CLESSE

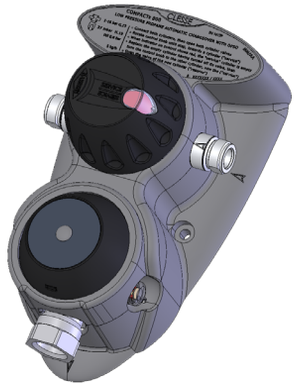
English - 91030162 - Ind.A

COMPACTRC800

Low Pressure Automatic Changeover "Telemetry Ready"

CompacTi **Compatible**

COMPACTRC800 OPSO with CSR (Consumer Safety Reset)

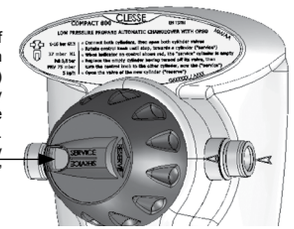


COMPACTRC800 Telemetry Ready automatic change-over range is designed to be connected with a wide range of communication modules (Bluetooth Low Energy, GSM, RF, IOT, ...). Multi Patented®

1- Application

In LPG (Propane, Butane or mixture) installations using 2 cylinders (Fig.1) or 2 groups of cylinders (Fig.2), where the automatic change-over provides continuous gas delivery by preferentially using one group of cylinders ("SERVICE"), until insufficient gas pressure remains to satisfy the consumer appliance demand. Then switching automatically to the other group of cylinders ("RESERVE") to ensuring continuous supply of gas exists without interruption or inconvenience to the consumer and the cylinders have been effectively emptied.

Note: *in the further text, in order to simplify the reading, we refer only to 2 cylinders installations. In case of an installation with 2 groups of cylinders, the word "cylinder" will have to be understood as "group of cylinders".*



The automatic change-over allows the off-take of gas firstly from the "SERVICE" cylinder (Fig.13), then off-takes gas from the "RESERVE" cylinder (Fig.13) only when the "SERVICE" one is not able to supply the requested flow rate. An indicator (**B**) built in the hand wheel (**C**), informs on the functioning state. When it shows red, it indicates that gas is currently being supplied totally or partially from the "RESERVE" cylinder.

This automatic change-over combines

- First and Second stage regulation functions allowing connection directly to the installation pipework supplying the appliances – *Note : always check the automatic change-over outlet pressure meets the requirements of all appliances supplied.*
- *Safety features built-in 2nd stage regulator a) Pressure Relief Valve marked "PRV" and b) Over Pressure Shut Off "OPSO" also described in this document as Consumer Safety Reset "CSR".*

Normal design operating temperatures: -20°C/+50°C.

Fig.1

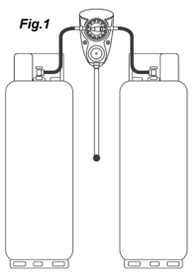
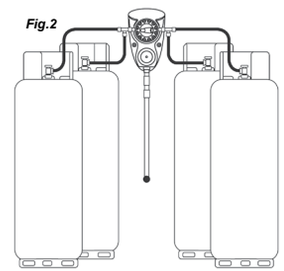


Fig.2



CLESSE UK (United Kingdom)
Ltd Drakes Broughton Business Park, Worcester Road, Drakes Broughton Pershore, Worcestershire WR10 2AG
Tel.: +44 (0)1905 842020 - Email: sales@clesse.co.uk
www.clesse.co.uk

CLESSE Industries (France)
Z.I. le Bois Joli CS 80118 63808 Cournon d'Auvergne
Tel.: +33 (0)4 63.66.30.01-Email: commercial@clesse.eu
www.clessefrance.fr

NOVA COMET S.r.l. (Italy)
Via Enrico Ma□ei, 28 - 25046 Cazzago San □ □ □(BS)
Tel.: +39 030 2159111 - Email: info@novacomet.it
www.novacomet.it

CLESSE Brasil (Brasil)
Av. Rudolf Da□erner, 601, Bloco C1
Alto da Boa Vista – Sorocaba (SP) CEP 18085-005
Tel.: +55 15 3218 1222 - Email: vendas@clesse.com.br
www.clesse.com.br

Warnings:

- This automatic change-over must be used only with vapour phase LPG and be positioned above the gas cylinders as indicated in Fig.1, Fig.2 and Fig.11. It must not be used with cylinders supplying liquid phase LPG.
- The number and type of cylinders, the type of gas used, the location of the installation, the pressures and the type of safety devices may be subject to local rules and safety restrictions applicable to the country or region of installation. Please refer to them.
- When, no cylinder is connected to one of the inlet connections, the automatic change-over still provides the regulating function. For safety reasons, the non-used inlet shall be sealed with an appropriate cap (available from Clesse).
- In UK, the Gas Safety (Installation & Use) Regulations 1998 require having Over Pressure Shut Off (OPSO) protection on any installation with four or more cylinders, (also suitable for 2 cylinder installations). This automatic change-over is fitted with an integral OPSO. It should be used with a Clesse upgrade connection kit from 2 to 4 cylinders supplied separately or as a 4 cylinder kit.

- COMPACTRC800 Telemetry Ready automatic change-over is not intended for gas installations in touring caravans and motor caravans.

2 – Features and Markings

The following characteristics are displayed on the product (**A**):

Inlet pressure range

- Inlet pressure range, marked as shown:
- Nominal outlet pressure, marked as shown:
- Change-over pressure, marked "**Pdi**"

Nominal outlet pressure

Note: *Pdi - It is the nominal outlet pressure of the internal change-over function when operating on the "SERVICE" cylinder.*

- Guaranteed flow rate in kilograms per hour kg/h (you can convert this to kilowatts by multiplying by 13.9 or 47,500 to give Btu)
- European code of inlet (G...) and outlet (H...) connection

Note: *only if they are described in EN16129 standard.*

- The presence (marked "PRV") and the opening pressure of a pressure relief valve on the built-in 2d stage regulator.
- The presence (marked "OPSO") and the closing pressure of this device

Both inlets connections are equipped with:

- Non-return valves which prevent any leakage during cylinder changing.
- Filters, which prevent the ingress of any debris.

Certain models can be equipped with accessories such as manual operating valve and/or pressure test point.

The dimensions are shown on Fig.3 & Fig.4.

Note that the dimensions between the connections are approximated as they depend on the type of connection.

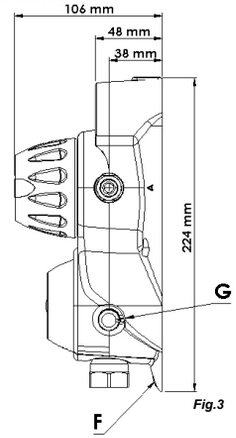


Fig.3

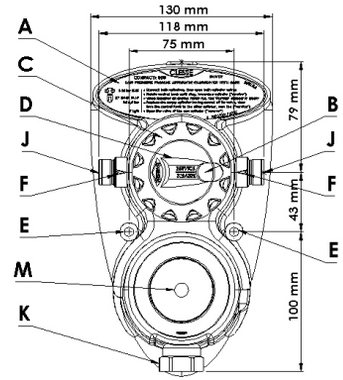


Fig.4

3 - Automatic change-over functioning

3.1 - Type of gas in the cylinders

LPG (liquefied petroleum gas) contained in the cylinders is composed mainly with butane and propane. It contains also, in minor quantity, other hydrocarbons.

Depending on the country and the gas distributors, 3 types of gas are generally marketed:

- Commercial butane, which contains approximately 80% of butane
- Commercial propane, which contains approximately 80% propane
- LPG mix, which contains an undefined mixture of butane and propane.

3.2 - Vaporisation in the cylinder

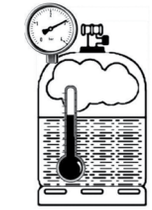


Fig.5

In a cylinder (Fig.5), LPG is liquid at the bottom and vapour under pressure at the top. When there is an off-take of gas (Fig.6), the gas volume is regenerated by boiling of the liquid part. This vaporisation cools down the liquid. The liquid is then heated up by the cylinder wall in contact with atmosphere.

Note that hydrocarbon components delivering high pressure (propane) vaporise faster than those delivering low pressure (butane).

3. 3 - Pressure in cylinder

Fig.6

The pressure in the cylinder depends only on the composition and temperature of LPG at any instant.The graph (Fig.7) shows the pressure in the cylinder for butane and propane.

During off-take, the temperature decreases, then the pressure decreases.

