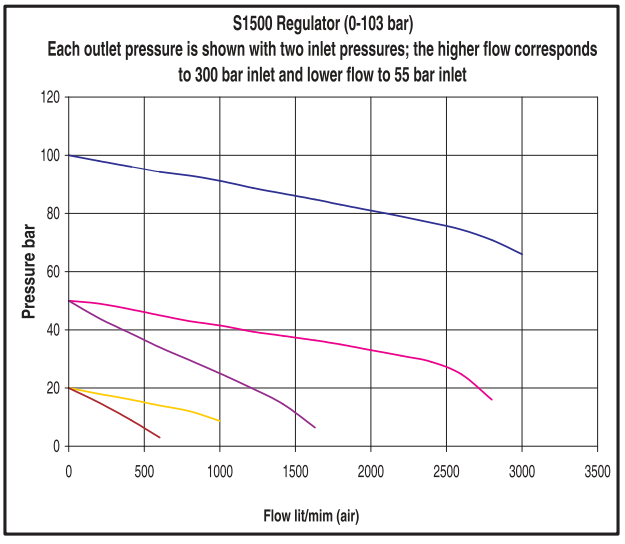
Type of Gas	Code Letter	Model	Max. Inlet Pressure (Bar)	Flow		Inlet Connection	Outlet Connection	Main Application
				Lit/min	ft^3/h			
CO_2	"N"	DURA "CO_2-35L"	200	35	74	0.860x14 TPI R/H (Female)	3/8" BSP R/H (Male)	MIG
Argon	"N"	DURA "Ar2-25L"	300	25	53	5/8" BSP R/H (Male)	3/8" BSP R/H (Male)	MIG & TIG

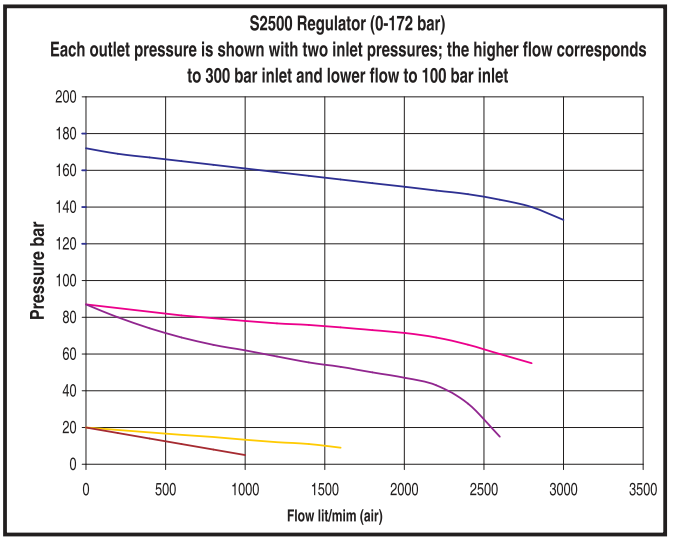
High Pressure Regulators

S-1500/2500 & R- 89 - High Pressure Regulators

- Typical applications include cartridge filling, pressure testing of vessels and pressurization of recoil cylinders.
- For high delivery pressures - 200 to 6000 psig.
- Standard HP cylinder connections - ready to use on cylinders or manifolds. Standard 1/4in. NP 1-to-37 deg. flared tubing outlet connection on R-89 models.
- Forged brass bodies.

