

Pressure, Vacuum and Delta P Switches



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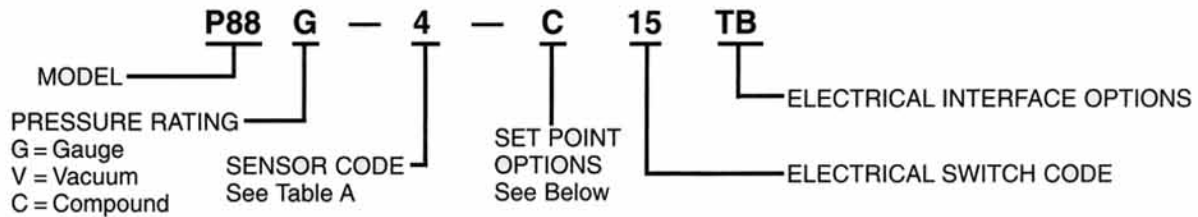
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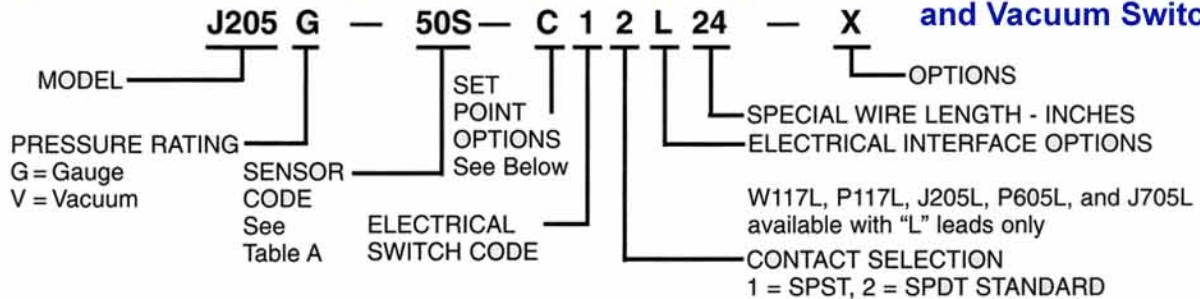
Part Number Construction Examples

After determining the switch model and required options please refer to the examples below for the part number construction.

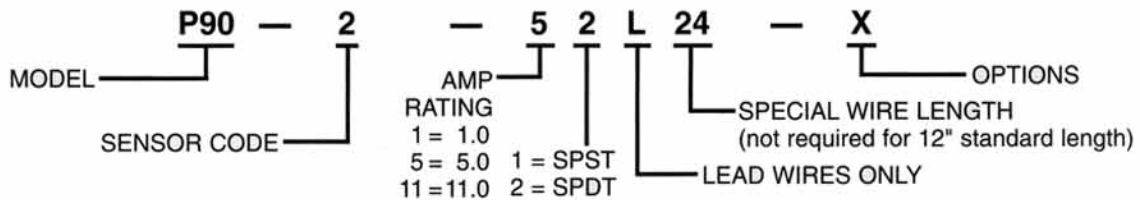
P88 Pressure, Vacuum and Compound Switches



P100, P117, P117L, W117, W117L, P119, J205, J205L, P605, P605L, J705 and J705L Pressure and Vacuum Switches



P90 and P95 Pressure Switches



Set Point Options

Most models offer 3 styles coded in the part number as:

- C = Customer set, field adjustable.
- K = Factory pre-set to customer specifications, field adjustable.
- F = Factory set to customer specifications, non-adjustable.

Information Required for Switch Selection

Please use the following information as a guide in determining the proper switch model for your application.

MAXIMUM SYSTEM PRESSURE: Used to determine the sensor or spring code, TABLE "A" on the product specification pages. Over pressures and spikes must not exceed the rated proof pressure.

SET POINT PRESSURE: Must fall within the limits established on TABLE "B" of the product specification pages, decreasing or increasing scale for a particular sensor or spring code.

RESET DIFFERENTIAL RANGE: Also known as deadband or hysteresis. A specific reset point can be ordered at an extra charge. Please consult factory.

ELECTRICAL SWITCH CHOICE: See TABLES "C, D, and E" on page 18 electrical switch selection. All electrical switches are single pole double throw (SPDT) but may be used as single pole single throw (SPST). If used as SPST switching function must be specified.

ELECTRICAL INTERFACE OPTIONS: See page 19.

SET POINT OPTIONS: Specified on all product specification pages. See above for code definitions.

FLUID AND ENVIRONMENT: The media and immediate environment must be compatible with the construction materials as outlined in each switch's GENERAL SPECIFICATIONS.

Limitation of Application Liability:

Whitman Controls Corporation assumes the buyer to be expert in his intended application of Whitman Controls products. Whitman Controls claims no special expertise in the application of its products in the buyer's equipment. Whitman Controls accepts no responsibility for the buyer's selection and use of Whitman Controls products. Buyer's interpretation and implementation of application suggestions and recommendation by Whitman Controls, general or specific, transmitted verbally or in writing, published or unpublished, is strictly at the buyer's own risk.

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P88G, V & C Patented Economical Pressure, Vacuum and Compound Switch

GUARDIAN P/V™

General Specifications

Pressure Range

Vacuum = 6"Hg to 28"Hg
 Compound = 28"Hg Vac to 3.5 psig
 (can not be set between 6"Hg Vac and 1.5 psig)
 Gauge = 1.5 to 600 psig
 Proof = 600 psig

Sensor Element – Diaphragm

Set Point Options

Factory set, field adjustable, or a combination of both.

Temperature Range

-31°F to +185°F (-35°C to +85°C)

Cycling – Not to exceed 100 CPM.

Weight – 7.4 oz. (approx.)