When only a small amount of liquid remains in the cylinder, the pressure is lower than when the cylinder was full. This is due to the preferential vaporisation of hydrocarbons delivering higher pressure.

3.4 - Typical flow rate capacity of cylinders

The maximum flow rate (Fig.7) depends on:

- The type of gas,
- The level in the cylinder,
- The ambient temperature,
- The using time,
- The dimension and material of the cylinder,
- The number of cylinder.

Table 1 shows typical flow rate capacity for various sized load steel cylinders, half full, depending on type of gas (butane or propane), temperature and using time.

Fig.7

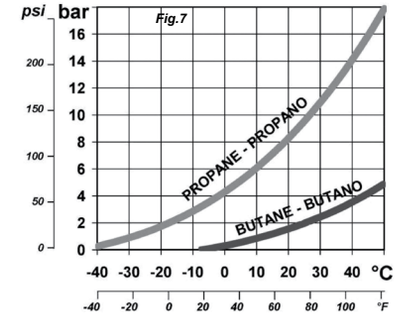


Table 1 Offtake rates quoted are approximate to supply normal intermittent and continuous loads

	Cylinder size kg	Offtake rate kg/h per cylinder	Offtake rate kW per cylinder
Butane	15 kg	0.70 kg/h	9.70
Propane	13 kg	1.05 kg/h	14.60
	19 kg	1.32 kg/h	18.35
	47 kg	2.32 kg/h	32.94

3.5 - Automatic change-over function (refer to Fig.3 and Fig.4)

The arrow (**D**) embossed in the hand wheel indicates the "SERVICE" cylinder. The other cylinder is the "RESERVE" one.

When the pressure in the "SERVICE" cylinder is sufficient, the entire flow rate is delivered by the "SERVICE" cylinder only.

When the pressure becomes insufficient, the flow rate is delivered:

- From both "SERVICE" and "RESERVE" cylinders (at the very end of the "SERVICE" cylinder contents),
- In totality from the "RESERVE" cylinder (when the "SERVICE" cylinder is empty).

In any condition, if the "SERVICE" and "RESERVE" cylinders are of identical type, the "SERVICE" cylinder will empty before the "RESERVE " one.

The indicator (**B**) shows red when the "SERVICE" cylinder does not deliver the entire flow, and indicates the cylinder requires replacement. The gas supply when switching from "SERVICE" to "RESERVE" bank is automatic. The hand wheel (**C**) should only be rotated by the person exchanging the cylinder.

4 - Safety devices

4.1 - Pressure relief valve

The pressure relief valve is integral to the low pressure built-in regulator. It allows relief of possible over-pressure that may result from small dirt or debris on the regulator seat or from thermal expansion of the gas

It is marked "PRV" on the product including the set value (**A**) on the data plate.

Warning: gas may be relieved from this valve. All necessary pre-cautions must be taken to prevent any risk of discharge into property or any restricted area, therefore this installation must be in accordance with local standards and fitted outdoors in well ventilated area.

4.2 - Over Pressure Shut Off

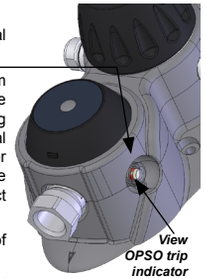


Fig.8

The OPSO is fitted to the low pressure built-in regulator with external indicator and push button to reset the safety device (**G**).

The device is the final safety protection to ensure downstream pipework and appliances are protected from abnormal increase of pressure, due to circumstances such as liquid LPG entering the regulator, dirt or debris on regulator seat, excessive thermal expansion or impact on the regulator or other abnormal operation or setting of the regulator. Should any of the abnormal conditions be present the device will activate and close off the gas supply to protect the down stream installation and appliances.

OPSO indication – To verify that the OPSO has activated in event of no gas downstream of the regulator –

View the clear plastic reset push button using “side on” angle of viewing indicated on Fig.8. If the OPSO has activated then a red mark will be visible through the clear plastic push button (**G**). If nothing is visible then it is likely that the device has not activated and that there may be other reasons why there is no gas downstream of the regulator – The gas cylinder valve closed, no gas left in cylinder, blocked cylinder connecting hose due to excess flow intervention, blocked inlet filter to change-over (**J**) or appliance fault (flame supervision device).

