

## **A-Series Miniature Watertight Pressure Switches**

## **FEATURES**

- Compact size
- 316 stainless steel construction
- Pressure ranges from vacuum to 15,000 psi
- Factory set or field adjustable setpoints
- Wide operating temperature range (-40°C to 100°C)
- Precision snap-acting micro switch
- SPDT or DPDT switching
- UL, CSA listed models
- CE and ROHS compliant
- CRN models available (up to 10,000 psi)
- SIL 3 capable

## **TYPICAL USES**

- Offshore oil rigs
- Chemical and petrochemical plants
- Pulp and papermills
- Autoclaves and sterilizers
- Rail and heavy vehicles
- Specialty machinery and equipment

<b>SPECIFICATIONS</b>	
Setpoint:	Factory set or field adjustable
Setpoint repeatability:	$\pm 2\%$ of range (Additional setpoint shift of $\pm 2\%$ of range per 40°F from initial setpoint set at 70°F typical)
Vibration:	Passed MIL-STD-202G
Shock:	75G's 10 milliseconds 3 axist
Piston:	Stainless steel w/Viton or Buna-N o-ring
Mechanical life piston design:	>1,000,000 operations typical
Diaphragm:	316L Stainless steel
Mechanical life diaphragm design:	>400,000 operations typical
Enclosure material:	316L Stainless steel
Enclosure rating:	NEMA 6, IP 67
Pressure Connection:	½ NPTF, ¼ NPTF, ¼ NPTM, ½ NPTM, ½ MNPT, ½ FNPT, (*/16-20 SAE M), VCR, VCO, ¾ Tri-Clamp*, 1.5" Tri-Clover*, 2.0" Tri-Clover G¼ B, G¼ A, Type E Stub end
Electrical output:	SPDT, or DPDT 5A or 3A 120VAC, 2A @ 30 VDC, gold contacts available
Electrical termination:	Wire leads, spade terminals or custom cables, ½ NPT conduit connection with wire leads, Micro DIN with and without mating connector M20 x 1.5 conduit connection with wire leads
Approvals:	CRN: OF 14836.5C, CSA: 2454057 (LR55528),















SIL 3 CAPABLE

LOOK FOR THESE MARKS ON OUR PRODUCTS

- High performance
- Small size
- Special connections
- Easily configurable to meet your application requirements
- SIL 3 capable



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# A-Series Miniature Watertight Pressure Switches

## **CHARACTERISTICS AND RATINGS**

A SERIES SWITCH PERFORMANCE CHARACTERISTICS													
		RANGE		SETI	POINT REPEATABI	LITY	SETPOINT ADJUSTABILITY				DEADBAND (DB)		
	psi	bar kg/cm²	kPa	psi	bar, kg/cm <sup>2</sup>	kPa	psi	bar, kg/cm <sup>2</sup>	kpa	psi	bar, kg/cm²	kPa	
_	-15/15	-1/1	-100/100	±0.6	±.04	±4	-15/15	-1/1	-100/100	1-5	.0735	7-35	
AGIV	30	2	200	±0.6	±.04	±4	6-30	.4-2	6-200	1-5	.0735	7-35	
DIAPHRAGM	60	4	400	±1.2	±.08	±8	8-60	.6-4	60-400	2-10	.1470	14-70	
ĕ	100	7	700	±2	±.14	±14	10-100	.7-7	70-700	3-15	.2-1.0	20-100	
_	200	14	1400	±4	±.28	±28	20-200	1.4-1.4	140-1400	3-30	.2-2.0	20-200	
	100	7	700	±2	±.14	±14	20-100	1.4-7	140-700	3-15	.2-1.0	20-100	
	200	14	1400	±4	±.28	±28	40-200	2.8-1.4	280-1400	3-30	.2-2.0	20-200	
z	500	35	3500	±10	±.70	±70	50-500	3.5-35	350-3500	20-100	1.4-7.0	140-700	
PISTON	1000	70	7000	±20	±1.40	±140	100-1000	7-70	700-7000	25-150	1.7-10	170-1000	
풉	2000	140	14000	±40	±2.8	±280	200-2000	14-140	1400-1400	30-300	2-20	200-2000	
	5000	350	35000	±100	±7.0	±700	500-5000	35-350	3500-35000	75-750	5-50	500-5000	
	7500	500	50000	±150	±10	±1000	750-7500	50-500	5000-50000	110-1100	7.5-75	750-7500	
	10000	700	70000	±200	±14.0	±1400	1000-10000	70-700	7000-70000	250-2500	17-170	1700-17000	
	15000	1000	100000	±300	±20	±2000	1500-15000	100-1000	10000-100000	300-3000	20-200	2000-20000	
	C	ONFIGURATION	1	MAX. W	MAX. WORKING PRESSURE "MWP"			PROOF PRESSURE "PROOF"			BURST PRESSURE		
	RANGES	(psi)	w/SEAL	psi	bar, kg/cm²	kPa	psi	bar kg/cm²	kPa	psi	bar, kg/cm²	kPa	
	up to	200	S	800	55	5500	1000	70	7000	>9500	>655	>65500	
	100-	200	B, V or N	2000	140	1400	2000	140	14000	>10000	>700	>70000	
	500-2	000	B, V or N	5000	350	35000	8000	550	55000	>30000	>2100	>210000	
	5000-7	500	B, V or N	10000	700	70000	15000	1000	100000	>50000	>3500	>350000	
	10000-15	5000	B, V or N	15000	1000	100000	20000	1400	140000	>45000	>31000	>310000	

"MWP" and "PROOF" PRESSURES										
MATERIAL AND TEMPERATURE RATINGS (based on mat'l and switch code)										
	ELECTRIC MATERIAL & TEMPERATURE									
Switch Code	Electric) on Label	Actuator Seal	Material	Temperature Range						
1P, 2P	3A 125Vac; 2A, 30Vdc	S	SS	-40-100°C						
1H, 2H	5A 125/250Vac; 5A, 28Vdc	B (Ranges 100#, 200#)	SS, BUNA	−28-100°C						
1G, 2G	0.1A 125Vac; 0.1A 30Vdc	B (Ranges 500# to 15,000#)	SS, BUNA	-40-100°C						
1L, 2L	1A 125Vac; 1A 28Vdc	V	SS, Viton	−20-100°C						
		N	SS, HNBR	-20-100°C						

Tri-Clover is a registered trademark of Alfa Laval Tri-Clamp is a registered trademark of Ladish Co.