Construction Materials

Wetted Parts

DIAPHRAGM – Buna N and Brass
 SEALING COMPOUND – Loctite #271
 BODY WITH FITTING – Zinc alloy, chromate finish
 Standard thread – 1/4-18 NPT male
 Optional threads - 1/4 - BSP male
 1/8-27 NPT male

Non-Wetted Parts

ADJUSTING CAP – Zinc alloy, chromate finish
 SWITCH ACTUATOR – Steel, Iridite finish
 BRACKET – Steel, Iridite finish
 SHIELD – High Dielectric strength Mylar



FOR 1/4" QUICK CONNECT TERMINALS



FOR SCREW TERMINALS - EXCEPT 25 AMPS



Sensor Code and Performance Tables

SENSOR CODE	TABLE A		TABLE B
	MAXIMUM SYSTEM* PRESSURE	SET POINT REPEATABILITY	SET POINT RANGE
	PSIG	PSIG	PSIG
3	600	± 0.15	1.5 - 3.5
4	600	± 1.0	3.0 - 40.0
5	600	± 5.0	30.0 - 150.0
6	600	± 20.0	100.0 - 500.0

Sensor Codes
 3, 4, 5 & 6 =
 Pressure Switches

SENSOR CODE	TABLE A		TABLE B
	MAXIMUM SYSTEM VACUUM/PRESSURE*	SET POINT REPEATABILITY	SET POINT RANGE
1	29.9 in. Hg/ 600 PSIG	± 1.2 in. Hg	6.0 to 28.0 in. Hg
2	29.9 in. Hg/ 600 PSIG	± 1.2 in. Hg ± 0.15 PSIG	28.0 in. Hg. to 3.5 PSIG (dead band 6 in. Hg to 1.5 PSIG)

Sensor Code 1 =
 Vacuum Switch

Sensor Code 2 =
 Compound Switch

Exceeding sensor capacity may cause shift in set point.

The entire P88 series may be operated in positive pressure or vacuum interchangeably.

Consult factory for reset differentials.

Sensor Codes
 1, 2 & 3
 Not Available in
 25 Amps

CAUTION: Customer media and environment must be compatible with construction materials as outlined above.



P90 / P95

Severe Environment Pressure Switch

General Specifications

Pressure Range

Set Point Range = 0.75 to 400 PSIG

Proof Pressure: P90 = 600 PSIG
P95 = 4000 PSIG

Set Point Options

Factory set to customer specification, **non-adjustable**.

Temperature Range

-40°F to +257°F (-40°C to +125°C)

Sensor Element – Diaphragm

Cycling – not to exceed 20 CPM

Weight – 7 oz. (approx.)

Shock – 150G

Vibration – 10Hz to 2,000 Hz @ 10G's

Cold storage – -67°F (-55°C)

Water Resistance – 1,000 PSIG high pressure spray

Cycle Life – 2,000,000 test cycles

**NEMA 6
RATED**

OPTIONAL ELECTRICAL CONNECTORS AVAILABLE



Construction Materials

Wetted Parts

P90 Lower Body: Zinc Alloy, Chromate Finish

P95 Lower Body: 303 Stainless Steel

Diaphragm - Viton

Non-Wetted Parts

UPPER BODY - Zinc Alloy, Chromate Finish

SLEEVE – Black valox

POTTING – Epoxy

WIRE – L TYPE INTERFACE

Standard – supplied #18 AWG

Cross-linked polyethylene insulation – SXL

Fittings: 1/8"NPT Standard, 1/2-20 SAE Optional

Other fittings available in quantities.



Sensor Code and Performance Tables

P90 TABLE A			P90 TABLE B	
SENSOR CODE	MAXIMUM SYSTEM PRESSURE*	SET POINT REPEATABILITY	SET POINT RANGE	
			DECREASE	INCREASE
	PSIG	PSIG	PSIG	PSIG
1	600	± 0.75	0.75 - 3	2.00 - 4.25
2	600	± 1	3 - 6	4.2 - 8
3	600	± 2	6 - 20	7 - 24
4	600	± 5	12 - 47	14 - 50
5	600	±10	30 - 110	38 - 125
6	600	± 20	75 - 270	85 - 270
7	600	± 40	100 - 330	125 - 400
P95 TABLE A			P95 TABLE B	
1	4000	± 0.75	0.75 - 3	2.00 - 4.25
2	4000	± 1	3 - 6	4.2 - 8
3	4000	± 2	6 - 20	7 - 24
4	4000	± 5	12 - 47	14 - 50
5	4000	± 10	30 - 110	38 - 125
6	4000	± 20	75 - 270	85 - 270
7	4000	± 40	100 - 330	125 - 400

*Exceeding sensor capacity may cause shift in set point.

CAUTION: Customer media and environment must be compatible with construction materials as outlined above.



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P100GV

High Accuracy Low Pressure and Low Vacuum Switches

General Specifications

Pressure Range: 0.1 to 15.0 psig

Vacuum Range: 0.4 to 11.0 In Hg

Proof: See Table "A"

Sensor Element – Diaphragm

Set Point Options

Factory set, field adjustable, or a combination of both.

Temperature Range

-65°F to +190°F (-54°C to +88°C)

A set point change of up to 2% of sensor capacity may be anticipated when switch is used either below -10°F or above +125°F.

Cycling – Not to exceed 100 CPM.

Weight – 7.8 Oz. (approx) Weight varies with electrical interface selection.

Construction Materials

Wetted Parts

DIAPHRAGM – Buna N with 316 stainless steel reinforcing

SEALING COMPOUND – Loctite #271

BODY WITH FITTING – Anodized Aluminum

Standard thread = 1/8-27 NPT male

Non-Wetted Parts

COVER – Anodized Aluminum

LOCK RING – Zinc alloy, chromate finish

SWITCH HOUSING – Zinc alloy, chromate finish

CAPS & ACCESSORIES – Black valox and brass terminals

P100
1 1/4" TALL NOM.
+ INTERFACE
MANY INTERFACES
AVAILABLE

2 5/16" DIA
NOMINAL



Sensor Code and Performance Tables

P100G-1 PRESSURE SWITCH

SENSOR CODE	TABLE A			TABLE B	
	MAX. SYSTEM PRESSURE*	PROOF	SET POINT REPEATABILITY	SET POINT RANGE	
	PSIG	PSIG	PSIG	DECREASING PSIG	INCREASING PSIG
1	15.0 (in. Hg)	20.0 (in. Hg)	± .03 (in. Hg)	.10 - 14.27 (in. Hg)	.15 - 15.0 (in. Hg)
1	30.54 (in. H ₂ O)	40.72 (in. H ₂ O)	± .06 (in. H ₂ O)	.21 - 29.06 (in. H ₂ O)	.31 - 30.54 (in. H ₂ O)
1	415.2	553.6	± 0.8	2.75 - 395.03	4.15 - 415.2

*Exceeding sensor capacity may cause shift in set point.

