

Detector Tube Pumps



For more complete information on all Detector Tube Pumps, see Data Sheet 08-01-02.

Toximeter™ II Automatic Detector Tube Pump

The Toximeter II Automatic Detector Tube Pump makes the sampling process easier, allowing the user to preset the number of pump strokes from 1 to 250. Intrinsically safe, the automatic pump works with all MSA detector tubes. It can also be used as a sampling pump.

Toximeter™ II Automatic Detector Tube Pump

655585	Toximeter II Automatic Detector Tube Pump
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Kwik-Draw® Detector Tube Pumps

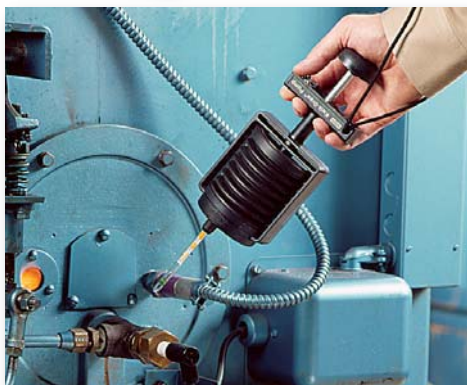
MSA's Kwik-Draw and Kwik-Draw Deluxe Pumps can be used with an assortment of MSA's detector tubes to spot-test atmospheres for a wide variety of toxic substances. They are designed for one-hand operation and consistent delivery of a sample draw volume of 100 milliliters (ml).

Kwik-Draw Detector Tube Pumps

488543	Kwik-Draw Basic Pump, with remote sampling adapter and carrying pouch
487500	Kwik-Draw Deluxe Pump, with remote sampling adapter, carrying pouch and end-of-stroke indicator

Accessories

73067	Sampling line, 10 ft
73068	Sampling line, 25 ft
73069	Sampling line, 50 ft
87970	Remote Sampling Adapter, required for above sampling line
488780	Solvent-Resistant Sampling Line, 25 ft, with reel
488872	Tube Holder, required for 488780 line above



Gas-Tester™ II H Detector Tube Pump

The Gas-Tester II H Pump is set for action by compressing the bellows. A pump stroke is started by pressing the release button. When the sample (100ml) is drawn through the tube, the end-of-stroke indicator changes color. An accurate measurement is obtained because the sample draw procedure itself is controlled only by the specifications of the pump and the flow resistance of the detector tube.

Gas-Tester II H Detector Tube Pump

696944	Gas Tester II H Detector Tube Pump
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Detector Tube Handbook

Detector Tube Handbook

813929	Detector Tube Handbook
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Detector Tubes

Detector Tube Industry Action Sets

Agricultural Set

4 x Phosphine
2 x Sulfur Dioxide
4 x Methyl Bromide
2 x Hydrogen Cyanide

Pulp & Paper Set

3 x Chlorine Dioxide
2 x Sulfur Dioxide
3 x Hydrogen Sulfide
2 x Chlorine
2 x Ozone

Indoor Air Quality Set

2 x Carbon Monoxide
2 x Carbon Dioxide
2 x Formaldehyde
2 x Ozone
2 x H₂O (relative humidity)

Pharmaceutical Set

3 x Acetic Acid
3 x Aromatic HC
3 x Qualitest
3 x Hydrogen Cyanide

Petroleum Set

2 x Hydrogen Sulfide
2 x Carbon Monoxide
2 x Qualitest
4 x Benzene
2 x Hexane

Synthetics Manufacturing Set

2 x Toluene
4 x Qualitest
2 x Ethanol
2 x Vinyl Chloride
2 x Trichloroethylene

Semiconductor Sets

Chemical Vapor Deposition Process

3 x Ammonia tubes
3 x CO₂ tubes
3 x Nitrous fumes tubes
3 x H₂S tubes

Etching Process

4 x Ammonia tubes
4 x Chlorine tubes
4 x Hydrogen Chloride tubes

Epitaxy Process

3 x CO tubes
3 x Hydrogen Chloride tubes
3 x Phosphine tubes
3 x Phosgene tubes

Crystal Growth Process

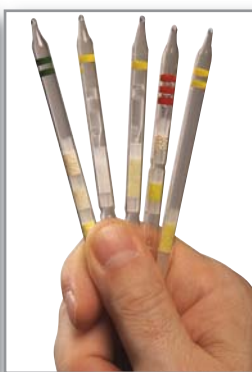
6 x Phosgene tubes
6 x Phosphine tubes



Detector Tube Industry Action Sets

Agricultural Set	655864
Pulp and Paper Set	655868
Indoor Air Quality Set	710981
Pharmaceutical Set	655869
Petroleum Set	655865
Synthetics Manufacturing Set	655866
Chemical Vapor Deposition Process Set	655933
Etching Process Set	655934
Epitaxy Process Set	655935
Crystal Growth Process Set	655931

Note: All sets are boxes of 12 tubes.



Chemical Warfare Agent Detector Tubes

Detect a wide range of nerve, blister, blood, and choking agents.

- Quick, simple to use, easy to interpret results
- Can be used with MSA's full line of pumps
- "Go/No Go" style
- All sold in boxes of 10 tubes
- Important: Sold only in the U.S.

Chemical Warfare Agent Detector Tubes

10007654	Nerve (Sarin, VX, GA, GD, etc.)
10007653	Blister (Mustard Gas)
10007650	Blister (Lewisite)
10007652	Blister (variety, including Mustard Gas)
10007651	Blood and Choking (CG, DP, AC, CK)



Multi CWA Tube Sampler



Single CWA Tube Sampler

Chemical Warfare Agent Detector Tube Kits

Chemical Warfare Kits are available in a Single CWA Tube Sampler and a Multi CWA Tube Sampler. The Single CWA Tube Sampler will only sample one CWA tube at a time. The Multi CWA Tube Sampler allows the user to simultaneously sample up to four CWA tubes at the same time without making adjustments. The kit is supplied with an MSA Escort ELF pump, which maintains constant flow with a built-in "Run/Hold" feature that allows the user to start/stop the pump and still maintain an accurate sampling timer. The four-port manifold tube holder is pre-set for the proper flow rate for CWA tube sampling.

Chemical Warfare Agent Detector Tube Kits

10049765	Multi CWA Tube Sampler with Escort ELF Pump
10044998	Single CWA Tube Sampler with Kwik-Draw Pump



CO Detector Tube Card

Carbon Monoxide Detector Tube Cards

CO Detector Tube Cards

481954	CO Detector Tube Cards, box of 20
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Detector Tubes

Substance Measured	Detector Tube applicable	Part No. (1 box of 10 tubes)	Measuring range (ppm)	Threshold Limit Value 1998 ACGIH (ppm)
Acetaldehyde	Formaldehyde-0.1	497649	5–50	25 (ceiling)
Acetic Acid	Acetic Acid-1	804138	1–80	10
Acetone	Acetone-100	804141	100–10,000	500
	Qualitest QL	497665	n/a	
Acetylene dichloride, cis and trans (1,2 Dichloroethylene)	Trichloroethane-5	487343	10–500	200
	Qualitest QL	497665	n/a	
Acetylene tetrabromide (1,1,2,2-Tetrabromoethane)	Trichloroethane-5	487343	5–200	1
	Qualitest QL	497665	n/a	
Acetylene tetrachloride (1,1,2,2-Tetrachloroethane)	Trichloroethane-5	487343	50–1000	1
	Qualitest QL	497665	n/a	
Ammonia	NH ₃ –2	804405	2–500	25
	NH ₃ –20	800300	20–1000	
	NH ₃ –0.1%	804406	0.1–10 Vol.-%	
n-Amyl chloride (1-Chloropentane)	Trichloroethane-5	487343	5–550	–
Arsine	Ash3	10072098	0.05–1	–
Benzene	Aromatic HC	804132	5–500	.5
	C ₆ H ₆ -1	807024	1–100	
	C ₆ H ₆ -5	804411	5–100	
	Qualitest QL	497665	n/a	
	C ₆ H ₆ -0.5	655837*	0.5–10	
Bromine	C12-0.2	803944	0.2–3	0.1
Bromobenzene	Aromatic HC	804132	30–720	–
Bromoethane (Ethyl bromide)	Trichloroethane-5	487343	15–400	5
Bromoform (Tribromomethane)	Trichloroethane-5	487343	7–200	0.5
Bromomethane (Methyl bromide)	Trichloroethane-5	487343	20–270	1
1,3-Butadiene	Ethylene-50	804428	100–1200	2
	Qualitest QL	497665	n/a	
n-Butane	Propane-200	804418	200–3800	800
	Qualitest QL	497665	n/a	
n-Butanol (Butyl Alcohol)	Ethanol-100	804136	100–3900	50 (ceiling)
sec. Butanol (sec-Butyl Alcohol)	Ethanol-100	804136	300–5100	100
1-Butene (1-Butylene)	Ethylene-50	804428	100–5000	–
	Qualitest QL	497665	n/a	
2-Butylene, cis and trans (2-Butylene)	Ethylene-50	804428	200–5000	–
	Qualitest QL	497665	n/a	
Butyl Alcohol (n-Butanol)	Ethanol-100	804136	100–3900	50 (ceiling)
sec-Butyl Alcohol (sec-Butanol)	Ethanol-100	804136	300–5100	100
n-Butylamine	Triethylamine-5	804134	2–28	5 (ceiling)
iso-Butylamine	Triethylamine-5	804134	3–36	–
sec-Butylamine	Triethylamine-5	804134	2–18	–
t-Butylamine	Triethylamine-5	804134	2–14	–
n-Butylchloride (1-Chlorobutane)	Trichloroethane-5	487343	5–170	–
	Qualitest QL	497665	n/a	
1-Butylene (1-Butene)	Ethylene-50	804428	100–5000	–
	Qualitest QL	497665	n/a	
2-Butylene (2-Butene, cis and trans)	Ethylene-50	804428	200–5000	–
	Qualitest QL	497665	n/a	
n-Butyl mercaptan	Ethylmercaptan-0.5	804589	1.5–15	0.5
t-Butyl mercaptan	Ethylmercaptan-0.5	804589	0.8–5	–
Carbon Dioxide	CO ₂ -100	497606	100–3000	5000
	CO ₂ -0.1%	487333	0.1–7.0 Vol.-%	
	CO ₂ -1%	804419	1–20 Vol.-%	
Carbon Disulfide	CS ₂ -2	492514	2–300	10
	Qualitest QL	497665	n/a	
Carbon Monoxide	CO-0.001 %	804421	0.001–0.3 Vol.-%	25
	CO-5	803943	5–1000	
	CO-10	487334	10–3000	
	CO-3000	815507	3000–70000	
	CO-0.1%	804423	0.1–1.0 Vol.-%	
	CO-0.3%	487335	0.3–7.0 Vol.-%	
	CO-10/color	47134	10–1000	
	(special orifice assembly for CO-10/color)	497652		
Chlorine	Qualitest QL	497665	n/a	0.5
	Cl ₂ -0.2	803944	0.2–30	
	ClO ₂ -0.05	804133	1–46	
	Cl ₂ -50	655862	50–500	

