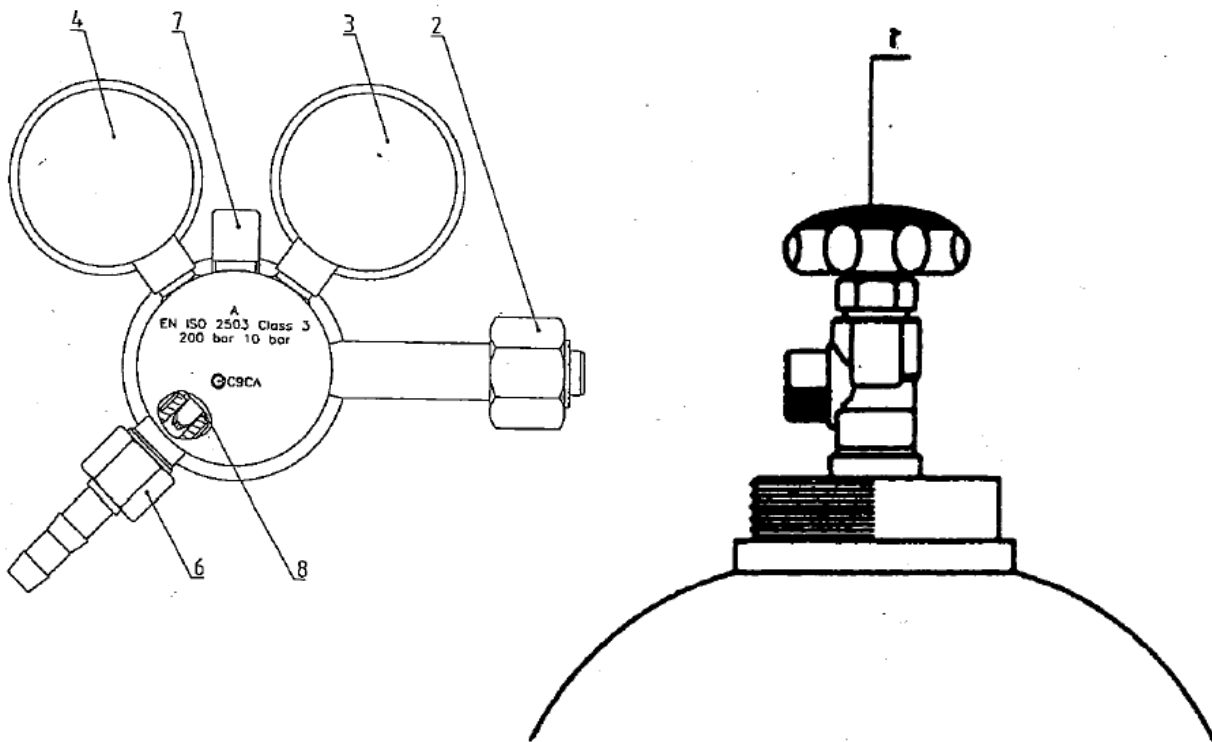


# Instruction manual



**Cylinder Regulators series 510  
Acetylene, Oxygen, Nitrogen,  
Argon, Carbon dioxide**



## Designations corresponding to EN ISO 2503

1. Cylinder valve
2. Inlet stem with screw or nut
3. High pressure gauge
4. Low pressure gauge, or flow-meter where applicable
5. Pressure adjusting screw
6. Union nut and hose tail
7. Safety relief valve
8. Regulating orifice, for regulators with flow meter gauge only

