



Direct Acting or Piloted
Aluminum Body Solenoid Valves
 1/8" to 3" NPT

NC NO

NC NO

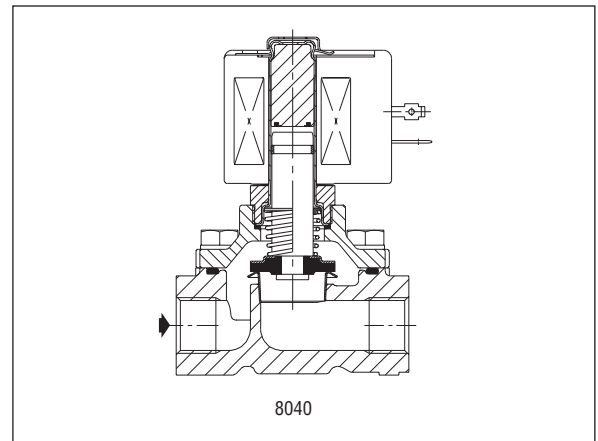
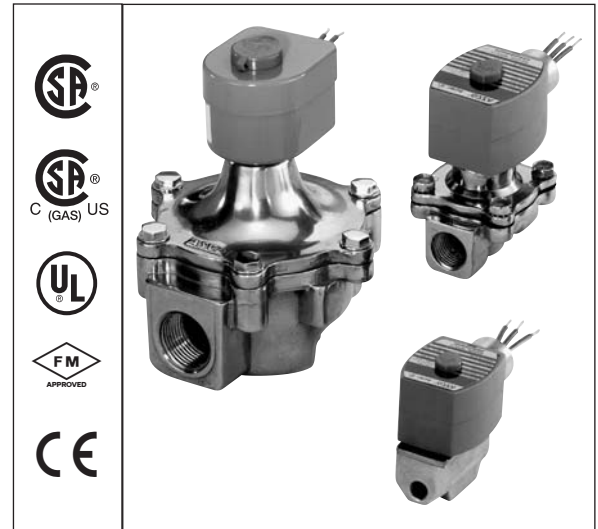
**2/2
 SERIES
 8040
 8215**

Features

- Lightweight, low-cost valves for air service.
- Ideal for low pressure applications.
- Provides high flow, Cv up to 138 (Kv 118).
- Air and vacuum service.

Construction

Valve Parts in Contact with Fluids	
Body	Aluminum
Seals, Diaphragms, Disc	NBR
Disc-Holder	PA (10.1 and 11.6 watt Normally Open only)
Core Guide	CA
Core Tube	305 Stainless Steel
Rider Rings	PTFE
Core and Plugnut	430F Stainless Steel
Springs	302 Stainless Steel
Shading Coil	Copper



Electrical

Standard Coil and Class of Insulation	Watt Rating and Power Consumption				Spare Coil Part No.			
	DC Watts	AC			General Purpose		Explosionproof	
		Watts	VA Holding	VA Inrush	AC	DC	AC	DC
F	-	6.1	16	40	238210	-	238214	-
F	11.6	10.1	25	70	238610	238710	238614	238714
B	14.9	-	-	-	-	62691	-	-
F	-	15.4	27	160	99257	-	99257	-
F	-	28.2	50	385	206409	-	206409	-

Standard Voltages: 24, 120, 240, 480 volts AC, 60 Hz (or 110, 220 volts AC, 50 Hz), 6, 12, 24, 120, 240 volts DC. Must be specified when ordering. Other voltages available when required.

Solenoid Enclosures

Standard: Red-Hat II - Watertight, Types 1, 2, 3, 3S, 4, and 4X; Red-Hat - Type I.
Optional: Red-Hat II - Explosionproof and Watertight, Types 3, 3S, 4, 4X, 6, 6P, 7, and 9; Red-Hat - Explosionproof and Raintight, Types 3, 7, and 9. (Except EF8215A40 and EF8215A90, which are suitable for Types 3 and 7 (C and D) only and have a T2B temperature rating code.) To order, add prefix "EF" to catalog number. See *Optional Features Section* for other available options.

Nominal Ambient Temperature Ranges:

Red-Hat II/
 Red-Hat AC: 32°F to 125°F (0°C to 52°C)
 Red-Hat II DC: 32°F to 104°F (0°C to 40°C)
 Red-Hat DC: 32°F to 77°F (0°C to 25°C)
 (104°F/40°C occasionally)

Refer to *Engineering Section* for details.