*includes scrubber tubes for Benzene specificity

Substance Measured	Detector Tube applicable	Part No. (1 box of 10 tubes)	Measuring range (ppm)	Threshold Limit Value 1998 ACGIH (ppm)
Chlorine dioxide	CIO2-0.05	804133	0.05–15	0.1
Chlorobenzene	Aromatic HC	804132	40–610	10
Chlorobromomethane	Trichloroethane-5	487343	5–180	200
1-Chlorobutane (n-Butylchloride)	Trichloroethane-5	487343	5–170	–
	Qualitest QL	497665	n/a	–
Chloroethane(Ethyl chloride)	Trichloroethane-5	487343	50–800	100
Chloroethylene (Vinyl chloride)	VC-1	803950	1–70	5
	Trichloroethane-5	487343	20–550	–
Chloroform (Trichloromethane)	Trichloroethane-5	487343	8–100	10
1-Chloropentane (n-Amylchloride)	Trichloroethane-5	487343	5–550	–
1-Chloropropane (l-Propylchloride)	Trichloroethane-5	487343	5–220	–
2-Chloropropane (2-Propylchloride)	Trichloroethane-5	487343	8–1700	–
Cycloheptane	Hexane-20	497664	80–3300	–
Cyclohexane	Hexane-20	497664	20–3400	–
	Qualitest QL	497665	n/a	300
Cyclohexylamine	Triethylamine-5	804134	7–38	10
Cyclooctane	Hexane-20	497664	20–2100	–
Cyclopentane	Hexane-20	497664	80–2700	600
n-Decane	Hexane-20	497664	50–500	–
1,2-Dibromoethane (Ethylene dibromide)	Trichloroethane-5	487343	25–700	–
Dibromomethane (Methylene dibromide)	Trichloroethane-5	487343	9–200	–
1,1-Dichloroethane (Ethylidene chloride)	Trichloroethane-5	487343	8–300	100
1,2-Dichloroethane (Ethylene dichloride)	CH ₂ Cl ₂ -50	804416	30–720	10
1,1-Dichloroethylene (Vinylidene chloride)	Trichloroethane-5	487343	10–600	5
1,2-Dichloroethylene (Acetylene dichloride, cis and trans)	Trichloroethane-5	487343	10–500	200
Dichloromethane (Methylene chloride)	CH ₂ Cl ₂ -50	804416	50–1000	50
1,2-Dichloropropane (Propylene dichloride)	Trichloroethane-5	487343	5–440	75
1,3-Dichloropropane (Trimethylene dichloride)	Trichloroethane-5	487343	5–220	–
Diesel Oil	Qualitest QL	497665	n/a	–
Diethylamine	Triethylamine-5	804134	3–27	5
Dimethylamine	Triethylamine-5	804134	3–27	5
2,2-Dimethylbutane	Hexane-20	497664	100–4900	–
Ethanol (Ethyl Alcohol)	Ethanol-100	804136	100–6000	–
	Qualitest QL	497665	n/a	1000
Ethene (Ethylene)	Ethylene-50	804428	50–5000	–
	Qualitest QL	497665	n/a	–
Ethyl Alcohol (Ethanol)	Ethanol-100	804136	100–6000	–
	Qualitest QL	497665	n/a	1000
Ethylamine	Triethylamine-5	804134	4–55	5
Ethyl benzene	Tol.-5	803947	5–1800	100
Ethyl bromide (Bromoethane)	Trichloroethane-5	487343	15–400	5
Ethyl chloride (Chloroethane)	Trichloroethane-5	487343	50–8000	100
Ethylenediamine	Triethylamine-5	804134	5–27	10
Ethylene dibromide (1,2-Dibromoethane)	Trichloroethane-5	487343	25–700	–
Ethylene dichloride (1,2-Dichloroethane)	CH ₂ Cl ₂ -50	804416	30–720	10
Ethylidene chloride (1,1-Dichloroethane)	Trichloroethane-5	487343	8–300	100
Ethyl mercaptan	Ethylmercaptan-0.5	804589	0.5–80	0.5
Formaldehyde	Formaldehyde-0.1	497649	0.1–55	0.3 (ceiling)
Formic Acid	Qualitest QL	497665	n/a	–
	Acetic Acid-1	804138	2–160	5
Furfuryl alcohol	Phenol-1	813778	on request	10
Gasoline	Gasoline-30	492870	30–6000	–
	Qualitest QL	497665	n/a	300
n-Heptane	Hexane-20	497664	20–2600	400
n-Hexane	Hexane-20	497664	20–3200	50
Hydrogen Chloride	HCl-1	803948	1–30	–
	Qualitest QL	497665	n/a	5 (ceiling)
Hydrogen Cyanide	HCN-2	803945	2–50	4.7 (ceiling)
Hydrogen Fluoride	HF-1	804142	1–50	3 (ceiling)