P100V-1 VACUUM SWITCH

SENSOR CODE	TABLE A			TABLE B	
	MAX. SYSTEM VACUUM*	PROOF	SET POINT REPEATABILITY	SET POINT RANGE	
	In. Hg	In. Hg	In. Hg	DECREASING In. Hg	INCREASING In. Hg
1	11.0 (in. H ₂ O)	40.72† (in. H ₂ O)	± .06 (in. H ₂ O)	0.4 - 9.9 (in. H ₂ O)	.5 - 11.0 (in. H ₂ O)
1	149.5	553.6†	± 0.8	5.4 - 134.53	6.8 - 149.5

* Exceeding sensor capacity or exposing to positive pressure may cause shift in set point.

†Rated in positive pressure.

CAUTION: Customer media and environment must be compatible with construction materials as outlined above.

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P117G/P117LG NEMA IV

Miniature Pressure Switch

General Specifications

Pressure Range

Gauge = 0.8 to 500 PSIG
Proof = 150% of sensor capacity

Sensor Element – Capsule

Set Point Options

For P117G – Factory set, field adjustable, or a combination of both.

For P117LG NEMA IV – Factory set to customer specification, **non-adjustable**.

Temperature Range

-65°F to +225°F (-54°C to +107°C)
A set point change of up to 2% of sensor capacity may be anticipated when switch is used either below -10°F or above +125°F.

Cycling

3H and 5H not to exceed 60 CPM.
10H, 25H and 50H not to exceed 20 CPM.

Weight – 3 Oz. (approx.)

Weight varies with electrical interface selection.

Construction Materials

Wetted Parts – P117G/P117LG NEMA IV

CAPSULE – 17-7 PH

SEALING COMPOUND – Loctite #271

FITTING – 303 Stainless steel

Standard thread = 1/8-27 NPT male
Optional threads = 1/4-18 NPT male
7/16-20 UNF male

P117
1 3/4" TALL NOM.
+ INTERFACE
MANY INTERFACES
AVAILABLE



1 3/32" DIA NOM.

P117L NEMA 4
2 9/16" TALL NOM.



1 1/8" DIA NOM.

Non-Wetted Parts

BODY – 303 Stainless steel
LOCK RING – Zinc alloy, chromate finish
SWITCH HOUSING – Zinc alloy, chromate finish
CAPS & ACCESSORIES – Black valox and brass terminals

Non-Wetted Parts

BODY – 303 Stainless steel
SWITCH HOUSING – Zinc alloy, chromate finish
SLEEVE – Anodized Aluminum
POTTING – Epoxy
WIRE – L TYPE INTERFACE
Standard – supplied #20 AWG Insulated with polyvinyl chloride – 300 volts
COLOR CODE: Black – Common
White – N.O.
Red – N.C.



Sensor Code and Performance Tables

SENSOR CODE	TABLE A		TABLE B	
	MAX. SYSTEM PRESSURE*	SET POINT REPEATABILITY	SET POINT RANGE	
			DECREASING	INCREASING
PSIG	PSIG	PSIG	PSIG	
3H	30	± 0.6	0.8 - 28.5	1.6 - 30.0
5H	50	± 1.0	2.0 - 48.0	3.0 - 50.0
10H	100	± 2.0	3.0 - 96.5	4.5 - 100.0
25H	250	± 5.0	7.5 - 242.5	9.7 - 250.0
50H	500	± 10.0	15.0 - 485.0	20.0 - 500.0

*Exceeding sensor capacity may cause shift in set point.

For the reset differential range for the P117G/P117LG consult factory.

CAUTION: Customer media and environment must be compatible with construction materials as outlined above.



P117V/P117LV NEMA IV

Miniature Vacuum Switch

General Specifications

Vacuum Range

Vacuum = 1.6 to 28.2 in. Hg
Proof = 150% of sensor capacity

Sensor Element – Capsule

Set Point Options

P117V – Factory set, field adjustable, or a combination of both.
P117LV NEMA IV – Factory set to customer specification, **non-adjustable**.

Temperature Range

-65°F to +225°F (-54°C to +107°C)
A set point change of up to 2% of sensor capacity may be anticipated when switch is used either below -10°F or above +125°F.

Cycling

3H and 5H not to exceed 60 CPM.
10H not to exceed 20 CPM.

Weight – 3 Oz. (approx.)

Weight varies with electrical interface selection.

Construction Materials

Wetted Parts – P117V/P117LV NEMA IV

CAPSULE – 17-7 PH

SEALING COMPOUND – Loctite #271

FITTING – 303 Stainless steel

Standard thread = 1/8-27 NPT male

Optional threads = 1/4-18 NPT male

7/16-20 UNF male

P117
1 3/4" TALL NOM.
+ INTERFACE
MANY INTERFACES
AVAILABLE



1 3/32"DIA NOM.

Non-Wetted Parts

BODY – 303 Stainless steel
LOCK RING – Zinc alloy, chromate finish
SWITCH HOUSING – Zinc alloy, chromate finish
CAPS & ACCESSORIES – Black valox and brass terminals

P117L NEMA 4
2 9/16" TALL NOM.



1 1/8"DIA NOM.

Non-Wetted Parts

BODY – 303 Stainless steel
SWITCH HOUSING – Zinc alloy, chromate finish
POTTING – Epoxy
SLEEVE – Anodized aluminum
WIRE – L TYPE INTERFACE
Standard – supplied #20 AWG
Insulated with polyvinyl chloride – 300 volts
COLOR CODE: Black – Common
White – N.O.
Red – N.C.



Sensor Code and Performance Tables

SENSOR CODE	TABLE A		TABLE B	
	MAX. SYSTEM VACUUM*	SET POINT REPEATABILITY	SET POINT RANGE	
			DECREASING	INCREASING
In. Hg	In. Hg	In. Hg	In. Hg	
3H	29.9	± 1.2	1.6 - 27.0	2.7 - 28.2
5H	29.9	± 2.0	4.0 - 24.8	5.1 - 28.2
10H	29.9	± 4.0	6.0 - 21.5	8.4 - 28.2

*Exposing vacuum switches to positive pressure may cause set point shift and void the warranty.

For reset differential range for the P117V and P117LV consult factory.

CAUTION: Customer media and environment must be compatible with construction materials as outlined above.