Consideration before resetting of OPSO - CSR Customer Safety Reset

If the indication inside the push button (**G**) shows red then the OPSO safety device will need to be reset. Bare in mind that this could have been due to an abnormal situation and therefore consideration should be given to have the gas system checked by a competent registered gas installer if the safety device continues to operate after a consumer reset. **DO NOT CONTINUE TO USE**, turn off at the cylinder valves and downstream valve and contact your competent registered gas installer.

To reset the OPSO

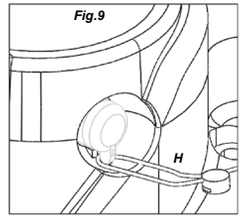


Fig.9

Remove the sealing wire (**H**) if fitted (Fig.9), normally performing reset after installation,

- If connected to cylinders turn off cylinder valves;
- If connected to down stream pipework ensure every gas appliances is turned off and turn on the downstream valve;
- Hold the regulator with both hands and push the OPSO reset button (**G**) firmly with thumb until the button engages and pushes open the internal latching mechanism, the resistance ease and continue to push the button until it stops, the distance of travel will be 7 mm until the OPSO is fully latched;
- Release the button (**G**) which will return to its normal position and if successful there should be no red indicator visible when viewed (Fig.8);
- Slowly reopen the cylinder valve one at a time – it is import that there is no instant and excessive surge of gas into the automatic change-over as this may trigger the OPSO mechanism to shut, or cause excess flows valves built into the hose tail connections to prevent high pressure gas from flowing into the automatic changover head;
- Once the safety systems are re-established proceed to turn on, relight pilot lights or commission gas appliances when first installed or serviced;
- Fit the wire seal (**H**) supplied on a new installion or equivilent if resetting after the installation. if available;
- If after resetting the OPSO continues to trip/ shut off **DO NOT CONTINUE TO USE**, turn off at the cylinder valves and downstream valve and contact your competant registered gas installer.

5 - Telemetry function

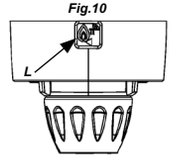


Fig.10

The automatic change-over COMPACTRC800 is designed to be fitted with an integrated telemetry backplate, from the Clesse CompacTi range. If this feature is not used at installation ensure the plastic Ti cover (**L**) is fixed in place before mounting the automatic change-over (Fig.10).

This back plate provides several types of information, depending on the model:

- The functioning state « SERVICE » or « RESERVE » as mentioned by the built-in indicator (B) integral to the hand wheel (multi patented®, FR priority 18/55668, EP3587896, US2019390791, AU2019204413, BR102019014013, CN201910899101.X and India 0191402493).

- The left or right hand wheel position (multi patented®, EP3001082, AU2015238769, BR102015002880, CN201510031773, US15369889, US9677684 and India 154MUM2015).

6 - Optional accessories

- Pressure test point should be fited after the ECV valve that enable the gas installer to measure regulated pressure downstream of the automatic change-over. Various types are available from your Clesse distributor.
- Additional cylinders 2 to 4 cylinder upgrade kit – the automatic change-over is normally supplied for installation onto two cylinders. Depending on the appliance load and frequency of cylinder exchange additional cylinders may be added and the Clesse upgrade kit will be required containing two tee pieces and two extra long hoses.

7 - Warnings before installation

FAILURE TO FOLLOW THESE INSTRUCTIONS CONTAINED IN THIS DOCUMENT WILL RESULT IN THE EXCLUSION OF THE LIABILITY OF THE MANUFACTURER FOR ANY DAMAGE OR LOSSES THAT COULD OCCUR.

Note that LPG gases may be dangerous and may cause serious injury, if not handled correctly.

Installation, inspection and maintenance must be performed by persons with the necessary competence, in relation to the type of gas and required usage.

The installation must be performed, inspected, used and maintained in conformity with the laws in force in the country of installation (for example BS 6891and New LGUK COP 32 (2021).

The number and the type of cylinders (“SERVICE” and “RESERVE”) must be chosen in such a way to supply the requested flow rate, in accordance with the requirements of the demands of installation and ambient temperatures.

Make sure that cylinder and installation valves are closed and that no sources of ignition are nearby. If present, thoroughly clean (blow through) upstream tubing and check all appliances for correct installation practice and refer to manufacturers data plate and instructions for the correct delivery of gas pressure and consumption.

