



Carbon and Sulfur Analysis

Parts and Supplies Catalog

Parts and Supplies for:

*CO₂ Coulometers: Models CM5010, CM5011, CM5012,
CM5014 and CM5015*

SO₂ Coulometers: Models CM3200 and CM5014S

*Acidification Modules: Models CM5030, CM5130 and
CM5230*

*Furnace Modules: Models CM5020, CM5120, CM5300
and CM5600*

*Autosampler Modules: Models CM5200, CM5240 and
CM5390*

2009

CO₂ Coulometers



Model CM5010 CO₂ Coulometer, c. 1975 - The Model CM5010 has either a light blue or gray case with analog meters. Most electronic components for this instrument are now obsolete, but alternate glassware and electrodes are available.

Model CM5011 CO₂ Coulometer, c. 1985 - The Model CM5011 has a gray or black cabinet with off-white front panels. This model utilizes LCD panel meters and thumbwheel selector switches. The CM5011 is still offered in limited production for specialized applications. All original or alternate parts are available.



Model CM5012 CO₂ Coulometer, c. 1991 - The Model CM5012 has an off-white cabinet with a black, cast aluminum front. This model utilizes LED panel meters, thumbwheel selector switches and has an enclosed cell compartment. The CM5012 is still offered in limited production for specialized applications. All original or alternate parts are available.

Model CM5014 CO₂ Coulometer, c. 1999 - The Model CM5014 has an off-white cabinet with a black, cast aluminum front. This model utilizes an integrated keyboard and plasmadot display. Like the CM5012, the CM5014 also has an enclosed cell compartment. The CM5014 is the current full-production model.



Instrument Identification

SO₂ Coulometers



Model CM3200 SO₂ Coulometer, c. 1985 - The Model CM3200 has a gray or black cabinet with off-white front panels. This model utilizes LCD panel meters and thumbwheel selector switches. The CM3200 is no longer in production. All original or alternate parts are available.

Model CM5014S SO₂ Coulometer, c. 2002 - The Model CM5014S has an off-white cabinet with a black, cast aluminum front. This model utilizes an integrated keyboard and plasmadot display. The CM5014S is the current full-production model.



Acidification Modules



Model CM5030 Acidification Module, c. 1975 - The Model CM5020 has a stainless steel body and "cigarette lighter" style heater. Most components for the CM5020 are obsolete, but alternative glassware and acid dispenser are available.

Model CM5130 Acidification Module, c. 1985 - The Model CM5130 has a gray or black cabinet with off-white front panels. The CM5130 is the current full-production model and all components and glassware are available.



Furnace Modules



Model CM5020 Furnace Module, c. 1975 - The Model CM5020 was mostly brown in color. All components for the CM5020 are obsolete, but alternate glassware is available.

Model CM5120 Furnace Module, c. 1985 - The Model CM5120 has a gray or black cabinet with off-white front panels. Some components for the CM5120 are obsolete. Alternate glassware is available.



Model CM5300 Furnace Module, c. 1999 - The Model CM5300 has an off-white cabinet with a black insert on the front. This is the current full-production model.

Model CM5600 Infrared Furnace Module, c. 2001 - The Model CM5600 has a dark gray cabinet with off-white side panels. This furnace utilizes an auxiliary catalyst furnace. The CM5600 is a current full-production model.



Autosamplers



Model CM5240 Auto-Acidification Module, c. 1999 -
The Model CM5240 has an off-white body with gray Lucite doors. There are two revision levels for this model, but all components are interchangeable. This is a current full-production model.

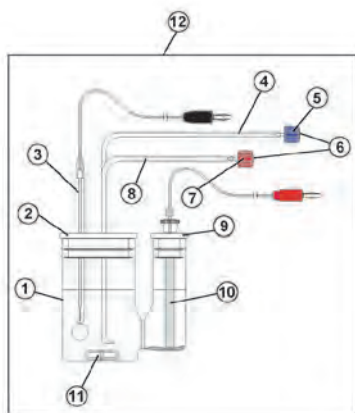
Model CM5200 Autosampler Furnace Module, c. 1996 -
The Model CM5200 has an off-white cabinet and a cast aluminum front panel. This is a current full-production model and all components are available.



CO₂ Coulometers

Carbon Coulometer Cell

Diag.

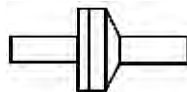


#	Description	Part No.
1	Cell w/ side arm, straight sides (All Coulometers)	CM200-051
2	Cathode Top, white Teflon (CM5012, CM5014)	CM119-027
	Cathode Top, black rubber (CM5011)	CM192-005
3	Platinum electrode, cathode (CM5012, CM5014)	CM101-135
	Platinum electrode, cathode (CM5010, CM5011)	CM101-034
4	Cell inlet tube w/ blue luer lock connector (CM5012, CM5014)	CM101-137
	Cell inlet tube (CM5010, CM5011)	CM190-002
5	Luer lock ring, blue (CM5012, CM5014)	CM129-073
6	Male luer connector w/ barbs, 1/16" id (CM5012, CM5014)	CM129-071
7	Luer lock ring, red (CM5012, CM5014)	CM129-072
8	Cell outlet tube w/ red luer lock connector (CM5012, CM5014)	CM101-136
9	Anode top, white Teflon (CM5012, CM5014)	CM119-028
	Anode top, black rubber (CM5011)	CM192-006
10	Silver electrode, anode (all coulometers)	CM101-033
11	Stir bar, 1.5" (all coulometers)	CM121-006
12	Complete cell assembly (CM5012, CM5014)	CM210-015
	Complete cell assembly (CM5010, CM5011)	CM210-008