Approvals:

CSA certified to:

8040 Series:

- 1) Standard C22.2 No. 139 "Electrically Operated Valves," File 10381.
- 2) Automatic Gas Valves Z21.21 (6.5), File 112872.
- 3) Automatic Gas Safety Shutoff Valves C/I (3.9), File 112972.

8215 Series Normally Closed:

- 1) Standard C22.2 No. 139 "Electrically Operated Valves," File 10381.
- 2) Automatic Gas Valves Z21.21 (6.5), File 112872.

8215 Series Normally Open:

- 1) Standard C22.2 No. 139 "Electrically Operated Valves," File 10381.

UL listed, as indicated. FM approved (Normally Closed only, except Catalog Numbers 8215A90 and 8215A40). Red-Hat II meets applicable CE directives. Refer to *Engineering Section* for details.

Specifications (English units)

Pipe Size (ins.)	Orifice Size (ins.)	Cv Flow Factor	Gas Capacity Btu/hr ⑥	Operating Pressure Differential (psi)			Max. Fluid Temp. °F		Aluminum Body			Watt Rating/ Class of Coil Insulation ②	
				Min.	Max. AC	Max. DC	AC	DC	Catalog Number	Constr. Ref. No	UL ⑤ Listing	AC	DC
					Air-Fuel Gas	Air-Fuel Gas							
NORMALLY CLOSED (Closed when de-energized)													
1/8	5/16	1.0	53,700	0	15	-	125	-	8040H6	11	○	6.1/F	-
1/4	5/16	1.1	59,000	0	15	-	125	-	8040H7	11	○	6.1/F	-
3/8	5/16	1.2	64,400	0	15	-	125	-	8040H8	11	○	6.1/F	-
3/8	3/4	3.4	183,000	0	50	25	125	104	8215G10	2	○	10.1/F	11.6/F
3/8	3/4	3.5	-	5	125	125	125	104	8215G1 ①	1	○	6.1/F	11.6/F
1/2	3/4	5.4	291,000	0	2	-	125	-	8040G22	13A	○	10.1/F	-
1/2	3/4	4.4	238,500	0	50	25	125	104	8215G20	2	○	10.1/F	11.6/F
1/2	3/4	4.8	-	5	125	125	125	104	8215G2 ①	1	○	6.1/F	11.6/F
3/4	3/4	9.5	449,000	0	2	-	125	-	8040G23	13B	○	10.1/F	-
3/4	3/4	5.1	247,500	0	50	25	125	104	8215G30	4	○	10.1/F	11.6/F
3/4	3/4	5.1	-	5	125	125	125	104	8215G3 ①	3	○	6.1/F	11.6/F
1	1 5/8	21	1,119,000	0	25	25	125	77	8215B50 ③	6	○	15.4/F	14.9/B
1 1/4	1 5/8	32	1,730,000	0	25	25	125	77	8215B60 ③	6	○	15.4/F	14.9/B
1 1/2	1 5/8	35	1,900,000	0	25	25	125	77	8215B70 ③	6	○	15.4/F	14.9/B
2	2 3/32	60	3,251,000	0	25	15	125	77	8215B80 ③	7	○	15.4/F	14.9/B
2 1/2	3	117	5,821,000	0	5	-	125	-	8215A90	8	○	28.2/F	-
3	3	138	7,430,000	0	5	-	125	-	8215A40	8	○	28.2/F	-
NORMALLY OPEN (Open when de-energized)													
3/8	3/4	3.2	172,500	0	125	125	125	104	8215G13	9	●	10.1/F	11.6/F
1/2	3/4	4	206,250	0	125	125	125	104	8215G23	9	●	10.1/F	11.6/F
3/4	3/4	4.6	247,500	0	125	125	125	104	8215G33	10	●	10.1/F	11.6/F
1	1 5/8	22	1,191,750	0	25	15	125	77	8215C53	12	●	15.4/F	14.9/B
1 1/4	1 5/8	33	1,793,250	0	25	15	125	77	8215C63	12	●	15.4/F	14.9/B
1 1/2	1 5/8	37	1,988,250	0	25	15	125	77	8215C73	13	●	15.4/F	14.9/B
2	2 3/32	58	3,100,000	0	25	15	125	77	8215C83	14	●	15.4/F	14.9/B
2 1/2	3	117	6,290,000	0	5	-	125	-	8215B93 ④	15	●	28.2/F	-
Notes: ① Do not use for Fuel Gas. ② On 50 hertz service, the watt rating for the 6.1/F solenoid is 8.1 watts. ③ FM Approved Process Control Valves. See Engineering Section (Approvals) for details. ④ Type 1 enclosure only. ⑤ ○ = Safety Shutoff Valve; ● = General Purpose Valve. Refer to Engineering Section (Approvals) for details. ⑥ 1" W.C. Drop @ 2" W.C. Inlet Pressure, 1, 000 Btu/cu.ft. or more, 0.64 Specific Gravity Gas.													