S-1500/2500





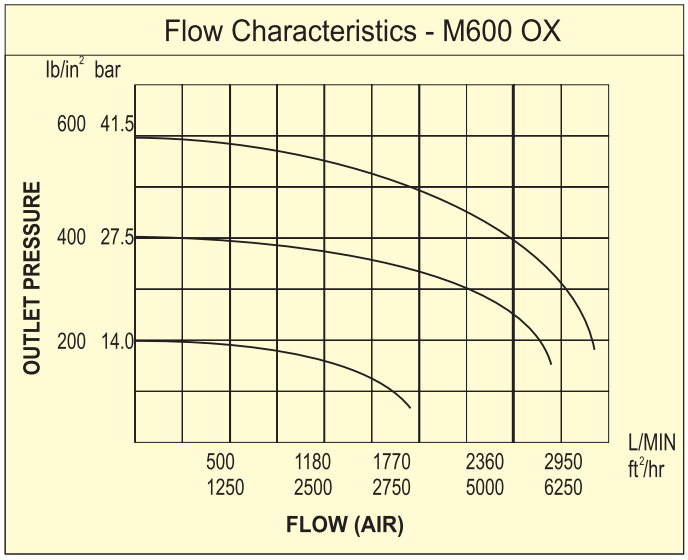
R-89-3M-580

Specifications

Model	Maximum Delivery pressure PSIG	Connection Outlet	Pressure Guage Inlet	Outlet
R-89-3M-580	3000	Flare	4,000	4,000
R-89-4M-680	4000	Flare	6,000	6,000
S-1500	1417	-	6,000	2,500
S-2500	3000	-	6,000	6,600

M600 - Heavy Duty Regulator

This Regulator is in wide spread use through-out the industry. It has a proven performance in applications where stable high pressure and flows are required. This regulators are used in jobs of critical nature, such as aerated bottling plants, cable pressurisation, power generating, pipeline testing, refrigeration, air conditioning industry and a wide variety of laboratory applications in universities, nuclear and chemical industry.



M600

Design/Construction

- Forged brass construction
- Double safety feature - safety valve and bursting disc prevention at second stage
- Inlet filter to prevent ingress of foreign particles at high velocity
- Stainless steel diaphragm on first stage to withstand shock of full cylinder pressure. Neoprene to give flexibility and long life on second stage.
- Easy read pressure gauges.

Specifications

Service Pressure	230 bar
Max. Outlet pressure	40 bar
Rated flow	3200 lit./min
Weight	4.30 Kg.
Inlet connection	5/8” BSP RH (Male)
Outlet connection	3/8” BSP RH (Male)
Gas Service*	Oxyten Nitrogen

Pipe Line Regulators

LM Series -Linemaster Pipeline Regulators

The increased use of manifold cylinders and piped gasses have created a need for specialised regulators. One benefit of a piped gas supply is relatively low pressure of gas within the building. This demands a regulator with large orifics and streamline gas passage to pass large volumes at low inlet pressure.

The LINEMASTER is specially designed for this service and is available for use with most gasses at range outlet pressure 14 bar and is now fitted with a captive pressure adjustment knob for added control and safety.

LM - 200

LM - 9

Specifications : Pipeline Regulators

Model	Max. Outlet Pressure		Gas Application
	Bar	lbf./sq.in.	
LM 9	0.6	9	Acetylene
LM 30	2	30	Fuel gas, Oxygen, Nitrogen
LM 70	5	70	Fuel gas, Oxygen, Argon
LM 200	14	200	Oxygen, Nitrogen

Flow Characteristics of Linemaster Regulators

Delivery Range (lb/sq.in)	Max. Inlet Pressure (lb/sq.in)	Capacity* (cu.ft./hr.)	Inlet Connections	Outlet Connedctions
9	22	100	1/4” NPT (Male)	3/8” BSP
30	435	500	1/4” NPT (Male)	3/8” BSP
70	435	850	1/4” NPT (Male)	3/8” BSP
200	435	2000	1/4” NPT (Male)	3/8” BSP

ISG 43 Series for High Purity Gases

The ISG 43 Series Regulators are the latest in a long line of superb gas control equipment manufacturered with world class ESAB technology.

ISG 43 incorporates latest design changes and proven diffusion-resistant materials to control the exacting requirements of services for speciality gases and provides the user with enhanced safety, durability and precision.

The ultra - high purity gases are expensive and use of diffusion prone components in this most critical control equipments (i.e. regulators) may lead not only to their wastage but may also distort the analytical results. Hence, the need for use of only specially engineered ISG 43 regulators.

The SS packless flow control valve available as an optional extra ensures constant flow of gases at varying pressure ranges.

ISG 43 regulators offer another exclusive feature - provision for using three instruments simultaneously with a single regulator (by adding outlets to ports for purging and relief valve.)

- **Flow :**
  Upto 9000 Liters per Hour

- **Purge Facility :**
The special purge assembly available optionally can be connected to the port for body purge to drive away undersirable contaminating elements before use.