OPTIONS
Description
Individual certified calibration chart
Fungus proofing
Positive Material Identification (75, 15 & 20 process conn. only)
2 wire leads w/ground wire - wired for normally closed operation
2 wire leads w/ground wire - wired for normally open operation
Stainless Steel tag
Paper tag
Cleaned for oxygen service



# A-Series Miniature Watertight Pressure Switches

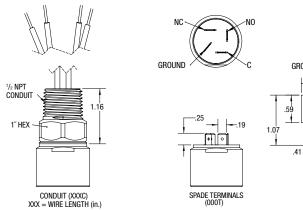
## ORDERING CODE

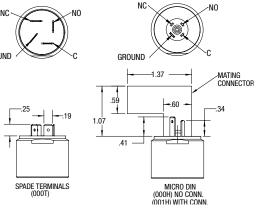
Example: APS N4 1H 012C S 02 30# - 15 R - X6E  Finalian  APS Pressure awarth, single setpoint, fixed deadband, factory self, of tell digitable:  APA Pressure awarth, single setpoint, fixed deadband, fixed algebable self, of tell digitable:  APA Pressure awarth, single setpoint, fixed deadband, fixed algebable APA Pressure awarth, single setpoint, fixed deadband, fixed algebable APA Pressure awarth, single setpoint, fixed deadband, fixed algebable APA Pressure awarth, single setpoint, fixed deadband, fixed algebable APA Pressure awarth, single setpoint, fixed deadband, fixed algebable APA Pressure awarth, single setpoint, fixed deadband, fixed algebable APA Pressure awarth, single setpoint, fixed deadband, fixed algebable APA Pressure awarth, single setpoint, fixed deadband, fixed APA Pressure deadband, fixed deadband, fixed fixed APA Pressure deadband, fixed deadband, fixed fixed APA Pressure deadband, fixed deadband, fixed fixed APA Pressure deadband, fixed fixed fixed APA Pressure deadband, fixed fixed fixed fixed APA Pressure deadband, fixed f		ORDERING CODE										
Function APS of the results with single seption, fixed deadhond, factory set, and teld deliafables.  AP Pressure south, single seption, fixed deadhond, fixed adjustable Enclosure  May Marteright 31 63 Study  Micro Switch, First Character  1 Single Switch - SPOT  Cod Contact - OPT (and variable with "5" actuator with <100 psi range)  Micro Switch, Second Character  Gold Contact - OL 78 0 125 Vec, 0.1 A 63 00 Vec  Higher Current - 5.4 O 125 Vec, 0.1 A 63 00 Vec  Higher Current - 5.4 O 125 Vec, 0.1 A 63 00 Vec  Higher Current - 5.4 O 125 Vec, 0.1 A 63 00 Vec  Higher Current - 5.4 O 125 Vec, 0.1 A 63 00 Vec  Higher Current - 5.4 O 125 Vec, 0.1 A 63 00 Vec  Higher Current - 5.4 O 125 Vec, 0.1 A 63 00 Vec  Higher Current - 5.4 O 125 Vec, 0.1 A 63 00 Vec  Celectrical Connection - Valority in the Second Contact of Vector o			Example:	APS	N4	1H	012C	S	02	30# -	15 R -	X6B
APS Pressure witch, single sepont, fixed deathand, factory set, not feel adjustable and sepontal displaced and sepontal fixed deathand, field adjustable and fixed the sepontal fixed deathand, field adjustable and fixed the sepontal fixed deathand, field adjustable and fixed the sepontal fixed feet fixed f	F		esculara.									
APA Pressure switch, single setpoint, fixed deachand, field adjustable    Finclosure    Micro Switch, First Character    Single Switch, First Character    Gold Cottact    Gold Cottact    Highte Current    Single Switch    Highte Current    Highte Current    Switch    Highte Current    Highter Current		Pressure switch, single setpoint, fixed	deadband, factory									
Memor Switch, "First Character  1 Single Switch - 9PDT 2 Dust Switch - 9PDT   2 Dust Switch - 9PDT   3 Single Switch - 9PDT   3 Single Switch - 9PDT   3 Single Switch - 9PDT   4 Switch - 9PDT   5 Switch - 9PDT   5 Switch - 9PDT   5 Switch - 9PDT   6 Soft Order - 9 Switch - 9PDT   6 Soft Order - 9 Switch - 9PDT   7 Switch - 9PDT   8 Soft Order - 9 Switch - 9PDT   8 Switch - 9PDT   9	APA	Pressure switch, single setpoint, fixed	deadband, field									
Micro Switch, First Character  I Single Switch - 9701  2 Data Switch - 9701 for available with "S" actuator with <100 psi range)  Micro Switch, Second Character  6 Okid Contact - 0.1 A 0 125 Nac. 0.1 A 0 30 Vec  H Righer Current - 6 A 0 120/220 Vac, A 8 0 28 Vec resistive, 3 A 0 28 Vec inductive.  H Righer Current - 6 A 0 120/220 Vac, A 8 0 28 Vec resistive, 3 A 0 28 Vec inductive.  H Righer Current - 6 A 0 120/220 Vac, A 8 0 28 Vec resistive, 3 A 0 28 Vec inductive.  H Righer Current - 6 A 0 120/220 Vac, A 8 0 28 Vec resistive, 3 A 0 28 Vec inductive.  P General Purpose - 3 A 0 125 Vac, 2 A 0 90 Vec  Electrical Commencetion  Work of the Commencetion - Vacinity of the Vacinity	Enclo	sure				_						