W117 / W117L NEMA 4

High Purity Pressure / Vacuum Switch

General Specifications

Pressure Range

Gauge = 0.8 to 500 PSIG
 Vacuum = 1.6 to 28.2 in. Hg
 Proof = 150% of sensor capacity

Sensor Element –

Capsule – electron beam welded
 Helium leak tested (4×10^{-9} Std CC/Sec)

Set Point Options: W117: Factory set, field adjustable or a combination of both, **W117L:** Factory set only.

Temperature Range

-65°F to +225°F (-54°C to +107°C)
 A set point change of up to 2% of sensor capacity may be anticipated when switch is used either below -10°F or above +125°F.

Cycling

3H and 5H not to exceed 60 CPM.
 10H, 25H and 50H not to exceed 20 CPM.

Weight – 3 Oz. (approx.)

Weight varies with electrical interface selection.

Construction Materials

Wetted Parts

CAPSULE – 17-7 PH – electron beam welded

FITTING – 303 Stainless steel

Standard thread = 1/8-27 NPT male
 Optional threads = 1/4 VCR male
 1/4-18 NPT male

Non-Wetted Parts

BODY – 303 Stainless Steel

LOCK RING – Zinc alloy, chromate finish

SWITCH HOUSING – Zinc alloy, chromate finish

CAPS & ACCESSORIES – Black valox and brass terminals.

W117
1 3/4" TALL
NOMINAL
+ INTERFACE
MANY INTERFACES
AVAILABLE



UNIT IS
SHOWN WITH
1/8" NPT
STANDARD
FITTING AND IS
1 3/32" DIA
NOMINAL

W117L NEMA4



2 7/8" LONG MAX
WITH VCR FITTING
SHOWN AND
1 1/8" DIA NOM.

Sensor Code and Performance Tables



		TABLE A		TABLE B	
	SENSOR CODE	SENSOR MAX. SYSTEM PRESSURE*	SET POINT REPEATABILITY	SET POINT RANGE	
				DECREASING	INCREASING
		PSIG	PSIG	PSIG	PSIG
GAUGE	3H	30	± 0.6	0.8 - 28.5	1.6 - 30.0
	5H	50	± 1.0	2.0 - 48.0	3.0 - 50.0
	10H	100	± 2.0	3.0 - 96.5	4.5 - 100.0
	25H	250	± 5.0	7.5 - 242.5	9.7 - 250.0
	50H	500	± 10.0	15.0 - 485.0	20.0 - 500.0
		In. Hg		In. Hg	
VACUUM	3H	29.9	± 1.2	1.6 - 27.0	2.7 - 28.2
	5H	29.9	± 2.0	4.0 - 24.8	5.1 - 28.2
	10H	29.9	± 4.0	6.0 - 21.5	8.4 - 28.2

*Exceeding sensor capacity or exposing vacuum switches to positive pressure may cause shift in set point and void the warranty.

CAUTION: Customer media and environment must be compatible with construction materials as outlined above.



P119G/V

Economy Model Pressure and Vacuum Switches

General Specifications

Pressure Range: 0.8 to 500 psig

Vacuum Range: 1.6 to 28.2 In Hg

Proof: 150% of sensor capacity

Sensor Element – Capsule

Set Point Options

Factory set, field adjustable, or a combination of both.

Temperature Range

-65°F to +225°F (-54°C to +107°C)

A set point change of up to 2% of sensor capacity may be anticipated when switch is used either below -10°F or above +125°F.

Cycling

3H and 5H not to exceed 60 CPM.

10H, 25H and 50H not to exceed 20 CPM.

Weight – 2.0 Oz. (approx.)

Weight varies with electrical interface selection.

Construction Materials

Wetted Parts

CAPSULE – 17-7 PH

SEALING COMPOUND – Loctite #271

BODY WITH FITTING –

Round – Zamac 3, chromate finish

Hexbody – ZA8, chromate finish

Standard threads – 1/8-27 NPT male

1/4-18 NPT male - Hex body only

Non-Wetted Parts

LOCK RING – Zinc alloy, chromate finish

SWITCH HOUSING – Zinc alloy, chromate finish

CAPS & ACCESSORIES – Black valox and brass terminals

P119
1 3/32" TALL NOM.
+ INTERFACE
MANY INTERFACES
AVAILABLE



1" HEX
BODY



Sensor Code and Performance Tables

P119G PRESSURE SWITCH

SENSOR CODE	TABLE A		TABLE B	
	MAX. SYSTEM PRESSURE*	SET POINT REPEATABILITY	SET POINT RANGE	
			DECREASING	INCREASING
PSIG		PSIG	PSIG	
3H	30	± 0.6	0.8 - 28.5	1.6 - 30.0
5H	50	± 1.0	2.0 - 48.0	3.0 - 50.0
10H	100	± 2.0	3.0 - 96.5	4.5 - 100.0
25H	250	± 5.0	7.5 - 242.5	9.7 - 250.0
50H	500	± 10.0	15.0 - 485.0	20.0 - 500.0

*Exceeding sensor capacity may cause shift in set point.

P119V VACUUM SWITCH

SENSOR CODE	TABLE A		TABLE B	
	MAX. SYSTEM VACUUM*	SET POINT REPEATABILITY	SET POINT RANGE	
			DECREASING	INCREASING
(In. Hg)	(In. Hg)	(In. Hg)	(In. Hg)	
3H	29.9	± 1.2	1.6 - 27.0	2.7 - 28.2
5H	29.9	± 2.0	4.0 - 24.8	5.1 - 28.2
10H	29.9	± 4.0	6.0 - 21.5	8.4 - 28.2

*Exceeding sensor capacity or exposing to positive pressure may cause shift in set point.

CAUTION: Customer media and environment must be compatible with construction materials as outlined above.



General Specifications

Pressure Range

Gauge = 0.8 to 800 PSIG
Proof = 5000 PSIG

Sensor Element – Diaphragm

Set Point Options

J205G – Factory set, field adjustable, or a combination of both.

J205LG NEMA IV – Factory set to customer specification, **non-adjustable**.

Temperature Range

-65°F to +225°F (-54°C to +107°C)

A set point change of up to 2% of sensor capacity may be anticipated when the switch is used either below -10°F or above +125°F.

Cycling – Not to exceed 100 CPM.

