









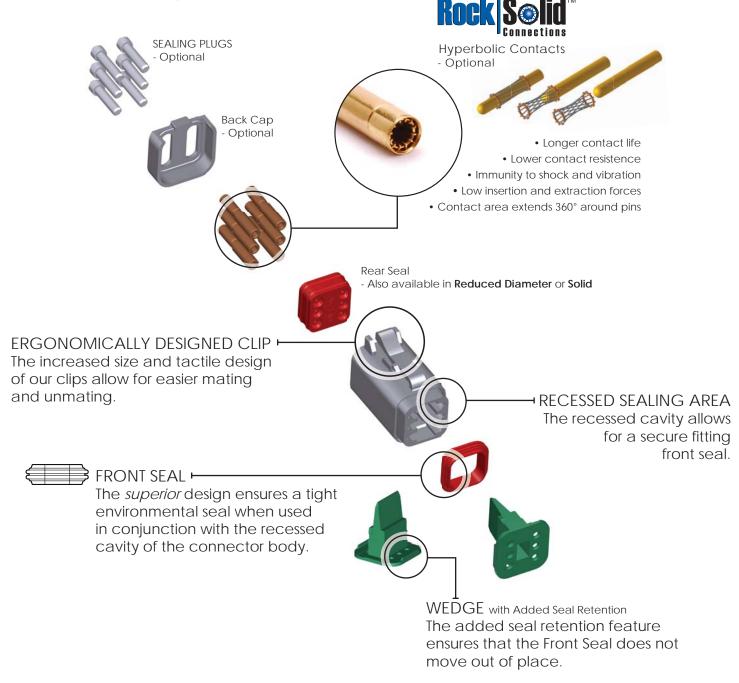
# We are **Amphenol**, a GLOBAL LEADER in providing YOU with INTERCONNECTONS and SOLUTIONS.

We fulfill your interconnect requirements, freeing you up to focus on your core business. WE RECOGNIZE YOUR REQUIREMENTS AS OUR TOP PRIORITY and are committed to constantly meeting and exceeding your expectations.



# What are AT Series<sup>™</sup> Connectors?

Amphenol Sine Systems AT Series<sup>™</sup> connectors were designed as a high-performance, cost-effective solution to be used within the Heavy Equipment, Agricultural, Automotive, Military, Alternative Energy and other demanding interconnect architectures. The AT Series<sup>™</sup> connectors contain superior environmental seals, seal retention capabilities and feature Amphenol Sine Systems RockSolid<sup>™</sup> Contact technology. In addition, all of our AT Series<sup>™</sup> connectors have been developed to be completely compatible with all other existing standard products industry-wide.



# AT Series™ Connectors

- The connector design incorporates an integral latching system that ensures a definitive electrical and mechanical connection
- Connector housings are manufactured with a thermoplastic material that is not only durable, but has excellent UV
  resistance, dielectric/mechanical properties and environmentally RoHS compliant
- The sealing system is comprised of a front and rear silicone, multi-sealing, perimeter against environmental ingress
- Contacts are derived from quality copper alloy to ensure an electrically-reliable connection. For applications
  demanding higher levels of performance, you can rely on our RockSolid™ contact technology

### Performance Criteria NOTE: All testing meets SAE J2030 specifications

CURRENT CAPACITY No. 16, 13 amps (max)

WIRE RANGE

No 16 contacts will accept wire ranges of 14 thru 20 awg

TEMPERATURE

Operating temperature range: -55°C to +125°C at rated current

DIELECTRIC VALUE Meets or exceeds 1500 volts minimum

FLAME RESISTANCE All dielectric materials have a flammability rating of UL94 V-0 or better

DROP TEST Shall not become detached or loosened when placed at 750mm and dropped to concrete eight times

SHOCK No latch disengagement or discontinuity shall be the result when subjected to 50 g's in each of three axis (X, Y & Z)

VIBRATION Continued continuity without degradation to mechanical or physical attributes following vibration. (max acceleration

20 g's at Sine sweep of 10-2000Hz)

CONNECTOR TERMINAL RETENTION When subjected to a direct pull, size 14-20 achieves minimum pull-out force of 110 newtons