- **Extremely Low inboard Leakage Rate**
Helium leak-tested to ensure non-contamination by diffusion - an assurance of the highest degree of gas purity.

- **Packless Disphragm Valve for high - precision Flow Control (Optional extra)**
Stainless steel packless diaphragm - type valve ensures extermely fine control of outlet flows. Models with suffix 'F' are supplied with flow control valve.

- **Contructed from Non Contaminating materials**
  - Body made of Austentic Stainless Steel AISI 304/316 grade
  - Seat made of TEFZEL
  - Teflon Seals
  - Teflon - lined Stainless Steel Diaphragm
  - Guage-Stainless Steel with SS Bourdon Tubes.

- **For a Wide Variety of Gases**
Ammonia, Argon, Helium, Hydrogen, Nitrogen, Nitrous Oxide, Nitric Oxide, Oxygen, Sulphur Dioxide, Rare Gases like Neon, Krypton & Xenon, Arsine, Carbon Monoxide, Carbon Sulphide, Methylene and for many other gases e.g. doping gases etc.

- **Standard Accessories**
  - Inlet & Outlet Gauges
  - Inlet Connection of Ext G 5/8" with Bull Nose Nipple
  - Bonnet Vent Pipe
  - Outlet Compression Fitting for (6.35 mm OD) stainless steel tube

- **Optional Accessories**
  - Stainless Steel Packless Flow Control Valve with one way Check valve
  - Stainless Steel Purge Assembly
  - Special inlet connections made to customer's specification

- **Ordering Details**
  - Specify the model with the gas/gas mixtures for which the regulators are required
  - Specify if any optional items required with details

- **Special Gas Regulators with Brass Body**
ISG regulators with Brass body can also be made available - please refer to us for further details.

Description

Single Stage Regulators

1. ISG 43 S RH I SS
2. ISG 43 S LH I SS
3. ISG 43 S RH II SS
4. ISG 43 S LH II SS
5. ISG 43 S RH III SS
6. ISG 43 S LH III SS

Double Stage Regulators

7. ISG 43 D RH I SS
8. ISG 43 D LH I SS
9. ISG 43 D RH II SS
10. ISG 43 D LH II SS
11. ISG 43 D RH III SS
12. ISG 43 D LH III SS

Note :

- ISG 43 denotes - Regulators for speciality Gases.
- S Denotes - Single Stage.
- RH/LH denote - Type of thread used.
- I, II, III denotes - Pressure and Flow Rate Range as indicated in the box under "Specifications".
- F denotes - with Flow control valve

Specifications

Model	ISG 43 I	ISG 43 II	ISG 43 III
Max. inlet Pressure (kg/cm^2)	250	250	250
Outlet Pressure Range (kg/cm^2)	0.14-5.27	0.8-15	5-25
Flow Ltrs. per hour (Max.)	6000	9000	9000

Available with RH or LH threads depending upon the type of gas

Cutting Blowpipes

Nozzle Mixing Type Hand Cutting Blowpipe NM250 / NM400

Conform To : IS 7653-1975 & BSEN ISO 5172-1997

New generation Nozzle Mixing Technology for new standards in **Safety** and **Efficiency,** Light weight (1.44 kg) NM Cutters are easy to handle and can withstand rough usage for longer time. Not only piercing is made easier by NM Cutters, but they can also be used for gouging with NM 400 Torch & suitable Nozzles.

Special Features

NM Type Nozzle : Much safer, virtually no backfire due to mixing of gases in the 3 seat nozzle only. Making chances of backfire/flashback very remote.

Angle Head : Forged fom brass rods - much stronger and longer life.

Tubes for O2 & Fuel Gas : Seamless Stainless Steel

Lever for Cutting Oxygen : Stainless steel Lever, positioned for convenient handling by operator. Provided with a Latch Facility to avoid operator fatigue.

Filter : S.S. Filter at inlet (oxygen side)

Handle : Metallic instead of plastic - longer life, much better appearance and grip.

Knobs : Metallic - better grip, longer life.

Weight of cutter : Much lighter - lower fatigue to operator, weight only 1.44 Kg. (without nozzle).