Substance Measured	Detector Tube applicable	Part No. (1 box of 10 tubes)	Measuring range (ppm)	Threshold Limit Value 1998 ACGIH (ppm)
Hydrogen Sulfide	H ₂ S-1	487339	1–200	10
	H ₂ S-100	487340	0100–4000	
	H ₂ S-0.1%	655932	0.1–4 Vol. %	
	Qualitest QL	497665	n/a	
Isobutane (Methylpropane)	Propane-200	804418	200–4200	–
Isobutanol (Isobutyl Alcohol, 2-Methylpropyl Alcohol)	Ethanol-100	804136	100–2900	50
Isobutene (Isobutylene, Methylpropene)	Ethylene-50	804428	400–2600	–
Iso-Butylamine	Triethylamine-5	804134	3–36	–
Isobutylene (Isobutene, Methylpropene)	Ethylene-50	804428	400–2600	–
Isobutyl Alcohol (Isobutanol, 2-Methylpropyl Alcohol)	Ethanol-100	804136	150–2900	50
Isobutyl Methyl Ketone	MEK-50	813334	50–6500	–
Iso Octane	Hexane-20	497664	100–3000	–
Isopropanol (Isopropyl Alcohol, 2-Propanol)	Ethanol-100	804136	200–5000	400
	Qualitest QL	497665	n/a	
Isopropyl Alcohol (Isopropanol, 2-Propanol)	Ethanol-100	804136	200–5000	400
	Qualitest QL	497665	n/a	
Isopropylamine	Triethylamine-5	804134	5–30	5
Isopropyl mercaptan	Ethylmercaptan-0.5	804589	0.5–5.5	–
Kerosene	Qualitest QL	497665	n/a	–
Ketones	Qualitest QL	497665	n/a	–
	Qualitest QL	497665	n/a	
Liquified Petroleum Gases	Gasoline-30	492870	Semiquantitative	–
	Qualitest QL	497665	n/a	
Mercury	Hg–0.1 mg/m ³	497663	0.1–0.8 mg/m ³ (0.01–0.08 ppm)	0.025 mg/m ³ (inorganic)
Methane	Natural Gas	655789	Semiquant. 5000+	–
Methanol (Methyl Alcohol)	Ethanol-100	804136	100–2350	200
Methyl Alcohol (Methanol)	Ethanol-100	804136	100–2350	200
Methylamine	Triethylamine-5	804134	4–55	5
Methyl benzene (Toluene)	Tol.-5	803947	5–1000	50
Methyl bromide (Bromomethane)	Trichloroethane-5	487343	9–200	5
	MeBr-200	710544	200–8000 ppm	
	MeBr-2	710391	2–100 ppm	
2-Methyl butane	Hexane-20	497664	50–3000	–
Methyl chloroform (1,1,1-Trichloroethane)	Trichloroethane-5	487343	5–1500	350
	Qualitest QL	497665	n/a	
Methylcyclohexane	Hexane-20	497664	80–4900	400
Methylcyclopentane	Hexane-20	497664	150–3700	–
Methylene chloride (Dichloromethane)	CH ₂ Cl ₂ -50	804416	50–1000	50
Methylene dibromide (Dibromomethane)	Trichloroethane-5	487343	9–200	–
Methyl Ethyl Ketone (MEK)	MEK-50	813334	50–4000	200
	Qualitest QL	497665	n/a	
Methyl mercaptan	Ethylmercaptan-0.5	804589	0.5–5	0.5
2-Methyl pentane	Hexane-20	497664	150–4500	–
3-Methyl pentane	Hexane-20	497664	100–3700	–
Methylpropane (Isobutane)	Propane-200	804418	200–4200	–
Methylpropene (Isobutylene, Isobutene)	Ethylene-50	804428	400–2600	–
2-Methylpropyl Alcohol (Isobutanol, Isobutyl Alcohol)	Ethanol-100	804136	150–2900	50
Nitrogen Dioxide	NO ₂ -0.5	487341	0.5–50	3
	NO ₂ -2	804435	2–140	
Nitrous Fumes	Nitr.-0.5	487336	0.5–50	–
	Nitr.-2	804425	2–140	
	Nitr.-10	803946	10–300	
	Nitr.-50	804426	50–3000	
n-Nonane	Hexane-20	497664	50–2800	200
n-Octane	Hexane-20	497664	50–3000	300
Ozone	Ozone-0.05	804140	0.05–5	0.05 (ceiling)
Pentachloroethane	Trichloroethane-5	487343	10–300	–
n-Pentane	Hexane-20	497664	50–3900	600
	Qualitest QL	497665	n/a	

Substance Measured	Detector Tube applicable	Part No. (1 box of 10 tubes)	Measuring range (ppm)	Threshold Limit Value 1998 ACGIH (ppm)
Perchloroethylene (Tetrachloroethylene)	Per-5	804429	5–200	25
	Per-10	487337	10–500	
	Qualitest QL	497665	n/a	
Phenol	Phenol-1	813778	1–25	5
	Qualitest QL	497665	n/a	
Phosgene	Phosgene-0.1	803949	0.1–20	0.1
Phosphine	PH ₃ -0.05	497101	0.05–3	0.3
	PH ₃ -0 1	485680	0.1–100	
	PH ₃ -50	489119	50–2000	
Propane	Propane-200	804418	200–4000	2500
	Qualitest QL	497665	n/a	
n-Propanol (Propyl Alcohol)	Ethanol-100	804136	100–3000	200
	Qualitest QL	497665	n/a	
2-Propanol (Isopropanol, Isopropyl Alcohol)	Ethanol-100	804136	200–5000	400
	Qualitest QL	497665	n/a	
Propene (Propylene)	Ethylene-50	804428	20–5000	–
	Qualitest QL	497665	n/a	
Propyl Alcohol (n-Propanol)	Ethanol-100	804136	100–3000	200
	Qualitest QL	497665	n/a	
n-Propylamine	Triethylamine-5	804134	2–28	–
1-Propylchloride (1-Chloropropane)	Trichloroethane-5	487343	5–220	–
2-Propylchloride (2-Chloropropane)	Trichloroethane-5	487343	8–1700	–
Propylene (Propene)	Ethylene-50	804428	20–5000	–
	Qualitest QL	497665	n/a	
Propylene dichloride (1,2-Dichloropropane)	Trichloroethane-5	487343	5–440	75
n-Propyl mercaptan	Ethylmercaptan-0.5	804589	0.7–8.0	–
Styrene	Styrene-10	804135	10–300	20
	Qualitest QL	497665	n/a	
Sulfur Dioxide	SO ₂ -1	487338	0.5–25	2
	SO ₂ -5	497662	5–120	
	SO ₂ -100	497661	100–4000	
Sulfur Hexafluoride decomposition products	SF ₆ Decomposition Products	804433	0.5–15	1000
1,1,2,2-Tetrabromoethane (Acetylene tetrabromide)	Trichloroethane-5	487343	5–200	1
1,1,2,2-Tetrachloroethane	Trichloroethane-5	487343	50–1000	1
Tetrachloroethylene (Perchloroethylene)	Per-5	804429	5–200	25
	Per-10	487337	10–500	
	Qualitest QL	497665	n/a	
Tetrahydrofuran	Ethanol-100	804136	Semi-quant	200
Toluene (Methyl benzene)	Tol.-5	803947	5–1000	50
	Qualitest QL	497665	n/a	
Tribromomethane (Bromoform)	Trichloroethane-5	487343	7–200	0.5
1,1,1-Trichloroethane (Methyl chloroform)	Trichloroethane-5	487343	5–1500	350
	Qualitest QL	497665	n/a	
1,1,2-Trichloroethane (Vinyltrichloride)	Trichloroethane-5	487343	10–170	10
Trichloroethene (Trichloroethylene)	Tri-5	487342	5–250	50
Trichloroethylene (Trichloroethene)	Tri-5	487342	5–250	50
Trichloromethane (Chloroform)	Trichloroethane-5	487343	8–100	10
1,2,3-Trichloropropane	Trichloroethane-5	487343	10–1200	10
Triethylamine	Triethylamine-5	804134	5–30	1
Trimethylamine	Triethylamine-5	804134	5–30	5
Trimethylene dichloride (1,3-Dichloropropane)	Trichloroethane-5	487343	5–220	–
2,2,4-Trimethylpentane	Hexane-20	497664	100–3000	–
Vinyl Chloride (Chloroethylene)	VC-1	803950	1–70	5
	Qualitest QL	497665	n/a	
Vinylidene chloride (1,1-Dichloroethylene)	Trichloroethane-5	487343	10–600	5
Vinyltrichloride (1,1,2-Trichloroethane)	Trichloroethane-5	487343	10–170	10
Water Vapor	H ₂ O-10	655863	10–100% RH	–
o-Xylene (1,2-Xylene)	Tol.-5	803947	5–2500	100
	Qualitest QL	497665	n/a	
m-Xylene (1,3-Xylene)	Tol.-5	803947	5–2500	100

HAZMATCAD™ and HAZMATCAD Plus Hazardous Material Chemical Agent Detectors



HAZMATCAD Detector

The HAZMATCAD Hazardous Material Chemical Agent Detector is a handheld instrument that detects and classifies Chemical Warfare Agents (CWA). When compared to other technologies, the HAZMATCAD Detector offers more capabilities and greater reliability at a lower cost.

Features

- Compact, light-weight and portable
- Self-diagnostic check during rapid warm-up
- Alphanumeric display with LED alarms
- Dual-Mode SAW Operation—Fast or High Sensitivity
- Operates between 8 and 12 hours on rechargeable Li-Ion batteries
- Vapor-diffusion check source verifies system performance
- Unit can be hand-carried or worn on belt
- RS-232 and IrDA communication ports; stores up to 8 hours of data
- Inlet design protects against dust and particulates

HAZMATCAD Plus Detector

The HAZMATCAD Plus Detector detects for Chemical Warfare Agents (CWA) and selected Toxic Industrial Chemicals (TICs). It is a portable instrument designed for one-hand operation. It is very easy to operate and requires limited training for effective use.

Features

- Self-diagnostic check during rapid warm-up
- Alphanumeric display with LED alarms
- Dual-Mode SAW Operation – Fast or High Sensitivity
- Electrochemical Cells – Real time analysis
- Operates between 8 and 12 hours on rechargeable Li-Ion batteries
- Vapor-diffusion check source verifies system performance
- RS-232 and IrDA communication ports; stores up to 8 hours of data
- Inlet design protects against dust and particulates

HAZMATCAD Detector Kits

Kits include: HAZMATCAD Detector; battery charger; belt clip; two Sony rechargeable batteries; hard, water-resistant carrying case; operating manual; vapor check source

Part No.	Instrument	Chemical Agents Detected
10055094	HAZMATCAD Detector	Nerve and Blister
10055095	HAZMATCAD Detector	Nerve, Blister and Hydrogen Cyanide
10055096	HAZMATCAD Detector	Nerve, Blister and Phosgene
10055097	HAZMATCAD Plus Detector	Nerve and Blister agents and TICs (phosgene, hydrogen cyanide, halogen and hydride gas)

HazMat Response Kit



The HazMat Response Detector Tube Kit can be used by firefighters, HazMat Response Teams and other workers to help classify unknown chemical gases and vapors at accident or spill sites. A Quad-Port Sampler allows four chemical classes to be tested simultaneously. The portable kit contains 12 types of Detector Tubes (each with sufficient tubes for 10 complete tests), a Kwik-Draw Pump to draw the sample through the tubes, the multiple tube holder and a convenient, easy-to-follow interpretation guide.