- CM101-178 Photodiode Assembly
- CM125-004 Fuse, 1A, 250V
- CM125-010 Fuse, 1.5A, 250V



- CM191-001 Unions, small, 1/4" x 1/8", 10/pk



- CM192-003 Check valves, 6/pk

- CM119-013 Component attachment clip, 2 1/4", each
- CM129-074 Lock nut, each
- CM140-001 Optical Filter, 620 nM
- CM140-005 Lamp, L4038, each
- CM151-017 Lamp socket, each
- CM190-009 Tubing, Teflon, 1/16" id x 1/8" od, per inch
- CM190-010 Tubing, Teflon, 3/32" id x 5/32" od, per inch

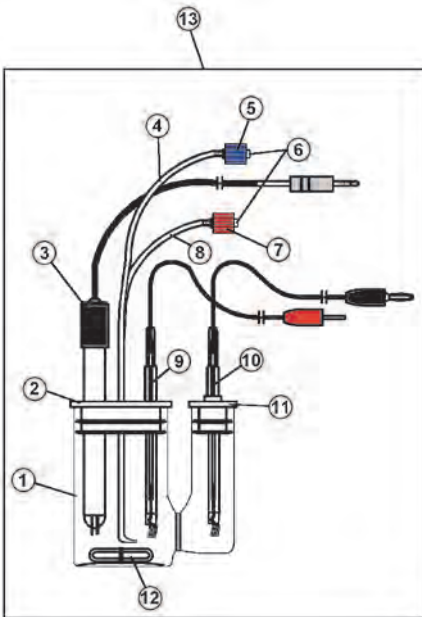
Chemicals

- CM300-001 Carbon cathode solution, 1 gallon, each
- CM300-002 Carbon anode solution, 16 oz., each
- CM300-003 Potassium iodide, 50 gm., each
- CM301-002 Calcium carbonate standard, 100 gm., each
- CM310-001 Carbon cell reagent kit, includes CM300-001, CM300-002 and CM300-003, each

SO₂ Coulometers

Sulfur Coulometer Cell

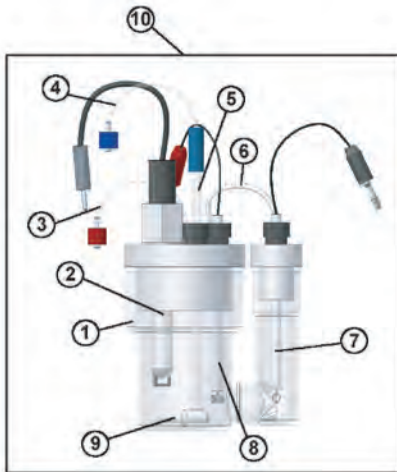
Diag.



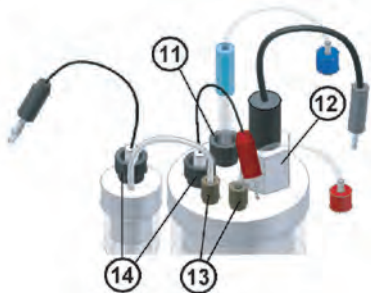
#	Description	Part No.
1	Cell w/ side arm, straight sides (CM3200, CM5014S)	CM200-051
2	Anode Top, white Teflon (CM5014S) Anode Top, green rubber (CM3200)	CM119-040 CM192-007
3	Detector electrode, dual platinum (CM3200, CM5014S)	CM101-098
4	Cell inlet tube w/ blue luer lock connector (CM5014S) Cell inlet tube (CM3200)	CM101-137 CM190-002
5	Luer lock ring, blue (CM5014S)	CM129-073
6	Male luer connector w/ barbs, 1/16" id (CM5014S)	CM129-071
7	Luer lock ring, red (CM5014S)	CM129-072
8	Cell outlet tube w/ red luer lock connector (CM5014S)	CM101-136
9	Platinum Anode, red lead (CM5014S) Platinum Anode, red lead (CM3200)	CM101-210 CM101-097
10	Platinum electrode, cathode (CM5014S) Platinum electrode, cathode (CM3200)	CM101-135 CM101-096
11	Cathode Top, white Teflon (CM5014S) Cathode Top, green rubber (CM3200)	CM101-213 CM192-008
12	Stir bar, 1.5" (all coulometers)	CM121-006
13	Complete cell assembly (CM5014S) Complete cell assembly (CM3200)	CM210-025 CM210-009

Simultaneous Carbon/Sulfur Coulometer Cell

Diag.