CONNECTOR RETENTION A mated connector subjected to a pulling force by the exiting wire bundle at 111 newtons times the number of contacts

to a maximum of 444 newtons applying load for 30 seconds

THERMAL SHOCK Subjected to 10 cycles at 55°C to +125°C with no cracking, chipping or other damage detrimental to the normal opera-

tion of the connector

INSULATION RESISTANCE Insulation resistance at 25°C shall be greater than 20 megohms when 1000 VDC are applied

MATING CYCLE DURABILITY Following 100 cycles of connection engagement and disengagement, degradation either mechanical or electrical is

not eviden

CONTACT MILLIVOLT DROP No. 16 contacts with 16 awg conductor - \*100 millivolt drop max at 13 amps test current

ULTRAVIOLET EFFECTS Test the mated connectors for 1000 hours per ASTM G 154 or ASTM G 153 with 20 hours UV and 4 hours of condensation

for each cycle

WATER IMMERSION A mated connection, properly wired, placed in an oven at +125°C for 1 hour, then placed immediately in a depth of

water of 1 meter for 4 hours without loss of electronic performance



#### **Product Material**

HOUSINGS

SEALS

SECONDARY LOCKS

CONTACTS

Thermoplastic

Silicone Elastomer

Thermoplastic

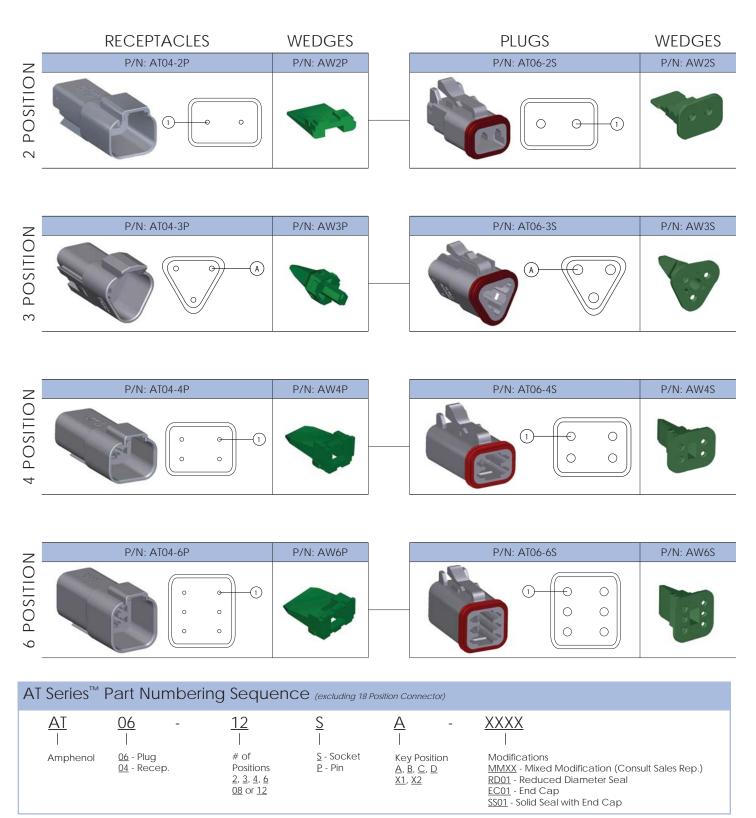
Copper Alloy, Nickel Plated, Gold optional

