PRODUCT GUIDE

SOLDIER SYSTEMS

Wearable electronic soldier systems in harsh environments require invisible power and data connectivity. mag-Net® is a groundbreaking connector solution that provides incredible ease-of-use and reliability.

mag-Net®

Connector

unleash mobility

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mag-Net®

Contents

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SOLDIER SYSTEMS

mag-Net®

The invisible power and data connector

for wearables in hostile environments

For wearable electronic systems that require invisible power and data connectivity, mag-Net® is a ground-breaking auto-aligning, self-coupling, self-locking connector solution that provides incredible ease-of-use and reliability.

Unlike circular barrel connectors, mag-Net® is a robust, flush-flat rectangular solution with a auto-aligning, self-coupling, automatic magnetic latching system, enabling the easiest one-handed blind mating.

- Auto-aligning and self-coupling, provides unbelievably easy one-handed blind mating
- Mechanical latching with no moving parts, gives most reliable jam-free connection.
- Equipment textile connectors for direct connection of equipment to garments eliminating unnecessary weight and cable snag hazards.
- Flush flat receptacles with abrasion resistant design, ensures maximum durability, with no protective caps required.
- Specifically designed for garment mounting; to protective vests or load carriage systems.
- 8 way contact configuration on for both power and high-speed data transmission.
- Ultra light-weight, no-bulk design to maximise mobility.
- Fully environmentally sealed.