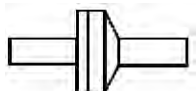


#	Description	Part No.
1	Threaded cell with tops	CM210-027
2	Detector electrode, dual platinum	CM101-098
3	Cell outlet tube w/ red luer lock connector	CM101-136
4	Cell inlet tube w/ blue luer lock connector	CM101-209
5	Dispersion tube, 10mm	CM200-062
6	Pressure equalization tube, 6 in.	CM190-009
7	Platinum electrode w/ banana plug	CM101-135
8	Platinum electrode w/ pin plug	CM101-210
9	Stir bar, 1.5"	CM121-006
10	Complete cell assembly	CM210-026
11	Nut for dispersion tube Ferrule, 7mm, for dispersion tube	CM191-061 CM129-120
12	Nut for detector electrode Ferrule for detector electrode	CM191-056 CM191-062
13	Nut for pressure equalization tube and cell outlet tube Ferrule for pressure equalization tube and cell outlet tube	CM191-059 CM191-060
14	Nut for working electrodes Ferrule for working electrodes	CM191-057 CM191-058



SO₂ Coulometers

- CM119-013 Component attachment clip, 2 1/4", each
- CM125-004 Fuse, 1A, 250V
- CM125-010 Fuse, 1.5A, 250V
- CM129-074 Lock nut, each
- CM190-009 Tubing, Teflon, 1/16" id x 1/8" od, per inch
- CM190-010 Tubing, Teflon, 3/32" id x 5/32" od, per inch
- CM191-001 Unions, small, 1/4" x 1/8", 10/pk

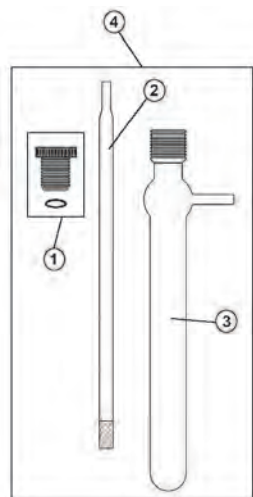


- CM192-003 Check valves, 6/pk

Chemicals

- CM300-026 Sulfur anode solution, 4 quarts, each
- CM300-027 Sulfur cathode solution, 1 quart, each
- CM310-002 Sulfur cell reagent kit, includes CM300-026, and CM300-027, each

Acidification Modules

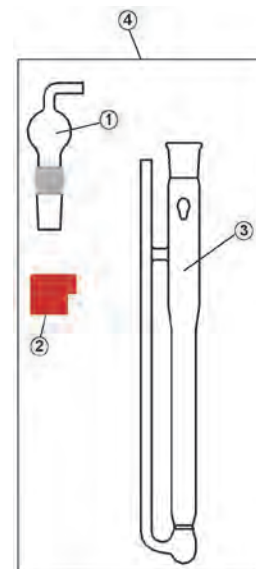


Pre-Scrubber Assembly Diag.

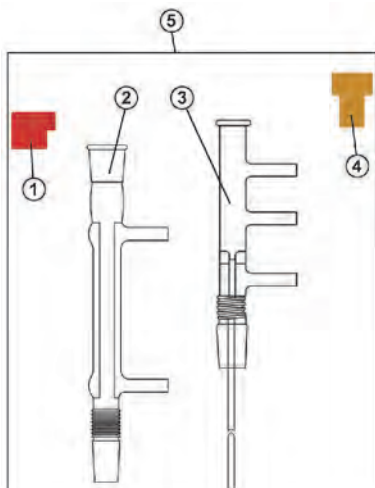
- | # | Description | Part No. |
|---|----------------------------------|-----------|
| 1 | Black threaded bushing w/ o-ring | CM191-006 |
| 2 | Dispersion tube for pre-scrubber | CM200-016 |
| 3 | Pre-scrubber body | CM200-015 |
| 4 | Pre-scrubber assembly, complete | CM210-002 |

Post-Scrubber Assembly Diag.

- | # | Description | Part No. |
|---|----------------------------------|-----------|
| 1 | Post-scrubber Top | CM200-046 |
| 2 | Threaded joint connector, red | CM192-009 |
| 3 | Post-scrubber body | CM200-020 |
| 4 | Post-scrubber assembly, complete | CM210-012 |



Acidification Modules



Sample Column Assembly

Diag.

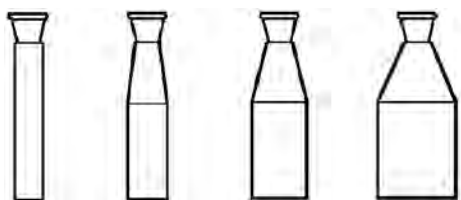
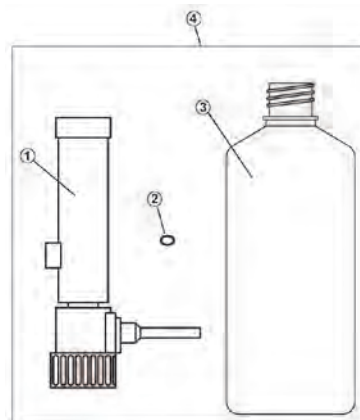
#	Description	Part No.
1	Threaded joint connector, red	CM192-009
2	Threaded condenser	CM200-041
3	Sample column adapter, threaded w/ septum	CM210-013
4	Septa, 10/pk	CM192-002
5	Sample column assembly, complete	CM210-010

Acid Dispenser Assembly

Diag.