## Product Data

<b>Regulator no</b>		171-510000	171-510001	631-510002	631-510003	698-510004	197-510010	611-510011
<b>Type</b>		510	510	510	510	510	510	510
<b>For use with</b>		Cylinder	Cylinder	Cylinder	Cylinder	Cylinder (C9)	Cylinder	Cylinder
<b>Gas</b>		Ox	Ac	N2	N2	CO2	Ar/CO2	N2
<b>Color code</b>		Blue	Red	Black	Black	Black	Black	Black
<b>Adjusting function</b>		Pressure	Pressure	Pressure	Pressure	Pressure	Flow	Flow
<b>Contents gauge with gaskets (spare)</b>		171-550178	171-550186	171-550178	171-550178	171-550178	171-550178	171-550178
<b>Working gauge with gaskets (spare)</b>		171-550194	171-550202	171-550194		171-550194	171-550210	
<b>Connections</b>	<b>Inlet</b>	W21.8x 1/14" int.	3/4"Ext. BSP	W24.32x 1/14"int.	W24.32x 1/14"int.	CGA320	W24.32x 1/14"int.	W24.32x 1/14"int.
	<b>Outlet</b>	R 3/8" RH	R 3/8" LH	R 3/8" RH	R 3/8" RH	R 3/8" RH	R 3/8" RH	R 3/8" RH
<b>Gauge Scales</b>	<b>Inlet</b>	<b>Bar</b>	400	40	400	400	400	400
		<b>Lbf/in<sup>2</sup></b>	5800	580	5800	5800	5800	5800
	<b>Outlet</b>	<b>Bar</b>	16	2,5	16	2,5	16	35l/min
		<b>Lbf/in<sup>2</sup></b>	230	36	230	36	230	20l/min
<b>Maximum pressures</b>	<b>Inlet</b>	<b>Bar</b>	200	20	200	200	200	200
		<b>Lbf/in<sup>2</sup></b>	2900	290	2900	2900	2900	2900
	<b>Outlet</b>	<b>Bar</b>	10	1,5	10	1	10	4,5
		<b>Lbf/in<sup>2</sup></b>	145	22	145	14,5	145	64
<b>Safety valve opening pressure</b>	<b>Bar</b>	16	3	16	3	16	7,8	
	<b>Lbf/in<sup>2</sup></b>	290	43	290	43	28	115	
<b>Max outlet capacity</b>	<b>l/min</b>	667	83	667	667	667	32	

## Standards

<b>EN ISO 2503:1988</b>	Gas welding equipment. Pressure regulators for gas cylinders used in welding, cutting and allied processes up to 300 bar
<b>EN 1398:2003</b>	Gas welding equipment. Integrated flow-meter regulators used on cylinders for welding, cutting and allied processes. Classification, specification and test

## Operating instructions for Cylinder Pressure Regulators corresponding to EN ISO 2503.

These instructions are produced in accordance with current regulations to ensure the safe operation of cylinder pressure regulators. Specific attention to these instructions will help to avoid risks and loss of production as well as enhance the reliability and durability of these cylinder pressure regulators.

### **THESE INSTRUCTION MUST BE KEPT PERMANENTLY AT HAND IN THE WORKSHOP**



For safety instructions, also see paragraph 2; If in any doubt please consult the manufacturer.

#### **1. Operation**

- 1.1. Cylinder pressure regulators are designed to reduce the respective cylinder pressure and to ensure a constant outlet working pressure. They are used with compressed gases, pressurized dissolved gases in cylinders and liquefied gases having a filling pressure of up to maximum of 300 bar.
- 1.2. Cylinder pressure regulators must not be used for gases in a liquid state. Cylinder pressure regulators must not be operated under temperatures of -30°C or above +60°C.  
Cylinder pressure regulators must not be used for corrosive gases

#### **2. Safety instructions**



- 2.1. All indications showing this exclamation mark are important safety instructions.

- 2.2. The cylinder pressure regulators comply with current relevant technical regulations and standards.



- 2.3. Under no circumstances must the cylinder pressure regulator be tampered with or modified.