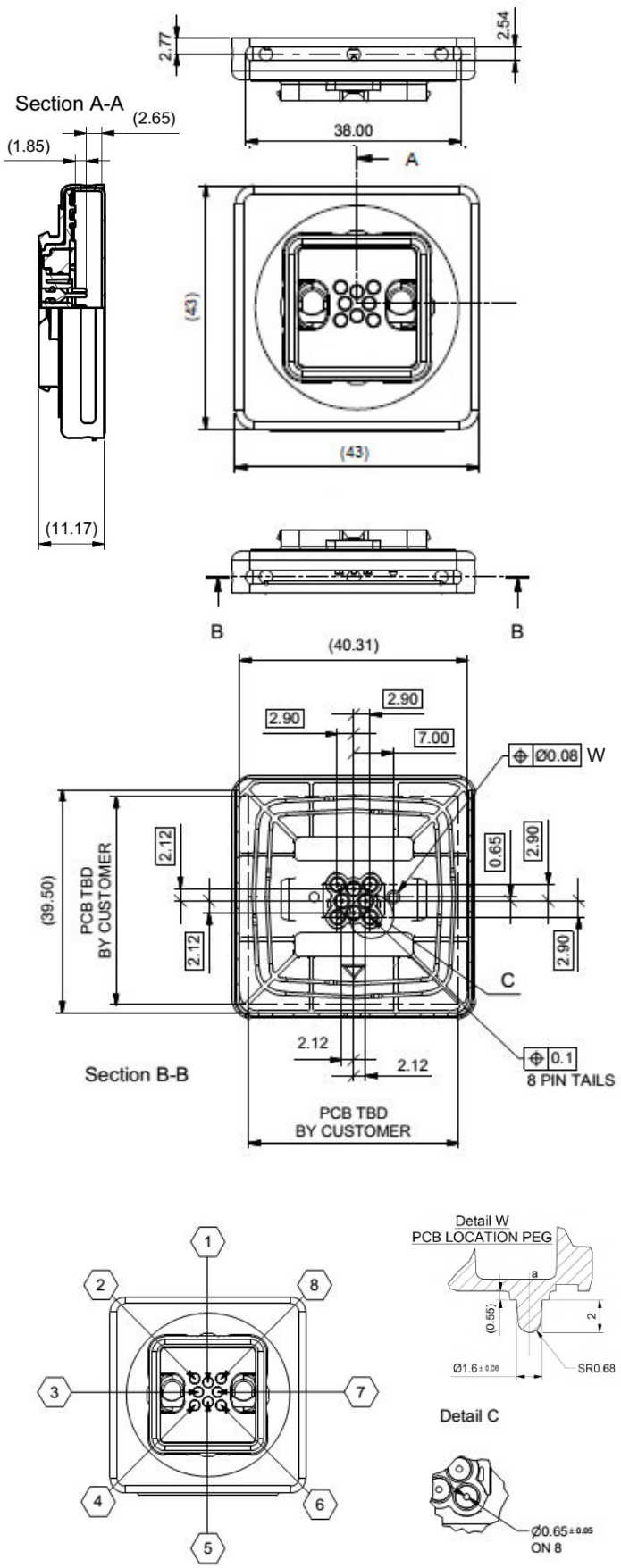
unleash mobility

Garment Receptacle Kit

Part number: MGNT-1095

mag-Net® garment receptacles are ultra-lightweight connectors for wearable Personal Area Networks in hostile environments. **mag-Net®** garment receptacles are fully sealed both in the mated and unmated condition, exceeding the immersion requirements of MIL-STD-810G, negating the need for any protective cap or covers. Connector shells are light-weight aluminum with a robust non-reflective finish and providing full EMI protection. The contact pads, insulator, and connector shell, are all flush-flat for easy cleaning. The two recesses in the insert contain the high strength 'schimmel' latching bars that provide the zero moving parts locking mechanism. The recesses are scooped to prevent dirt build-up. **mag-Net®** garment receptacles can accept both latching and non-latching style **mag-Net®** plugs.

mag-Net® garment connectors simply snap into the **mag-Net®** garment cage, giving clear separation of the electronics PAN and the garment. This combination provides the most reliable, simplest, and lowest cost, integration and removal of the PAN system.



Specifications:

- Endurance 3000 mating cycles
- Operating temperature of –30°C to +80°C
- IP68 (3 metres for 2 hours) mated/unmated
- Corrosion resistance 200hrs salt fog
- Max current 8A
- Contact resistance <15m ohm
- Insulation resistance 1000M Ω
- Dielectrics withstand voltage 500V
- USB2.0 compatible
- Fluid and shock resistance to MIL-STD-810G
- RoHS, REACH, WEEE compliant

Construction:

- **Shell**: Aluminium
- **Finish**: Non-reflective black Electroless nickel
- **Contacts**: Gold over copper alloy
- **Insert**: Glass filled thermoplastic. Low lusture brown as standard. For black, please add BK to the end of the part number. Please consult factory for alternative insert colours.
- **Backshell**: Stainless steel

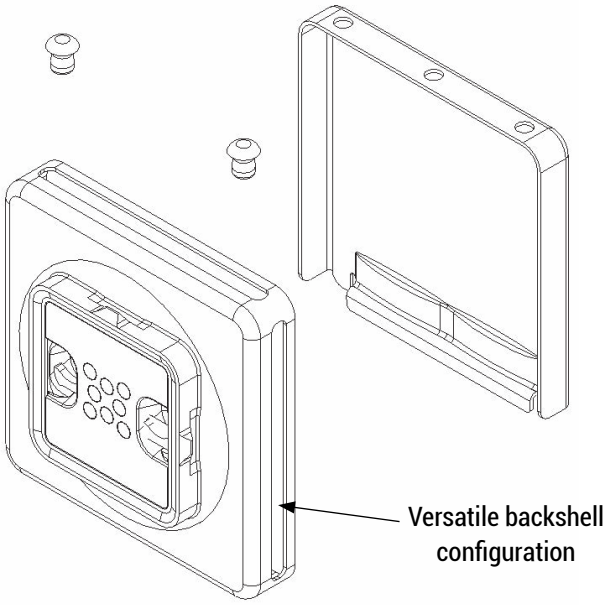
Garment Receptacle Kit

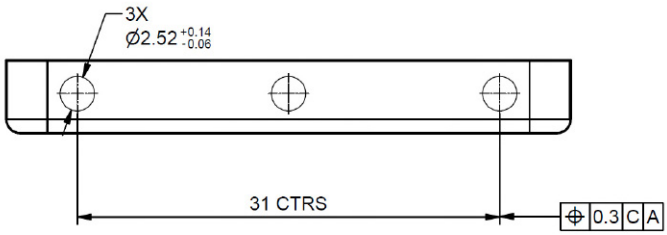
Part number: MGNT-1095

As well as being robust, **mag-Net®** garment receptacles remain versatile. The MGNT-1095 variant is a kit of components comprising of a back shell, rivets and the receptacle. This method assists with offering 360° screening which prevents unintentional generation, propagation and reception of electromagnetic energy which may cause unwanted effects such as electromagnetic interference (EMI).

