



CLEMCO
 The Performance System

TECHNICAL DATA SHEET

Note: For safety, efficiency, and productivity, read and follow the owner's manual and seek training for everyone who will use this equipment.

Purpose

The CMS-3 monitor detects carbon monoxide in the breathing-air supply and triggers audible, visual, and vibratory alarms when CO is detected in concentrations of at least 10 parts per million. The alarms alert the operator to an unsafe condition.

Requirements for Operation

- Battery installed in the CMS-3
- 25 ppm calibration gas, calibration cup and connector
- Grade D or ambient-air breathing-air supply for the abrasive blast operator
- Thorough familiarity with the CMS-3 instructions

Description of Operation

OSHA requires Grade D quality breathing air and NIOSH-approved Type CE continuous-flow supplied-air respirators for abrasive blast operators. OSHA regulations call for a maximum exposure limit to carbon monoxide of 10 parts per million (ppm). When the presence of carbon monoxide is detected at this level, the CMS-3 emits an audible alarm, a visible flash, and the unit vibrates. When an alarm occurs, the user should remove the respirator immediately when it is safe to do so. To prolong battery life, turn unit off when not in use; turn unit on and re-install at beginning of work shift.

CMS-3 Features

- Digital liquid crystal display (LCD)
- Audible, visual, and vibrating alarms
- Low battery alarm
- Sensor fail alarm
- Replaceable sensor and battery

Description

The CMS-3 monitor detects deadly carbon monoxide (CO) in the blast operator's breathing-air supply. The unit mounts inside the blast operator's respirator. It is NIOSH-approved exclusively for use with Clemco Apollo 20, 60, and 600 models.

Note: CMS monitors do not remove CO or convert CO to carbon dioxide (CO₂).

CMS Series Carbon Monoxide Monitor- Alarm

**Model CMS-3 In-Helmet
 Monitor with Calibration Kit
 Stock No. 24612**



Model CMS-3 In-Helmet CO Monitor- Alarm

Advantages

- Blast operator can work independently. No need to rely upon others to warn operator or take action when monitor alarms. No need for remote alarm; each user is individually protected for instant awareness of a hazardous condition.
- Unit is small, lightweight, and conveniently worn inside blast respirator. Requires no external connections or hoses.
- Unit can be calibrated in minutes, is easily installed, and easily removed.
- Long-life, economical easy-to-replace sensor with estimated sensor life of 2 years.
- Unit uses small commonly-available lithium easy-to-replace battery with estimated life of 3000 hours.
- Microprocessor controlled with digital read-out for accurate readings.

Approvals and Certifications

Meets OSHA requirement for CO monitoring.

NIOSH-approved for use with Clemco Apollo 20, 60, and 600 respirators.

Safety Rating: CSA classified "C/US" as intrinsically safe. Class I, Division I, Groups A, B, C, and D, Temp. code T4.

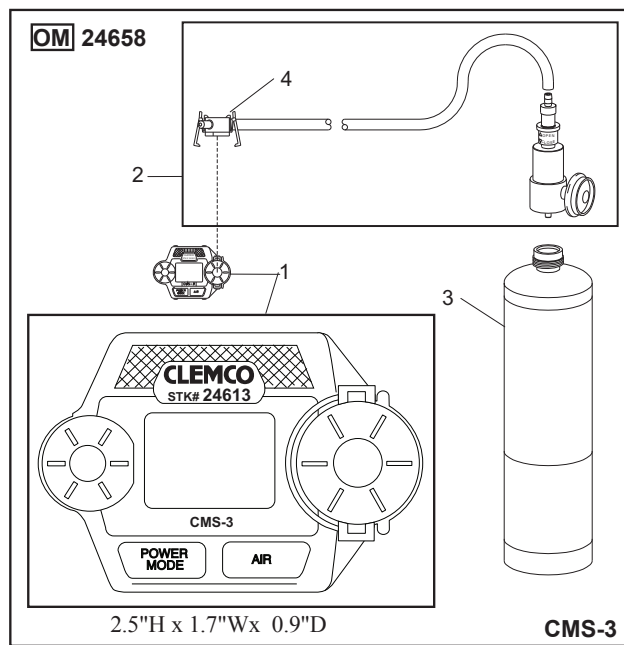
Specifications

OSHA rules dictate that maximum exposure limit to CO for abrasive blasters breathing Grade D air is 10 parts per million.