Single Switch — SPOT  2 Deals Switch — SPOT  3 Deals Switch — SPOT  4 Deals Switch — SPOT  5 Deals Switch — SPOT  5 Deals Switch — SPOT  6 Gold Contact — 0.1 A © 125 Sec. 0.1 A © 30 V/dc  1 Insigher Current — Self 20 2250 Viac, SA © 28 V/dc resistive, 3A © 28 V/dc inductive.  1 Insigher Current — Self 20 2250 Viac, SA © 28 V/dc resistive, 3A © 28 V/dc inductive.  1 Insigher Current — Self 20 2250 Viac, SA © 28 V/dc resistive, 3A © 28 V/dc inductive.  1 Insigher Current — Waterlight DN 43550 FORM C cable socket without mailing connector.  1 Insigher Current — Waterlight DN 43550 FORM C cable socket without mailing connector.  1 Insigher Current — Waterlight DN 43550 FORM C cable socket with mating connector.  2 Insigher Microsoft — Self Switch — Se	N4	Watertight 316 SS body				_						
2 Dual Switch — DPDT (not available with "5" extrustor with <100 psi range)  Micros Switch, Second Character 6 Gold Contact — 0.1 A 69 125 Van. 0.1 A 69 30 Vide 1 Higher Current End to Contacts — 1.4 69 125 Van. 1.4 69 28 Vide resistive, 0.5 A 69 28 Vide inductive. 1 Higher Current Cold Contacts — 1.4 69 125 Van. 1.4 69 28 Vide resistive, 0.5 A 69 28 Vide inductive. 2 Higher Current Cold Contacts — 1.4 69 125 Van. 1.4 69 28 Vide resistive, 0.5 A 69 28 Vide inductive. 3 Higher Current Cold Contacts — 1.4 69 125 Van. 1.4 69 28 Vide resistive, 0.5 A 69 28 Vide inductive. 3 Higher Current Cold Contacts — 1.4 69 125 Van. 1.4 69 28 Vide resistive, 0.5 A 69 28 Vide inductive. 3 Higher Current Cold Contacts — 1.4 69 125 Van. 1.4 69 28 Vide resistive, 0.5 A 69 28 Vide inductive. 4 Higher Current Cold Contacts — 1.4 69 125 Van. 1.4 69 28 Vide inductive. 4 Higher Current Cold Contacts — 1.4 69 125 Van. 1.4 69 28 Vide inductive. 4 Higher Current Cold Contacts — 1.4 69 125 Van. 1.4 69 28 Vide inductive. 5 Higher Current Cold Contacts — 1.4 69 125 Van. 1.4 69 28 Vide inductive. 5 Higher Current Cold Contacts — 1.4 69 125 Van. 1.4 69 28 Vide inductive. 5 Higher Current Cold Contacts — 1.4 69 125 Van. 1.4 69 28 Vide inductive. 5 Higher Current Cold Contacts — 1.4 69 125 Van. 1.4 69 28 Vide inductive. 5 Higher Current Cold Contacts — 1.4 69 125 Van. 1.4 69 28 Vide inductive. 5 Higher Current Cold Contacts — 1.4 69 28 Vide inductive. 5 Higher Current Cold Contacts — 1.4 69 28 Vide inductive. 5 Higher Current Cold Contacts — 1.4 69 28 Vide inductive. 5 Higher Current Cold Contacts — 1.4 69 28 Vide inductive. 5 Higher Current Cold Contacts — 1.4 69 28 Vide inductive. 5 Higher Current Cold Contacts — 1.4 69 28 Vide inductive. 5 Higher Current Cold Contacts — 1.4 69 28 Vide inductive. 5 Higher Current Cold Contacts — 1.4 69 28 Vide inductive. 5 Higher Current Cold Contacts — 1.4 69 28 Vide inductive. 5 Higher Current Cold Contacts — 1.4 69 28 Vide inductive. 5 Higher Current Cold Contacts — 1.4 69 28 Vide inductive. 5 Higher Current	Micro	Switch, First Character										
Micro Switch, Second Character G Golf Contact - 0.1. A © 125 Sty no. 1.1 & 3.0 Vide H Higher Current - 5. A © 125 Sty no. 1.1 & 3.0 Vide H Higher Current - 5. A © 125 Sty No. 1.1 & 3.0 Vide H Higher Current - 5. A © 125 Sty No. 2.8 & 0.2 Vide resistive, 0.5 A © 28 Vide inductive. Higher Current Golf Contacts - 1.4 © 125 Viac, 1.4 © 28 Vide resistive, 0.5 A © 28 Vide inductive. F General Purpose - 3.4 © 125 Viac, 2.4 © 30 Vide General Purpose - 3.4 © 125 Viac, 2.4 © 30 Vide H Water Contact - Witerlight DIM 4560 FORM C cable socket without mating connector. M Water DIM Connector - Witerlight DIM 4560 FORM C cable socket with mating connector. M Water DIM Connector - Witerlight DIM 4560 FORM C cable socket with mating connector. M Water DIM Connector - Witerlight DIM 4560 FORM C cable socket with mating connector. M Water DIM Connector - Witerlight DIM 4560 FORM C cable socket with mating connector. M Water DIM Connector - Witerlight DIM 4560 FORM C cable socket with mating connector. M Water DIM Connector - Witerlight DIM 4560 FORM C cable socket with mating connector. M Water DIM Connector - Witerlight DIM 4560 FORM C cable socket with mating connector. M Water DIM Connector - Witerlight DIM 4560 FORM C cable socket with mating connector. M Water DIM Connector - Witerlight DIM 4560 FORM C cable socket with mating connector. M Water DIM 5 MID Connector - Witerlight DIM 4560 FORM C cable socket with mating connector.  M Water DIM 5 MID Connector - Witerlight DIM 4560 FORM C cable socket with mating connector.  M Water DIM 5 MID Connector - Witerlight DIM 4560 FORM C cable socket with mating connector.  M Water DIM 5 MID Connector - Witerlight DIM 4560 FORM C cable socket with mating connector.  M Water DIM 5 MID Connector - Witerlight DIM 4560 FORM C cable socket with mating connector.  M Water DIM 5 MID Connector - Witerlight DIM 4560 FORM C cable socket with mating connector.  M Water DIM 5 MID Connector - Witerlight DIM 4560 FORM C cable socket with Cable socket with mating connector.  M Water DIM 5 MID Connect	1	Single Switch – SPDT										