The ribs on the **mag-Net®** insulator offer both support to the customers PCB and also has various integrated channel-ways which can be used to remove flux residue. This assists with preventing corrosion.

Ease of assembly is also taken into consideration and the receptacle and back shell are assembled together by a simple hand operation process, once assembled together, they remain in place via a leverage system and two rivets. A central hole is then available to inject a suitable epoxy. This provides a proven method of fully sealing the rear end of the connector to 3 metres for 1 hour. Please consult the factory for details on recommended epoxy and application methods.

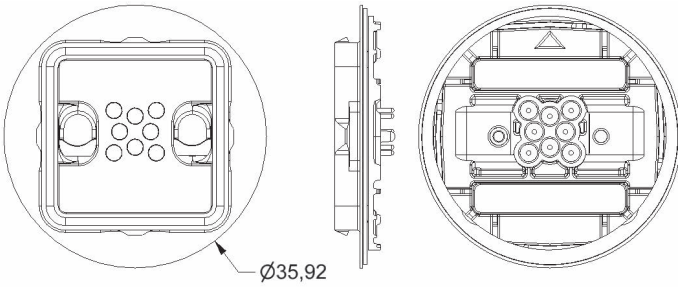




Parts are also available to order seperately as followed:

- Garment Receptacle—MGNT-1057
- Receptacle Backshell—MGNT-1043

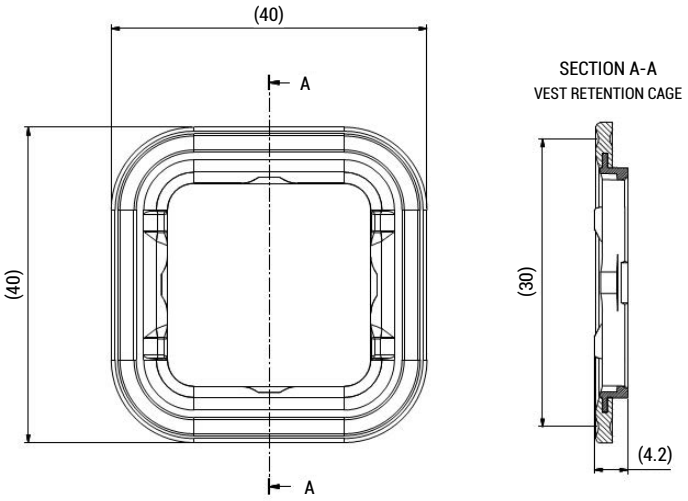
With the cylindrical central configuration remaining consistent across all variants, **mag-Net®** offers versatility to adapt to the relevant application. Please consult our team with your requirements.



Garment Receptacle cage

Part number: MGNT-1038

mag-Net® receptacle cages can be sewn into place into a garment. The rubberised surround incorporates a sew line groove that can be stitched through, protecting the thread from any potential abrasion. The cage is a low-cost, mechanical device which matches the dimensions of one MOLLE/PALS strap, providing an aperture into which a **mag-Net®** connector receptacle can be fied. The **mag-Net®** garment receptacle cage allows garments to be manufactured completely separately from the electronics harness, and provides the easiest method of removal or refitting of the electronics for repair, maintenance, or refitting. **mag-Net®** cages can be oriented in any direction, and the **mag-Net®** receptacle connectors simply 'click' into the cage. When fitted, the receptacle cage and connector are completely flush with the garment, minimising any risk of abrasion damage, and completely eliminating the risk of dangerous snagging, which is common with all circular connector types. **mag-Net®** cages are available in dierent colours to match most camouflage paerns, including multicam®, MTP, woodland, coyote & black (please consult factory).