- Sampling by diffusion
- Operating temperature and humidity range: -4 to 104 degrees F (-20 to 40 degrees C); up to 85 percent relative humidity (non-condensing)
- Alarm points: Low and high alarms factory set at 10 ppm
- Accuracy rating: plus or minus 2 ppm
- Powered by 3-volt coin-type lithium battery (CR2450)
- Continuous operation: approximately 1 year of normal use (3000 hours)
- Unit net weight 1.6 ounces (0.1 lb)
- Dimensions: 2.5" w x 1.7" h x 0.9" d
- Unit calibrated with 25 ppm test gas; optional impurity-free gas available for fresh-air setting
- Over-range condition indicated by audible, vibratory, and visual alarms
- Low-battery warning given by visual flashing indicator
- Dead battery indicated by audible alarm
- System failure warning given by audible alarm
- Attachment to respirator: VELCRO®
- Warranty: 1 year material and workmanship

CMS-3 System and Accessories CMS-3 Replacement Parts

Item	Description	Stock No.
(-)	CMS-3 CO Monitor Package	
	Includes Items with asterisk (*).....	24612
1.	*CMS-3 CO Monitor only.....	24613
2.	*Calibration Connector Assembly	
	Includes calibration connector, tubing and cup.....	24614
3.	Test gas,	
	*25 ppm CO.....	25573
	Impurity free.....	11132
4.	Calibration cup.....	24615



Packaging: Monitor enclosed in plastic 3" diameter x 5" jar

Stock No.	Carton Dimensions	Shipping Wt.
24612	10" W x 12" L x 8-3/4" H	4 lb
246136-3/4"	W x 11-1/4" L x 3-1/2" H	1 lb

Color: CMS-3: Red and black

Other Available Clemco CO Alarms

Description	Stock No.
CMS-1 Wall-Mountable with Calibration Kit.....	23017
CMS-2 Field-Portable with Calibration Kit.....	22894

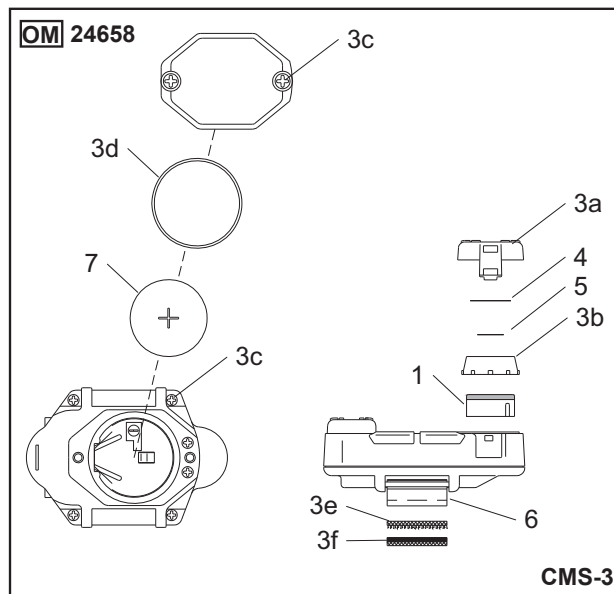
Related Clemco Literature

Description	Stock No.
CMS-3 Owner's Manual.....	24658



Item	Description	Stock No.
1.	Sensor.....	24616
2.	Service kit, includes	
	Items 3, 4 and 5.....	24617
3.	Kit, screws and seal.....	25577
	3a. Cap, sensor	
	3b. Gasket, sensor	
	3c. Screw set, 8 case and 4 battery cover	
	3d. O-ring, battery cover	
	3e. VELCRO® tape, loop side, 1" x 1-1/4"	
	3f. VELCRO® tape, hook side, 1" x 2"	
4.	Discs, sensor cover, pack of 10.....	25563
5.	Filter, charcoal, pack of 5.....	25564
6.	Mounting plate.....	25575
7.	Battery, Lithium, 3-volt, coin-type,	
	model CR2450.....	24619

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Authorized Distributor:

ISO 9001:2008 certified. Clemco is committed to continuous product improvement. Specifications are subject to change without notice.



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Note: For safe, efficient blasting, read and follow the owner's manual and seek training for everyone who will use this equipment.