Golf Contact — 0.1 A @ 125 Vac, 0.1 A @ 30 Vac Helpher Current — 5.4 & 125 Say, 125 Vac, 5.4 & 22 Vac resistive, 3.4 @ 28 Vac inductive.  I Higher Current Cold Contacts — 1.4 £125 Vac, 1.4 @ 28 Vac resistive, 0.54 @ 28 Vac inductive  P General Purpose — 3.4 @ 125 Vac, 2.4 @ 30 Vac  Electrical Connection  Winto DNI Connecter— Vacetriph DNI 45650 FORM C cable socket without meting connector.  Winto DNI Connecter— Vacetriph DNI 45650 FORM C cable socket without meting connector.  Not available with DPDT switching  ONOT Stake terminals, 4 - 0.187 male spade — not available with DPDT switching  — C iv IPPT male conduct connection with 18 ANG wires — L Wise lacks, 3-18 ANG PAC installed wints — L Wise lacks, 3-18 ANG PAC installed wints — L Wise Installed and the same with 18 ANG wires — L Wise Installed and Installed wints — L Wise Installed wints		,	h "S" actuator with <	100 psi range	e)							
Higher Current — 5. At © 125/250 Vais, SA © 28 Vote resistive, 0.54 © 28 Vote inductive. Higher Current Gold Contacts — 1 A © 125 Vac, 2.4 © 30 Vote General Purpose — 3.4 © 125 Vac, 2.4 © 30 Vot What Commendation of the Current of Voter of the Commendation of the Voter of Available with DPDT available wit												
Higher Current Cold Contacts — 1A 0125 Var. 1A 02 8 Voto resistive, 0.5A 02 8 Voto Inductive Per General Paprose — 3A 0125 Var. 2A 020 Voto Electrical Commection OWN** Micro DNC Connector - Workfortght DN 4 2656 PGMC Cable socket without mating connector. Not available with DPDT switching OWN** Micro DNC Connector - Workfortght DN 4 2656 PGMC Cable socket with mating connector. Not available with DPDT switching OWN Provided Search - 10 187" male spade - Not available with DPDT switching OWN Provided Search - 10 187" male spade - Not available with DPDT switching												
P. General Purpose – 3.4 © 125 Var.; 2A 403 Vdc Electrical Connection  0004** Micro DNI Connector — Waterlight DNI 4850 FORM C cable socket without mating connector. Not available with PDT switching  000M1** Micro DNI Connector — Waterlight DNI 4850 FORM C cable socket with mating connector. Not available with PDT switching  000M1 Spade terminals, 4 - 0.187 male spade – Not available with PDT switching  000T Spade terminals, 4 - 0.187 male spade – Not available with PDT switching  000T Spade terminals, 4 - 0.187 male spade – Not available with PDT switching  000T Spade terminals, 4 - 0.187 male spade – Not available with PDT switching  000T Spade terminals, 4 - 0.187 male spade – Not available with PDT switching  000T Spade terminals, 4 - 0.187 male spade – Not available with PDT switching  000T Spade terminals, 4 - 0.187 male spade – Not available with PDT switching  000T Spade terminals, 4 - 0.187 male spade – Not available with PDT switching  000T Spade terminals, 4 - 0.187 male spade – Not available with PDT switching  000T Spade terminals, 4 - 0.187 male spade – Not available with SWG wires  000T Spade Spa		•										
Electrical Connection  ONI** Micro Diff Connection - Waterlight DIN 4395 FORM C cable socket without mating connector. Not available with PDT switching  ONI** Micro Diff Connection - Waterlight DIN 4395 FORM C cable socket with mating connector. Not available with PDT switching  ONN Nonstandard, customer specified see it variation  ONOT Spade terminals, 4 - 0.137 mals spade - Not available with DPDT switching		_ ·		resistive, 0.5	A @ 28 Vdc	Inductive	-					
Micro Dilit Connector - Watertight Dil A 3565 FORM C cable socket without mating connector. Not available with PDT switching		•	@30 vac									
Mot available with DPDT switching OMN+** Micro DMC Connector — Waterlingh DM 43650 FORM C cable socket with mating connector. Not available with DPDT switching OMN Ponstandrd, usstomer specified see # variation OMN To Spade terminals, 4 - 0.187* male spade — Not available with DPDT switching — 1 - Micro 1 - Micro Experiments — 1 - Micro 1			42650 EODM C cable	cocket withou	ut mating cor	noctor		-				
Month   Micro Diff Commentor - Waterlight Diff ASSO FORM C cable socket with mating connector. Not available with PDT switching	00011		43030 I ONIVI G Gable	SOCKEL WILLION	ut mating cor	IIIGUIUI.						
DOOT   Spade terminals, 4 - 0.187 male spade — Not available with DPDT switching   L	00MH*	* Micro DIN Connector – Watertight DIN	43650 FORM C cable	socket with r	nating conne	ctor.		-				
DOOT   Spade terminals, 4 - 0.187 male spade — Not available with DPDT switching   L	000N	Nonstandard, customer specified see	# variation					-				