Specifications:

- Operating temperature of –40°C to +80°C
- Corrosion resistance 2000hrs salt fog
- Fluid and shock resistance to MIL-STD-810G
- RoHS, REACH, WEEE compliant

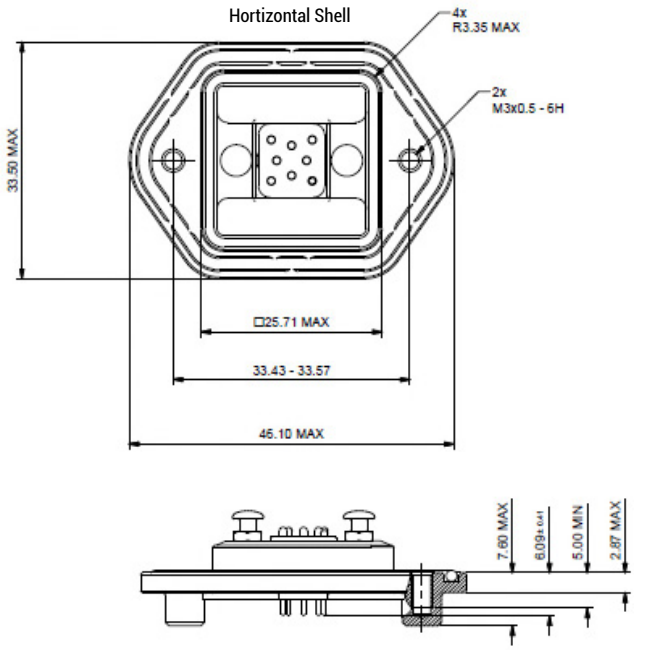
Construction:

- **Cage insert**: glass filled thermoplastic
- **Overmould**: Thermoplastic Elastomer
- **Standard colour**: Coyote. For black, please add the letters BK to the end of the part number i.e. MGNT1038BK

Equipment plug

Part number: MGNT-1049-X-X

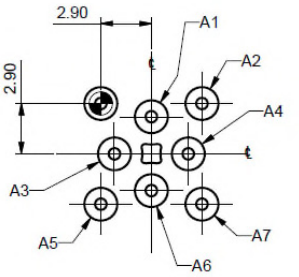
Horizontal Shell



Equipment plug options

MGNT-1049-X-X

G = Guide Pin
L = Latch Pin
H = Horizontal Shell
V = Latch Pin Shell



Vertical Shell

PCB DRILLING DETAIL		
HOLE	X	Y
A1	2,90	-0,78
A2	5,80	0,00
A3	0,78	-2,90
A4	5,02	-2,90
A5	0,00	-5,80
A6	2,90	-5,02
A7	5,80	-5,80

mag-Net® equipment plugs reduce weight, stiffness and improve mobility of the user by eliminating the need for cables altogether. **mag-Net®** equipment plugs are automatic self-aligning, self-latching/mating, with no moving parts to jam that can cause unwanted disconnects or difficult connection. Once connected, stainless steel 'mushroom' latch pins are firmly locked in place, into the receptacle preventing any accidental or unwanted disconnects. To disengage, simply lift vertically and remove. **mag-Net®** equipment plugs have two options to mount into suitable enclosures, with either vertical body or horizontal body. Both options are dependent upon the application and can easily be modified to suit other applications. **mag-Net®** equipment plugs have gold spring probe 'pogo' style contacts, for easy cleaning and maintenance. Plug shell bodies are lightweight aluminum and are finished with a flame retardant, non reflective, and low Infra Red contrast colour overmould. All **mag-Net®** cable plugs meet and exceed MIL-STD-810G immersion requirements and with an hexagonal O-Ring and blind fastener holes are fully environmentally sealed against dust and moisture ingress to IP68 3m for 1 hour in a mated condition. **mag-Net®** equipment plugs come equipped with PCB tail contacts for flexible print cable or a PCB termination.

Specifications:

- Endurance 3000 mating cycles
- Operating temperature of –30°C to +80°C
- IP68 (3 metres for 2 hours)
- Corrosion resistance 200hrs salt fog
- Max current 8A
- Contact resistance <15m ohm
- Insulation resistance 1000M Ω
- Dielectrics withstand voltage 500V
- USB2.0 compatible
- Fluid and shock resistance to MIL-STD-810G
- RoHS, REACH, WEEE compliant
- Last mate, first break contact
- Max panel thickness: 2.10mm or 2.90mm with counterbored screw heads (Consult factory for details).