#	Description
1	Acid dispenser, 0-5ml injection volume
2	O-ring, 1/4" OD x 1/8" ID
3	Bottle, polyethylene, 500ml
4	Acid dispenser assembly, complete

Part No.
CM250-007
CM153-001
CM332-010
CM101-115



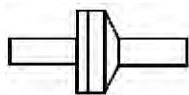
Sample Flasks

CM200-042	Sample flask, 10ml, ea.
CM200-043	Sample flask, 25ml, ea.
CM200-044	Sample flask, 50ml, ea.
CM200-045	Sample flask, 100ml, ea.



Heater Block Inserts

CM122-042	Heater block insert, 10ml, ea.
CM122-043	Heater block insert, 25ml, ea.
CM122-044	Heater block insert, 50ml, ea.



CM192-003	Check valves, 6/pk
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CM191-001	Unions, small, 1/4" x 1/8", 10/pk
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Acidification Modules



CM191-012 Union, Teflon, 1/4" x 1/8", ea.



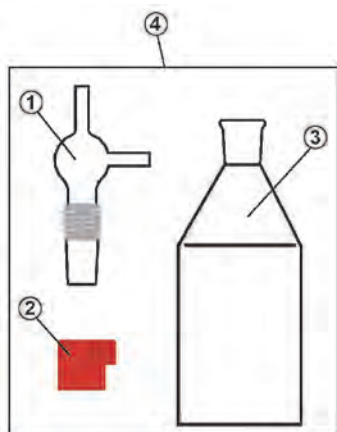
CM119-034/50 Sample cups, Teflon, 50/pk



CM251-003 Porcelain sample boat, 4x5x17mm, ea.

CM251-004 Porcelain sample boat, 8x10x60mm, ea.

CM123-017 Flowmeter, ea.



Auxiliary Scrubber Assembly Diag.

#	Description	Part No.
1	Auxiliary scrubber top, threaded	CM200-055
2	Threaded joint connector, red	CM192-009
3	Sample flask, 100ml	CM200-045
4	Auxiliary scrubber assembly, complete	CM210-017

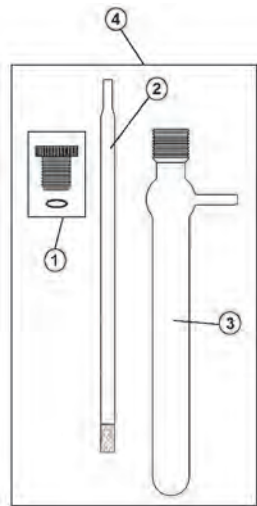
Other Parts and Accessories

CM101-122	Clamp assembly
CM119-016	Component attachment clip, 3/4", ea.
CM119-017	Component attachment clip, 1/2", ea.
CM121-001	Stir bar, 1", ea.
CM124-024	Internal air pump
CM125-003	Fuse, 2A, 250V for power entry module on 115V units, ea. (CM5130)
CM125-004	Fuse, 1A, 250V for power entry module on 230V units, ea. (CM5130)
CM190-009	Tubing, Teflon, 1/16" id x 1/8" od, per inch
CM440-006	Operation Manual, CM5130, ea.

Chemicals

CM300-037	Potassium Hydroxide, 100 g, ea.
CM300-025	Silver Nitrate, 30 g, ea.

Furnace Modules



Pre-Scrubber Assembly

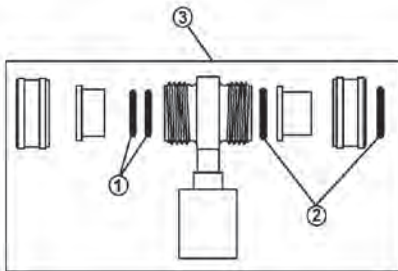
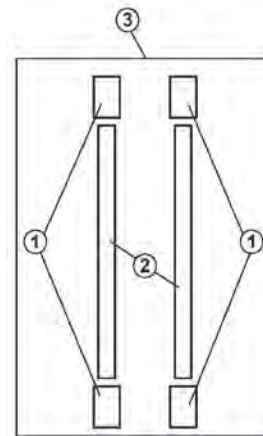
Diag.

#	Description	Part No.
1	Threaded bushing w/ o-ring	CM191-006
2	Dispersion tube	CM200-016
3	Pre-scrubber body	CM200-015
4	Pre-scrubber assembly, complete	CM210-002

Post-Scrubber Assembly

Diag.

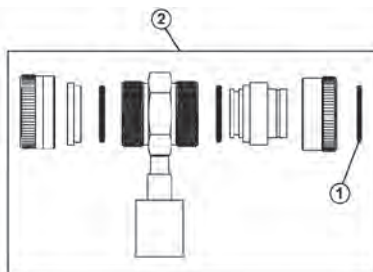
#	Description	Part No.
1	Unions, medium, 1/2" x 1/8", 4/pk	CM191-002
2	Scrubber tubes, 2/pk	CM200-014
3	Post-scrubber assembly, complete	CM210-006



15mm Breech Block Assembly

Diag.

#	Description	Part No.
1	O-ring, 13/16" OD x 5/8" ID	CM153-006
2	O-ring, 7/8" OD x 11/16" ID	CM153-007
3	15mm breech block assembly, complete	CM101-126

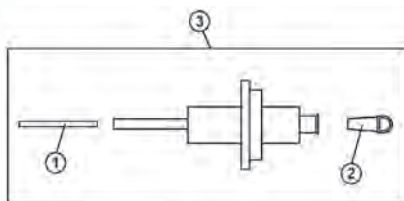


25mm Breech Block Assembly

Diag.

