

PAGE: 1 of 12
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DOCUMENT TITLE

**3.5KG CARBON DIOXIDE
FIRE EXTINGUISHERS**

MODELS: R3.5CO2

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RUIHUA

Technical Data Sheet No. JS-SM-38

PRODUCT: 3.5kg CARBON DIOXIDE FIRE EXTINGUISHERS

PAGE: 2 of 12

MODEL No's: (R3.5CO2)

ISSUE: A 00

DATE: 07/22/15

CONTENTS

1. PURPOSE
2. GENERAL DESCRIPTION AND OPERATION
3. SPECIFICATIONS
4. MATERIALS AND CONSTRUCTION
5. EXTINGUISHANT
6. FINISH
7. QUALITY ASSURANCE
8. APPROVALS AND RATINGS
9. SERVICING
10. DRAWING

1. PURPOSE

This Carbon Dioxide type fire extinguisher is designed for easy operation by one person on Class 'E' Fires. It is also suitable for use on small Class 'B' fires and small surface Class 'A' fires.

Class 'A' fires - Fires involving carbonaceous solids such as wood, paper, textiles, rubber and many plastics. Note Carbon Dioxide is suitable for small Class 'A' surface fires only.

Class 'B' fires - Fires involving flammable and combustible liquids, petrol, oil and grease etc.

Class 'E' fires - Fires involving energised electrical equipment.

Note: Carbon Dioxide is not suitable for use on Class 'D' fires - fires involving combustible metals (magnesium, sodium, potassium etc).

2. GENERAL DESCRIPTION AND OPERATION

The extinguisher is of the manually operated type with a forged brass valve incorporating squeeze grip operation, fitted to a high pressure aluminium cylinder containing dry compressed carbon dioxide.

When the operating lever is depressed, the liquid carbon dioxide flows through the siphon tube and valve to the nozzle in the horn assembly. As the liquid carbon dioxide passes through the orifice in the nozzle, it is expanded into gas and 'snow' and directed onto the fire by the horn.

The squeeze grip operation permits on/off control of the discharge, thus enabling the operator to conserve extinguishant and move from point to point when fighting a fire.

A pull out type safety pin is used in the valve assembly to prevent accidental discharge of the extinguisher.

OPERATION IS SIMPLE

The operating procedure for the extinguisher is both written and shown pictorially on the label, the procedure being:

1. Hold upright. Pull out the pin
2. Stand back 2 metres. Aim nozzle at base of fire
3. Squeeze handles. Sweep under the flames

These extinguishers must be used in an upright position to ensure full discharge of the contents.

NOTE: The extinguisher must be recharged immediately after any use.

3. SPECIFICATIONS

Model Number	R3.5CO2
CO2 capacity	3.5kg
Fire rating to AS/NZS1850	5B:E
Cylinder outside diameter	140mm
Cylinder test pressure	25MPa
Mass Extinguisher charged	8.9kg approx
Height overall	577mm
Width	390mm
Discharge time	15 sec's
Discharge range	1 to 2m
Packaging	Each extinguisher is individually packed, charged, complete with wall hook in a rigid cardboard carton.

4. MATERIALS AND CONSTRUCTION

a) Cylinder

The cylinder is of seamless construction (ie no welds) manufactured from aluminium alloy by an impact extruding process and incorporates a M25 x 2 parallel thread in the neck for mounting of the valve head assembly.

The cylinders are hydrostatically pressure tested for a minimum period of 30 seconds to their rated test pressure.

Cylinders are then dried. Cylinders are polyester powder coated signal red R13 to AS2700

b) Valve Assembly

The valve assembly is of the squeeze-grip type, and is fitted with a pull-out type safety pin to prevent accidental operation of the extinguisher. It incorporates a valve spindle assembly which is used as the seal for the on/off control. The assembly screws into the cylinder neck thread and the connection is sealed by a nitrile 'O' ring.

The valve assembly has a nickel plated machined brass forging, and is fitted with a natural finish grade 304 stainless steel pressed handle and lever.