Features & Benefits

- Quickly classifies unknown chemical gases and vapors
- Quad-Port Sampler allows simultaneous testing with four detector tubes, meaning less time in IDLH atmosphere
- Flow-limiting orifices ensure even sample flow
- Portable and easy to handle
- Includes simple interpretation guide

HazMat Response Kit

807472	Includes 12 types of detector tubes, multiple tube holder, Kwik-Draw Pump and interpretation guide
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SafeSite® Multi-Threat Detection System



**SAFEMTX
Multi-Threat
Detector**

**SAFECOM
Command
Center**



**HAZMATCAD Plus Detector
with SAFECONNECT Belt-Bridge**



**Sirius PID Multigas Detector
with SAFECONNECT Belt-Bridge**



**ADASHI
CERTIFIED
COMPATIBLE**

**ADASHI First Responder
Software helps
emergency responders
manage, communicate
and respond to
dangerous incidents.**



PC Connection

The SAFESITE Multi-Threat Detection System simultaneously monitors and wirelessly communicates six potential threats: CWAs, VOCs, TICs, gamma radiation, combustible gas and oxygen deficiency.

The SAFESITE System combines state-of-the-art detection technology with advanced wireless communication capabilities to provide superior preventative and counter-measure solutions for:

- Homeland Security
- Emergency Response
- Public Events
- Building Protection
- Mass Transportation Centers
- Perimeter Monitoring
- Hazardous Response
- Port Surveillance
- Confined Space Monitoring

SAFESITE System components consist of the SAFEMTX™ Multi-Threat Detector, the SAFECOM™ Command Center and SAFECONNECT™ Belt-Bridge with SIRIUS® Wireless Interface or HAZMATCAD Interface and SAFECONFIG™ Software. The system can be installed permanently (wired or wireless) for continual monitoring or deployed as a portable system.

Through the SAFECOM Command Center, alarms are identified with both visual and audible alarms. Alarms can then be acknowledged and silenced, detectors can be enabled and disabled, event logs and event log history can be viewed, plus units can be customized to suit the specific deployment scenario.

SAFESITE is fully compatible with ADASHI First Responder Software. SAFESITE threat information will appear in the ADASHI PC interface. ADASHI software capabilities include plume modeling and weather information for comprehensive event information and threat management.



- 1 Threat Readings** – scrolling readings of up to 16 MTX Detectors per channel. Unit is identified by large icon to the left of the readings. In alarm condition, display snaps to unit in alarm.
- 2 MTX Icons** – identify number of units enabled in current network. Users may view specific unit reading by double-clicking on icon.
- 3 Map** – option for map view or uploaded image view.
- 4 Signal Strength** – communication status from SAFEMTX™ Detector to SAFECOM™ Command Center.
- 5 Power** – status of battery life of SAFEMTX Detectors.
- 6 System Status** – alerts user to alarm, warning or fault within a particular system.
- 7 Action Buttons** – allow user to select address, cycle units, acknowledge alarms and enable or disable units from the system.

Threat	Technology	Benefit
Chemical warfare agents	Surface acoustic wave (SAW)	Low false positives and false alarms, differentiates nerve & blister agents
Gamma radiation	Cadmium zinc telluride (CZT)	Sensitive with adjustable threshold and 2 ranges. (0-100 mR/hr, 0.1 mR/hr resolution & 0-1000 mR/hr, 1 mR/hr resolution)
Volatile organic compounds	Photo-ionization (PID)	10.6 eV lamp provides ppm readings for broadband toxics and VOC detection
Toxic industrial chemicals	Electrochemical	Detects many specific toxic gases such as chlorine, ammonia, hydrogen cyanide and hydrogen chloride
Oxygen deficiency/enrichment	Electrochemical	Oxygen monitoring for confined space
Combustible gas	Catalytic bead	Wide range detection for hydrocarbons

BIOSENSOR™ 2200R Biological Agent Detector



The new BIOSENSOR 2200R Biological Agent Detector from MSA is a handheld, portable, on-site instrument for rapid detection, analysis, and identification of biological agents. Unique bioassay technology offers excellent sensitivity and low false positives while offering ease of use during white powder response calls. This highly accurate detection method provides rapid measurement of biohazards such as anthrax, ricin, botulism, SEB, and plague.

Exclusive five minute time-to-answer allows first responders to make informed critical decisions more rapidly than any other biological agent detector. The BIOSENSOR 2200R employs dynamic surface generation, a patent pending type of immunoassay detection technology. This technology offers significant advantages over other field-based assay methods by combining the benefits of both the free solution and lateral flow types. The result is more rapid analysis, a user-friendly format, and detector stability within a wide range of climates.

Both wet and dry samples may be tested and results are displayed with a simple red (target present) or green (no target present) indication. As tests are nondestructive, samples may be retained as evidence. Single-test, disposable cartridges with on-board reagents have a 12-month shelf life. This instrument is permanently housed in a sturdy, lightweight Pelican case.

Instrument Features and Benefits

- 5 minute time-to-answer
- Uses positive and negative control cartridges
- Battery-operated with ability to run 50 tests on a single charge
- Fully deconable housing; IP67 rated
- Visual and audible alarms provide clear indication of status
- Extremely easy to use with a training time of one hour
- Integrated RFID (radio frequency identification) for automatic cartridge recognition

Targets

- Anthrax/ricin duplex—one test, two agents
- Ricin
- Botulism*
- Smallpox*
- Cholera*
- Anthrax
- SEB (staphylococcal enterotoxin B)
- Plague*
- Tularemia*
- West Nile virus*

*additional agents in development



BIOSENSOR 2200R Biological Agent Detector

10084834	MSA BIOSENSOR 2200R Biological Agent Detector Kit*, includes carry case, charger, cartridge starter kit (10084758), instruction manual, and quick start guide.
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BIOSENSOR Cartridge Plans

10084758	MSA BIOSENSOR cartridge starter kit includes 3 Anthrax/Ricin dual kits**, 1 Anthrax, 1 Ricin, 3 positive control, 2 negative control cartridges, and 2 wet sample kits
10084753	MSA BIOSENSOR Low volume cartridge plan includes 6 Anthrax/Ricin dual kits**, 2 Anthrax, 2 Ricin, 6 positive control, 2 negative control cartridges, and 2 wet sample kits
10084754	MSA BIOSENSOR Medium volume cartridge plan includes 24 Anthrax/Ricin dual kits**, 6 Anthrax, 6 Ricin, 24 positive control, 6 negative control cartridges, and 4 wet sample kits
10084755	MSA BIOSENSOR High volume cartridge plan includes 60 Anthrax/Ricin dual kits**, 8 Anthrax, 8 Ricin, 60 positive control, 8 negative control cartridges, and 6 wet sample kits.

* Extended warranties available.

** Each biohazard cartridge test kit includes a dry sample kit. Please contact your local MSA rep for more information.

Escort ELF® and Escort® LC Sampling Pumps



Escort ELF Sampling Pump



Escort LC Sampling Pump

Escort ELF and LC Kits

Escort ELF Pump with flow fault indicator, 110V single-unit charger, Gemini® Twin Port Sampler, and standard packaging	805559
Escort ELF Pump with flow fault indicator, 110V single-unit charger, sampling line, and standard packaging	805560
Escort LC Pump with 110V single-unit charger, sampling line and standard packaging	711400

Replacement Parts and Accessories

One Replacement Inlet Water Stop Filter	802897
Escort Pump Overhaul Kit—common components for routine maintenance	802922
Inlet Dust Filter (pkg of 5)	808935

Battery Chargers—MSA Omega® Chargers

120 VAC 50/60 Hz	494716
220 VAC 50/60 Hz	495965
120/240 VAC 50/60 Hz (five-unit)	801759

Sampling Equipment

Sampling line only	456226
10mm Cyclone Assembly to separate respirable dust from non-respirable dust	456243
Gemini Twin-Port Sampler for sorbent tubes	497697
10mm Cyclone Assembly to separate respirable dust from non-respirable dust, for use with 37 mm non-MSA cassettes	10044015

Carrying Accessories

Leather case	811741
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Assemble-to-Order (ATO) System: You Make the Choices

The ATO System makes it easy to “custom-order” Escort Pumps, configured exactly the way you want them.

You can choose from an extensive line of base instrument components and accessories. See the ATO Chart on the following page.

To obtain a copy of the ATO via FAX, call MSA QuickLit Information Service at 1-800-672-9010. At the prompt, request QuickLit Document #2346 (ATO for Escort and Escort ELF and Escort LC Sampling Pumps).