L Wire leads, 3-18 AWG PVC insulated wiresG M20 x 1.5 male conduit connection with 18 AWG wireG M20 x 1.5 male conduit connection with 4 conductor jacketed cable with 18 AWG wiresJ V <sub>1</sub> NPT male conduit connection with 4 conductor jacketed cable with 18 AWG wires NDTE: e <sub>0</sub> 10 12C = 12 lead wires. Specify wire length in inches.  Actuator Seal (see page six for more information)  B 316 SS piston & Buna 0-fring, ranges ≥ 100 psi \$ 316 SS piston & Buna 0-fring, ranges ≥ 200 psi N 316 SS piston & Buna 0-fring, ranges ≥ 200 psi N 316 SS piston & HDR 0-ring, ranges ≥ 200 psi Pressure Connection  11 ⅓ NPT Male 22 ⅓ NPT Male 33 ⅙ NPT Female* 44 ⅙ NPT Male 55 ⅙ NPT Female* 56 ⅙ A (Type E Stud End) 13 G ⅓ B 13 G ⅓ B 13 G ⅓ B 14 NPT Female* 15 G ⅙ A (Type E Stud End) 16 ∀ NPT Female* 17 G ⅙ A (Type E Stud End) 17 S O SAE Male 18 ⅙ Male SAE Female 19 ⅓ NPT Female* 19 ⅙ NPT Female* 10 € VGR Fixed* 10 Fixed* SAE Female 10 € VGR Fixed* 10 Fixed* Connection (includes 3A Approval)* 11 S 1.5 Tin-Clover® connection (includes 3A Approval)* 12 C 0 Tin-Clover® connection (includes 3A Approval)* 13 G 17 Fixed Connection (includes 3A Approval)* 15 1.5 Tin-Clover® connection (includes 3A Approval)* 16 1.5 Tin-Clover® connection (includes 3A Approval)* 17 C 10 Fixed* 18 Fixed SAE Female 19 G 10 Fixed SAE Female 10 Fixed SAE Female SAE Female 10 Fixed SAE Female SAE Female 11 Fixed SAE Female SAE Female 12 C 10 Fixed SAE Female 13 G 17 Fixed SAE Female 14 Male SAE Female 15 C 17 Fixed SAE Female 16 Male SAE Female 17 G 18 Fixed SAE Female 18 Male SAE Female 19 G 18 Fixed SAE Female 10 Fixed SAE Female 10 Fixed SAE Female 11 G 18 Fixed SAE Female 12 G 18 Fixed SAE Female 13 G 18 Fixed SAE Female 14 Male SAE Female 15 G 18 Fixed SAE Female 16 Male SAE Female 17 G 18 Fixed SAE Female 18 Male SAE Female 19 Fixed SAE Female 10 Fixed SAE Female 10 Fixed SAE Female 11 G 18 Fixed SAE Female 12 G 18 Fixed SAE Female 13 G 18 Fixed SAE Female 14 Male SAE Female 15 G 18 Fixed SAE Female 16 Male SAE Female 17 G 18 Fixed SAE	000T	Spade terminals, 4 - 0.187" male space	de – Not available with	n DPDT switcl	hing			-				
G M20 x 1.5 male conduit connection with 18 AWG wire W X 1.5 male conduit connection with 4 conductor jacketed cable with 18 AWG wires Y. NPT male conduit connection with 4 conductor jacketed cable with 18 AWG wires NOTE: e.g. 0.12C = 12' lead wires. Specify wire length in inches. Actuator Seal (see page six for more information)  B 316 SS piston & Buna 0-ring, ranges ≥ 100 psi V 316 SS piston & Witnon 0-ring, ranges ≥ 100 psi S 316 SS piston & Witnon 0-ring, ranges ≥ 100 psi N 316 SS piston & HUBRO 0-ring, ranges ≥ 100 psi N 316 SS piston & HUBRO 0-ring, ranges ≥ 100 psi N 316 SS piston & HUBRO 0-ring, ranges ≥ 100 psi Pressure Connection 01 ¼ NPT Male 02 ¼ NPT Female* 03 ¼ NPT Female* 04 ¼ NPT Female* 12 G ¼A (Type € Stud End) 13 G ¼B 13 G ¼B 13 G ¼B 13 G ¼B 14 G ¼G M3 G												
M20 x 1.5 male conduit connection with 4 conductor jacketed cable with 18 AWG wires  J¹, NPT male conduit connection with 4 conductor jacketed cable with 18 AWG wires  NDTE:												
								_				
NOTE: . — . (e.g. 0.12C = 12' lead wires. Specify wire length in inches.  Actuator Seal (see page six for more information)  8						es		_				
Actuator Seal (see page six for more information)  B 316 SS piston & Buna O-ring, ranges ≥100 psi  V 316 SS piston & Without O-ring, ranges ≥100 psi  S 316 SS welded Diaphragm, ranges ≥200 psi N 316 SS piston & HNBR O-ring, ranges ≥200 psi Pressure Connection O1 ¼ NPT Male O2 ¼ NPT Male O3 ¼ NPT Female* O4 ½ NPT Male O5 ¼ NPT Female* O6 ¼ NPT Female* O6 ¼ NPT Female* O6 ¼ NPT Female* O7 ¼ NPT Female* O8 ¼ NPT Female* O8 ¼ NPT Female* O8 ¼ NPT Female* O9 ¼ NPT F					AWG wires			-				
B 316 SS piston & Buna 0-ring, ranges ≥100 psi 3 136 SS piston & Witon 0-ring, ranges ≥100 psi 3 316 SS welded Diaphargm, ranges ≥200 psi N 316 SS piston & HNBR 0-ring, ranges ≥200 psi Pressure Connection 1 ½ NPT Male 02 ¼ NPT Male 03 ¼ MPT Female* 04 ½ NPT Male 50 ½ NPT Female* 12 G ¼ A (Type E Stud End) 13 G ¼ B 25 ¼ NPT Female* 05 ¼ NPT Female* 06 WCR Fixed* 07 VCO Fixed* 08 ¼ 6-20 SAE Male 09 W6-20 SAE w37* Flare End 19 ¼ 6-20 SAE w37* Flare End 19 ¼ 6-20 SAE w37* Flare End 19 ¼ 6-20 SAE male 19 5 0.75 Th-Closmp® connection (includes 3A Approval)* 19 5 0.75 Th-Closmp® connection (includes 3A Approval)* 19 5 characters maximum representing selpoint of the switch in the same units as the range of the switch. For selpoints in Vacuum specify as selpoint Direction R Rising Pressure, (Increasing Pressure, Decreasing Vacuum) D D Decreasing Pressure, (Increasing Pressure, Decreasing Vacuum)  Options		, <u>, , , , , , , , , , , , , , , , , , </u>	· · ·	S.								