Purpose

The CMS monitor detects carbon monoxide and hydrocarbons in a compressed air supply and triggers visual and audible alarms when CO is detected in concentrations of 10 parts per million. CMS-1 is wall-mountable; CMS-2 is field-portable with integral rugged carrying case.

NOTE: CMS monitors do not remove CO or convert CO to CO₂.

Requirements for Operation

- Compressed-air source (55 to 145 psi) of Grade D breathing air as defined by the Compressed Gas Association commodity specification: G-7.1 (www.cganet.net).
- Air flow of 0.5 to 0.8 scfh at 55 psi or more to operate and maintain adequate sampling
- Power – 120 volt AC or 12 volt DC. Line cord provided for 120 volt AC; may be conduit wired.

Description of Operation

Connect the CMS to the air supply and to an electric power source. The system warms up and stabilizes in about five minutes.

Once stabilized, the unit is operational and continuously monitors the incoming air. The indicator light glows green to indicate adequate air pressure and flow, and that the CO concentration is below 10 ppm. The alarm light glows yellow, and a loud, intermittent alarms sounds if air flow or pressure drops.

The air-quality light turns red and the CMS sounds a loud, constant alarm if CO reaches 10 ppm. To prevent CO poisoning, the operators must immediately remove their respirators and exit the blast environment.

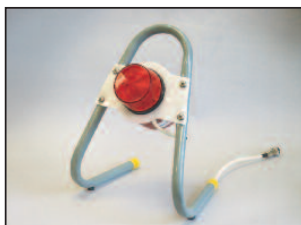
Once the source of CO has been located, and corrected, the CMS will continue to monitor the air and will glow green automatically when the CO has passed out of the air supply.

Description

Carbon monoxide monitor and alarm for breathing air supplied from a compressed air source. Features warning lights, high-decibel audible alarm, particulate/oil filter, and connections for optional remote alarm and shutdown devices. Unit monitors air supply; can serve multiple respirators.



Model CMS-2 Field-Portable



CMS Remote Alarm

CMS Series Carbon Monoxide Alarms

Model CMS-1 Wall-Mountable, with Calibration Kit:
 Stock No. 23017

Model CMS-2 Field-Portable, with Calibration Kit:
 Stock No. 22894



Model CMS-1 Wall-Mountable

Advantages

- One monitor can serve multiple respirators
- Microprocessor circuit and digital readout provide accurate readings
- Simple, rugged construction for in-plant or field use
- Manual calibration accomplished in minutes
- Long-lasting replaceable sensor
- May be used with 120 volt AC or 12 volt DC power source
- Accommodates optional remote alarm kit

Approvals and Certifications

- Meets OSHA requirement for CO monitoring

Specifications

- Shielded to reject radio frequency interference
- Includes 10 feet of 1/8-inch tubing and connector fittings
- Electrochemical sensor responds instantly to CO
- CMS-1 has polycarbonate case with impact-resistant clear plastic cover meets NEMA-4 specifications
- CMS-2 has polyethylene case with dual hinges, dual latches, and dust-tight, weather-resistant rubber seal
- Nominal noise rating of 98 dB at distance of one foot for the standard alarm; and 100 dB at distance of 3.1 feet for the optional remote alarm.

Options and Accessories

- HumidifierStock No. 03600
- Remote alarm kit includes: remote alarm, stand, wiring connector, and 50-ft. cord.....Stock No. 22909
- Remote alarm extension cordStock No. 22910

Related Clemco Literature

Description	Stock No.
Operator Safety Equipment .....	.07764
CMS-1 Owners Manual .....	.23301
CMS-2 Owners Manual .....	.22925