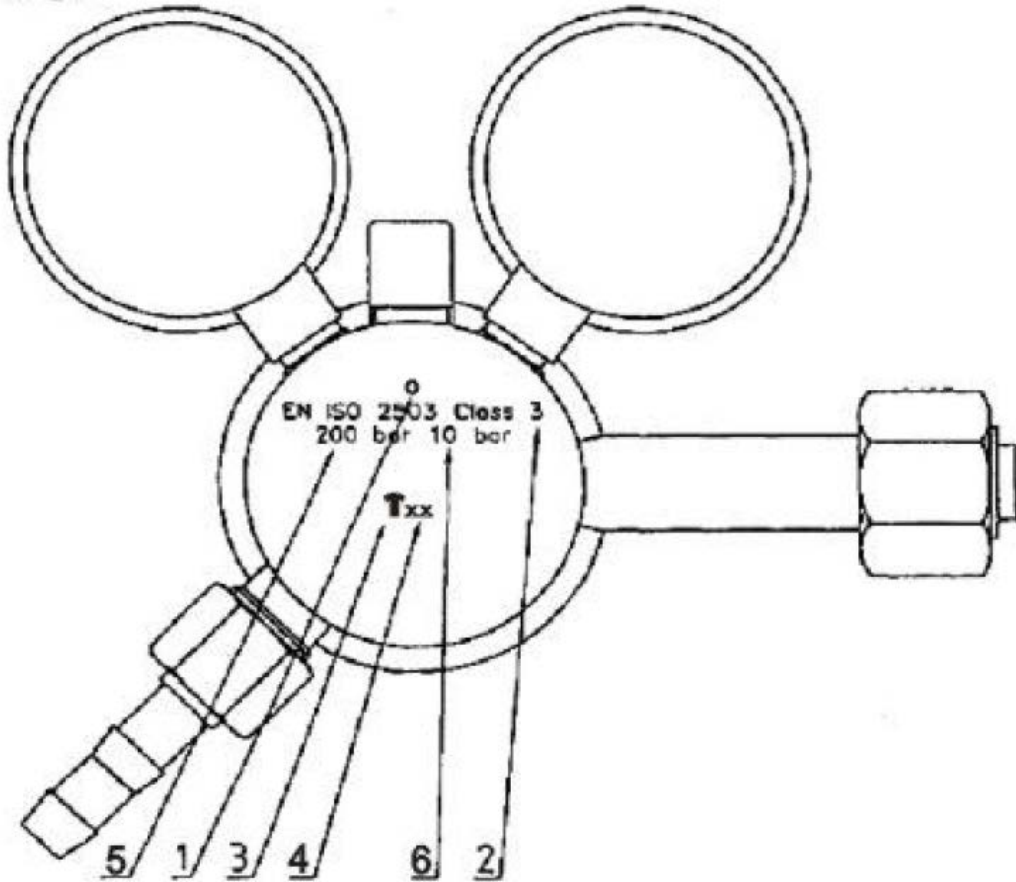
- 2.4. Avoid the use of adaptors between the cylinder valve and the cylinder pressure regulator.

- 2.5. Incorrect use will endanger the operator and other personnel, damage to the cylinder pressure regulator and Installation may also be the result.



- 2.6. Regulations to be adhered to:  
National and international regulations on safe handling of welding gases.  
EN ISO 2503 Cylinder Pressure Regulator.

## 3. Markings



### A. (Nameplate — Front view)

1. Cylinder pressure regulator type and Unitor name.

### B. (Rear view)

1. Gas type. (See below for gas code abbreviations)
2. Cylinder pressure regulator class corresponding to EN ISO 2503
3. Unitor identification mark
4. Lot identification
5. Maximum inlet pressure for oxygen and other compressed gases
6. Maximum outlet pressure

Type of Gas	Code letter	Type of Gas	Code letter
Acetylene	A	LPG	P
Oxygen	0		
Compressed Air	D	CO <sub>2</sub> , Nitrogen, Inert Gas	N

## 4. Attaching the Cylinder Pressure Regulator to the cylinder valve



- 4.1. Keep hands, tools and regulator clean; oil and grease can cause an explosion on contact with oxygen.
- 4.2. The operator must be fully familiar with these operating instructions prior to the use of this equipment, all instructions should be adhered to when in use.
- 4.3. Check that the cylinder pressure regulator is suitable for the gas to be used. (See markings paragraph 3.)



- 4.4. Check that the cylinder valve connection is clean and undamaged: if not, do not connect the cylinder Pressure Regulator.
- 4.5. Check that both gauge pointers are at zero.
- 4.6. Check that the pressure adjusting knob (5) is fully screwed out (anti-clockwise).
- 4.7. Connect the cylinder pressure regulator to the cylinder valve (1) by means of the Inlet nut on the inlet stem (2).
- 4.8. Connect the hose to the cylinder pressure regulator outlet (6). Use hoses of good quality, free from defects.