#	Description	Part No.
1	O-ring, 7/8" OD x 11/16" ID	CM153-007
2	25mm breech block assembly, complete	CM101-127

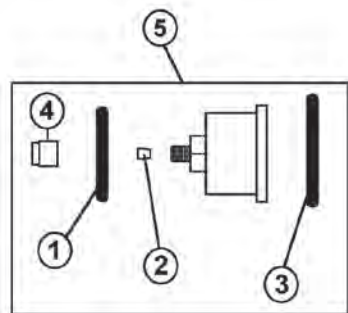
Furnace Modules



Syringe Injection Adapter

Diag.

#	Description	Part No.
1	Needle guide, Teflon	CM190-003
2	Stopper for Luer adapter	CM129-035
3	Syringe injection adapter (15mm only), complete	CM101-092

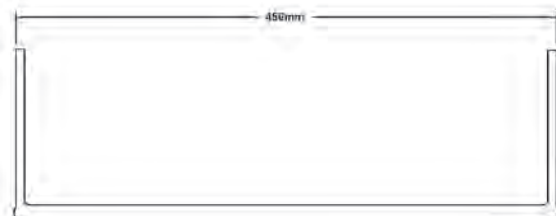


Manipulator Rod Adapters, 15mm and 25mm

Diag.

#	Description	Part No.
1	O-ring, 7/8" OD x 11/16" ID (25mm only)	CM153-007
2	Ferrule, Vespel, 10/pk (15mm and 25mm)	CM129-097
3	O-ring, 1 3/8" OD x 1" ID (25mm only)	CM153-021
4	Nut, Knurled	CM129-049
5	Manipulator rod adapter, complete, 15mm	CM101-077
	Manipulator rod adapter, complete, 25mm	CM101-129

Combustion Tubes



CM201-037	Pre-combustion tube, unfilled
CM211-016	Pre-combustion tube, filled



CM201-004	Ladle combustion tube, 15mm inlet, unfilled
CM211-002	Ladle combustion tube, 15mm inlet, filled



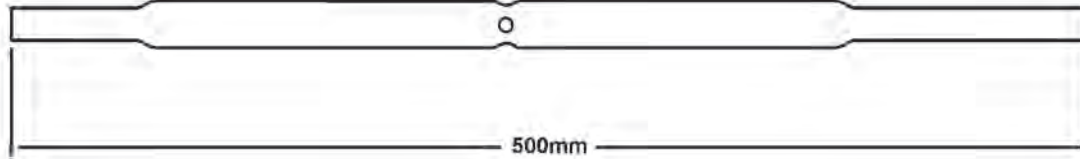
CM201-007	Surface combustion tube, 15mm inlet, unfilled
CM211-004	Surface combustion tube, 15mm inlet, filled



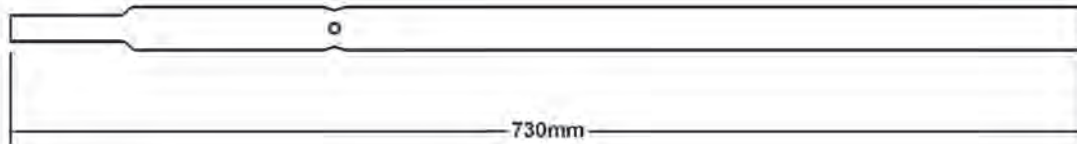
CM201-020	Surface combustion tube, 2 furnace, 15mm inlet, unfilled
CM211-005	Surface combustion tube, 2 furnace, 15mm inlet, filled

Furnace Modules

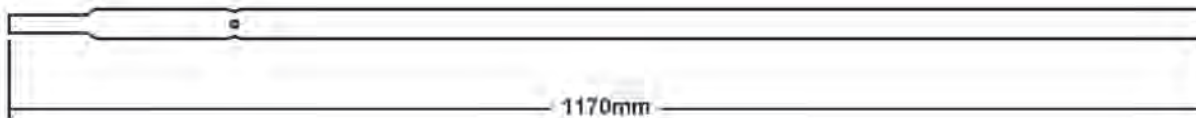
Combustion Tubes (cont.)



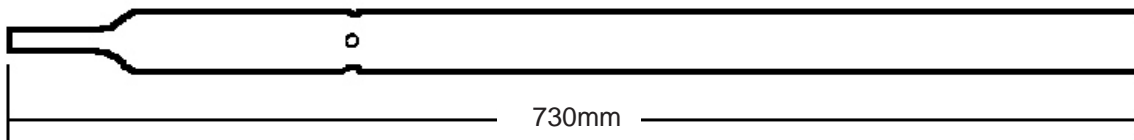
- CM201-029** Syringe combustion tube, 15mm inlet, unfilled
- CM211-009** Syringe combustion tube, 15mm inlet, filled (w/o silver)
(except CM5600)
- CM211-012** Syringe combustion tube, 15mm inlet, filled (except CM5600)
- CM211-018** Syringe combustion tube, 15mm inlet, filled (CM5600)