W 316 SS piston & Witon 0-ring, ranges ≥100 psi   S 316 SS welded Diaphragm, ranges ≥200 psi   N 316 SS piston & NBRP 0-ring, ranges ≥100 psi												
S 316 SS wielded Diaphragm, ranges ≤200 psi N 316 SS piston & HNBR 0-ring, ranges ≤100 psi Pressure Connection  01												
N 316 SS piston & HNBR O-ring, ranges ≥100 psi  Pressure Connection  01 ⅓ NPT Male  02 ⅓ NPT Male  03 ⅓ NPT Female*  04 ⅓ NPT Male  12 G ¼A (Type E Stud End)  13 G ¼B  15 ¼ NPT Female*  16 ¼ NPT Female*  17 G ¼A (Type E Stud End)  18 G ¼B  19 Female*  19 G ¼A (Type E Stud End)  19 G ¼A (Type E Stud End)  10 G ¼B  10 Female*  11 G ¼B  12 G ¼A (Type E Stud End)  13 G ¼B  14 NPT Female*  15 ½ NPT Female*  16 ¼C 20 SAE Male  17 G ¼C 20 SAE Female  18 ¼C 18 SAE Female  19 G ¼C 20 SAE Female  19 G ¼C 20 SAE Female  10 G ¾C 18 SAE Female  10 G ¾C 18 SAE Female  11 S 1.5 Tri-Clover® connection (includes 3A Approval)†  12 G 2.0 'Tri-Clover® connection (includes 3A Approval)†  15 L 5 Tri-Clover® connection (includes 3A Approval)†  16 Select from table page 2  Setpoint  5 characters maximum representing setpoint of the switch in the same units as the range of the switch. For setpoints in Vacuum specify as """ pressure, if no setpoint is required on an APA switch use either "NSR" or "NSD." If direction is not known use "NSR" as the default.  Setpoint Direction  R Rising Pressure (Increasing Pressure, Decreasing Vacuum)  D Decreasing Pressure, (Increasing Vacuum)												
Pressure Connection 01												
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50 ½ NPT Female*  12 G ¼A (Type E Stud End)  13 G ¼B  25 ¼ NPT Female*  06 VCR Fixed*  07 VCO Fixed*  08 ¾6-20 SAE Female  46 ¾6-20 SAE Female  46 ¾6-20 SAE Female  76 ¼6-20 SAE Female  77 0.75 "Tri-Clamp® connection (includes 3A Approval)†  15 1.5 "Tri-Clover® connection (includes 3A Approval)†  20 2.0 "Tri-Clover® connection (includes 3A Approval)†  28 Setect from table page 2  Setepoint  5 characters maximum representing setpoint of the switch in the same units as the range of the switch. For setpoints in Vacuum specify as "- "pressure. If no setpoint is required on an APA switch use either "NSR" or "NSD." If direction is not known use "NSR" as the default.  Setpoint Picection  R Rising Pressure (Increasing Pressure, (Increasing Vacuum)  D Decreasing Pressure, (Increasing Vacuum)	03	1/4 NPT Female*										
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25 ¼ NPT Female*  05 %-20 SAE Male  06 VCR Fixed*  07 VCO Fixed*  08 %-20 SAE Female  46 %-18 SAE Female  76 %-20 SAE Female  75 0.75" Tri-Clamp® connection (includes 3A Approval)†  15 1.5" Tri-Clover® connection (includes 3A Approval)†  20 2.0" Tri-Clover® connection (includes 3A Approval)†  Ranges Select from table page 2  Setpoint  5 characters maximum representing setpoint of the switch in the same units as the range of the switch. For setpoints in Vacuum specify as "-" "pressure. If no setpoint is required on an APA switch use either "NSR" or "NSD." If direction is not known use "NSR" as the default.  Setpoint Direction  R Rising Pressure (Increasing Pressure, Decreasing Vacuum)  D Decreasing Pressure, (Increasing Vacuum)	12	G ¼ A (Type E Stud End)								_		
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07 VCO Fixed* 08 ¼6-20 SAE Female 46 %6-18 SAE Female 76 ¼6-20 SAE w/37° Flare End 75 0.75″ Tri-Clamp® connection (includes 3A Approval)† 15 1.5″ Tri-Clover® connection (includes 3A Approval)† 20 2.0″ Tri-Clover® connection (includes 3A Approval)† Ranges Select from table page 2 Setpoint 5 characters maximum representing setpoint of the switch in the same units as the range of the switch. For setpoints in Vacuum specify as "-"pressure. If no setpoint is required on an APA switch use either "NSR" or "NSD." If direction is not known use "NSR" as the default.  Setpoint Direction  R Rising Pressure (Increasing Pressure, Decreasing Vacuum)  Options										-		
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"- "pressure. If no setpoint is required on an APA switch use either "NSR" or "NSD." If direction is not known use "NSR" as the default.  Setpoint Direction  R Rising Pressure (Increasing Pressure, Decreasing Vacuum)  D Decreasing Pressure, (Increasing Vacuum)  Options			the switch in the san	ne units as th	e range of th	e switch. Fo	r setpoints in V	acuum speci	fy as			
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D Decreasing Pressure, (Increasing Vacuum)  Options	Setpo	int Direction										
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•			ium)									
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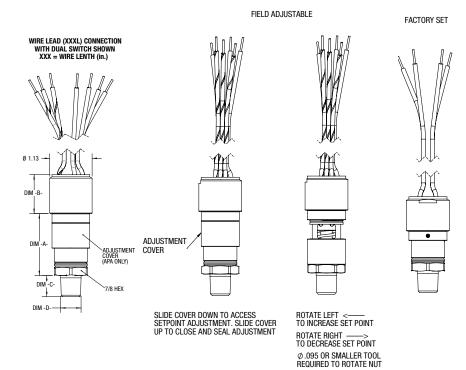