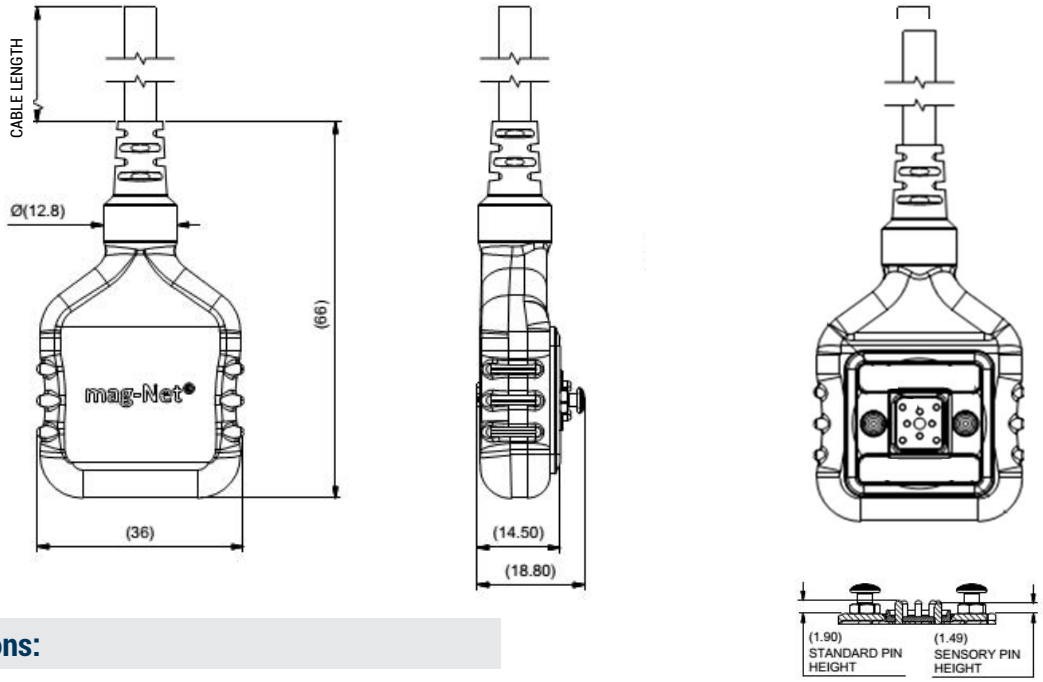
Construction:

- **Shell**: non-reflective black electroless nickel over aluminum
- **Contacts**: gold over copper alloy
- **Insert**: glass filled thermoplastic
- **Latch pins**: stainless steel
- Pin out positions as per cable plug
- Supplied with 2 x No. 6 Hexalobular ultra low head cap screws.

Cable Plug

Part number: MGNT-1039-X-X-XXX

mag-Net® cable plugs are fully shielded and environmentally sealed cordsets for wearable electronics in the harshest of environments. **mag-Net®** cable plugs have automatic self-aligning, self-latching/mating, with no moving parts to jam that can cause unwanted disconnects or difficult connection. Once connected, stainless steel 'mushroom' latch pins are firmly locked in place into the receptacle preventing any accidental or unwanted disconnects. To disengage, simply lift vertically and remove. **mag-Net®** cable plugs are ergonomically shaped for easy use even with gloves, and the rounded shape minimises potential snagging. **mag-Net®** cable plugs have gold spring probe 'pogo' style contacts, for easy cleaning and maintenance. Plug shell bodies are lightweight aluminum and are finished with a flame retardant, non reflective, and low Infra Red contrast colour overmould. All **mag-Net®** cable plugs meet and exceed MIL-STD-810G immersion requirements, and are fully environmentally sealed against dust and moisture ingress to IP68 3m for 1 hour in a mated condition. **mag-Net®** cable plugs are supplied with high performance cable designed for the latest wearable Personal Area Networks (PANs) including DEF STAN 23-12 General Soldier Architecture. **mag-Net®** cable plugs are wired for high speed data USB 2.0 requirements with a 90Ω shielded data pair and two lines for USB power, and four additional lines to carry power. The cable is fully shielded with an overall braid screen terminated to the plug body to provide high performance EMC characteristics for the most demanding applications. **mag-Net®** cable plugs can also be provided as a non-latching guide-pin assembly. This method is perfectly suited for quick disconnect requirements to ensure the users safety in life threatening situations is not affected.