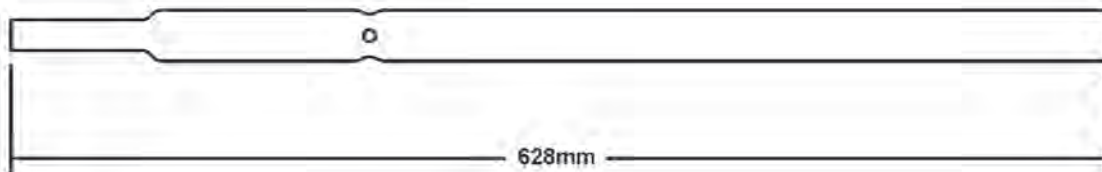
- CM201-032** Large volume combustion tube, 25mm inlet, unfilled
(except CM5600)
- CM211-013** Large volume combustion tube, 25mm inlet, filled (except CM5600)



- CM201-033** Large volume combustion tube, 2 furnace, 25mm inlet, unfilled
- CM211-014** Large volume combustion tube, 2 furnace, 25mm inlet, filled



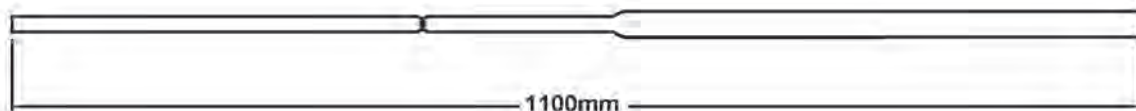
- CM201-036** X-Large volume combustion tube, 38mm inlet, unfilled
- CM211-015** X-Large volume combustion tube, 38mm inlet, filled



- CM201-038** Large volume combustion tube, 25mm inlet, unfilled (for CM5600)
- CM211-017** Large volume combustion tube, 25mm inlet, filled (for CM5600)

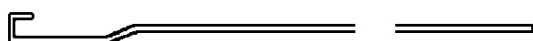
Furnace Modules

Combustion Tubes (cont.)



- CM201-028** Sulfur combustion tube, 2 furnace, 25mm inlet, unfilled
- CM211-010** Sulfur combustion tube, 2 furnace, 25mm inlet, filled

Sample Introduction Components

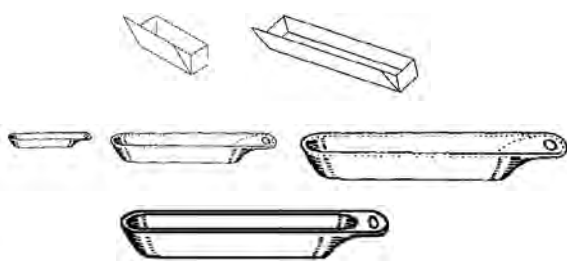
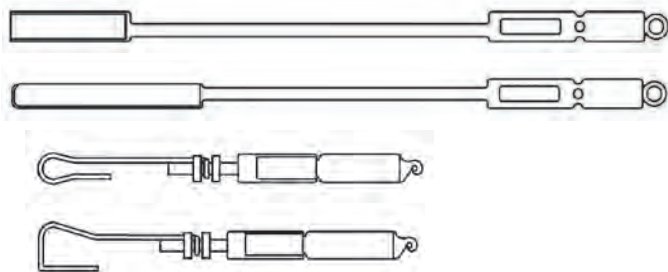


Manipulator Rods

- CM118-132** Manipulator rod, 33.5", ea.
- CM118-133** Manipulator rod, 19.5", ea.

Ladles

- CM201-005** Ladle, open end
- CM201-014** Scoop Ladle, open top
- CM201-016** Hook ladle, small
- CM201-026** Hook ladle, large



Sample Boats

- CM251-001** Platinum boat, 4x4x12mm
- CM251-002** Platinum boat, 3.5x5x30mm
- CM251-003** Porcelain boat, 4x5x17mm
- CM251-004** Porcelain boat, 8x10x60mm
- CM251-005** Porcelain boat, 10x16x97mm
- CM251-006** Ceramic boat, 10x16x97mm, used for TS analysis, 500/pk

- CM250-001** Syringe, spring loaded, 200ul
- CM250-002** Syringe needle, replacement for CM250-001



- CM121-002** Magnet, used with ladles

Furnace Modules

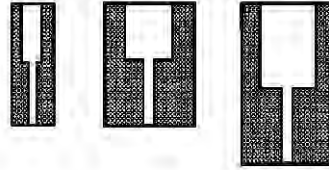
Miscellaneous and Consumable Parts

- CM101-113 Balston filter w/ tube and clamp
- CM162-016 Ceramic fiber insulation
- CM190-009 Teflon tubing, 1/8" OD x 1/16" ID, per inch

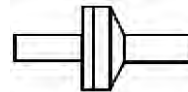
- CM191-001 Unions, small, 1/4" x 1/8", 10/pk
- CM191-002 Unions, medium, 1/2" x 1/8", 4/pk
- CM191-003 Union, large, 3/4" x 1/8", ea.