# A-Series Miniature Watertight Pressure Switches

### **DIMENSIONS**







FUNCTION CODE					
Description Dim. A					
APS (Factory Set) 1.06					
APA (Field Adjustable) 1.64					
MICRO SWITCH					

MICRO SWITCH					
Description	Dim. B				
1H, 2H, 1L, 2L	1.03				
1P, 2P, 1G, 2G	0.90				

PRE	SSURE CONNECTION GENER	AL DIME	NSION
Code	Description	Dim. C	Dim. D
01	1/8 NPT Male	0.45	0.441
02	1/4 NPT Female	0.56	0.54
03	1/8 NPT Female	0.75	0.65
04	1/2 NPT Male	0.92	0.75
25	1/4 NPT Female	1.10	0.75
50	1/2 NPT Female	1.25	1.04
05	7/16-20 SAE Male	0.56	0.44
08	7/16-20 SAE Female	1.10	0.84
06	VCR Fixed	0.58	0.56
07	VCO Fixed	0.47	0.56
12	G 1/4A	0.47	0.44
13	G 1/4B	0.59	0.37
46	9/16-18 SAE Female	0.39	0.47
76	7/16-20 SAE w/37_ Flare End	0.55	0.36
75	0.75" Tri-Clamp Seal	1.10	0.96
15	1.5" Tri-Clover Seal	1.23	1.99
20	2.0" Tri-Clover Seal	1.23	2.49



CRN: OF 14836.5C,



CSA: 2454057 (LR55528)



UL: E34743



CE



**ROHS** 

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# A-Series Miniature Watertight Pressure Switches

## **AVAILABLE CONNECTIONS**

### PRESSURE CONNECTIONS

1/8, 1/4 or 1/2 MALE NPT



3/4", 1.5" or 2.0" SANITARY



<sup>1</sup>/<sub>8</sub> or <sup>1</sup>/<sub>4</sub> FEMALE NPT, <sup>7</sup>/<sub>16</sub>-20 SAE FEMALE



G 1/4 A TYPE-E STUD END



VCR or VCO



1/2 FEMALE NPT



 $^{7/_{16}}$ -20 SAE MALE (OPTIONAL 37° FLARE END)



G 1/4 B



### **ELECTRICAL CONNECTIONS**

18 AWG WIRE LEADS



DPDT 18 AWG LEADS



1/2 NPT CONDUIT CONNECTOR WITH 18 AWG WIRE LEADS



| M20 X 1.5 MALE CONDUIT WITH | 18 AWG WIRES



SPADE TERMINAL 4-0.187 MALE TERMINALS



1/2 NPT MALE CONDUIT AND JACKETED CABLE WITH 18 AWG WIRES



HIRSCHMANN MICRO-DIN CONNECTOR 43650 FORM C



M20 X 1.5 MALE CONDUIT AND JACKETED CABLE WITH 18 AWG WIRES





# A-Series Miniature Watertight Pressure Switches

#### **SELECTION GUIDE**

Before selecting a switch the following should be considered:

#### Actuator:

The actuator responds to changes in pressure and operates the micro switch element in response to these changes. The actuator is normally exposed to the process media and must be chemically compatible with it. There are three types of actuators available for the A-Series switches – all welded 316 SS diaphragm sealed piston; 316 SS piston with Viton O-ring seal; and 316 SS piston with Buna-N O-ring seal. The 316 SS diaphragm is available in ranges from –15/15 psi to 200 psi. The 316 SS piston is available in ranges from 100 psi to 15,000 psi. Switches offered in 100 psi and 200 psi can be ordered with either the piston or diaphragm design. The piston design will have a longer mechanical life, while the diaphragm design has a better operating temperature.

The piston design is more reliable than a diaphragm design when subjected to frequent large pressure excursions, pressure surges and spikes associated with typical hydraulic applications. Piston designs are typically used when the switch is used as low pressure alarm or cutoff where the normal working pressure is above the nominal range of the switch.

#### The Switching Function:

Most applications for alarm, shutdown and interlock are satisfied by the standard

A-Series switches which feature single setpoint fixed deadband. For pump, compressor and other control applications, the deadband becomes a very important consideration and may require increasing the range of the switch to increase the deadband. Please consult your Ashcroft representative for assistance with special applications.