The handle and lever are secured in place using a stainless steel rivet.

PRODUCT: 3.5kg CARBON DIOXIDE FIRE EXTINGUISHERS

PAGE: 5 of 12

MODEL No's: (R3.5CO2)

ISSUE: A 00

DATE: 07/22/15

c) Siphon Tube

The siphon tube is manufactured from high density polyethylene tube and is threaded on its top end to allow it to be screw mounted into the bottom end of the valve head assembly.

d) Burst disc Assembly

The burst disc assembly is located on the side of the valve assembly. It is designed to rupture should the pressure in the cylinder become excessive in the event of the extinguisher being exposed to high temperatures.

e) Safety Pin

The valve assembly is fitted with a stainless steel safety pin to prevent accidental discharge of the extinguisher. This pull-out type pin must be withdrawn before the extinguisher can be operated. It is held in place with an antitamper seal.

f) Labels

The label is of durable quality, manufactured from self adhesive vinyl and is in the form of a single band that wraps around the middle of the extinguisher body.

The label indicates the quantity of carbon dioxide, the class of fire it is recommended for, the fire test rating obtained as well as featuring simple operating instructions both written and pictorial, along with refilling and maintenance instructions.

g) Horn Assembly

The 3.5kg model has a polyethylene horn and cross drilled brass nozzle arrangement attached to the end of a high pressure flexible hose, the other end of which is attached to the valve outlet. The cross drilled nozzle reduces the amount of recoil felt by the operator when the extinguisher is discharged.

h) Wall Bracket Assembly

This consists of a red plated pressed steel wall bracket .

The bracket is designed for easy removal of the extinguisher but is not suitable for vehicle use.

PRODUCT: 3.5kg CARBON DIOXIDE FIRE EXTINGUISHERS

PAGE: 6 of 12

MODEL No's: (R3.5CO2)

ISSUE: A 00

DATE: 07/22/15

5. EXTINGUISHANT

Carbon Dioxide is an effective extinguishant for flammable liquids and fires involving live electrical equipment. It leaves no mess after use and as such is particularly suitable for use around electronic equipment. The carbon dioxide (99% pure) are held in the extinguisher cylinder in liquid form under pressure.

6. FINISH

Extinguisher body: Finished in red polyester powder coat to approximate colour R13 to AS2700.

Valve body: Brass - Nickel plated.

Handle and Lever: Stainless steel - Natural finish.

7. QUALITY ASSURANCE

The company is a registered quality assured supplier operating to the ISO9001 quality standard. All components are manufactured to conform to drawing tolerances and specifications that meet the specific design requirements and are subject to strict quality control at every stage of manufacture.

8. APPROVALS AND RATINGS

Approved to Australian/New Zealand Standard AS/NZS 1841.6. License No. 102557.

The extinguishers are endorsed for the following ratings to AS/NZS 1850 by Global-Mark

3.5kg R3.5CO2 5B:E

9. SERVICING

9.1 Inspection and Maintenance

Periodic inspection and testing should be carried out as per Australian Standard AS 1851 "Maintenance of Fire Protection Equipment, Section 14 - Portable Fire Extinguishers".

9.2 Safety Precautions

Note 1: Before attempting to discharge the extinguisher, ensure that the hose (where applicable) and the horn and nozzle are fitted to the outlet port of the valve. Check that there is no foreign matter lodged inside the horn as this could cause a high velocity jet of CO₂ to occur. Do not aim the discharge at personnel.

Note 2: If for any reason it is found the extinguisher will not discharge its contents in a normal manner, seek professional advise from Custombilt Steel Products on what course of action is to be taken.

Note 3: When servicing, safety glasses should be worn, and if any chilled parts are to be handled use gloves as frost bite protection.

Note 4: Before attempting any repairs, ensure that all the CO₂ gas has been expelled from the extinguisher by operating the valve. If the extinguisher has just been discharged, clamp open the operating lever to exhaust residual gas which will flow as the small quantity of dry ice inside the extinguisher thaws out.