# AT Series™ Specifications



# AT Series™ Receptacles, Plugs and Wedges - 2, 3, 4 and 6 Position

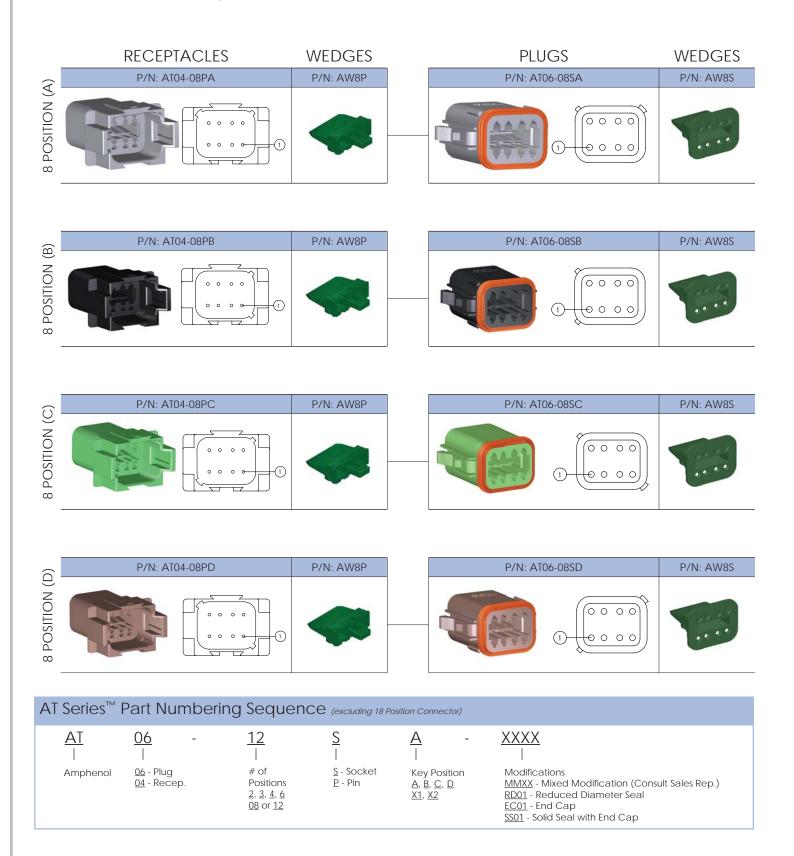
Note: The views shown below are Mating Face Views



AT Series<sup>™</sup>

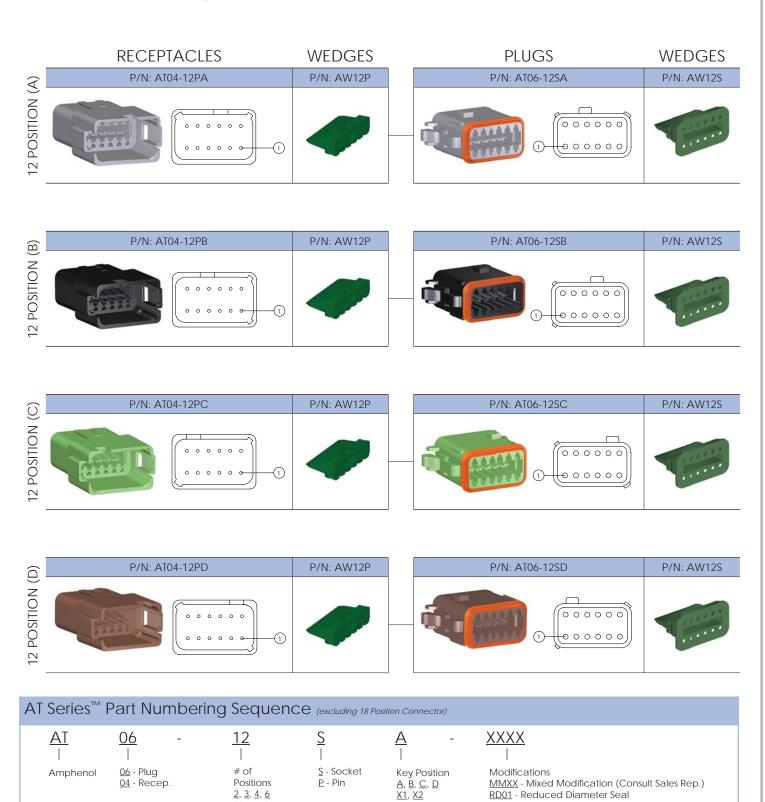
# AT Series™ Receptacles, Plugs and Wedges - 8 (A-D) Position