Specifications

	NM250	NM400
Cutting Capacity	300mm thick M.S.	450mm thick M.S.
Type of Cutter	Nozzle-Mixing	Nozzle-Mixing
Suitable for Fuel Gas	Acetylene or LPG with suitable nozzle	Acetylene or LPG with suitable nozzle
Length	450mm	675mm
Angle Head	90°	75°
Standard set includes	• Blowpipe - 1 No. • Cutting Nozzle - ANM (3/64") 1 No. • Nut & Nipple for hose connection (10mm) - 1 each for O_2 & Fuel gas • Guarantee Card • Data Card for cutting	• Blowpipe - 1 No. • Cutting Nozzle - ANM (5/64") 1 No. • Nut & Nipple for hose connection (10mm) - 1 each for O_2 & Fuel gas • Guarantee Card • Data Card for cutting • Data Card for Gouging

Injector Type Hand Cutting Blowpipe CUTOGEN 5

Conform To : IS 7653-1975 & BSEN ISO 5172-1997

A sturdy well balanced Injector Type hand cutting Blowpipe. To cut upto 300 mm. thick mild steel. Injection type cutters can be used with dissolved Acetylene Cylinders. Can also be used for LPG with suitable nozzle. Standard version is 450 mm/ 90^0. Also avalable in different lengths and head angles (180^0). The other models can be made available against specific orders.

Special Features

- Body and head are of forged brass. Eliminate casting porpsity and ensure total safety and gas economy.
- Gas flow geometry designed to prevent backs flow.
- Laminar gas flow for quality cutting and gas saving.
- Swaged nozzles ensure parallel beam of heating flame; refacing of nozzles possible which enhance nozzle life without compromising on "cut" quality.

Look for seal of safety

- ISI Cerification mark

Specifications

	CUTOGEN 5
Cutting Capacity	300 mm thick M. S.
Type of Cutter	Injector Type
Suitable for Fuel Gas	Acetylene or LPG with suitable nozzle
Length	450 mm
Angle Head	90° & 180°
Standard set includes	• Blowpipe - 1 no. • Cutting Nozzle "A" (3/64") 1 no. • Nut & Nipple for hose connection (10mm)-1 each) Oxygen & Fuel gas • Guarantee Card • Data Card for cutting

Welding & Heating Blowpipe

SAFFIRE 2HP Welding Blowpipe for medium duty Welding applications

Conform To : IS 7653-1975 & BSEN ISO 5172-1997

An ideal blowpipe for welding various metals in general workshop use and general heating purpose. It is supplied with tips suitable for welding mild steel in the range of 1.25 mm. to 8.5mm thickness.

The blowpipe is supplied complete with hose connections, spanner, operating data card and 6 nos. swaged tips-sizes : 2, 3, 6, 13, 20 and 30.

Specifications

Capacity	Weld mild steel upto 8.5mm thickness
Approx. Weight	610 gms
Gas Valves	Stainless steel spindles, taper ended
Control Knob	Red for Acetylene, Blue for Oxygen
Tips	Swaged Copper

SAFFIRE LWHP Welding Blowpipe for light duty welding applications

Conform To : IS 7653-1975 & BSEN ISO 5172-1997

ESAB Saffire Light Weight Welding Blowpipe has been developed for use in light sheet metal in garages and workshops. It is ideally suitable for repetitive work in production lines, where its handiness minimizes operator fatigue. Careful design of tips, mixer and shank gives trouble-free operation, high performance, economy and safety. The blowpipe is supplied with complete hose connection, operating data card and 4 nos. of swaged tips in sizes : 2, 3, 6 and 13.

Specifications

Capacity	Weld mild steel upto 5 mm thickness.
Inlet	Oxygen 1/4" B.S.P. RH & Acetylene 1/4" BS.P. LH
Weight Approx.	360 gms.
Length	23.5 cm (without tip)
Hose	5 mm bore hose (Blue-Oxygen & Red-Acetylene)

Design / Construction

- **Tip** : Swaged copper for better performance, long life and weld area visibility.
- **Control** : Durable leak proof design with S.S. tapper ended spindle valve for long maintenance free operation.
- **Mixer** : Specially designed to give freedom from backfires.