9.3 Recharging Instructions

Note: Recharging of these extinguishers requires no special tools. However, the repair of detail parts is impractical and all defective parts should be replaced with new parts.

Recharging of the extinguishers after use should be carried out as per the 'after-use' routine of Australian Standard AS1851 Section 14.

Additionally, the following steps should be observed:

Note: Check the date of the last pressure test, which is permanently recorded on the top of the cylinder against the mark of an approved Gas Cylinder Test Station. If pressure testing is required, as per AS1851, it must be carried out before any recharging of the extinguisher is commenced.

PRODUCT: 3.5kg CARBON DIOXIDE FIRE EXTINGUISHERS

PAGE: 8 of 12

MODEL No's: (R3.5CO2)

ISSUE: A 00

DATE: 07/22/15

- i) Observe '**SAFETY PRECAUTIONS**' - refer to 9.2
- ii) Remove hose, horn and nozzle assembly from extinguisher valve as appropriate.
- iii) Fit charging adaptor to valve outlet.
- iv) Clamp open extinguisher operating lever.
- v) Connect CO₂ charging line to adaptor and open CO₂ supply valve.
- vi) Charge extinguisher to full mass stamped on valve hanging lug.
Note: This mass does not include any hose, horn and nozzle assemblies.
- vii) Release extinguisher operating lever, shut off CO₂ supply valve, and replace safety pin in extinguisher valve assembly.
- viii) Vent CO₂ charging line, disconnect from charging adaptor and remove adaptor from valve.
- ix) Test extinguisher for leaks as detailed under '**TEST**' .

9.4 **Test**

After filling, the extinguisher must be tested for leaks. Proceed as follows:

- i) Place extinguisher on rack with valve outlet facing upwards.
- ii) Fill valve outlet with a solution of water and detergent. No bubbles should form in this solution if valve is sealing correctly.
- iii) Apply solution to the joint where the valve assembly screws into the cylinder, and around the burst disc assembly. No bubbles should appear in these joints.
- iv) If no leaks are detected, drain all solution from valve and dry thoroughly.
- v) Pass sealing tie through safety pin and around handle and lever, thread, and pull tight.
- vi) After the leak test has been successfully completed, refit horn, or horn and hose assembly to the valve outlet port as appropriate.

Note: If bubbles are detected, rectify by replacing valve spindle components or 'O' rings as per '**REPAIRS**' - see 9.5

9.5 Repairs

a) Valve Removal

- i) Observe 'SAFETY PRECAUTIONS' - refer to 9.2
- ii) Grip body of the extinguisher securely in a chain vice, use leather strap to protect the body. The valve should be able to be unscrewed by hand. If valve is tight, undo using a 30mm open end spanner applied across the flats on the base of the valve. Once unscrewed, withdraw the valve assembly complete with siphon tube from the extinguisher body.

Note: If there is audible release of pressure from the valve/neck ring connection as the valve is unscrewed, there is still pressure in the cylinder, and the valve should not be further removed until this audible pressure release has ceased.

b) Valve Installation

- i) Invert cylinder to remove any loose matter which may have entered.
- ii) Clean out 'O' ring groove and top face of cylinder.
- iii) Fit new 'O' ring to valve, and lubricate with petroleum jelly. This 'O' ring must be renewed every time the valve is removed.
- iv) **Important note:**
Before re-installing the valve/siphon tube assembly, check that the siphon tube is of correct length to give a 10mm to 15mm gap from its bottom end to the bottom inside of the extinguisher cylinder (refer to diagram on page 16). If the gap is less than 10mm reduce the siphon tube length at its bottom end to give this required clearance. **NOTE:** May be cut with a Stanley knife
- v) With the extinguisher cylinder in the upright position, screw the valve/siphon tube assembly into the cylinder and tighten firmly by hand. Ensure that the shoulder of the valve has made contact with the top face of the cylinder. Use a 30mm open ended spanner to nip up if required.