Note: The views shown below are Mating Face Views



# AT Series™ Receptacles, Plugs and Wedges - 12 (A-D) Position

Note: The views shown below are Mating Face Views



AT Series<sup>™</sup>

EC01 - End Cap

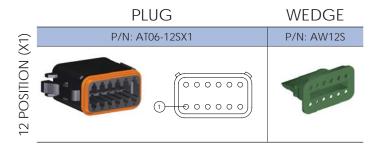
SS01 - Solid Seal with End Cap

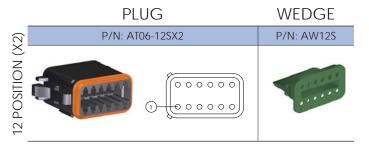
08 or 12

## AT Series™ Plugs, Wedges and Connectors - 12 and 18 Position

Note: The views shown below are Mating Face Views

All measurements in Inches



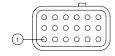


PLUG (Fully assembled. Includes Wedge and End Cap)

P/N: AT16-18SB-K004

**I8 POSITION** 





# AT Series<sup>™</sup> Optional Modifications with Part Numbering Sequencing

ATAmphenol

XX<u>06</u> - Plug

04 - Receptacle

# of **Positions** <u>2</u>, <u>3</u>, <u>4</u>, <u>6</u> 08, 12 or 18

XX

X

S - Socket <u>P</u> - Pin

X

Key Position <u>A</u>, <u>B</u>, <u>C</u>, <u>D</u> <u>X1</u>, <u>X2</u>

EC01

**END CAP** 

• End Cap Standard Seal



<u> AT</u> Amphenol XX

06 - Plug 04 - Receptacle

XX# of Positions <u>2, 3, 4, 6</u> 08, 12 or 18

X S - Socket

<u>P</u> - Pin

<u>X</u> Key Position

A, B, C, D <u>X1</u>, <u>X2</u>

RD01

REDUCED DIAMETER

 Reduced Seal (.053 - .120 range)



AT Amphenol XX

<u>06</u> - Plug 04 - Receptacle

XX# of

Positions <u>2, 3, 4, 6</u> 08, 12 or 18 S - Socket

Key Position <u>A</u>, <u>B</u>, <u>C</u>, <u>D</u> <u>X1</u>, <u>X2</u>

X

MM01

MIXED MODIFICATION

• End Cap

 Reduced Seal (.053 - .120 range)





ΑT Amphenol

<u>XX</u> <u>06</u> - Plug 04 - Receptacle

XX# of

**Positions** 2, 3, 4, 6 08, <u>12</u> or <u>18</u> S - Socket P - Pin

<u>P</u> - Pin

<u>X</u> Key Position <u>A</u>, <u>B</u>, <u>C</u>, <u>D</u>

<u>X1</u>, <u>X2</u>

SS01

**SOLID SEAL** • End Cap







# AT Series<sup>™</sup>



# What are AHD Series™ Connectors?

Amphenol Sine Systems AHD Series™ Connectors were developed in response to the overwhelming need for an economic alternative to today's existing diagnostic product options. Designed specifically as a cost-conscious, reliable alternative, intermateable to industry standard 6 and 9 pin connectors, the AHD Series™ is ideal for any situation where either controlled and/or uncontrolled environmental conditions exist.

Amphenol Sine Systems AHD Series<sup>™</sup> Connectors offer both a smooth, non-sealing option for controlled applications, as well as an environmentally-sealed, threaded option for more demanding applications. The same applies for our DiagnosticGrade<sup>™</sup> Cable Assemblies in that we provide both options for our customers.

Feature	Advantage
INTEGRATED ALIGNMENT KEYS	Tactile verification for blind mating
STRONG THERMOPLASTIC HOUSING	Extended service life
OPERATING TEMPERATURE RANGE: -55°C TO +125°C	Wide range compatibility
ECONOMICALLY SOUND	Low overall cost
ROHS COMPLIANT	Environmentally friendly

#### Performance Criteria

PHYSICAL SHOCK Military Style: No locking, unmating or other unsatisfactory result after 50 g's in each of three mutually perpendicular planes.

DIELECTRICAL STRENGTH DiagnosticGrade™ / Military Style: 1500 volts minimum

VIBRATION Military Style: Maintains continuity and exhibits no mechanical or physical damage after vibration. (20 g's at 10-2000 Hz)

TEMPERATURE DiagnosticGrade™ / Military Style: Operating temperature range: -55°C TO +125°C at rated current.

INSULATION RESISTANCE | DiagnosticGrade™ / Military Style: 1000 megohms minimum at 25°C.