#### The Micro Switch Element:

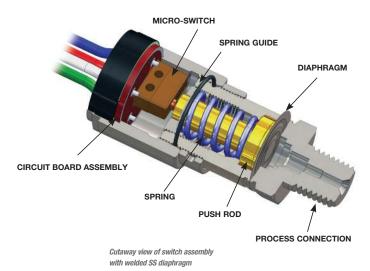
The micro switch element must be chosen to meet the electrical load requirement to be switched. The switches are offered as either SPDT (single pole double throw) or DPDT (double pole double throw). The DPDT switch is made up of two SPDT switches which are adjusted to work together by Ashcroft's patent pending Circuit Board Rotation Design. DPDT switching is not available on diaphragm designs below 100 psi, with Spade terminals or the Micro DIN connector.

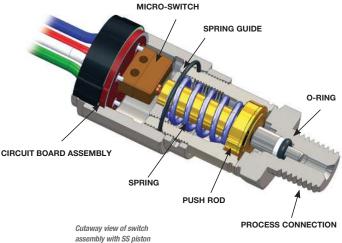
### **Understanding Setpoints and Reset Points:**

Pressure switches can be set to switch on either increasing (rising) or decreasing pressures. Since the switches have both Normally Open (NO) contacts and Normally Closed (NC) contacts you can wire the switch to open or close for either an increasing or decreasing pressure. To be consistent in setting the switches Ashcroft defines the setpoints as follows. For an increasing setpoint, the pressure is increased from 0 psi to the set point and then decreased to the reset point. For a decreasing setpoint, the pressure is increased to full range and then decreased to the setpoint and then increased to the resetpoint.

### **Custom Applications:**

The A-series switch is designed to allow custom process connections and electrical terminations. Please consult your Ashcroft representative for assistance with custom applications.







# A-Series Miniature Watertight Pressure Switches

#### **ADDITIONAL SWITCH TERMINOLOGY**

**Accuracy** – (See repeatability) Accuracy normally refers to conformity of an indicated value to an accepted standard value. There is no indication in switch products; thus, instead, the term repeatability is used as the key performance measure. Ashcroft A-Series switch accuracy is 2% of nominal range.

**Automatic Reset Switch** – Switch which returns to normal state when actuating variable Pressure is reduced.

**Adjustable or Operating Range** – That part of the nominal range over which the switch setpoint may be adjusted. Normally about 10% to 100% of the nominal range for A-Series pressure switches.

**Burst Pressure** – The maximum pressure that may be applied to a pressure switch without causing leakage or rupture. This is approximately 16X of nominal range for A-Series switches. Diaphragm switches subjected to pressures above the nominal range can be permanently damaged.

**Deadband** – The difference between the setpoint and the resetpoint, normally expressed in units of the actuating variable. Sometimes referred to as differential.

**Fixed Deadband** – The difference between the setpoint and the resetpoint of a pressure switch. It further signifies that this deadband is a fixed function of the pressure switch and not adjustable.

National Electrical Manufacturers Association (NEMA) – This group has defined several categories of enclosures, usually referred to as "types." Further, they designate certain features and capabilities each type must include.

**NEMA 6** – Enclosures constructed for either indoor or outdoor use to provide a degree of protection to personnel against access to hazardous parts; to provide a degree of protection of the equipment inside the enclosure against ingress of solid foreign objects (falling dirt); to provide a degree of protection with respect to harmful effects on the equipment due to the ingress of water (hose directed water and the entry of water during occasional temporary submersion at a limited depth); and that will be undamaged by the external formation of ice on the enclosure.

**Normal Switch Position** – Contact position before actuating pressure (or variable) is applied. Normally closed contacts open when the switch is actuated. Normally open contacts close when the switch is actuated.

**Normally Closed** – Refers to switch contacts that are closed in the normal switch state or position (unactuated). A pressure change opens the contacts.

**Normally Open Switch** – Refers to the contacts that are open in the normal switch state or position (unactuated). A pressure change closes the contacts.

Overpressure Rating(s) – A nonspecific term that could refer to either burst or proof pressure, or both.

**Proof Pressure** – The maximum pressure which may be applied without causing damage. This is determined under strict laboratory conditions including controlled rate of change and temperature: This value is for reference only. Consult factory for applications where switch must operate at pressures above nominal range or reference temperature (70°F).

Repeatability (Accuracy) – The closeness of agreement among a number of consecutive measurements of the output setpoint for the same value of the input under the same operating conditions, approaching from the same direction, for full-range traverses. Ashcroft A-series switch repeatability is 2% of nominal range.

**Note:** It is usually measured as non-repeatability and expressed as repeatability in percent of span or nominal range. It does not include hysteresis or deadband.

**Resetpoint** – The resetpoint is the Pressure value where the electrical switch contacts will return to their original or normal position after the switch has activated.

**Setpoint** – The setpoint is the Pressure value at which the electrical circuit of a switch will change state or actuate. It should be specified either on increase or decrease of that variable.

Single Pole Double Throw (SPDT) Switching Element – A SPDT switching element has one normally open, one normally closed, and one common terminal. The switch can be wired with the circuit either normally open (N/O) or normally closed (N/C). SPDT is standard with A-series switches.

**Double Pole Double Throw (DPDT) Switching Element –** Two SPDT switching elements both set to actuate or de-actuate at the same set or resetpoint. Each switch one has one normally open, one normally closed, and one common terminal. The switches are independent of each other and can be wired to two independent circuits. The two circuits can either normally open (N/O) or normally closed (N/C).

**Snap Action** – In switch terminology, snap action generally refers to the action of contacts in the switch element. These contacts open and close quickly and snap closed with sufficient pressure to firmly establish an electrical circuit. The term distinguishes products from mercury bottle types that were subject to vibration problems.



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