Specifications (Metric units)

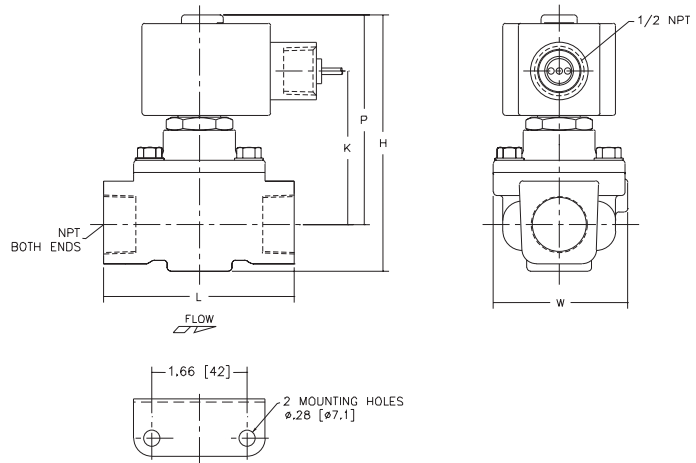
Pipe Size (ins.)	Orifice Size (mm)	Kv Flow Factor (m3/h)	Gas Capacity Btu/hr ⑥	Operating Pressure Differential (bar)			Max. Fluid Temp. °C		Aluminum Body			Watt Rating/ Class of Coil Insulation ②	
				Min.	Max. AC	Max. DC	AC	DC	Catalog Number	Constr. Ref. No	UL ⑤ Listing	AC	DC
					Air-Fuel Gas	Air-Fuel Gas							
NORMALLY CLOSED (Closed when de-energized)													
1/8	7.9	.86	53,700	0	1.0	-	51	-	8040H6	11	○	6.1/F	-
1/4	7.9	.94	59,000	0	1.0	-	51	-	8040H7	11	○	6.1/F	-
3/8	7.9	1.03	64,400	0	1.0	-	51	-	8040H8	11	○	6.1/F	-
3/8	19	2.91	183,000	0	3.4	1.7	51	40	8215G10	2	○	10.1/F	11.6/F
3/8	19	3.00	-	0.3	8.6	8.6	51	40	8215G1 ①	1	○	6.1/F	11.6/F
1/2	19	4.63	291,000	0	0.1	-	51	-	8040G22	13A	○	10.1/F	-
1/2	19	3.77	238,500	0	3.4	1.7	51	40	8215G20	2	○	10.1/F	11.6/F
1/2	19	4.11	-	0.3	8.6	8.6	51	40	8215G2 ①	1	○	6.1/F	11.6/F
3/4	19	8.14	449,000	0	0.1	-	51	-	8040G23	13B	○	10.1/F	-
3/4	19	4.37	247,500	0	3.4	1.7	51	40	8215G30	4	○	10.1/F	11.6/F
3/4	19	4.37	-	0.3	8.6	8.6	51	40	8215G3 ①	3	○	6.1/F	11.6/F
1	41	18.00	1,119,000	0	1.7	1.7	51	25	8215B50 ③	6	○	15.4/F	14.9/B
1 1/4	41	27.43	1,730,000	0	1.7	1.7	51	25	8215B60 ③	6	○	15.4/F	14.9/B
1 1/2	41	30.00	1,900,000	0	1.7	1.7	51	25	8215B70 ③	6	○	15.4/F	14.9/B
2	53	51.43	3,251,000	0	1.7	1.0	51	25	8215B80 ③	7	○	15.4/F	14.9/B
2 1/2	76	100.28	5,821,000	0	0.3	-	51	-	8215A90	8	○	28.2/F	-
3	76	118.28	7,430,000	0	0.3	-	51	-	8215A40	8	○	28.2/F	-
NORMALLY OPEN (Open when de-energized)													
3/8	19	2.74	172,500	0	8.6	8.6	51	40	8215G13	9	●	10.1/F	11.6/F
1/2	19	3.43	206,250	0	8.6	8.6	51	40	8215G23	9	●	10.1/F	11.6/F
3/4	19	3.94	247,500	0	8.6	8.6	51	40	8215G33	10	●	10.1/F	11.6/F
1	41	18.86	1,191,750	0	1.7	1.0	51	25	8215C53	12	●	15.4/F	14.9/B
1 1/4	41	28.28	1,793,250	0	1.7	1.0	51	25	8215C63	12	●	15.4/F	14.9/B
1 1/2	41	31.71	1,988,250	0	1.7	1.0	51	25	8215C73	13	●	15.4/F	14.9/B
2	53	49.71	3,100,000	0	1.7	1.0	51	25	8215C83	14	●	15.4/F	14.9/B
2 1/2	76	100.28	6,290,000	0	0.3	-	51	-	8215B93 ④	15	●	28.2/F	-
Notes: ① Do not use for Fuel Gas. ② On 50 hertz service, the watt rating for the 6.1/F solenoid is 8.1 watts. ③ FM Approved Process Control Valves. See Engineering Section (Approvals) for details. ④ Type 1 enclosure only. ⑤ ○ = Safety Shutoff Valve; ● = General Purpose Valve. Refer to Engineering Section (Approvals) for details. ⑥ 1" W.C. Drop @ 2" W.C. Inlet Pressure, 1,000 Btu/cu.ft. or more, 0.64 Specific Gravity Gas.													