DURABILITY DiagnosticGrade™ / Military Style: No electric or mechanical defects after 100 cycles of engagement and

disengagement

CORROSION RESISTANCE DiagnosticGrade™ / Military Style: Connectors show no evidence of corrosion after exposure to 48 hours of salt spray per MIL-

STD 1344 method 1001.



#### **Product Material**

HOUSINGS Thermoplastic
SEALS Silicone Elastomer

CONTACTS Copper Alloy/Gold plated

AHD Series™ Specifications

6 POSITION

# AHD Series<sup>™</sup> 6 Pin Receptacles, Plugs and Caps

The AHD Series™ products listed below provide a quick connection between Amphenol Sine Systems 6 Pin products and equivalent industry 6 Pin products.

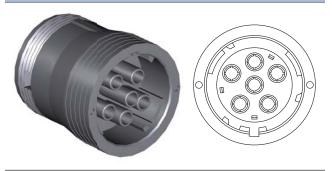
#### **RECEPTACLE** - Military Style

#### P/N: AHD10-6-12P-L



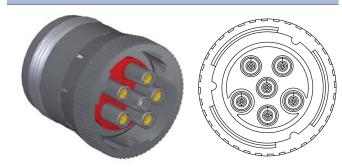
### $SMOOTH \ SHELL \ PLUG \ - \ Diagnostic Grade^{\tau_M}$

P/N: AHD16-6-12S (available w/out Rear Seal)



#### LOCKING RING PLUG - Military Style

P/N: AHD16-6-12S-B010



#### RECEPTACLE CAP - Military Style

P/N: AHDC-16-6





# AHD Series<sup>™</sup> 9 Pin Receptacles and Plugs (J1939)

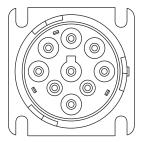
The **AHD Series™** products listed below provide a quick connection between Amphenol Sine Systems 9 Pin products and equivalent industry 9 Pin products.

## RECEPTACLE - Military Style

P/N: AHD10-9-1939P

9 POSITION

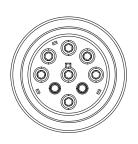
9 POSITION



SMOOTH SHELL PLUG - DiagnosticGrade™

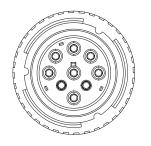
P/N: AHD17-9-1939S (available w/out Rear Seal)





LOCKING RING PLUG - Military Style

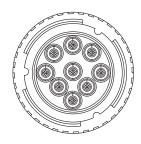
P/N: AHD16-9-1939S



LOCKING RING PLUG (Non J1939) - Military Style

P/N: AHD16-9-96S





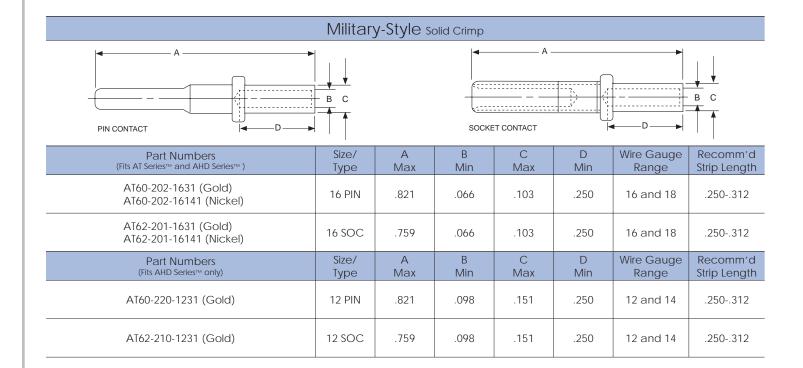


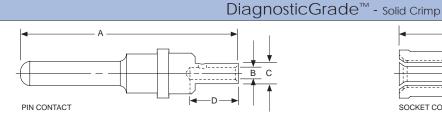
AHD Series™

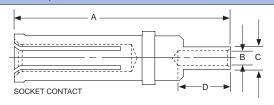
## Pin Contacts, Socket Contacts and Tooling

All measurements in Inches

Listed below are quick-reference illustrations for both Military-style and DiagnosticGrade™ crimp options, as well as the Amphenol Sine Systems part numbers.