Weight – 4.0 Oz. (approx.)

Weight varies with electrical interface selection.

Construction Materials

Wetted Parts – J205G/J205LG NEMA IV

BODY – 303 Stainless steel

DIAPHRAGM – 316 Stainless steel

O RING – Buna N standard
Special material available upon request.

SEALING COMPOUND – Loctite #271

FITTING – 303 Stainless steel
Standard thread = 1/8-27 NPT male

Optional threads = 1/4-18 NPT male
1/4 VCR male
7/16-20 UNF male

J205
1 3/4" TALL NOM.
+ INTERFACE
MANY INTERFACES
AVAILABLE



J205L NEMA 4
2 7/8" TALL NOM.



BOTH UNITS 1 1/8" DIA NOMINAL

Non-Wetted Parts

LOCK RING – Zinc alloy, chromate finish

SWITCH HOUSING – Zinc alloy, chromate finish

CAPS & ACCESSORIES – Black valox and brass terminals

Non-Wetted Parts

LOCK RING – 300 Series stainless steel
SWITCH HOUSING – Zinc alloy, chromate finish

POTTING – Epoxy

SLEEVE – Anodized aluminum

WIRE – L TYPE INTERFACE

Standard – supplied #20 AWG
Insulated with polyvinyl chloride – 300 volts

COLOR CODE: Black – Common
White – N.O.
Red – N.C.

Sensor Code and Performance Tables

SENSOR CODE	TABLE A			TABLE B	
	MAX.SET POINT	WORKING PROOF*	SET POINT REPEATABILITY	SET POINT RANGE	
	PSIG	PSIG	PSIG	DECREASING PSIG	INCREASING PSIG
2S	20	5000	± 0.8	0.8 - 16.3	1.2 - 20.0
5S	50	5000	± 2.0	2.0 - 42.5	2.0 - 50.0
10S	100	5000	± 4.0	4.0 - 91.0	4.0 - 100.0
25S	250	5000	± 10.0	10.0 - 222.0	10.0 - 250.0
50S	500	5000	± 20.0	20.0 - 432.0	20.0 - 500.0
80S	800	5000	± 40.0	50.0 - 700.0	100.0 - 800.0

*Exceeding sensor capacity may cause shift in set point.

For the reset differential range for the J205G and J205LG consult factory.

CAUTION: Customer media and environment must be compatible with construction materials as outlined above.



J205V/J205LV NEMA IV

Vacuum Switch with Overpressure Feature

General Specifications

Vacuum Range

Vacuum = 1.6 to 28.2 in. Hg
Proof = 5000 PSIG

Sensor Element – Diaphragm

Set Point Options

J205V – Factory set, field adjustable, or a combination of both.

J205LV NEMA IV – Factory set to customer specification, **non-adjustable**.

Temperature Range

-65°F to +225°F (-54°C to +107°C)
A set point change of up to 2% of sensor capacity may be anticipated when the switch is used either below -10°F or above +125°F.

Cycling – Not to exceed 100 CPM.

Weight – 4.0 Oz. (approx.)

Weight varies with electrical interface selection.

Construction Materials

Wetted Parts – J205V/J205LV NEMA IV

BODY – 303 Stainless steel

DIAPHRAGM – 316 Stainless steel

O-RING – Buna N standard

Special material available upon request.

SEALING COMPOUND – Loctite #271

FITTING – 303 Stainless steel

Standard thread = 1/8-27 NPT male

Optional threads = 1/4-18 NPT male

1/4 VCR male

7/16-20 UNF male

J205
1 3/4" TALL NOM.
+ INTERFACE
MANY INTERFACES
AVAILABLE



J205L NEMA 4
2 7/8" TALL NOM.



BOTH UNITS 1 1/8" DIA NOMINAL

Non-Wetted Parts

LOCK RING – Zinc alloy, chromate finish

SWITCH HOUSING – Zinc alloy, chromate finish

CAPS & ACCESSORIES – Black valox and brass terminals

Non-Wetted Parts

POTTING – Epoxy

SLEEVE – Anodized aluminum

WIRE – L TYPE INTERFACE

Standard – supplied #20 AWG
Insulated with polyvinyl chloride – 300 volts

COLOR CODE: Black – Common
White – N.O.
Red – N.C.



Sensor Code and Performance Tables

SENSOR CODE	TABLE A			TABLE B	
	MAX SYSTEM VACUUM	WORKING PROOF	SET POINT REPEATABILITY	SET POINT RANGE	
				DECREASING	INCREASING
In. Hg	PSIG	In. Hg	In. Hg	In. Hg	
1S	29.9	5000†	± 1.6	1.6 - 22.5	2.2 - 28.2
10S	29.9	5000†	± 8.0	8.0 - 21.8	8.0 - 28.2

†Rated in positive pressure.

For the reset differential range for the J205V and J205LV consult factory.

CAUTION: Customer media and environment must be compatible with construction materials as outlined above.



P605/P605L NEMA IV

Medium to High Pressure Switch

General Specifications

Pressure Range

Gauge = 400 to 6000 PSIG
Proof = 9000 PSIG

Sensor Element – Piston

Set Point Options

Factory set, field adjustable, or a combination of both.

Temperature Range

-65°F to +225°F (-54°C to +107°C)
A set point change of up to 2% of sensor capacity may be anticipated when switch is used either below -10°F or above +125°F.

Cycling – Not to exceed 20 CPM.

Weight – 7.0 Oz. (approx.)

Weight varies with electrical interface selection.

Construction Materials

Wetted Parts – P605/P605L NEMA IV

LIMP DIAPHRAGM – Kapton

O RING – Viton standard

Teflon available

ADAPTER – 303 Stainless steel

SEALING COMPOUND – Loctite #271

FITTING – 303 Stainless steel

Standard thread = 1/4-18 NPT male

Optional threads = 1/8-27 NPT male

7/16-20 UNF male



P605
2 7/8" TALL NOM.
+ INTERFACES
MANY INTERFACES
AVAILABLE

1 1/8" DIA
NOM.



P605L
NEMA 4
4" TALL
NOM.