Specifications:

- Endurance 3000 mating cycles
- Operating temperature of –30°C to +80°C
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- Corrosion resistance 200hrs salt fog
- Contact resistance <15m ohm
- Insulation resistance 1000M Ω
- Dielectrics withstand voltage 500V
- USB2.0 compatible
- Fluid and shock resistance to MIL-STD-810G
- RoHS, REACH, WEEE compliant
- Last mate, first break contact

Construction:

- **Shell**: non-reflective black electroless nickel over aluminum
- **Contacts**: gold over copper alloy
- **Insert**: glass filled thermoplastic
- **Latch pins**: stainless steel

Cable construction:

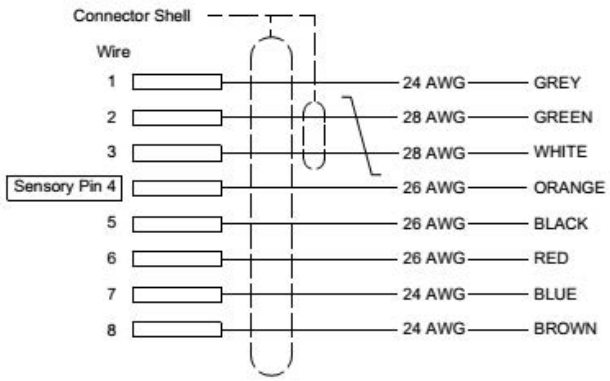
- **Data**: 90 ohm 28 AWG (7 x 0.13) twisted pair, tin plated copper, FPI insulation, with overall foil screen and drain wire.
- **Power**: 24 AWG (19 x 0.13), tin plated copper, FPI insulation
- **Binder**: Polyester wrap
- **Braid screen**: 38 AWG
- **Jacket**: Flame retardant PUR, RAL 1019 Grey Beige, overall diameter 6.0mm max. Alternative colours/cable available on request.

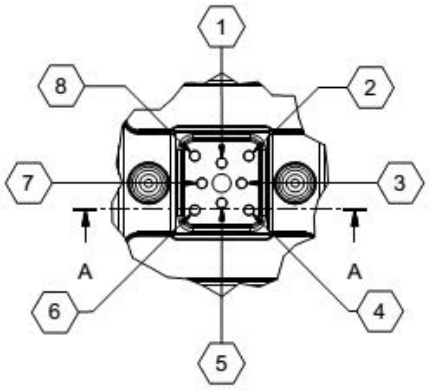
For alternative plug options:

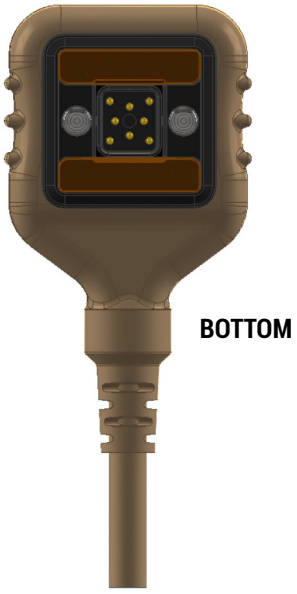
MGNT-1039-X-X-XXX-XX

- G = Guide Pin
- L = Latch Pin (See overleaf)
- L = Left
- R = Right
- T = Top
- Cable Length in cm
- BK = Black cable and overmould. Omit if grey beige is required

Plug Wiring Schematic







Cable entry position options.

Note: The wiring terminations and last make, first break contact remain consistent across all cable plug entry positions.

mag-Net®

Equipment and Cable Plug Coupling Options

Latch Pin

- Mechanical latching with no moving parts
- Provides a secure connection and prevents unwanted disconnections
- High latching retention
- Auto-aligning
- Self-coupling

Guide Pin

- Mechanical aligning with no moving parts
- Provides a quick release option where quick disconnect is required
- Auto-aligning
- Self-coupling

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