MODEL 'O' - Welding blowpipe for light duty welding applications

Conform To : IS 7653-1975 & BSEN ISO 5172-1997

ESAB Model "O" blowpipe is a finely balanced injector type blowpipe ideally suited for fine welding and brazing applications, including the fusion welding and brazing applications.It is used for fusion welding of thin sheet up to 1.5 mm. (e.g. Zinc or Aluminium). It is also suitable for delicate lead welding. Careful design of tips neck and injector gives trouble free operation, high performance, economy and safety. Model "O' welding blowpipe is ideal for production lines where its handiness minimizes operator fatigue. Model "O" blowpipe is available in different lengths for different types or operations.

Specifications

Capacity	Thin sheet metal upto 1.5 mm
Inlet	Oxygen 1/4" B.S.P. RH & Acetylene 1/4" B.S.P. LH
Weight	250 gms
Length	20 cm (without tip)
Hose	5 mm bore hose (Blue-Oxygen & Red-Acetylene)

Design / Construction

- **Injector:** The injector capability makes the blowpipe equally suitable for use with acetylene or hydrogen gas and hence can be used in electronics.

HD Heating Welding Blowpipe for heavy duty Heating applications

Conform To : IS 7653-1975 & BSEN ISO 5172-1997

An Injector type Oxy-Acetylene, ESAB H.D. Heating Blowpipe, is used for localized heating. It is particularly useful for large construction sites, pipe bending and other applications for general purpose heating.

The standard blowpipe is about 750mm long and supplied with nozzle size 30. A large nozzle size 33 can be supplied as optional extra.

The blowpipe is designed to be used with Oxygen and dissolved Acetylene, preferably drawn form suitable manifold cylinders.

Specifications

Metal thickness	Head size	Oxygen pressure (PSI)
Over $1\frac{1}{2}$ inch	30	75-80
Over $1\frac{1}{2}$ inch	33	100-110

Inlet Connections

3/8" BSP RH for Oxygen & 3/8" BSP LH Acetylene

Cutting Nozzles

NOZZLE

- Hard drawn Tellurium copper used in one piece nozzles
  -withstands heat & wear
  -out lasts any copper nozzles
- One piece nozzle has swaged interior
  -Gas passages are mirror smooth with internal angles rounded
  -Non-turbulent more efficient gas flow.
  -Clean smooth cuts with minimal kerf loss
- Preheat ports are closely spaced around cutting orifice
  -For greater concentration of preheat flames.
- Long parallel preheat passages
  -Permit redressing of nozzle without affecting performance

ANM (Acetylene) Nozzle for NM 250 / NM 400

NOZZLE (inch)	PLATE THICKNESS (mm)
1/32	6
3/64	12
1/16	25,50,75
5/64	100
3/32	150
1/8	200,250,300

AGNM (Gouging) Nozzle for NM 400

NOZZLE width (mm)	Maximum Groove Width (mm)
13	8
19	11
25	12

PNM (LPG) Nozzle for NM 250 / NM 400

NOZZLE (inch)	PLATE THICKNESS (mm)
1/32	6
3/64	12
1/16	25,50,75
5/64	100
3/32	150
1/8	250

NOZZLE

A-Type (Acetylene) Nozzle for Cutogen 5

NOZZLE SIZE	PLATE THICKNESS (mm)
A8 (1/32")	6
A12 (3/64z")	12
A16 (1/16")	50,75,100
A20 (5/64")	150
A24 (3/32")	200
A28 (7/64")	250
A32 (1/8")	300

P-Type (LPG) Nozzle for Cutogen 5

NOZZLE SIZE	PLATE THICKNESS (mm)
P8 (1/32")	6
P12 (3/64")	12
P16 (1/16")	25,50,75
P20 (5/64")	100
P24 (3/32")	150
P28 (7/64")	200
P32 (1/8")	250

Operating Data for Mild Steel cutting with ESAB Cutting Blowpipe (Injector & Nozzle Mix type) comply with ISI & ISO Standards