## 5. Operating the Cylinder Pressure Regulator for setting the pressure.

- 5.1. Check that the pressure adjusting knob (5) is fully screwed out (anti-clockwise).
- 5.2. Check that downstream (shank) valve is closed.
- 5.3. Slowly open the cylinder valve (1) and ensure that the cylinder pressure is showing on the high pressure (contents) gauge (3)
- 5.4. Open the downstream (shank) valve.
- 5.5. Rotate the pressure adjusting knob (5) clockwise to set the required working pressure on the outlet gauge (4).

## 6. Closing down the Cylinder Pressure Regulator.

- 6.1. Close cylinder valve (1).
- 6.2. Unwind (anti-clockwise) the pressure adjusting knob (5).
- 6.3. Vent the pressure in the system by opening the downstream (shank) valves.
- 6.4. Once the system has been depressurized, close the downstream (shank) valves.

## 7. Operating and Maintenance instructions

- 7.1. Protect the cylinder pressure regulator from damage. Check visually for any signs of damage before use.



- 7.2. The preset adjustment of the safety valve (7) must not be changed.

- 7.3. Ensure that all washers and mating surfaces are in a satisfactory condition. Store spare washers with the regulator



- 7.4. If it is suspected that the cylinder pressure regulator is not functioning correctly, or is found to have any form of a leak, close the cylinder valve and remove the regulator from service immediately.



**Do not, under any circumstances, undertake or allow any repairs by unauthorized personnel.**



## 8. Repairs

- 8.1. Repair of cylinder pressure regulators is limited to replacement of gauges and gaskets and must only be carried out by competent personnel.
- 8.2. Only genuine spare parts may be used.
- 8.3. Any other repairs or modifications will lead to loss of liability.

### Attention

**Please use these Unitor products exclusively for the purpose indicated by Unitor and only if the operator fully understands current practices and procedures. If any further information or assistance is required please contact your local Unitor specialist.**