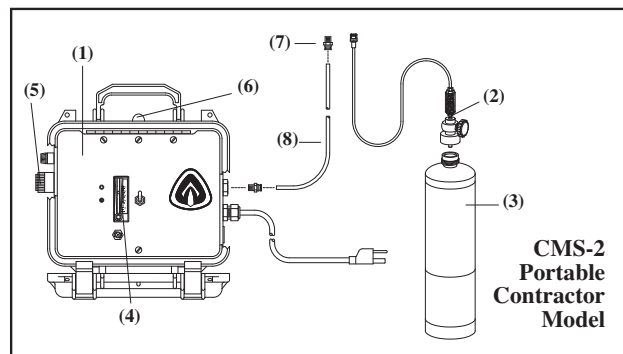
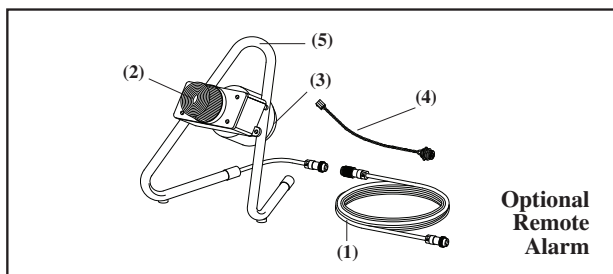
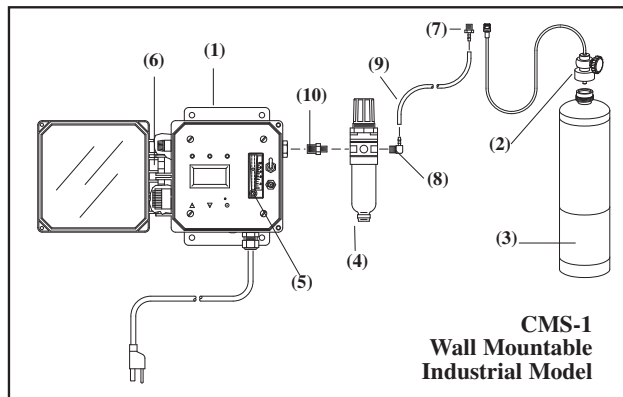
Replacement Parts

Item	Description	Stock No.
(-)	CMS-1 CO monitor package, includes: monitor, calibration connector, and 10 PPM test gas .....	.23017
1.	CMS-1 CO monitor includes: monitor and items 3 to 9 .....	.23012
2.	Calibration connector assembly .....	.23011
3.	Test gas 10 PPM .....	.22865
	Test gas, impurity free .....	.11132
4.	Regulator /Filter .....	.23013
5.	Flowmeter .....	.21376
6.	Horn w/ wire, 12 Volt DC .....	.22922
7.	Adaptor, straight, 1/8" NPT x 1/8" barb .....	.11732
8.	Adaptor, elbow, 1/8" NPT x 1/8" barb .....	.11733
9.	Tubing, urethane, per foot .....	.12475
10.	Reducer, 1/4" x 1/8" .....	.02026
(-)	Sensor (not shown) .....	.23015
(-)	Filter element (not shown) .....	.23014

Item	Description	Stock No.
(-)	CMS-2 CO monitor/alarm package, includes: monitor, calibration connector, and 10 PPM test gas.	
	120 V AC .....	.22894
	12 V DC .....	.25024
1.	CMS-2 CO monitor/alarm (instrument only) .....	.22892
	120 V AC .....	.22892
	12 V DC .....	.25072
	220 V AC .....	.25532
2.	Calibration connector assembly .....	.22893
3.	Test gas 10 PPM .....	.22865
	Test gas, impurity free .....	.11132
4.	Flowmeter .....	.21376
5.	Horn w/ wire, 12 Volt DC .....	.22922
6.	Alarm light, exterior w/ wire .....	.22923
7.	Fitting, 1/4" OD, quick fit .....	.22924
8.	Tubing, urethane, per foot .....	.12475
(-)	Sensor (not shown) .....	.22919
(-)	Regulator/filter (not shown) .....	.22920
(-)	Filter element (not shown) .....	.22921
(-)	Air-line humidifier .....	.03600

Optional Remote Alarm

(-)	Remote Alarm: includes: alarm, stand, wiring connector and 50 ft. cord .....	.22909
1.	Cable, remote alarm extension 50 feet .....	.22910
2.	Strobe light .....	.22984
3.	Horn .....	.22985
4.	Wiring adaptor .....	.22986
5.	Stand assembly with internal wiring .....	.22987



Color: CMS-2: black case w/ white graphic front
 CMS-1: gray metal enclosure w/ white graphic front
 Optional Remote Alarm: gray metal

Packaging: Ships in one carton with owner's manual.

Stock No.	Dimensions	Shipping Wt.
23017	7-1/2" H x 7 1/2" W x 5-1/2" D	8 lb
23012	7-1/2" H x 7 1/2" W x 5-1/2" D	6 lb
22894	9-1/4" H x 10 3/8" W x 5" D	9 lb
22892	9-1/4" H x 10 3/8" W x 5" D	7 lb

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