Escort ELF Sampling Pumps

The patented Escort ELF Sampling Pump can be used for personal and area sampling. The state-of-the-art electronic laminar flow sensor, consisting of a laminar flow element and pressure sensor, provides constant flow (volume) control, with $\pm 2.5\%$ regulation of flow rate (from 1 to 3 lpm) and automatic compensation for changes in battery voltage, temperature, altitude, and sample load.

An internal secondary standard calibrates the pump continuously and needs to be checked against a primary standard only once a month (or every 200 hours for coal mine dust sampling).

Approvals

Escort ELF Sampling Pumps are UL approved as intrinsically safe for use in hazardous locations—Class I, Groups A, B, C, D; Class II, Groups E, F, and G; and Class III, Division I locations. NIOSH-certified for coal mine dust sampling (TC-74-030). MSHA certified as intrinsically safe for underground use (Approval No. 2G-3924-1).

Escort LC Sampling Pumps

The Escort LC Sampling Pump can be used with a variety of personal and area sampling devices to collect such airborne contaminants as asbestos fibers, toxic gases, vapors, particulates, fumes, and mists. It can also be used to sample silica dust, coal dust, and organic vapors.

The Escort pump is exceptionally compact, lightweight, and quiet in operation. Engineered for use in “hostile” environments, the unit can be sprayed with water while it is operating without being damaged.

Approvals

Escort LC Sampling Pumps are UL approved as intrinsically safe for use in hazardous locations—Class I, Groups A, B, C, D; Class II, Groups E, F, and G; and Class III, Division I locations.

MSA Sampling Pump Accessories

MSA sampling pump accessories and air sampling equipment allow monitoring of many different contaminants in various applications. Sampling pump accessories can be used in personal and area sampling for a wide variety of airborne contaminants such as asbestos fibers, toxic gases, vapors, particulates, mists, and fumes.

Accessories for MSA sampling pumps include filter media, a cyclone assembly, preweighed filter cassettes, filter holder assemblies, impingers, the Gemini® Twin-Port Sampler, sorbent tubes, and calibrators.

For more information, see Data Sheet 08-09-01.



Battery Chargers



Sampling Equipment



Leather Case

Escort ELF and Escort LC Sampling Pump Assemble-to-Order (ATO) Options

- To create your instrument configuration, select the instrument option code and mark them in the boxes to the right.

A. Number of Pumps	It's your choice: You can order one pump at a time, or the convenient "5-Pump Kit," which includes a durable PVC carrying case and bonus training video. NOTE: When you order the 5-Pump Kit through this ATO Ordering Selection Matrix, any accessories (such as single-unit chargers, Gemini Twin-Port Samplers, cyclones or instrument jackets) you order will also be provided in five-packs.	Number of Pumps	Code	Selection
		One	1	
		Five	5	
B. Pump Type	No matter whether you choose the Single-Pump Option or the 5-Pump Kit Option in Section A, you have a choice of three different types of pumps: • The Escort ELF Pump with 90-second Flow-Fault Indicator. In the event that a flow blockage occurs, the Flow-Fault Indicator circuitry illuminates an LED to alert the user. Within 90 seconds, the pump automatically shuts off, but the cumulative elapsed time remains on the display. To select this option, write "ELF1" in the box at right. • The Escort ELF Pump without Flow-Fault Indicator. To select this option, write "ELF2" in the box at right. • The Escort LC Pump. To select this option, mark "ESLC" at right.	Pump Type	Code	Selection
		Escort ELF Pump with 90-second Flow-Fault Indicator	ELF1	
		Escort ELF Pump without 90-second Flow-Fault Indicator	ELF2	
		Escort LC Pump	ESLC	
C. Battery Chargers	Which type of battery charger do you want? Select from the following choices and mark your selection in the box at right (all operate from 50/60 Hz): "0" for no battery charger, "1" for 120-Volt charger, "2" for 220-Volt charger, or "5" for the 5-Unit charger.	Battery Chargers	Code	Selection
		No battery charger	0	
		120-Volt charger 50/60 Hz	1	
		220-Volt charger 50/60 Hz	2	
		5-Unit charger 120/240 V, 50/60 Hz	5	
D. Sampling Accessories	Sampling Accessories include the following: • Sample Line • 10 mm Cyclone Assembly, which separates respirable dust particles from non-respirable particles • The Gemini Twin-Port Sampler, which streamlines sampling with sorbent tubes by enabling collection of two or more samples simultaneously from a single sampling pump.	Sampling Accessories	Code	Selection
		Sample Line only	1	
		10 mm Cyclone Assembly* (P/N 456243)	2	
		Gemini Twin-Port Sampler	3	
		No Sampling Line	4	
		10 mm Cyclone Assembly IH* (P/N 10044015)	5	
E. Protective Jackets	A protective leather jacket is offered as an option to protect the instrument from everyday wear, tear and scuff marks. To select the jacket, mark "1" in the box at right.	Protective Leather Jacket	Code	Selection
		None	0	
		Protective Leather Jacket for Sampling Pump	1	

Your Model Part Number Please write in numbers from selections above in appropriate boxes and contact your Safety Products Distributor to place your order.

Selection ... **A** **B** **C** **D** **E**
A-PMP- - - - -

* Cyclone Assembly 456243 is for use with MSA pre-weighed cassettes (MSHA); Cyclone Assembly 10044015 is for use with non-MSA cassettes.

42 CFR Oil-Mist Sampling Kits

The NIOSH respirator certification standard, 42 CFR Part 84, has introduced new ways to select non-powered air-purifying particulate filter respirators. One of the primary concerns of the standard is oil-mist exposure. According to this NIOSH standard, there are 3 levels of respiratory protection: N = Not resistant to oil; R = Resistant to oil; P = Oil-Proof. But how do you know whether oil mist is present in the workplace? MSA's 42 CFR Sampling Pump Kits can help you answer this question by providing convenience and flexibility in oil-mist sampling.

42 CFR Oil-Mist Sampling Kits

Escort ELF 42 CFR Sampling Pump Kit	711585
Escort LC 42 CFR Sampling Pump Kit	711586

Kit includes:

- Sampling Pump (Escort ELF or LC)
- 3-piece 37-mm MCE filter cassette, 0.8 micron pore size, 10 filters per kit
- 110V charger
- Sampling line
- Garment clip
- Instruction manual



Escort ELF® Kit

General-Purpose Cassette

The general-purpose cassette is a 5-μ pore size PVC sample cassette that can be used for silica sampling. This cassette can also be used for all airborne particulate collection not limited to quartz or silica.

This cassette is individually packaged in a sealed plastic bag. Each cassette is weighed by a robot to .01 mg at 70°F +/- 5° and 45 RH +/- 10%. Each cassette is attached to a Dust Data Card which includes the cassette serial number and actual weight. The cassette inlet contains a tamper-proof deflector plate, and the outlet contains an anti-blow-back check valve. Both the inlet and outlet openings are capped (sealed) to ensure cleanliness. The perimeter of the cassette housing is sealed with tamper-proof sealing tape.

Because of the extreme accuracy of the MSA weighing process, users of this cassette can sample the atmosphere for dust particulate and have the analytical analysis performed with complete confidence in its accuracy.

General-Purpose Cassette

General-Purpose Cassette	711361
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Sampling Pump Accessories



Gemini Twin-Port Sampling Kit

Gemini® Twin-Port Sampler

For low-flow control when sorbent tubes are used, the patented Gemini Twin-Port Sampler is a valved mechanism that allows flow adjustment down to 1 mlpm (0.001 lpm to 500 mlpm total between both tubes). U.S. Patent No. 5,370,004. As an added benefit, the Gemini accessory permits simultaneous sampling from sorbent tubes, with independently controlled flow rates of each. Dual sampling means two like sorbent tubes can be attached for simultaneous sampling at different flow rates, or two different tubes can be used to sample two types of substances at once.

Sorbent Tube Sampling

Gemini Twin-Port Sampling Kit—including Gemini Sampler, tube protectors, Y-connector, clips and carrying case	497697
Charcoal Sampling Tubes (150mg), 50 tubes	697169

Cassette Sampling

General Purpose Filter Cassettes

Fifty complete 3-piece preloaded filter cassettes with MCE filters.

With 25mm, 0.8- μ pore size	695677
With 37mm, 0.8- μ pore size	695676

Filter Discs for Nuisance Dust Sampling

Used with 37mm cassettes.

PVC, 0.5- μ pore size, 50/pack	459733
PVC, 5.0- μ pore size, 50/pack	625413
Glass Fiber	463784

MCE Filter Discs for Asbestos and Nuisance Dust

25mm, 0.8- μ pore size, 100/pack	695674
37mm, 0.8- μ pore size, 50/pack	463797
37mm, 0.45- μ pore size, 50/pack	463796

Silver Membrane Filters for Silica, Coke Oven Emissions & Carbon Black

Silver Membrane, 0.8- μ pore size, 50/pack	464324
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Coal Dust and Silica Filter Cassette

Preweighed filter cassette with 5- μ pore size PVC filter and Mine Data Card - Coal Dust	803462
Preweighed filter cassette with 5- μ pore size PVC filter and Data Card - Silica	711361

Respirable Dust Sampling w/Cyclone Assembly

10mm Cyclone Assembly, used with MSHA pre-weighed cassettes	456243
10mm Cyclone Assembly, IH version used with 37mm cassettes	10044015



General Purpose Filter Cassettes



Filter Media



Coal Dust Cassettes - P/N 803462

Miscellaneous Accessories

MSA's complete line allows users to load sampling cassette cases and select your own combinations of sampling media. Your MSA distributor can help you select the accessories that best suit your application requirements.