1 13/32"
MAX DIA



Non-Wetted Parts –

BODY – 303 Stainless Steel
PISTON – 300 Series stainless steel
LOCK RING – Zinc alloy, chromate finish
SWITCH HOUSING – Zinc alloy, chromate finish
CAPS & ACCESSORIES – Black valox and brass terminals
ADJUSTING PORT COVER – Stainless steel

Non-Wetted Parts

BODY – 303 Stainless Steel
PISTON – 300 Series stainless steel
SWITCH HOUSING – Zinc alloy, chromate finish
ADJUSTING PORT COVER – Anodized aluminum
PORT COVER O RINGS – Buna N
POTTING – Epoxy
SLEEVE – Anodized aluminum
WIRE – L TYPE INTERFACE
Standard – supplied #20 AWG
Insulated with polyvinyl chloride – 300 volts
COLOR CODE: Black – Common
White – N.O. Red – N.C.

P605 SENSOR PERFORMANCE AND CODE SELECTION TABLES

TABLE A			TABLE B	
CODE	MAX. SYS. PRESSURE* PSIG	SET POINT REPEAT-ABILITY PSI	SET POINT RANGE PSIG	
			DECREASING	INCREASING
0	3000	± 25	200 - 600	200 - 600
1	3000	± 50	400 - 1500	400 - 1500
2	6000	± 150	1250 - 2750	1250 - 3500
3	9000	± 300	2750 - 5000	3500 - 6000

*Exceeding sensor capacity may cause shift in set point.

For the reset differential range for the P605 and P605L consult factory.

CAUTION: Customer media and environment must be compatible with construction materials as outlined above.



J705/J705L NEMA 4

Medium to High Pressure Switch

General Specifications

Pressure Range

Gauge = 500 to 6000 PSIG
Proof = 9000 PSIG

Sensor Element – Piston

Set Point Options

For J705 – Factory set, field adjustable, or a combination of both.

For J705L NEMA IV – Factory set to customer specification, non-adjustable.

Temperature Range

-65°F to +225°F (-54°C to +107°C)
A set point change of up to 2% of sensor capacity may be anticipated when switch is used either below -10°F or above +125°F.

Cycling – Not to exceed 20 CPM.

Weight – 4.0 Oz. (approx.)

Weight varies with electrical interface selection.

Construction Materials

Wetted Parts – J705/J705L NEMA IV

PISTON – 17-4 PH

O RING – Buna N standard. Special materials available upon request.

FITTING – 303 Stainless steel

Standard thread = 1/8-27 NPT male

J705
1 3/4" TALL NOM.
+ INTERFACE
MANY INTERFACES
AVAILABLE



1 3/32" DIA
NOM.

Non-Wetted Parts

BODY – CRS
LOCK RING – Zinc alloy, chromate finish
SWITCH HOUSING – Zinc alloy, chromate finish
CAPS & ACCESSORIES – Black valox and brass terminals

J705L NEMA 4
2 11/16" TALL



1 1/8" DIA
NOM.

Non-Wetted Parts

BODY – CRS
SWITCH HOUSING – Zinc alloy, chromate finish
POTTING – Epoxy
SLEEVE – Anodized aluminum
WIRE – L TYPE INTERFACE
Standard – supplied #20 AWG
Insulated with polyvinyl chloride – 300 volts
COLOR CODE: Black – Common
White – N.O. Red – N.C.

Sensor Code and Performance Tables

SENSOR CODE	TABLE A		TABLE B	
	MAX. SYSTEM PRESSURE*	SET POINT REPEATABILITY	SET POINT RANGE	
			DECREASING	INCREASING
PSIG	PSIG	PSIG	PSIG	
3	3000	± 25	500	500
		± 50	1000	1000
		± 75	1500	1500
		± 100	2000	2000
		± 125	2500	2500
		± 150	2800	3000
4	5000	± 45	600	600
		± 60	1000	1000
		± 85	1500	1500
		± 100	2000	2000
		± 125	2500	2500
		± 150	3000	3000
		± 175	3500	3500
		± 200	4000	4000
5	6000	± 250	4500	5000
		± 65	700	700
		± 75	1000	1000
		± 85	1500	1500
		± 100	2000	2000
		± 150	3000	3000
		± 200	4000	4000
		± 250	5000	5000
		± 300	5500	6000

*Exceeding sensor capacity may cause shift in set point.
For the reset differential range for the J705 and J705L consult factory.

CAUTION: Customer media and environment must be compatible with construction materials as outlined above.

CE



P845

Differential Pressure Switch

General Specifications

Pressure Range

Vacuum to 6000 PSIG
 Max. differential pressure = 2000 PSID
 Proof = 9000 PSIG

Sensor Element

Piston

Set Point Options

Field adjustable, or factory set –
 field adjustable

Temperature Range

-65°F to -225°F
 Advise factory on applications which
 exceed temperature range.
 A set point change of up to 2% of
 sensor capacity may be anticipated
 when switch is used either below
 -10°F or above +125°F.

Cycling:

Not to exceed 20 CPM

Weight:

8.5 ounces approximately

Construction Materials:

Wetted parts
 SPRING - steel
 PISTON - anodized aluminum
 BODY - anodized aluminum
 SEAL - Buna - other materials available
 SEALING COMPOUND - Loctite #271
 FITTING - anodized aluminum
 1/4-18 NPT Female

Electrical Switch Information

SPDT ACTION
 "L" ONLY - non jacketed 12" long #24
 AWG
 MAXIMUM RATINGS
 175 VDC, 0.25 AMPS DC, 5 WATTS DC
 120 VAC, 0.25 AMPS AC, 3 WATTS AC
 White = common
 Blue = N.C.
 Black = N.O.

Part Number Construction:

P845 - 2 - KR2L - X

SENSOR CODE From Table A

SET POINT OPTION See to Right

SPECIAL OPTIONS



Dimensions: 4" Long, 1½" High, 1¼" Deep

Application Information

This is a rugged differential pressure switch with excellent by-pass characteristics, able to handle a wide variety of media to 6000 PSIG with set point ranges to 250 PSID. It may be mounted in any position and is capable of carrying light to moderate mechanical shock and vibratory loads.

Sensor Performance and Code Selection Tables

TABLE A		TABLE B		
SENSOR CAPACITY		SET POINT REPEATABILITY PSI	DIFFERENTIAL SET POINT RANGE PSID	
CODE	MAX SYS PRESSURE PSIG		INCREASING	DECREASING
1	6000	+/-2	7-13	2-7
2	6000	+/-4	13-25	5-16
3	6000	+/-8	25-45	10-21
4	6000	+/-16	35-160	20-80
5	6000	+/-32	120-250	35-120

Set Point Options

Most models offer 3 styles coded in the part number as:
 C = Customer set, field adjustable.
 F = Factory set to customer specifications, non-adjustable.
 K = Factory pre-set to customer specifications, field adjustable.