- CM192-003 Check valves, 6/pk
- CM118-153 Safety shield, ea.
- CM119-016 Component attachment clip, 3/4"
- CM119-017 Component attachment clip, 1/2"
- CM119-018 Component attachment clip, 1 1/2"

- CM123-017 Flowmeter
- CM125-007 Fuse, 4A, 250V, used on power module for 230V furnace (CM5120)
- CM125-008 Fuse, 8A, 250V, used on power module for 115V furnace (CM5120)
- CM125-016 Fuse, 15A SloBlo (CM5600)



CM191-001 - CM191-003



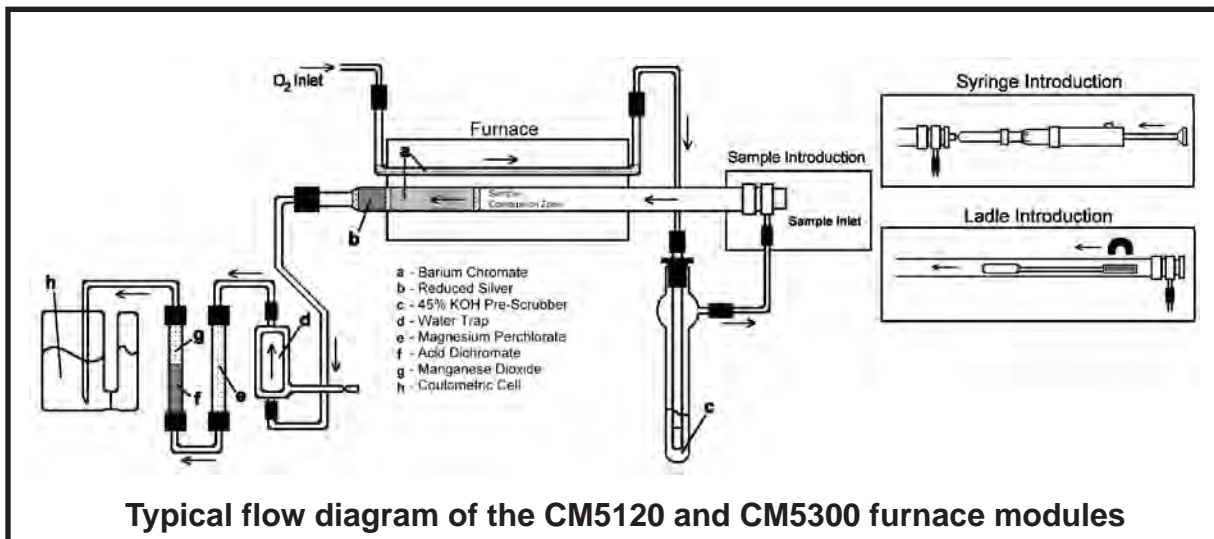
CM192-003



CM123-017

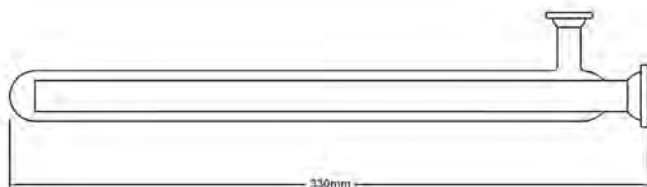
Chemicals for Carbon and Sulfur Analysis

- CM300-004 Quartz wool, 4 g
- CM300-008 Acid dichromate on silica support, 14 g
- CM300-009 Manganese dioxide, 5 g
- CM300-010 Magnesium perchlorate, 500 g
- CM300-011 Barium chromate, 200 g
- CM300-012 Reduced silver, 100 g
- CM300-015 Tungsten trioxide, 100 g
- CM300-028 Vanadium pentoxide, 250 g
- CM300-029 Copper oxide, 250 g
- CM300-030 Reduced copper, 250 g
- CM319-001 Granular silver, 1 g



Autosamplers

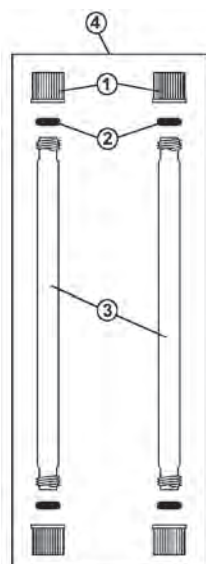
CM5200 Autosampler Furnace



CM201-035 Combustion tube, vertical furnace, unfilled only



CM251-012 Ceramic insert, slotted
CM251-007 Ceramic insert, unslotted



Post-Scrubber Assembly Diag.

#	Description	Part No.
1	Cap, 14mm	CM191-035
2	O-ring, 4mm x 4mm	CM153-024
3	Tube, threaded, 200mm	CM200-056
4	Post-scrubber assembly, CM5200, complete	CM210-018

Other Post-scrubber Parts

CM119-017	Component attachment clip, 1/2"
CM130-017	Scrubber tube outlet, 12/3 ball joint
CM130-018	Scrubber tube inlet, 18/3 ball joint
CM130-019	Scrubber u-tube
CM192-011	Clamp, #12 ball socket
CM192-015	Clamp, #18 ball socket



CM251-008 Tin boats, 6x6x12mm, 500/pk

Other Parts and Accessories

CM123-017	Flowmeter
CM125-002	Fuse, 10A, 250V, Slo Blo
CM125-009	Fuse, 20A, 250V, Slo Blo
CM125-011	Fuse, 5A, 250V, Slo Blo
CM147-012	Ceramic tube, furnace insert, 1 1/8" ID
CM153-018	O-ring, #28 ball fitting
CM190-009	Tubing, Teflon, 1/8" OD x 1/16" ID, per inch
CM191-001	Unions, small, 1/4" x 1/8", 10/pk
CM192-012	Clamp, #28 ball socket
CM251-009	Micro spatula
CM251-010	Forceps, curved fine point
CM251-011	Forceps, membrane



CM123-017

Autosamplers

CM5200 Autosampler Furnace (cont.)