Filter Cassette Cases, 2-piece, 37mm, pack of 12	625412
Filter Cassette Cases, 3-piece, 37mm, pack of 10	449347
25mm Support Pad (felt backup disc), pack of 100	695684
37mm Support Pad (felt backup disc), pack of 25	449375
37mm Cellulose Bands, jar of 60	625415
37mm Stainless Steel Coupler for 3-piece filter cassette case used with Cyclone Assembly	457392
Plastic Coupler for preweighed filter cassette sampling used with Cyclone Assembly	457391
Sampling Line Assembly (used with all pumps and filter cassette cases)	456226
25mm Filter Cassette Case Sampling Line Coupler, package of 10	695685
37mm Filter Cassette Case Sampling Line Coupler, package of 3	459743
Charcoal Filter Tubes—for use in in-line sampling to protect pumps from vapor damage	804403
Bubbler for Fritted-glass Flask	10008397
Flask Holster	10008398
Tubing for Flask	93495

Sampling Pump Calibration Check Devices



The DigiCal Calibrator makes sampling pump calibration a stress-free, one-step procedure.

A primary calibration device, the DigiCal™ Calibrator provides instantaneous calibration for instruments like the MSA Escort LC or the secondary flow standard inside the Escort ELF Sampling Pumps. Just press the plunger and the DigiCal Calibrator does the work. Its unique flow cell replaces conventional bubble tubes and makes calibration easier.

The DigiCal Calibrator achieves extreme accuracy by utilizing a computerized flow meter that provides instantaneous flow readouts on a digital display. Accurate measurements are possible within ± 0.5 percent at any altitude.

For more complete information, see Bulletin 0810-34-MC.

Sampling Pump Calibration Check Devices

Primary Calibration Devices

DigiCal Calibrator	655101
Air Inlet Caps, pkg of 2	655102
110V Charger with A/C Adapter	655112
Bubble Solution, 4-oz bottle	655273
Sub C Battery Pack	655169

Secondary Calibration Devices

Flowmeter for use with Flow-Lite and Escort Sampling Pumps, 0.2 to 4 lpm	490197
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Ventilation Smoke Tube Kits



MSA's Ventilation Smoke Tube Kits are for use where controlled generation of a visible smoke is desired in order to determine the velocity of slow-moving air currents and establish their direction and flow patterns in shafts, mines and tunnels. They can also be used in commercial buildings and industrial processing plants to determine velocity and flow patterns of heating, ventilating, and air-conditioning systems. For more complete information, see Data Sheet 08-00-20.

Ventilation Smoke Tube Kits

Ventilation Smoke Kit, including aspirator bulb, two rubber plugs, and six smoke-producing tubes contained in plastic carrying case	458481
Ventilation Smoke Kit, including aspirator bulb, six tube caps, and two glass smoke-producing tubes contained in plastic carrying case	5607
Ventilation smoke tubes, box of 12	458480
Glass smoke tubes, box of 10	5645

Calibration



Galaxy® Automated Test System

Extremely Easy to Use

- Standard web browser accessibility for data retrieval and reporting
- Industry-standard memory card available for simple data retention
- System does not require a computer or network interface
- Works without the touch of a single button
- Minimal training needed

Versatile and Expandable

- Up to 10 systems can be interconnected
- Instrument charging option available
- Optional battery pack available for remote use

Durable, Innovative Design

- Wireless- or wired-network interface available
- Invenite system door also functions as dust cover
- Guaranteed to work in the harshest environments
- In-line gas cylinder holster available; keeps the work area clean and orderly

Value-Driven Performance

- All-inclusive, 2-year warranty
- High quality, cost-effective solution
- Very low total cost of ownership

Galaxy System Kits

	ALTAIR 5 Pumped	ALTAIR 5 Diffusion	ALTAIR 4	Solaris	Sirius	Orion	ALTAIR
Basic Standalone Kit							
Basic System	10090589	10090552	10089964	10061051	10061050	10061824	10078252
Standard Standalone Kit (Includes Regulator)							
Standard System	10090603	10090618	10089998	10061783	10061810	10061825	10078253
Standard System + Charging	10090600	10090615	10089995	10061784	10061811	10061826	—
Standard System + Cylinder Holder	10090602	10090617	10089997	10061785	10061812	10061827	10078254
Standard System + Charging, Cylinder Holder	10090601	10090616	10089996	10061786	10061813	10061828	—
Smart Standalone Kit (Includes Regulator, Memory Card)							
Smart System	10090594	10090583	10089969	10061787	10061814	10061829	10078255
Smart System + Charging	10090590	10090579	10089965	10061788	10061815	10061830	—
Smart System + Cylinder Holder	10090593	10090582	10089968	10061789	10061816	10061841	10078256
Smart System + Charging, Cylinder Holder	10090592	10090581	10089967	10061790	10061817	10061842	—
Portable Kits (Includes Regulator, Battery Pack)							
Portable System	10090599	10090588	10089994	10061802	10061818	10061843	10078257
Portable System + Memory Card, Cylinder Holder	10090598	10090587	10089993	10061801	10061819	10061844	10078258
Wired Network Kits (Includes Regulator, Wired Ethernet Access)							
Wired Network System	10090608	10090623	10090003	10061803	10061820	10061845	10078259
Wired Network System + Charging, Cylinder Holder	10090607	10090622	10090002	10061804	10061821	10061847	—

Accessories

710288	Demand Flow Regulator
10047342	North American Power Supply
10047343	Global Power Supply



Assemble-to-Order (ATO) System: You Make the Choices

The ATO System makes it easy to "custom order" the Galaxy Automated Test System, configured exactly the way you want it. You can choose from an extensive line of base components and accessories. See the ATO chart below to make your selections.