CAUTION: Customer media and environment must be compatible with construction materials as outlined above.



IN STOCK, ADJUSTABLE PRESSURE AND VACUUM SWITCHES

A large selection of in stock pressure and vacuum switches can be ordered from our online store.

If you order by 1:00 PM eastern time, we ship the same day.

Popular models, including our P88, P117, W117, W117-VCR P119, J205 and J705, are all available with a wide choice of electrical switch amperage ratings. Interfaces choices are "L" lead wires, "TB" 1/4" terminal blades and "TS" screw terminals. All are field adjustable.

All switches are ready to go out the door with your internet order.

Log on to WWW.WHITMANCONTROLS.COM and go to the online store at the bottom left of the home page.



Pressure / Vacuum Switch Glossary

ACCURACY – The limit of deviation from the set point of a pressure or vacuum switch. It is usually defined in either pounds per square inch, or percentage of full scale.

ACTUATION POINT – See Set Point.

ACTUATION VALUE – The difference between the set point and the reset point.

ADJUSTABLE RANGE – The range within which the switch can be set from the lowest to the highest point, usually expressed in PSI, inches of mercury or PSIA.

DEADBAND – The difference between the increasing and decreasing readings when the switch is operated between set point and reset point.

DIFFERENTIAL – The mechanical motion lost within the electrical switch element while it reverses itself. This is usually greater in high amperage switches than in low amperage switches.

ELECTRICAL SWITCHING ELEMENT – Opens or closes an electrical circuit in response to movement from the pressure or vacuum sensing element. Single pole, double throw (SPDT) snap action switches are standard, may be used as single pole, single throw (SPST). NO/NC circuitry is selectable, but it must be specified at order time.

HYSTERESIS – The difference in pressure or vacuum switch response to increasing and decreasing pressure or vacuum.

NORMALLY CLOSED SWITCHING ELEMENT – Current flows through the switch until it is broken by a pressure or vacuum change.

NORMALLY OPEN SWITCHING ELEMENT – No current flows through the switch until contact is made by a pressure or vacuum change.

PRESSURE, ABSOLUTE – A pressure scale based on PSIA “0” or a perfect vacuum.

PRESSURE, AMBIENT – The pressure immediately surrounding a pressure switch. It is usually but not necessarily atmospheric gauge pressure.

PRESSURE, ATMOSPHERIC – The pressure caused by the actual weight of the earth’s atmosphere. At sea level atmospheric pressure equals 14.7 psi, 30 inches of mercury or 408 inches of water, above absolute “0” (“0” PSIA).

PRESSURE, BAROMETRIC – Actual atmospheric pressure in a specific location and altitude. The standard is 29.92 inches of mercury at sea level at 70°F.

PRESSURE, DIFFERENTIAL – The difference between a reference pressure and a variable pressure.

PRESSURE, GAUGE – Uses atmospheric pressure as a zero reference point so there is no compensation for changes in barometric pressure.

PRESSURE, MAXIMUM SYSTEM – System pressure including surges or spikes.

PRESSURE, PROOF – The maximum pressure which can be applied to a pressure switch without causing irreparable damage. It is usually 150% of the pressure sensing element’s rated maximum system pressure.

PRESSURE, SYSTEM – Normal system pressure level not including surges or spikes.

PRESSURE SENSING ELEMENT – The portion of the pressure switch that moves with a change in system fluid pressure. Whitman Controls pressure switches employ capsule, diaphragm, and piston sensing elements.

PRESSURE SWITCH – An instrument that converts a pressure change to an electrical function.

REPEATABILITY – The ability of the switch to actuate repeatedly at the desired set point within sensor tolerance.

RESET POINT – After the pressure has reached set point and operated the electrical switch, it must return to the reset point before the electrical switch returns to its original position.

RESET POINT RANGE – The difference between the set point and the reset point. It is caused by the hysteresis of the pressure or vacuum sensing element and the differential of the electrical switch. This is a fixed function of the switch and is not adjustable.

RESPONSE TIME (REACTION TIME) – The amount of time taken between a change in the pressure of the system and the change in the electrical signal.

SET POINT – The exact point, at which the electrical switching element functions. This is generally expressed in PSI, inches of mercury or PSIA.

SET POINT RANGE – The range within which the switch can be set from the lowest to the highest point, usually expressed in PSI, inches of mercury or PSIA.

SWITCHING CURRENT, MAXIMUM – The maximum load (amperage) that the electrical switch will carry.

TEMPERATURE, AMBIENT – The temperature immediately surrounding a pressure switch.

TEMPERATURE SHIFT – A change in switch set point due to changes in ambient temperature.

VACUUM – Gauge pressure less than ambient pressure using ambient pressure as a reference.

Electrical Switch Selection Tables

Electrical Switch Selection - Table C (Model P88 ONLY)

SWITCH CODE	VOLTS	AMP RESISTIVE	HORSE POWER @ 250 VAC	CONTACT MATERIAL
1	30 VDC / 125VAC	1	–	GOLD
5	250 VAC	5	0.1	SILVER
10	250 VAC	10	1/3	SILVER
15	250 VAC	15	1/2	SILVER
25	250 VAC	25	2	SILVER

For dry circuitry, i.e. 5VDC-50 mA or less, use gold contact switch (Code 1). If less than 20mA, performance of electrical switch will be environmentally dependent. If there is some form of contamination (dust, dirt, oil, chemical residue, etc.) at point of contact, the electrical switch could perform intermittently, as there would be insufficient current to burn off any possible contamination. Above switches are SPDT, but may be used as SPST. 25 Amp Switch Available on Codes 4, 5 & 6 ONLY.