NOTE: Do not use excessive force to tighten the valve. The seal between the valve and cylinder is made by the 'O' ring, over tightening will not increase the efficiency of the seal.

c) Valve Overhaul

If valve is to be overhauled, it will need to be removed from the cylinder by following the instructions given in 9.5 and observing the 'SAFETY PRECAUTIONS' given in 9.2.

After removing the valve from the cylinder proceed as follows:

- i) Remove the siphon tube adaptor (including siphon tube) using a 17mm A/F spanner.

- ii) Extract the valve spring and then remove the valve spindle assembly.
- iii) Inspect the valve seat for foreign matter or other damage (use 10 x magnification inspection glass). Clean and polish seat as necessary. If any extensive damage to the seat is found, replace the valve assembly.
- iv) Inspect the valve spindle assembly, pay particular attention to the seat seal washer, and the valve spindle 'O' ring. If the 'O' ring is damaged replace, if the seal washer is damaged replace the entire valve spindle assembly.
- v) Inspect the valve spring. This normally should last the lifetime of the extinguisher, but in the unlikely event it is damaged, replace it with a new one.
(Note: Its free length should be 31mm).
- vi) Inspect the siphon tube adaptor and siphon tube, ensure there is clear passage through them and there is no evidence of damage, and that the siphon tube is securely attached to the adaptor. Replace assembly if damaged.
- vii) Invert the valve and re-assemble as follows:
 - 1) Lightly lubricate valve spindle 'O' ring with petroleum jelly and insert valve spindle assembly into valve body, push home until it shoulders against valve seat.
 - 2) Insert spring onto end of valve spindle assembly.
 - 3) Position siphon tube adaptor on end of spring, push down hard to compress spring sufficiently to enable adaptor to be screwed home into the bottom end of the valve. Tighten up with a 17mm A/F spanner until adaptor shoulders against bottom face of valve.
 - 4) Install valve assembly into cylinder in accordance with instructions given in 9.5(b) valve installation.
- d) **Burst Disc**
The burst disc should not normally require replacement as a cause of valve leakage. If the disc needs replacing because it has been damaged or has burst, the following steps should be observed.
 - i) Observe **SAFETY PRECAUTIONS** (refer 9.2)
 - ii) Remove pressure relief plug from the valve body using a 14mm A/F socket spanner.

PRODUCT: 3.5kg CARBON DIOXIDE FIRE EXTINGUISHERS

PAGE: 11 of 12

MODEL No's: (R3.5CO2)