Galaxy Automated Test System Assemble-to-Order (ATO) Options

A. Test Stand Instrument Type Each Galaxy test stand has a dedicated instrument type. Up to 10 specific systems can be mixed and matched; however, different instruments types will not work in the same test stand. The Solaris and Orion Instruments must have datalogging installed to operate with the Galaxy test stand. Note: The Altair Galaxy test stand should only be used with CO, H ₂ S and O ₂ versions of the Altair and Altair Pro Single-Gas Detectors. Note: Choose Altair 5 Diffusion Galaxy for a diffusion Altair 5 gas detector. Choose Altair 5 Pumped Galaxy for a pumped Altair 5 gas detector. Note: Choose Altair 5 Pumped Galaxy for use with Altair SIR instruments.	<table> <tr> <th>Test Stand Options</th><th>Code</th></tr> <tr> <td>Solaris, Solaris with ALkaline Battery</td><td>A</td></tr> <tr> <td>Sirius</td><td>B</td></tr> <tr> <td>Orion</td><td>C</td></tr> <tr> <td>Altair/Altair Pro</td><td>D</td></tr> <tr> <td>Altair 4</td><td>F</td></tr> <tr> <td>Altair 5 Diffusion</td><td>G</td></tr> <tr> <td>Altair 5 Pumped</td><td>H</td></tr> </table>	Test Stand Options	Code	Solaris, Solaris with ALkaline Battery	A	Sirius	B	Orion	C	Altair/Altair Pro	D	Altair 4	F	Altair 5 Diffusion	G	Altair 5 Pumped	H
Test Stand Options	Code																
Solaris, Solaris with ALkaline Battery	A																
Sirius	B																
Orion	C																
Altair/Altair Pro	D																
Altair 4	F																
Altair 5 Diffusion	G																
Altair 5 Pumped	H																
B. Calibration Cylinders The Solaris and Altair Galaxy test stand, by default, will operate with 1 calibration gas cylinder. The Sirius Galaxy test stand, by default, will operate with 2 calibration gas cylinders. If your system configuration requires 3 cylinders for calibration, select option "1". Note: Choose option 1 for any Altair 5 instruments that will require use of more than 1 calibration gas. This would include certain exotic gases like SO ₂ , NH ₃ , Cl ₂ and also non-CO ₂ versions of the Altair SIR gas detector. Note: Not available for ClO ₂ or % Vol Combustible.	<table> <tr> <th>Calibration Cylinder Options</th><th>Code</th></tr> <tr> <td>No</td><td>0</td></tr> <tr> <td>Yes</td><td>1</td></tr> </table>	Calibration Cylinder Options	Code	No	0	Yes	1										
Calibration Cylinder Options	Code																
No	0																
Yes	1																
C. Regulator At least 1 demand flow regulator is required for either the Solaris, Orion or Altair Galaxy Test Stands. At least 2 demand flow regulators are required for the Sirius Galaxy Test Stand. The number of regulators you need equals the number of gas cylinders required for an instruments calibration.	<table> <tr> <th>Regulator Options</th><th>Code</th></tr> <tr> <td>1 Regulator</td><td>1</td></tr> <tr> <td>2 Regulators</td><td>2</td></tr> <tr> <td>3 Regulators</td><td>3</td></tr> <tr> <td>None</td><td>0</td></tr> </table>	Regulator Options	Code	1 Regulator	1	2 Regulators	2	3 Regulators	3	None	0						
Regulator Options	Code																
1 Regulator	1																
2 Regulators	2																
3 Regulators	3																
None	0																
D. Cylinder Holder The number of cylinder holders should match the number of gas cylinders required for an instruments calibration. Included in this option is the ability to order either 1, 2, or 3 cylinder holders. Note: For Cl ₂ and NH ₃ please order 3 cylinder holders and ensure that the exotic gas goes into cylinder holder 3, furthest to the left.	<table> <tr> <th>Cylinder Holder Options</th><th>Code</th></tr> <tr> <td>1 Cylinder Holder</td><td>1</td></tr> <tr> <td>2 Cylinder Holders</td><td>2</td></tr> <tr> <td>3 Cylinder Holders</td><td>3</td></tr> <tr> <td>None</td><td>0</td></tr> </table>	Cylinder Holder Options	Code	1 Cylinder Holder	1	2 Cylinder Holders	2	3 Cylinder Holders	3	None	0						
Cylinder Holder Options	Code																
1 Cylinder Holder	1																
2 Cylinder Holders	2																
3 Cylinder Holders	3																
None	0																
E. Instrument Charging If you'd like to have your new Galaxy system installed with the ability to charge your instrument, select "1" for this option. (Requires instrument with rechargeable batteries). <i>Not compatible with Solaris with alkaline batteries, ALTAIR, and ALTAIR Pro instruments.</i>	<table> <tr> <th>Charging Options</th><th>Code</th></tr> <tr> <td>No</td><td>0</td></tr> <tr> <td>Yes</td><td>1</td></tr> </table>	Charging Options	Code	No	0	Yes	1										
Charging Options	Code																
No	0																
Yes	1																
F. Power Supply A power supply is required to power each Galaxy test stand. The global power supply comes with several international plug outlet configurations for countries outside of North America, for this option select "G". Select the battery pack option "B" for locations (includes North American supply) where AC power may not be easily accessible. If you choose the instrument charging option, the battery pack option is not available.	<table> <tr> <th>Power Supply Options</th><th>Code</th></tr> <tr> <td>North American Supply</td><td>N</td></tr> <tr> <td>Global Supply</td><td>G</td></tr> <tr> <td>Battery Pack & North American Supply</td><td>B</td></tr> <tr> <td>Battery Pack & Global Supply</td><td>X</td></tr> <tr> <td>Battery Pack & Australian Supply</td><td>Y</td></tr> </table>	Power Supply Options	Code	North American Supply	N	Global Supply	G	Battery Pack & North American Supply	B	Battery Pack & Global Supply	X	Battery Pack & Australian Supply	Y				
Power Supply Options	Code																
North American Supply	N																
Global Supply	G																
Battery Pack & North American Supply	B																
Battery Pack & Global Supply	X																
Battery Pack & Australian Supply	Y																
G. Memory Card If you'd like to have a removable memory card installed in your new Galaxy System, select option "1". A memory card reading device is required to read the memory card, this must be entered as a different line item on your order. Only 1 memory card is needed per Galaxy System.	<table> <tr> <th>Memory Card Options</th><th>Code</th></tr> <tr> <td>No</td><td>0</td></tr> <tr> <td>Yes</td><td>1</td></tr> </table>	Memory Card Options	Code	No	0	Yes	1										
Memory Card Options	Code																
No	0																
Yes	1																
H. Network Interface Module For wired (ethernet) connectivity to your internal network, select option "A". The location where the Galaxy will be installed must have the capability for this option to operate properly. Only 1 network interface module is needed per Galaxy system.	<table> <tr> <th>Network Interface Module Options</th><th>Code</th></tr> <tr> <td>None</td><td>0</td></tr> <tr> <td>Wired Web Interface</td><td>A</td></tr> </table>	Network Interface Module Options	Code	None	0	Wired Web Interface	A										
Network Interface Module Options	Code																
None	0																
Wired Web Interface	A																

Your Model Part Number

Please write in numbers from selections above in appropriate boxes and contact your Safety Products Distributor to place your order.

Selection ... **A** **B** **C** **D** **E** **F** **G** **H** **0** **0**

A-GALAXY- - - - - - - - - - -

Regulators

Gas Miser® Demand Regulator: The Intelligent Regulator



**Gas Miser
Model RP**



**Gas Miser
Model BD-20**

The Gas Miser Regulator is the most advanced, yet simple-to-use calibration gas delivery system available. Made of nickel-plated brass and polished aluminum (especially important for reactive gases), the Gas Miser Regulator can supply gas flow from 0.1 lpm to 3.0 lpm. But that's only the beginning. Designed for use with any MSA Model RP Calibration Cylinder except chlorine and ammonia*, the Gas Miser Regulator features an automatic ON/OFF valve that releases gas only on demand. So only the amount of gas needed to calibrate your MSA instrument is delivered accurately. When the calibration is complete, the Gas Miser Regulator shuts off automatically. And, for user convenience, the regulator can stay connected to the cylinder where it remains in a ready state—making it ideal for such fixed installations as work benches and calibration stations.

The Gas Miser Regulator also eliminates the need to change regulators to accommodate different instruments or flow rates. It's not only intelligent, it's cost-efficient. Supplied with calibration tubing and special fitting.

* A Gas Miser Regulator for chlorine and ammonia is available for Model RP cylinders —P/N 10034391

Model RP Combination Regulators



Two regulators in one. Trigger activation allows a bump test or calibration check in the "SQUEEZE" mode or fixed-flow calibration in the up or "LOCKED" position. Designed for use with all Model RP and Econo-Cal calibration cylinders. Supplied with calibration tubing and special fitting.

Gas Miser® Manifold



The Gas Miser Manifold is not only a cylinder holder but it also incorporates a 4-station "bump test" or calibration manifold. It works with Model RP and Econo-Cal cylinders and Gas Miser regulator on any pumped or aspirated instrument. The manifold will supply the correct amount of gas required and will bump test or calibrate up to four instruments simultaneously. Gas Miser regulator sold separately.

Regulators

.25/1.5 LPM Flow Control

Model RP Cylinder .25 lpm*	467895
Model RP Cylinder 1.5 lpm	467896

Gas Miser Demand Regulator

Model RP	710288
Model RP, Chlorine and Ammonia	10034391
Model BD-20, with CGA 590 fitting	710289

Model RP Combination Regulator

Model RP Combination Regulator, .25 lpm	711175
Model RP Combination Regulator, 1.5 lpm	711174

Gas Miser Manifold

4-station Manifold	710274
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Model RP Calibration Check Kits

Check Kit, Model RP, with 1.5 lpm regulator—complete	477150
Check Kit, Model RP, with 0.25 lpm regulator—complete	477149

* Can be used with chlorine and ammonia; replaces P/N 809945.

Model RP Calibration Check Kits



**.25/1.5 LPM Flow Control
Model RP**

Model RP Check Kits consist of a regulating valve which includes a gauge to measure container pressure, an adapter hose, sensor adapter (where applicable), instructions, and a case fitted with room for two Model RP cylinders of calibration check gas.

Calibration Gas

Calibration Gas

Each MSA Calibration Gas Cylinder is shipped with an individual copy of a material safety data sheet (MSDS) and an individual copy of a certificate of analysis.

MSA certifies that the gas mixture in calibration gas cylinders was prepared gravimetrically, using NIST traceable weights. The lot number and nominal value of the gas constituents in percent by volume, percent by mass, PPM, or volume are specified on the cylinder. The uncertainty statement of the specified nominal value is also listed.