Material Thickness		Nozzle size		Gas pressure Oxygen		Gas Pressure Fuel			
						Acetyline		Propane	
mm	inch			bar	psi	bar	psi	bar	psi
6.0	1/4”	1/32”	(3-6)	1.5	20	0.15	2.0	0.20	3.0
12.0	1/2"	3/64”	(5-12)	2.0	30	0.15	2.0	0.20	3.0
25.0	1”	1/16”	(10-75)	2.5	35	0.15	2.0	0.30	4.0
50.0	2”	1/16”	(10-75)	3.0	45	0.15	2.0	0.30	4.0
75.0	3”	1/16”	(10-75)	3.5	50	0.15	2.0	0.30	4.0
100.0	4”	5/64”	(70-100)	4.0	60	0.20	3.0	0.35	5.0
150.0	6”	3/32”	(90-150)	4.0	60	0.20	3.0	0.40	6.0
200.0	8”	7/64”	(140-200)	4.0	60	0.20	3.0	0.40	6.0
250.0	10”	1/8”	(190-250)	4.0	60	0.20	3.0	0.45	6.5
300.0	12”	1/8”	(250-300)	4.5	65	0.20	3.0	0.50	7.0

Welding Tips

TIPS

- Tips are manufactured from copper tubes which have swaged interior
  -Gas passages are mirror smooth with internal angles rounded, non-turbulent
  -More efficient gas flow.
- Wide range of Tips of different sizes
  -Optimum consumption of gas with use of correct size of tips.

Saffire 2 HP (swaged)

TIP SIZE (mm)	PLATE THICKNESS (mm)
1	0.9
2	1.2
3	2.0
6	3.0
7	3.2
10	4.0
13	5.0
20	8.0
30	8.5
35	10.0
45	13.0
55	16.0
70	20.0
90	25.0

TIPS

Light weight - LWHP (swaged)

TIP SIZE (mm)	PLATE THICKNESS (mm)
2	1.9
3	2.0
6	3.0
10	4.0
18	5.0
25	6.5
13	8.2

Model 'O' Tips

TIP SIZE (mm)	PLATE THICKNESS (mm)
1	2-3
2	4.5
3	6-8
4	10-20
5	18-30

Operating Data for Mild Steel welding with ESAB Welding Blowpipe (High pressure & Low pressure type) comply with ISI & ISO Standards

Material Thickness		Tips size	Gas pressure Oxygen		Gas Pressure Fuel Acetyline	
mm	inch		bar	psi	bar	psi
1.2	3/64”	2.0	1.5	20	0.14	2.0
2.0	5/64”	3.0	1.5	20	0.14	2.0
3.0	1/8”	6.0	2.5	35	0.21	3.0
5.0	3/16”	13.0	2.5	35	0.21	3.0
8.0	5/16”	20.0	3.0	45	0.28	4.0
10.0	3/8”	30.0	3.0	45	0.28	4.0
12.0	13/32”	35.0	3.5	50	0.42	6.0
14.0	9/16”	45.0	3.5	50	0.42	6.0
16.0	5/8”	55.0	4.0	60	0.56	8.0
20.0	13/16”	70.0	4.0	60	0.70	10.0
25.0	1”	90.0	4.5	65	0.70	10.0