**Instruction manual  
& spare part list**

Fraser/surrey Gaspe Gros Caouna Halifax Hamilton Harbour Grace H Westminster Bc Pictou/halifax Pointe Aux Pic.quebec Port Alfred Port C Port Of Quebec Port Weller Powell River Prince Rupert Roberts Bank Sa halifax Squamish St. Catherines St.john's, Nfld St.romuald Stephens alleyfield Vancouver Victoria Weymouth Windsor Yarmouth Ancud / Lanco Amrotagua Andra Caldera Concepcion Bay Coquimbo Coronel Corral Huasco Las Ventanas Lirquen Lota Penco Puerto Montt Puerto Williams Punta Arenas Quintero San Antonio San Vicente Talcahuano Tocopilla Valparaiso Antilla Bahia Honda Banos Baracoa Cabanas Caibarien Cardenas Casilda Ceiba Hueca Cienfuegos Guantanamo Guayabal Havana Isabel De Sagua Manati Mariel Media Luna Moa Nicaro Niquero Nuevitas Pilon Puerto Padre Santiago De Cuba Sigloo **Genoa** Finn Tanamo Tunas De Zaza Vita Balao Esmeraldas Guayaquil La Libertad Manta Puerto Bolivar Freeport/bahamas Guam Mahdia Acapulco Campeche Ciudad Del Carmen Coatzacoaloos Cozumel Dos Bocas Ensenada Guaymas La Paz Lazaro Cardenas Mazatlan Progreso Puerto Vallarta Salina Cruz Tampico Topolobampo Tuxpan Vera Cruz Bonaire Bullen Bay Curacao Aguadulce Almirante Armuelles Bahia Las Minas Balboa Cristobal Manzanillo Int.term. Vacamonte Callao Chimbote Ilo Matarani Paita Pisco Guayama Guayanilla Mayaguez Ponce San Juan Yabucoa St. Vincent Chaguaramas La Brea Point Fortin Point Lisas Pointe-a-pierre Port Of Spain Tembladora Aberdeen,wa Alameda Albany,n.y. Alexandria, Va Algiers Point Amelia Anacortes, Wa Anchorage,ak Annapolis,md Antioch Aransas Pass Tx Astoria, Or Baltimore Baton Rouge Bayonne Baytown Beaumont Bellingham, Ma Bellingham, Wa Benicia, Ca Boston, Ma Bridgeport Bridgeport, Conn Brooklyn, Ny Brownsville Tx Brunswick Brunswick, Ga ucksport,me Buras Camden Camden, Nj Cameron La Chalmette Charleston, Sc Cheasapeake Chester Chicago Claymont Convent Coos Bay, Or Corpus Chr.tx Crockett Darrow Davant Deer Park Delaware City Destrehan Donaldsonville Dutch Harbor, Ak Eastport, Me Eureka Everett, Wa Fairless Hills Femaqusta Ferndale,wa Freeport Tx Galveston Tx Garville Geismar Georgetown, Sc Gloucester, Nj Good Hope Gramercy Grand Isl aii Hoquiam, Wa Houma Jacksonville Kalama Kalama, Wa Kenai Key V **We service your needs in 2 200 ports...** a Loop Terminal Los Angeles Manchester, Wa Manhattan, Ny I ad City, Nc Morgan City Morrisville, Pa Myrtle Grove Naples Nederland Tx New Haven, Conn New Iberia New London New Orleans New York Newington, Nh Newport News, Va Newport, Or Newport, Ri Nikiski Norco Norfolk Oakland Olympia, Wa Orange, **Rotterdam** Tx Palm Beach Panama City, Fl Pasadena Pascagoula, Ms Paulsboro, Nj Pennsauken, Nj Pensacola, Fl Petaluma Philadelphia Piney Point, Md Pittsburg Plaquemine Point Comfort Tx Port Allen Port Angeles, Wa Port Arthur Tx Port Canaveral Port Everglades Port Hueneme Port Isabel Tx Port Manatee, Fl Port Neches Tx Port Royal, Sc Port St. Joe, Fl Port Townsend, Wa Portland, Me Portland, Or Portsmouth Portsmouth, Nh Providence, Ri Queens, Ny Redwood City Reserve Revere, Ma Richmond Richmond, Va Sacramento Salem Salem, Ma San Diego San Francisco Sandwich, Ma Savannah Searsport, Me Seattle Seward Sparrows Point St.petersburg, Fl St.rose Staten Island, Ny Stockton Tacoma, Wa Tampa Texas City The Bronx, Ny The Loop Valdez Vancouver, Wa Venice West Palm Beach Westville, Nj Wilmington, Ca Wilmington, De **Houston** Wilmington,nc Yonkers, Ny Yorktown, Va Fray Bentos Jose Ignacio Montevideo Nueva Palmira Amuay Bay Bajo Grande Cumarebo El Palito El Tablazo Guanta Guaranao Jose Bay La Guaira La Salina Maracaibo Pertigalete Puerto Cabello Puerto La Cruz Puerto Miranda Puerto Ordaz Punta Cardon Punta De Palmas Punto Fijo San