Model RP and Model R Calibration Cylinders—Non-Reactive Gases, Steel Cylinder, 100 Liters

Gas Fill	Gas Mixture	Background	100 LTRS 1000 PSI	19 LTRS 300 PSI	34 LTRS 500 PSI
			Model RP	Model R	Econo-Cal
Air	air zero (THC < 1 ppm)	—	801050	—	—
Carbon Monoxide	400 ppm carbon monoxide	air	806255	—	—
	300 ppm carbon monoxide	air	473180	461769	—
	200 ppm carbon monoxide	air	809243	—	—
	100 ppm carbon monoxide	air	809242	—	—
	50 ppm carbon monoxide	air	809241	—	—
	100 ppm carbon monoxide	nitrogen	806734	—	—
Hydrogen	0.8% hydrogen	air	803102	—	—
Isobutylene	100 ppm isobutylene	air	494450	—	10048279
Methane	2.5% methane	air	491041	459942	—
	6.6% methane	nitrogen	801049	—	—
Oxygen	20.8% oxygen	nitrogen	479857	468248	—
	5.0% oxygen	nitrogen	493580	476302	—
Nitrogen	100% nitrogen	—	481317	—	—
Nitrous Oxide	100 ppm nitrous oxide	nitrogen	806736	—	—
Pentane	0.75% pentane (50% LEL)	air	804532	—	—
Propane	0.6% propane	air	493579	—	—
Combination Gas Cylinders	0.35% pentane, 19.0% oxygen, 100 ppm carbon monoxide	nitrogen	10007047	—	—
	0.6% propane, 15% oxygen, 60 ppm carbon monoxide	nitrogen	801051	—	—
	1.45% methane, 300 ppm carbon monoxide, 15% oxygen	nitrogen	10010162	—	—
	2.5% methane, 60 ppm carbon monoxide, 15% oxygen	nitrogen	813718	—	—
	2.5% methane, 300 ppm carbon monoxide, 15% oxygen	nitrogen	10040791	—	—
	1.45% methane, 15% oxygen	nitrogen	478192	—	—



Model RP

Model RP Cylinder

Contents: Pressure 1000 psig; approximately 100 liters at atmospheric pressure
Size: 13-34" x 3"
Weight: 2 lb 13 oz
Material: Steel

Calibration Gas

Model RP and Econo-Cal Calibration Cylinders—Reactive Gases, Aluminum Cylinders, 58 & 34 Liters

			58 LTRS 500 PSI	
Gas Fill	Gas Mixture	Background	Model RP	Econo-Cal
Ammonia	25 ppm ammonia	nitrogen	814866	711078
Chlorine	10 ppm chlorine	nitrogen	806740	711066
Hydrogen Sulfide	40 ppm hydrogen sulfide	nitrogen	467897	711062
	15 ppm hydrogen sulfide	nitrogen	806253	711064
	10 ppm hydrogen sulfide	nitrogen	467898	711060
Nitric Oxide	50 ppm nitric oxide	nitrogen	812144	711074
Nitrogen Dioxide	10 ppm nitrogen dioxide	air	808977	711068
Phosphine	0.5 ppm phosphine	nitrogen	710533	711088
Hydrogen Chloride	40 ppm hydrogen chloride	nitrogen	710210	—
Hydrogen Cyanide	10 ppm hydrogen cyanide	nitrogen	809351	711072
Sulfur Dioxide	10 ppm sulfur dioxide	air	808978	711070
Combination Gas Cylinders	1.45% methane, 15% oxygen, 300 ppm carbon monoxide, 10 ppm hydrogen sulfide	nitrogen	804770	711058
	1.45% methane, 15% oxygen, 20 ppm hydrogen sulfide	nitrogen	10048788	10048790
	1.45% methane, 15% oxygen, 300 ppm carbon monoxide, 2.5% carbon dioxide	nitrogen	—	10058023
	1.45% methane, 15% oxygen, 60 ppm carbon monoxide, 20 ppm hydrogen sulfide	nitrogen	10045035	10048280
	1.45% methane, 15% oxygen, 10 ppm hydrogen sulfide	nitrogen	804769	711056
	2.5% methane, 15% oxygen, 300 ppm carbon monoxide, 10 ppm hydrogen sulfide	nitrogen	813720	711076
	2.5% methane, 15% oxygen, 60 ppm carbon monoxide, 20 ppm hydrogen sulfide	nitrogen	10048890	10048981
	2.5% methane, 15% oxygen, 20 ppm hydrogen sulfide	nitrogen	10048889	10048888
	1.45% methane, 15% oxygen, 10 ppm hydrogen sulfide, 300 ppm carbon monoxide, 2.5% carbon dioxide	nitrogen	10050744	10058022
	0.35% pentane, 19% oxygen, 100 ppm carbon monoxide, 35 ppm hydrogen sulfide	nitrogen	10007049	—
	1.45% methane, 15% oxygen, 300 ppm carbon monoxide, 2.5% carbon dioxide	nitrogen	10058021	

Note: Reactive gases have an expiration date listed on each cylinder. This is to ensure the highest quality and accuracy for instrument calibration. Most cylinders have an expiration date of 12 months. Check with MSA Customer Service for the exact shelf life of a particular calibration cylinder.

Model RP Calibration Cylinder—Steel, 100% Methane

Contents:	Pressure 1000 psig; approximately 58 liters of pure methane with odorant added to smell like natural gas in all commercial gas lines		
Size: 8-1/2" x 3"	Weight: 1 lb 13 oz	Material: Steel	
Gas Fill	Gas Mixture	Part No.	
Methane	100% Methane	711014	

Model BD-20 Calibration Cylinders

Contents:	Pressure 2200 psig; approximately 552 liters (20 cu ft) of gas at atmospheric pressure		
Size: 25" x 4-1/4"	Weight: 10 lb 9 oz	Material: Steel	
Gas Fill	Gas Mixture	Background	Part No.
Methane	2.5% Methane, 15% Oxygen, 60 ppm Carbon Monoxide,	Nitrogen	710566
	1.45% Methane, 15% Oxygen, 60 ppm Carbon Monoxide	Nitrogen	710565
Air, zero	Air, zero, THC<1 ppm	—	710776



Model RP

Econo-Cal

Model RP Cylinder

Contents: Pressure 500 psig; approximately 58 liters at atmospheric pressure
Size: 3-1/2" dia. x 14-1/2" high
Weight: 1 lb 11 oz
Material: Aluminum

Econo-Cal Cylinder

Contents: Pressure 500 psig; approximately 34 liters at atmospheric pressure
Size: 2-3/4" dia. x 11-1/4" high
Weight: 1 lb 1 oz
Material: Aluminum



Model BD-20 Calibration Cylinders

Calibration Gas

Squirt Gas Bump Tester

Squirt Gas Bump Test Kit, less cylinder, but with required fittings and adapters, complete with instructions

813411

Cylinders for Squirt Gas

Instrument	Squirt Gas Cylinder	Combustible		Oxygen	Carbon Monoxide	Hydrogen Sulfide	Isobutylene	Balance
		Methane	Pentane Simulant					
Explosimeter	815307	2.5%	See cylinder	—	—	—	—	Air
Gasport	814350	2.5%	—	15% O ₂	60 ppm CO	—	—	Nitrogen
Gasport	814349	2.5%	—	15% O ₂	300 ppm CO	35 ppm H ₂ S	—	Nitrogen
Passport, FiveStar	814497	1.3%	50% LEL	15% O ₂	60 ppm CO	—	—	Nitrogen
Passport, FiveStar	814559	1.3%	50% LEL	15% O ₂	300 ppm CO	35 ppm H ₂ S	—	Nitrogen
MiniCO** Responder	814978	—	—	—	60 ppm CO	—	—	Air
MiniH2S* Responder	814979	—	—	—	—	35 ppm H ₂ S	—	Nitrogen
MicroGard**	815308	1.3%	52% LEL	15% O ₂	—	—	—	Nitrogen
Passport PID II	815704	—	—	—	—	—	100 ppm	Air

* Shelf life item. See note page 102. ** Requires calibration adapter.



Contents: Pressure 155 psig; approximately 11 liters at 70°F

Cylinder Holders

Single Portable Cylinder Holder

The Single Portable Cylinder Holder is designed for use with all MSA Model R and Model RP cylinders. It fits neatly on a workbench or shelf, and its unique design ensures that the calibration cylinder (with the regulator attached) always stays where you put it.



Double Cylinder Holder, Wall-Mounted

The Wall-Mounted Double Cylinder-Holder holds all MSA Model R and Model RP cylinders. A molded base and holding straps keep the cylinders securely in position, yet both cylinders and/or regulators can be easily changed. The holder is ideal for field station calibrations and can be easily mounted for workbench applications.



Cylinder Holders

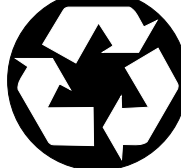
Single Cylinder Holder, 6" wide x 13" long x 4" high	710386
Double Cylinder Holder, 17" high, 10" wide, 3 1/2" deep at base	710483

Calibration Cylinders Are Recyclable!

MSA has affiliated with the Association of Retarded Citizens, Butler County—a nonprofit organization that employs mentally retarded citizens—and established a Cylinder Recycling Center. The calibration cylinders are not refilled, but salvaged for scrap. All money generated from selling the scrap cylinders is placed in the ARC operating fund for salaries and operating costs.

Calibration cylinders are considered hazardous unless the cylinders are empty. MSA has developed special devalving tools that will ensure the cylinder is empty and render the cylinder non-fillable. For your convenience, MSA also offers a specially pre-addressed shipping box (also recyclable) which helps you pay the lowest shipping costs available.

The MSA Recycling Center limits the return of calibration cylinders to MSA-logoed cylinders only. Non-MSA cylinders will be rejected. Contact the Customer Service Center for additional details at 1-800-MSA-2222.



Recycling Accessories

Devalving Tool, Model "RP" & Econo-Cal Cylinders	711228
Devalving Tool, Model "R" cylinders	711229
Shipping Box, Special, Pre-addressed	711227