Flashback Arrestors

ESAB FR - 18

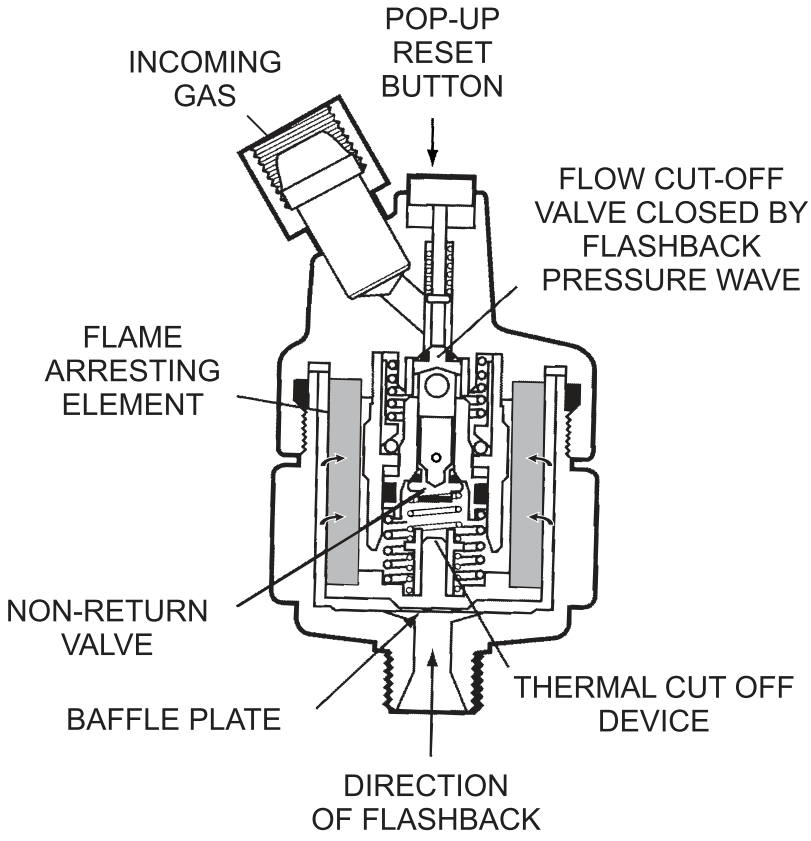
ESAB FR-18 are torch mounted Flashback Arrestors, which comes in a pair of both Oxygen & Acetylene, designed to arrest the flame and avoid the reverse flow of gases.

ESAB FRT

The ESAB cylindrical flashback arrestors, are of advanced design giving a higher flow rate. The FRT model is designed to be connected to the regulator or tapping point, model is equipped with a large cylindrical flame arresting element, an automatic reset non-return valve and a heat sensitive thermal cut-off.

ESAB PROTEX

- FLAME ARRESTOR - Flame arrestor shall quench flashbacks
- NON-RETURN VALVE - Flame arrestor with non-return valve shall quench flashbacks & shall not allow the reverse flow of gases.
- TEMPERATURE SENSITIVE CUT-OFF VALVE - Flame arrestor with temperature sensitive cut-off valve shall quench flashbacks & shall stop the gas flow before the upstream gas is ignited.
- PRESSURE SENSITIVE CUT-OFF VALVE - Flame arrestor with pressure sensitive cut-off valve shall quench flashbacks & the pressure sensitive cut-off function shall active at each flashback. The pressure-sensitive cut-off valve shall remain closed until it is manually reset.



In view of the fact that flashback can occur in any of the cylinders ESAB PROTEX comes in two versions

- PROTEX - RO (For Oxygen)
- PROTEX-RA (For Acetylene)

Small / Portable Cutting Machines

ESAB PUG, PUG - NM

Small / Portable Gas Cutting Machines

ESAB-straight line and circle cutting machines.

Special Features:

- **Easy to handle**
  The Machines are light weight and they have a wrap round handle for easy portability and protection.
- **Body**
  Made of pressed steel with wrap round handle and fibre glass heat deflector.
- **Versatile**
  Using extendable tracks, these machines can produce straight cuts on any length, square or bevel edge. With the same precision these machines can cut circles and also shape with gradual curves, when hand-guided.
- **Circle Cutting**
  Can be done with the use of circle cutting attachments, supplied as optional extra. This can be easily attached to the machines by two screws.
- **Cutter**
  PUG: Injector type, specially designed to prevent backfire.
  PUG NM: Nozzle mixing type, latest technology, much safer.
- **Cutter adjustment**
  Can be Swivelled to cut levels up to 45° with Rack and Pinion.
- **Fuel Gas**
  Acetylene or LPG can be used by selecting the appropriate nozzles. Two nozzles for use with Acetylene for cutting MS from 6 mm to 75 mm thickness supplied along with the machine. Cutter types and sizes are available as optional extras.
- **Motor**
  Machine are fitted with 200 volts Fractional Horse Power geared reversible motors. Power is fed through a Forward-Reverse toggle Switch.
- **Track**
  1.8 meter long Aluminium Track (for PUG & PUG NM) or Steel Track can be supplied as optional extra. The PUG/PUG NM Machines may be set to follow the edge of any straight piece of metal, 8 x 20 mm.