Dimensions: inches (mm)

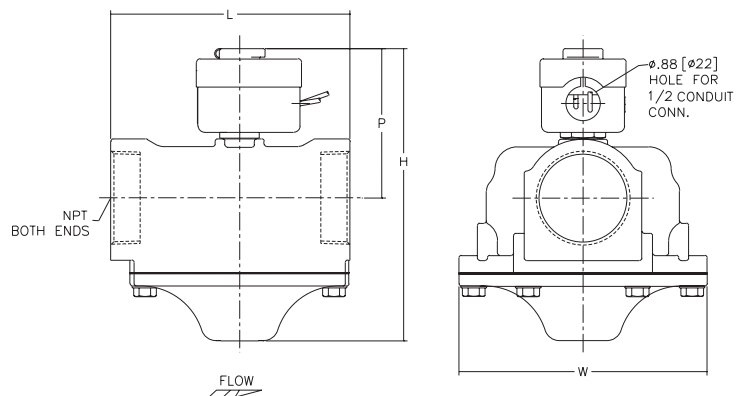
Constr. Ref. No.		H	K	L	P	W
1	ins.	3.42	2.00	2.75	2.87	2.46
	mm	87	51	70	73	63
2	ins.	4.02	2.49	2.75	3.46	2.46
	mm	102	63	70	88	63
3	ins.	3.87	2.19	3.31	3.05	2.33
	mm	98	56	84	77	59
4	ins.	4.46	2.68	3.31	3.64	2.33
	mm	113	68	84	92	59
6 ①	ins.	6.84	x	5.00	5.59	5.38
	mm	174	x	127	142	137
7 ①	ins.	7.47	x	6.09	5.94	6.31
	mm	190	x	155	151	160
8 ①	ins.	10.25	x	7.79	7.91	7.94
	mm	260	x	198	201	202
9	ins.	4.42	2.72	2.75	3.86	2.36
	mm	112	69	70	98	60
10	ins.	4.86	2.72	3.31	4.04	2.36
	mm	123	69	84	103	60
11	ins.	2.74	1.44	2.00	2.30	1.69
	mm	69	36	51	58	43
12	ins.	6.84	x	5.00	3.63	5.38
	mm	174	x	127	92	137
13	ins.	6.84	x	5.00	3.56	5.38
	mm	174	x	127	90	137
13A	ins.	4.05	2.46	2.75	3.44	2.42
	mm	103	63	70	87	62
13B	ins.	4.49	2.65	3.31	3.63	2.39
	mm	114	67	84	92	61
14 ②	ins.	7.44	x	6.09	3.81	6.31
	mm	189	x	155	97	160
15 ②	ins.	10.25	x	7.80	5.22	7.94
	mm	260	x	198	133	202

IMPORTANT: Valves may be mounted in any position except all DC constructions and those marked ①, which must be mounted with the solenoid vertical and upright. Constructions marked ② must be mounted with the solenoid vertical and upright or horizontal only.