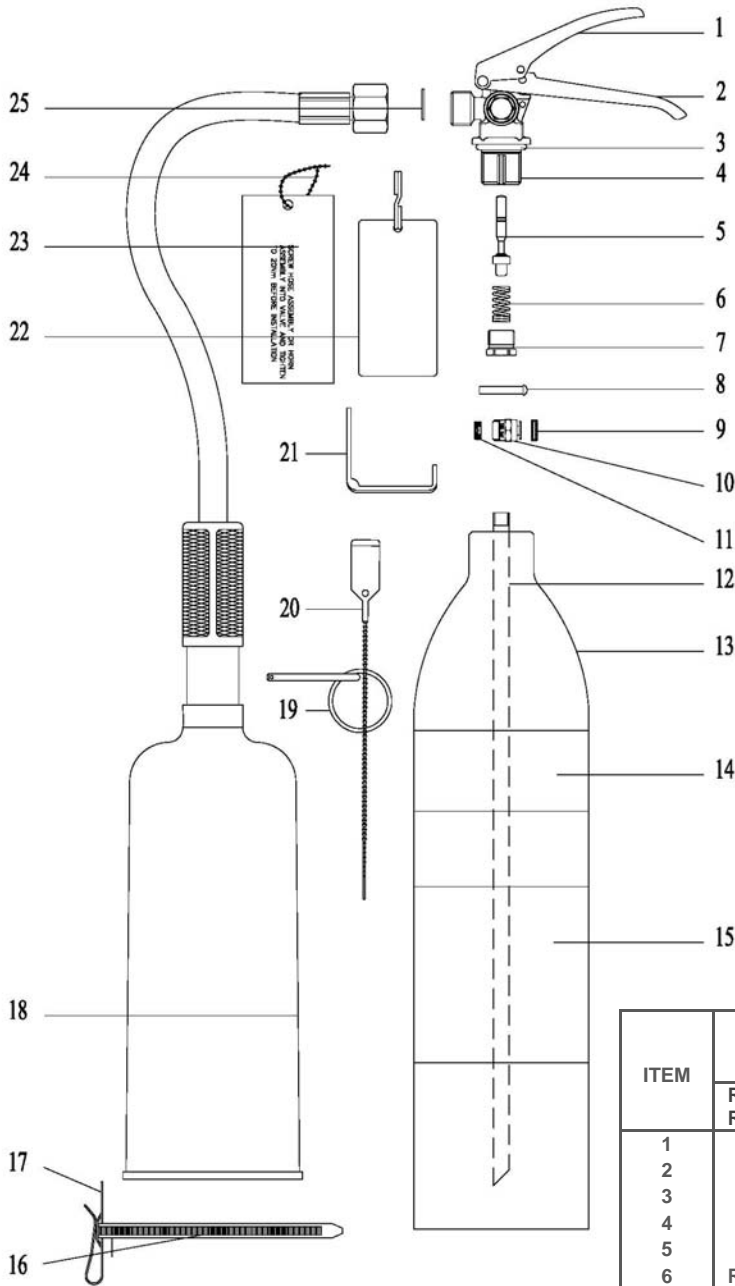
ISSUE: A 00

DATE: 07/22/15

- iii) Remove old burst disc assembly from valve body and discard.
- iv) Check for clear passage through the port by blowing through with air, and ensure port seat is clean and free from contamination.
- v) Remove the plastic cap from the end of the pressure relief plug and check that the 2-exit ports (diametrically opposite one another) in the end of the plug, are clear, with no obstructions. If okay, replace the plastic cap. If damaged, replace plug assembly.
- vi) Insert a new burst disc assembly make sure it is inserted the correct way around with the face end containing the burst disc going in first.
- v) Screw in the pressure relief plug assembly, tighten home using a 14mm A/F socket spanner in conjunction with a torque wrench, tighten to a torque of 19 Nm.

Caution:

Whilst this torque is required to produce consistent gas tight assemblies, excessive torque can result in gas leakage.



ITEM	CSP PART	DESCRIPTION	QTY
	R3.5CO2 RH30268A	3.5KG CO2 EXT.	1
1		LEVER (SUS304)	1
2		HANDLE (SUS304)	1
3		NECK SEAL 'O' RING	1
4		VALVE BODY	1
5		VALVE SPINDLE ASSEMBLY	1
6	RH300140A	VALVE SPRING	1
7		SIPHON TUBE ADAPTOR	1
8		HANDLE RIVET	1
9		PLASTIC CAP	1
10		PRESSURE RELIEF PLUG	1
11		BURST DISC	1
12	RH300303	SIPHON TUBE-465mm	1
13	RH500273	3.5KG ALUMINIUM CO2 CYLINDER	1
14	/	IDENTIFICATION BAND. BLACK	1
15	RH30268A-T	3.5KG CO2 EXT. LABEL	1
16	RH301602A	CABLE TIE	1
17	RH300724	HORN RETAINER CLIP	1
18	RH300444	HOSE ASSEMBLY	1
19	/	SAFETY PIN	1
20	RH300909	INDICATOR SEAL(WHITE)	1
21	RH300729	WALL BRACKET. Q235	1
22	RH501311	HANGTAG	1
23	RH501314	WARNING TAG	1
24	RH300911	SEAL	1
25	RH500404-7	WASHER	1