Check the condition and depending on countries the expiry, replacement or production date of the flexible cylinder hoses. Replace them, if necessary.

If they are used in the installation (connector with a nut and washer), check the presence of the gasket and its integrity. Replace it if necessary.

8 - Automatic change-over installation

The automatic change-over should preferably be installed outdoors (see local legislation) and be protected from flooding, build up of snow and from all other agents (i.e. dust, mortar).

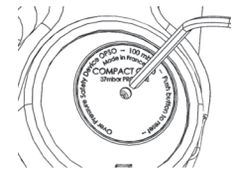
Its position shall be higher than the cylinder valves and the outlet connection valve must be orientated vertically downward. All upstream tubes and pigtails shall have a steady fall back to the cylinders and their length shall not be excessively long (Fig.1, Fig.2 and Fig.11).

The automatic change-over shall be fitted on a wall, or suitable vertical surface, using 2 screw holes (**E**).

Make sure that the types of connection on the hoses or tubes to be connected to inlets (**J**) and outlet (**K**) are compatible with those of the automatic change-over. Attach these connections following the gas passage direction, indicated by the arrow (**F**) and test for gas leakage as per local regulations.

Fig.11

9 - Pressure Adjustment



Low pressure adjustment is available for the qualified gas installer, access can be obtained to the adjustment screw on the regulator under push-on cover (**M**).

Use the flat end of a 4mm Allen type key (Fig.12) and locate the hexangonal socket inside the regulator cover. Adjust clockwise to increase and anti-clockwise to decrease pressure. Do not force the adjuster once reaching the stop in any direction.

Adjustment of regulator can only be performed by competent persons and where subject to local rules and safety restrictions, please refer to them.

10 - Start of operation

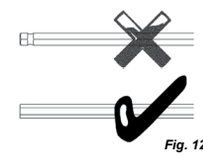


Fig. 12

Turn the hand wheel (Fig.14) of the change-over head (**A**) fully toward “SERVICE” cylinder - a click stop should normally be felt.

Open slowly all cylinders valves (“SERVICE” and “RESERVE”) and downstream valves (if any). The indicator should not show red colour anymore.

Check joints with a suitable leak detection fluid and at the hose connections every time the cylinders are changed and the condition of the hose incase there is any damage.

11 - Cylinder replacement

Fig.14

The “SERVICE” cylinder is empty when the indicator is red in a stable no-flow or sustained low-flow condition.

It is recommended to re-check this condition after a stabilisation time of a few hours.

To replace an empty cylinder (Fig.13):

- Close the empty “SERVICE” cylinder valve,
- Rotate the hand wheel (**C**) half turn to the previous “RESERVE” cylinder, a click stop can normally be felt (respect the manual hand wheel direction of rotation as indicated in Fig.14). Now this becomes “SERVICE” cylinder and the red colour indicator disappears,
- Replace the empty cylinder with a full one, and tighten the connections,
- Open its valve. This cylinder is now the new “RESERVE” cylinder.

Always re-check joints with a suitable Leak Detection Fluid.

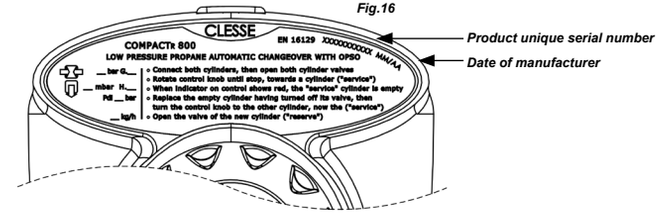
Fig.13

12 - Maintenance

The installation shall be inspected regularly, following the rules in force and requirements of local standards. In normal use conditions the automatic change-over will not require maintenance. We recommend replacing it within 10 years of use.

13 - Locating the unique product Serial No. and date of manufacture

Fig.16



The product is marked with a unique Serial Number (Fig.16). Please record this below for your service records together date of first commissioning

DATE OF MANUFACTURE	**MM/YY:** /
UNIQUE 11 DIGIT SERIAL No.	.....
DATE OF FIRST COMMISSIONING	**DD/MM/YY:** / /

CLESSE CompacTi *sold separately*

The new experience for Gas Suppliers, Single Users, Holiday and Park operators.

Solutions to suit any size of park or individual owners.

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