Electrical Switch Selection - Table D (Models P90 & P95 ONLY)

SWITCH CODE	VOLTS	AMP RESISTIVE @ 250 VAC	HORSE POWER	CONTACT MATERIAL
1	30 VDC / 125VAC	1	–	GOLD
5	30 VDC / 250VAC	5	–	SILVER
11	30 VDC / 250VAC	11	1/4	SILVER

For dry circuitry, i.e. 5VDC-50 mA or less, use gold contact switch (Code 1). If less than 20mA, performance of electrical switch will be environmentally dependent. If there is some form of contamination (dust, dirt, oil, chemical residue, etc.) at point of contact, the electrical switch could perform intermittently, as there would be insufficient current to burn off any possible contamination. Above switches are SPDT, but may be used as SPST.

Electrical Switch Selection - Table E (All EXCEPT Models P88, P90 & P95)

SWITCH CODE	VOLTS AC / DC	AMP RESISTIVE	AMP INDUCTIVE	CONTACT MATERIAL
1	115 / 28	1 / 1	1 / .5	GOLD
5	250 / 28	5 / 5	5 / 3	SILVER
UL & CSA LISTED @ SEA LEVEL FOR AC VOLT RATING				

For dry circuitry, i.e. 5VDC-50 mA or less, use gold contact switch (Code 1). If less than 20mA, performance of electrical switch will be environmentally dependent. If there is some form of contamination (dust, dirt, oil, chemical residue, etc.) at point of contact, the electrical switch could perform intermittently, as there would be insufficient current to burn off any possible contamination. Above switches are SPDT, but may be used as SPST.

Optional*

Electrical Switch Selection - (All EXCEPT Models P88, P90 & P95)

SWITCH CODE	VOLTS AC / DC	AMP RESISTIVE	CONTACT MATERIAL
.1	125 / 30	.1	GOLD PLATE
3	125 / 30	3 / 2	SILVER

For dry circuitry, i.e. 5VDC-50 mA or less, use gold contact switch (Code .1). If less than 20mA, performance of electrical switch will be environmentally dependent. If there is some form of contamination (dust, dirt, oil, chemical residue, etc.) at point of contact, the electrical switch could perform intermittently, as there would be insufficient current to burn off any possible contamination. Above switches are SPDT, but may be used as SPST.

*Consult factory for sensor code and performance table specifications.

CAUTION: Customer media and environment must be compatible with construction materials as outlined above.





Interface Options

Optional Electrical Interfaces

Available for Models

P100, P117, P119, J205, P605, J705, W117



T

Standard solder type terminals also accept AMP 60789-2 and 60598-4 Pin Receptacles.



TS

Three flat bar terminals with #6-32 pan head screws at right angle



TB

3 standard terminals accept arc-less (or equal) female quick connect terminals



DN

DIN Male Plug "F" Set Only Except "C", "K" & "F" Set on P605 Series Units

For L and U Electrical Interfaces

2 or 3 wire pigtail furnished in 12" length
Standard-supplied #20 AWG Insulated with polyvinyl chloride – 300 volts.

COLOR CODE:

- Black – Common
- White – N.O.
- Red – N.C.



DN Pin-out:
1 = Common
2 = N/C
3 = N/O
Other Pin-outs on request

"M" Interface Quick-Disconnect 3-Pin Connector

This interface is rated as environmentally resisting. It is intended for use where the connector will be subjected to heavy condensation and rapid changes in environmental temperature or pressure. This connector is equivalent to MS3102E-10SL-3P. Applicable to models shown below only.



"M" Interface

P117, J705, J205, P605
"F" Set Only Except "C"
"K" and "F" Set on P605

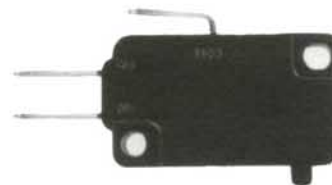


MS3106E

Connectors – All Models
With "M" Interface

Interface Options

Optional Electrical Interfaces Available for Model P88



TB

1/4" (TB)
Blade terminals
UL Recognized
CSA Listed



TS

Screw Terminal
UL Listed
(except 25 amp)
CSA Listed





Optional Parts

Popular Options:

SPECIFIC RESET POINT RANGE – (Calibrated Switch)

PIGTAILS – Standard, Non-jacketed (“L” Interface)
12” long included in price, longer lengths available
18 AWG, 20 AWG Wire in various colors

PIGTAIL WITH PVC JACKET (“L” Interface)
12” length, longer lengths available

UL and/or CSA – Consult Factory
Some product is covered by UL/CSA approval under the following file numbers: UL E 109178 - CSA LR62173 - P88, P117, W117, P119.
UL E 123402 – CSA LR87500 – Wiring harness

PIN RECEPTACLE – AMP 60789-2 or equal
Three per set (“T” interface)

VOLTAGE SPIKE ARRESTOR – AC/DC Voltage,
SPST/SPDT Switches

BAR CODING
R/C CIRCUITS FOR CURRENT BELOW 10mA
O RINGS (J205, P605, J705 only)
Special materials upon request

ROLL STAMPING/STENCILING
COMPUTER DIAGNOSIS CAPABILITY

SHRINK TUBING

CONVOLUTED CONDUIT

LABELING

TEFLON TAPE – Available on NPT Fittings

THREAD LOCKER – Available on all Fittings

Fittings:

Most models can be obtained with a variety of fittings.
Some common fittings are shown below.
Please specify when ordering.



Adapters:

Models P100, P119 and J705 are available with optional port thread adapters.



Conduit Adapter pressure switch protector, equivalent to NEMA Type III when mounted as shown. 1/2" NPT Male Connection. Limited to "L", "TB" and "TS" Interfaces. Material, anodized aluminum.
301-300 for use with:
Models P117, P119
320-300 for use with:
Models J205, J705
323-605 for use with:
Model P605
Consult factory for NEMA IV models





Accessories



Protective Boot

NEMA IV rubber boot for use with model P119. Limited to "L" interface with jacketed lead wire only

Electrical Connectors

Numerous electrical connectors available for all models with "L" interface including:

Amp	Packard	Hirschmann
Molex	Burndy	and more
Canon	Bendix	<i>Consult factory</i>
Amphenol	T & B	<i>complete details.</i>



3-Year Million Cycle Limited Warranty

The proven quality and reliability of Whitman Controls Corporation products is backed by our 3 year / one million cycle warranty - whichever comes first. Our complete warranty statement is available on request.

All Product Manufactured by Whitman Controls Corporation is RoHS and REACH Compliant and C E Conformant. Whitman Controls is an ISO 9001:2008 Registered Company.



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