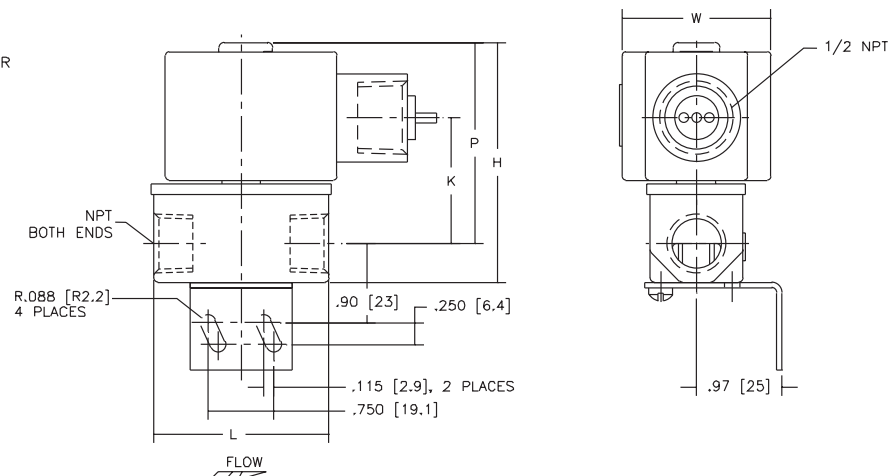
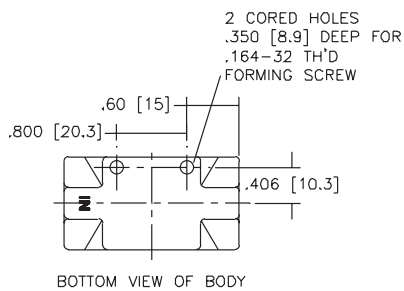
Constr. Refs. 1-4, 9, 10, 13a, 13b






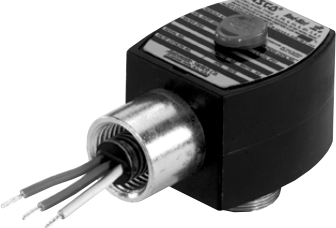
Constr. Refs. 6, 7, 8, 12-15



Constr. Refs. 11



Important Note: One-piece molded epoxy Red-Hat II® solenoids are a unique combination of coil and enclosure. When ordering some Red-Hat II options, it may be necessary to specify the appropriate catalog number prefixes for both the enclosure and the coil.