Lorenzo, Vz St.croix Aeroskobing Assens Bagenkop Bogense Copenhagen Ebeltoft Enstedvaerket Havn Esbjerg Fakse Ladeplads Havn Fredericia Frederiksund Frederiksvaerk Fredrikshavn Faaborg Gedser Great Belt Grenaa Graasten Gulfhavn Haderslev Halsskov Hanstholm Helsingor Hirtshals Hobro Holbaek Horsens Kalundborg Kertminde Koge Kolding Korsor Lemvig Mariager Marstal **Oslo** Middlefart Naestved Naskov Nyborg Nykobing Falster Nykobing Mors Nykobing Skjaelland Odense Orehoved Falster Randers Ronne Rudkobing Sakskobing Skaelskor Skaerbaek Skagen Skive Sonderborg Stege Stigsnaesvaerkets Havn Svendborg Studstrupvaerkets Havn Thisted Thorshavn Vejle Vordingborg Aabenraa Aalborg Aarhus Kunda Loksa Muuga Paldiski Paljassaare Parnu Tallinn Dalsbruk Hamina/fr.havn Hanko/hangoe Helsinki Ingaa/inkoo Jakobstad Kalajoki Kantvik Kaskinen/kasko Kemi Kemio Kakkola/karleby Kotka Koverhar Kristinestad Lappvik Lovisa Mariehamn Merikarvia Nystad Naantali Oulu Pargas Pori Porvoo/borgaa Rauma Raahe/brahestad Skoeldvik Tammisaari Teijo Tolkis Torneaa Turku Valkom/valko Vaasa Akureyri Isafjördur Reykjavik Arklow Aughinish Bantry Cork Drogheda Dublin Dun Laoghaire Dundalk Foynes Galway Limerick Moneypoint Ringaskiddy Tarbert Waterford Liepaja Mersrags Riga Roja Salacgriva Skulte Ventspils Butinge Klaipeda Agnefest Alta **Piraeus** Arendal Asker Askoy Aukra Aure Averoe Bergen Berlevaag Bodo Boemlo Brattvag Brevika Brevik Baatsfjord Dirdal Drammen Dusavik Egersund Eide Elnesvaagen Eydehavn Fagerstrand Farsund Finnsnes Flekkefjord Floroe Flaam Fosnavaag Fraena Fredrikstad Frei Gamvik **Genoa** Geiranger Gjemnes Glomfjord Gravdal Grimstad Gudvangen Halden Hals Hammerfest Harstad Haugesund Hellesylt Heroeya Hjelmeland Hoeyanger Holla Holmestrand Hommelvik Honningsvaag Horten Husnes Jelsa Jessheim Joerpeland Joessinghamn Kambo Karmoey Kirkenes **Singapore** Krageroe Kristiansand Kristiansund Kvinesdal Kyrksaeterora Kaarsto Larvik Leknes Lillesand Lyngdal Mandal Mehavn Mo I Rana Molde Mongstad Mosjoen Moss Muruvik Maaloey Namsos Narvik Nettet Odda Oelen Oersta Orkanger Porsgrunn Rafnes Randaberg Raubergvika Risoer Sandefjord Sandnes Sandnessjoen Sarpsborg Sauda Skien Skjervoe Slagen Slagentangen Smoela Soevik Sola Sorreisa Sortland Stavanger Stord Sture Sundalsoera **Dubai** Surnadal Svelgen Svolvaer Tananger Tau Thamshamn Tingvoll Tjeldbergodden Toensberg Tofte Tomrefjord Tromsoe Trondheim Tustna Tvedestrand Tyssedal Tysvaer Ulsteinvik Vadsoe Vardoe Verdal Vik Volda Aagotnes Aaheim Aalesund Aalvik Aardal i Ryfylke Aardalstangen Gdansk Gdynia Kolobrzeg Police Swinoujscie Szczecin Arkangelsk Baltiysk De Kastri Kaliningrad Kandalaksha Kavkaz Kronshtadt Lomonosov Murmansk Nakhodka Novorossiysk Primorsk Sakhalin Sakhalin Severomorsk St. Petersburg Svetlyi Taman Temruk Temryuk Tuapse Vladivostok Vostochniy, Port Vostochnyi Vyborg Bohus Brofjorden Falkenberg Gavle Gothenburg Hallstavik Halmstad Helsingborg Hoganas Holmsund Hudiksvall Iggesund Kalmar Karlshamn Karlskrona Karlstad Koeping Landskrona Lidkoping Lilla Edet Luleaa Lysekil Malmoe Mariestad Marstrand Munkedal Norrkoeping Norrsundet Norttalje Nynashamn **Rotterdam** Ornskoldsvik Oskarshamn Oxelosund Pitea **Shanghai** Simrishamn Skarhamn Skelleftehamn Skutskar Slite Soderhamn Sodertalje Solvesborg Stenungsund Stockholm Stromstad Sundsvall Surte Trelleborg Uddevalla Umeaa Varberg Vastervik Vasteraas Visby Wallhamn Ystad Aberdeen Appledore Arbroath Ardersier Ardrossan Avonmouth Ayr Ballycastle Banff Barking Barnstaple Barrow In Furness Barry Barton On Humber Belfast Berwick Upon Tweed Billingham Birkenhead Blyth Boston Bowling Braefoot Rav Bridgend Bridlington Bridport Bristol Briton Ferry Brixham Bromborough Buckie Burntisland Burton Upton Stather