Chemicals

CM300-004	Quartz wool, 4 g
CM300-008	Acid dichromate on silica support, 14 g
CM300-009	Manganese dioxide, 5 g
CM300-010	Magnesium perchlorate, 500 g
CM300-039	Barium chromate, 10-20mesh, 200 g
CM300-012	Reduced silver, 100 g

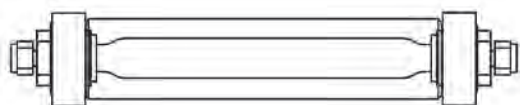
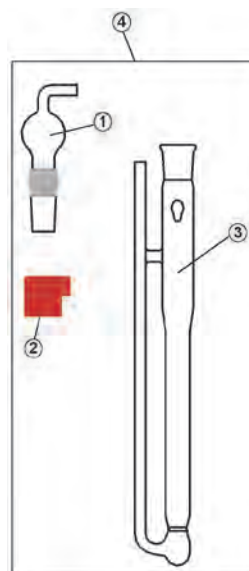
CM5240 Auto-Acidification Module

Post-Scrubber Assembly

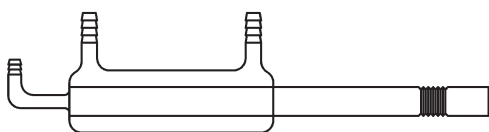
Diag.

#	Description
1	Post-scrubber Top
2	Threaded joint connector, red
3	Post-scrubber body
4	Post-scrubber assembly, complete

Part No.
CM200-046
CM192-009
CM200-020
CM210-012



CM210-022 Solid CO2 pre-scrubber

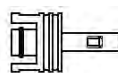


CM210-021 Condenser, unheated
CM210-023 Condenser, heated

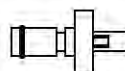
CM119-034/50 Sample cups, Teflon, 50/pk



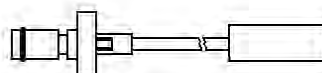
CM129-118 Quick disconnect, male



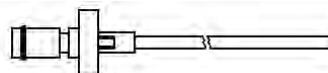
CM129-109 Coupling, male w/ hose barbs



CM101-182 Connection hose, condenser to CM5240

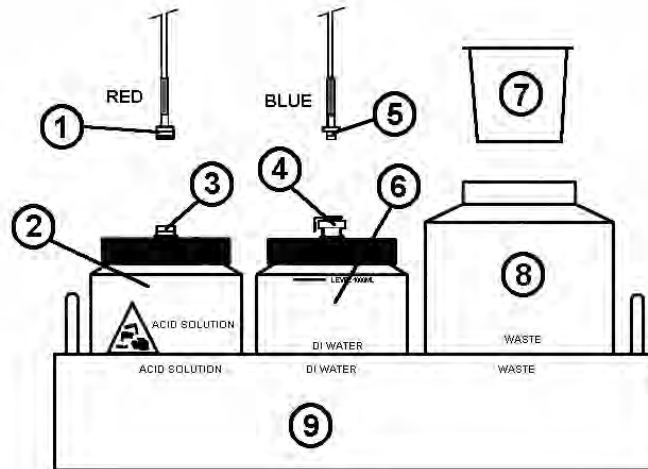


CM101-183 Connection hose, CM5240 to CM5014



Autosamplers

CM5240 Auto-Acidification Module (cont.)



Bottle Rack Components

Diag

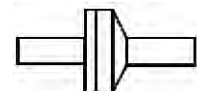
#	Description	Part No.
1	Fitting, (M) LL w/ barbs for Acid Inlet line	CM129-111
2	1 liter bottle for Acid, complete w/ cap, fitting and filter	CM332-015
3	Fitting, (F) LL, bulkhead w/ barbs	CM129-129
4	Fitting, (F) LL, 1/16" w/ barbs	CM129-110
5	Coupling, 1/16" (M) w/ barbs	CM129-109
6	1 liter bottle for Water, complete w/ cap, fitting and filter	CM332-014
7	Sample holder cup	CM332-016
8	2 liter Waste bottle, complete w/ sample holder cup	CM332-013
9	Bottle rack	CM101-185
10	Bottle rack assembly, complete w/ CM332-013, CM332-014, CM332-015 and CM101-185	CM101-191

Other Parts and Accessories

CM101-186	45-position carousel assembly
CM119-033	Plexiglass carousel cover
CM123-017	Flowmeter
CM125-017	Fuse, 2A, 20mm
CM129-108	Valve cartridge, for rinse and acid pumps, 2/pk
CM153-027	O-rings, Viton #206, 5/pk
CM190-009	Tubing, Teflon, 1/8" OD x 1/16" ID, per inch
CM191-001	Unions, small, 1/4" x 1/8", 10/pk
CM192-003	Check valves, 6/pk
CM192-009	Threaded joint connector, red
CM250-017	Bottom-of-the-bottle filter, ea.
CM251-009	Micro spatula
CM251-010	Forceps, curved fine point
CM251-011	Forceps, membrane



CM123-017



CM192-003



For All Your Laboratory Needs

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