<p>Type 1 General Purpose Solenoids with Class F High-Temperature Coils</p>	<p>Enclosures:</p> <ul style="list-style-type: none"> • Also meet Type 2 Dripproof, Types 3 and 3S Raintight, and Types 4 and 4X Watertight requirements. • Supplied standard with 1/2" threaded conduit hub and built-in strain relief for leads. <p>Coils:</p> <ul style="list-style-type: none"> • Insulation system for coil temperatures up to 311°F (155°C).^① • For ambient temperature requirement, refer to specific Series and charts in Engineering Information Section, beginning on page 11.00. • Suitable for 50 and 60 Hz.^② 	<p>Ordering Information: Supplied standard on all Red-Hat II valves.</p>	
<p>Type 1 General Purpose Solenoids with Class H High-Temperature Coils</p>	<p>Enclosures:</p> <ul style="list-style-type: none"> • Same as Class F. <p>Coils:</p> <ul style="list-style-type: none"> • Insulation system suitable for coil temperatures up to 356°F (180°C).^① • For ambient temperature requirements, refer to specific Series and charts in Engineering Information Section, page 11.00. • Suitable for 50 and 60 Hz.^② 	<p>Ordering Information: Depending on wattage, use catalog number prefix "HT" or "HB" (e.g., HT8210G2).</p>	
<p>Panel Mount Type 1 General Purpose Solenoids with Class F or H High-Temperature Coils</p>	<p>Enclosures:</p> <ul style="list-style-type: none"> • Same as above, but with provision for mounting on a panel (panel not included). <p>Coils:</p> <ul style="list-style-type: none"> • Same as Class F or H above. 	<p>Ordering Information: For Class F coil, use catalog number prefix "GP" (e.g., GP8210G2) and specify voltage. For Class H coil, depending on wattage, use catalog number prefix "GPHT" or "GPHB" (e.g., GPHT8210G2) and specify voltage.</p>	
<p>Type 7 (A, B, C, and D) Explosionproof Solenoids with Class F High-Temperature Coils</p>	<p>Enclosures:</p> <ul style="list-style-type: none"> • Also meets Types 3 and 3S Raintight, Types 4 and 4X Watertight, Types 6 and 6P Submersible, and Type 9 (E, F, and G) Dust Ignitionproof requirements. Refer to Engineering Information Section, beginning on page 11.00 for details. <p>Coils:</p> <ul style="list-style-type: none"> • Insulation systems suitable for coil temperatures up to 311°F (155°C).^① • For ambient temperature requirements, refer to specific Series charts in Engineering Section, page 11.00. • Suitable for 50 and 60 Hz.^② 	<p>Approvals: UL listed; CSA certified.</p> <p>Ordering Information: Use catalog number prefix "EF" (e.g., EF8210G2) and specify voltage.</p>	
<p>Notes: ^① UL limitations are 284°F (140°C) for Class F insulation systems and 320°F (160°C) for Class H insulation systems. ^② Can be supplied for 50 Hz at a reduced voltage, which is standard throughout the world; i.e., 120/60, 110/50.</p>			

Solenoid Enclosures

ASCO offers two types of enclosures, each for a variety of applications: a one-piece molded epoxy construction called the Red-Hat II® solenoid and a conventional Red-Hat metallic construction. Both meet ICS-6 ANSI/NEMA, and UL Standards 429, 508, and/or 1002. These standards define enclosure protection levels and the tests passed by Red Hat II

Red-Hat II®

Red-Hat II® solenoid enclosures are of one-piece molded epoxy construction, with an integral 1/2" NPT conduit hub. This epoxy encapsulation serves as the enclosure. The magnetic frame is molded into the coil.

General Purpose Enclosures:

The standard Red Hat II Enclosure is green and comes equipped with three 18" long leads. The third lead is green and serves as a ground for the enclosure. This Enclosure meets the requirements for Types 2 (Dripproof), 3 and 3S (Raintight), and 4 and 4X (Watertight-Corrosion Resistant).

An optional Junctionbox/Terminal coil construction is also available for spade and screw terminal constructions.

Type 7 Enclosure:

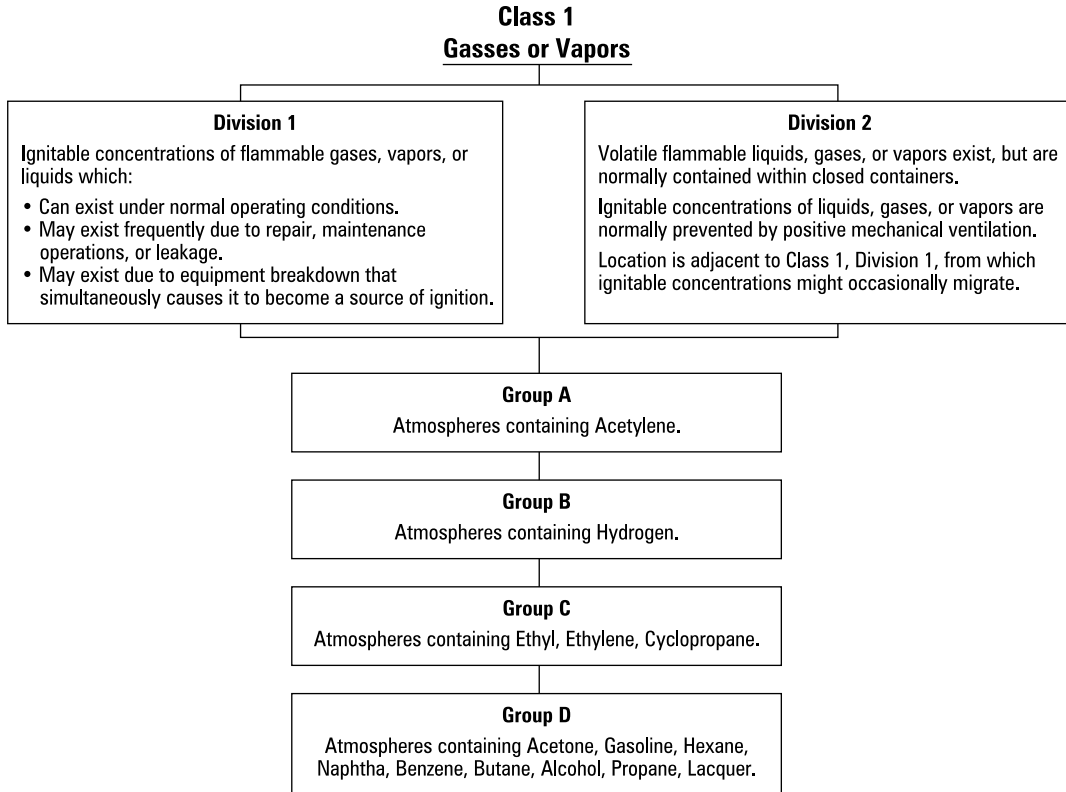
The Type 7 Red Hat II Enclosure is black and comes equipped with three 18" long leads. The third lead is green and serves as a ground for the enclosure. This enclosure meets the requirements to Types for Types 2 (Drop-off), 3 and 3S (raintight), and 4 and 4X (Watertight-Corrosion Resistant), Type 6 and 6P (Submersible) as well as Type 7 (A,B,C,D) Explosionproof and 9 (E, F, and G) Dust-ignition-proof for Class 1, Division 1, Groups A, B, C and D and Class II, Division 1, Groups E, F and G.

Enclosure Classifications and Types

Type 1	<i>General Purpose</i>	<i>Intended for indoor use, primarily to provide protection for enclosed parts in locations without unusual service conditions.</i>
Type 2	<i>Dripproof</i>	<i>Intended for indoor use, primarily to provide protection against limited amounts of falling water or dirt.</i>
Type 3	<i>Raintight, Dusttight, and Sleet (Ice) Resistant</i>	<i>Intended for outdoor use, primarily to provide protection against wind-blown dust, rain, and sleet; undamaged by the formation of ice on the enclosure.</i>
Type 3S	<i>Raintight, Dusttight, and Sleet (Ice) Resistant</i>	<i>Intended for outdoor use, primarily to provide protection against wind-blown dust, rain, and sleet; external mechanism remains operable when ice laden.</i>
Type 3R	<i>Rainproof, Sleet (Ice) Resistant</i>	<i>Intended for outdoor use, primarily to provide protection against falling rain and sleet; undamaged by the formation of ice on the enclosure.</i>
Type 4	<i>Watertight and Dusttight</i>	<i>Intended for indoor or outdoor use to provide protection against splashing water, water seepage, falling or hose-directed water, and severe external condensation; undamaged by the formation of ice on the enclosure.</i>
Type 4X	<i>Watertight, Dusttight, and Corrosion Resistant</i>	<i>Same as Type 4, but provides additional protection to resist corrosion.</i>
Type 6	<i>Submersible</i>	<i>Intended for indoor or outdoor use to provide protection against entry of water during submersion at a limited depth. (Tested to 6' for 30 minutes.)</i>
Type 6P	<i>Submersible</i>	<i>Same as Type 6 Enclosure, but provides prolonged submersion protection at a limited depth. (Tested to 6' for 24 hours.)</i>
Type 7 and Type 9	<i>See charts on next page</i>	

Type 7 (A, B, C, and D)

Explosionproof enclosures are designed to contain an internal explosion, without causing an external hazard, when installed in the following atmospheres or locations:



Type 9 (E, F, and G)

Dust-ignitionproof enclosures are designed to prevent the entrance of dust, and the enclosed devices do not produce sufficient heat to cause external surface temperatures capable of igniting dust on the enclosure or in the surrounding atmosphere.