Specifications:

MODEL NAME	ESAB PUG	ESAB PUG-NM
Cutting Capacity:		
Square Cuts	Upto 75mm thick MS	Upto 100mm thick MS
Bevel cuts (Upto 45)	Upto 50mm thick MS	Upto 75mm thick MS
Circles	75-1140mm diameter	75-1140mm diameter
(Using standard circle attachments, which can be supplied as an optional extra.)		
Cutting Speed	190-800mm/min	190/800mm/min
Cutter	IMC-3 Injector type	NM-type
Speed Control	Rotary resistance	Rotary resistance
Gas Hose Connections (for 5 mm Hose)	1/4” BSP RH & LH	1/4” BSP RH & LH

Optional: i) Circle cutting attachments ii) Extra for torches iii) Aluminium tracks

Gas Saver for Welding Blowpipes

Where welding operations are intermittent and the operator needs to frequently adjust the work place, considerable Gas and as well as Time (in re-setting the torch) is wasted.

Considerable saving in both gas and re-set up time can be achieved by fitting a Gas Saver upstream of the blowpipe. The torch can be hung on an arm which activates two valves, which cuts-off the gas supplies. When the operator is ready to re-commence the welding, he removes the torch from an arm which releases the gas supply. He is then able to re-light the flame from a pilot flame on the unit without operating the blowpipe control valves.

Gas Saver is a very effective accessory that will quickly pay in Gas and labour savings.

Design Features

- Bunsen type pilot flame evenly at all pressures without soot.
- Pilot flame can be adjusted or turned off by separate valve.
- The Acetylene valve is always closed first to eliminate soot in the air or the blowpipe.
- Reliable valves.
- No leaks glands

Welding & Cutting Hose

Technical Details

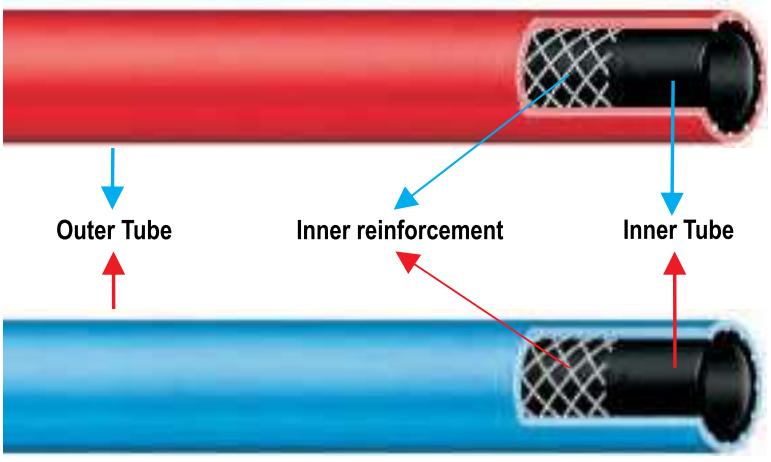
- **Core :** Black Synthetic Elastomer
- **Reinforcement :** High Tensile Polyester Yarn
- **Cover :** Hiper Flame Retardant Thermo-compound
- **Temperature Range :** -40°C to +55°C
- **Standard :** Manufactured according to IS:447

Features

- Highly Flexible
- Excellent Electrical Resistant
- Light in Weight
- High Abrasion Resistant
- Standard 50 mtr. length supplied in a box

Application

- Specially designed for Oxy-acetylene welding and cutting equipment



Specifications

Description	Dash Size	DN	Hose I.D. (Nom.)		Hose O.D. (Nom.)		Working Pressure		Min. Burst Pressure		Min. Bend Radius	
			(in.)	(mm)	(in.)	(mm)	(psi)	(bar)	(psi)	(bar)	(mm)	(in.)
Dura Hose	-3	5	3/16	5.0	0.43	11	220	15	800	55	18	0.71
Dura Hose	-5	8	5/16	8.0	0.63	16.0	220	15	800	55	25	1.00
Dura Hose	-6	10	3/8	10.0	0.71	18.0	220	15	800	55	38	1.52