Part Numbers (Fits AT Series™ and AHD Series™ )	Size/ Type	A Max	B Min	C Max	D Min	Wire Gauge Range	Recomm'd Strip Length
65-54756 (Gold)	16 PIN	.826	.047	.078	.165	20	.250303
65-54757 (Gold)	16 SOC	.763	.047	.078	.165	20	.250303
Part Numbers (Fits AHD Series™ only)	Size/ Type	A Max	B Min	C Max	D Min	Wire Gauge Range	Recomm'd Strip Length
65-54749 (Gold)	12 PIN	.826	.047	.078	.165	20	.250303
65-54748 (Gold)	12 SOC	.763	.047	.078	.165	20	.250303

#### Universal Hand Crimp Tool - Part Numbers

P/N: CA-5D12



# Pin Contacts, Socket Contacts and Tooling

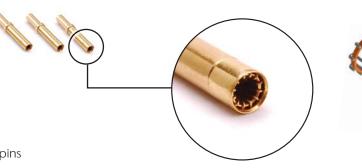
All measurements in Inches

Listed below are quick-reference illustrations for RockSolid $^{\text{\tiny{TM}}}$  and stamped and formed crimp options, as well as the Amphenol Sine Systems part numbers.



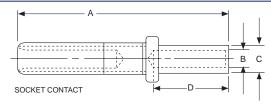
#### Hyperbolic Contacts

- Longer contact life
- Lower contact resistence
- Immunity to shock and vibration
- Low insertion and extraction forces
- Contact area extends 360° around pins



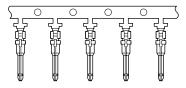


## RockSolid™ Gold Contacts



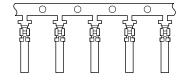
Part Numbers (Fits AT Series™ and AHD Series™ )	Size/ Type	A Max	B Min	C Max	D Min	AWG Range	Recomm'd Strip Length
65-54942-14	16 SOC	.759	.073	.106	.250	14	.250312
65-54942-16	16 SOC	.759	.068	.103	.250	16	.250312
65-54942-20	16 SOC	.759	.048	.078	.172	20	.250312

### Stamped and Formed - Size 16





Part Numbers	AWG Range	Recomm'd Strip Length	Material
AT60-14-0122	14-16		Nickel
AT60-14-0144	14-10		Gold
AT60-16-0122	16-18	.125175	Nickel
AT60-16-0144	10-18	.125175	Gold
AT60-16-0622	18-20		Nickel
AT60-16-0644	10-20		Gold



**SOCKETS** 

Part Numbers	AWG Range	Recomm'd Strip Length	Material
AT62-14-0122	14-16		Nickel
AT62-14-0144	14-10	.125175	Gold
AT62-16-0122	16-18		Nickel
AT62-16-0144	10-18		Gold
AT62-16-0622	18-20		Nickel
AT62-16-0644	10-20		Gold

## Crimp Die (Stamped & Formed Contacts)

P/N: MFX 3950

Sealing Plug (Size 16)

P/N: A114017



AT and AHD Series<sup>™</sup> Accessories

# Contact and Wedge Insertion



1. Grasp crimped contact approx. one inch behind the contact barrel.



2. Hold connector with rear grommet facing you.



 Push contact straight into connector until a 'click' is felt. A slight tug will confirm placement.



4. Insert wedge into connector.



5. A 'click' will be felt when the wedge is fully installed.

# Contact and Wedge Removal



 Remove wedge by inserting a flathead screwdriver head underneath the lip of the wedge.



2. Twist the flathead screwdriver until wedge 'pops' out of connector.



3. Use the same flathead screwdriver to remove contact inside connector.

# Plug Assembly



# Contact and Wedge Insertion



1. Grasp crimped contact approx. one inch behind the contact barrel.



2. Hold connector with rear grommet facing you.



3. Push contact straight into receptacle until a 'click' is felt. A slight tug will confirm placement.



4. Insert wedge into receptacle.



5. A 'click' will be felt when the wedge is fully installed.

# Contact and Wedge Removal



1. Remove wedge by inserting a hook into an opening of the wedge.



2. Pull until wedge 'pops' out of receptacle.



3. Remove wedge.

# Receptacle Assembly

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