Pneumatic and hydraulic Grip-Clamps® from ALADCO can provide smooth, rapid and accurate handling and positioning of parts in numerous material handling, clamping and workholding applications. Grip-Clamps® are ideal for pallet, carriage and conveyor stops, overhead gantries, floor level transfers, positioning/locating, and clamping. In properly designed applications the durability of Grip-Clamps® can result in very high production line equipment reliability and low cost of ownership.

Grip-Clamps® use one of two types of clamping techniques:

- **Toggle lock** – where the cylinder to arm linkage goes through an over-center condition to produce a positive lock when the arm is in the closed position.

- **Power lock** – where the cylinder to arm linkage does not go through an over-center condition enabling clamping on variable thickness, flexible control of the clamping force, or flexible position control.

The standard Toggle Lock and Power Lock Styles are:
- One arm – 0 degrees when closed or 90 degrees when closed.
- Two arm – 0 degrees when closed.

The cylinder shaft is protected by the enclosed base of the clamp housing and the cylinder shaft being fully retracted in the arm closed orientation.

The clamp housing and cylinder attachment is designed to resist shifting and loosening due to repeated heavy loading and vibrations.

**Grip-Clamp® Characteristics**

The max arm torque load capacity is 56,000 in-lbs for large Grip-Clamps® 9,400 in-lbs for the medium Grip-Clamps®. The standard arm swing is 90 degrees, but arm swings of less than 90 degrees can be obtained by customized designs.

The standard arms are straight and are 10” long for large and 6” for medium. There are two types of standard arms 1. a solid arm 2. an arm with mounting holes.

The Grip-Clamps® can be supplied with custom arms (lengths up 30” from the main pivot for the large and up to 22” from the main pivot for the medium). Examples of custom arms are illustrated in the figure to the left. General types of custom arms are straight, hooked, and spring contact loaded. The standard spring contact pin can travel up to ½”. The pin on the medium clamp starts will apply a load between 26 lbs. and will apply up to 50 lbs. when fully depressed to its ½” of travel. To 80 lbs. and will apply up to 150 lbs. when fully depressed to its ½” of travel.

The gripper interfaces to NFPA MF1 cylinders, so a variety of 1” rod pneumatic and hydraulic cylinders can be used. A variety of cylinder porting, and clamping position indicator switch options can be specified. Cylinder flow control orifices are standard with each clamp (closing or opening times are less than 1 second for pressures above 20 PSI). A variety of cylinder port, cylinder cushion, and cylinder or plate mounted switch positions can be specified.

The standard spring contact pin is
The gripper interfaces to NFPA MX3 cylinders, so a variety of 1” rod pneumatic and hydraulic cylinders can be used. A variety of cylinder porting, and clamping position indicator switch options can be specified. Cylinder flow control orifices are standard with each clamp (closing or opening times are less than 1 second for pressures above 20 PSI). A variety of cylinder port and cylinder or plate mounted switch positions can be specified.

**Arm Torque Curves**

**260 Power Lock 80 PSI, 2.5” cylinder**

**Large Power Lock 80 PSI, 4” cylinder**

**Cylinders**

The gripper interfaces to NFPA MF1 cylinders, so a variety of 1” rod pneumatic and hydraulic cylinders can be used. A variety of cylinder porting, and clamping position indicator switch options...
ALADCO Gripper & Clamp Basics

can be specified. Cylinder flow control orifices are standard with each clamp (closing or opening times are less than 1 second for pressures above 20 PSI). A variety of cylinder port, cylinder cushion, and cylinder or plate mounted switch positions can be specified.

Grip Clamp® Switches

Grip-Clamps® have four basic switch options:

N1 No Switches (Note: the piston on standard aluminum cylinders have magnet rings.)
R1 Reed Switches
C1 Cylinindicator Switches
C2 Dual Proximity Module

R1 - Reed Switches

SPST normally open 2 wire, 0– 240 VDC/VAC, and 30 Watts Max. Nine feet of two conductor (bare end wire) cable is part of the switch. Temperature Range -4 to 176F (-20 – 80C)

Reed Switches can be retrofitted to Grip-Clamps that have a standard aluminum cylinder. Reed sensors do not work well with inrush current surge currents (common to inductive and capacitive loads, relays, coils and long wire runs).

C1 - Cylinindicator Switches.

PNP Normally Open switch. 20– 240 V DC/AC, 30 Watts Max, LED indicators for power and switch activation. Temperature Range -15 to 158 F (-26 to 70 C)

Connector cables are not supplied with the switch. Switch connector options are either three pin Mini DIN male connector or Micro Din (M12) male connector.

C2 - Dual-Proximity Module

The Dual Proximity module has two switches. The standard switches are PNP Normally Open, 10-30 VDC, 100 mA max and are IP65. The watertight switch module is immune to welding fields up to 100 mT. Temperature Range -15 to 158 F (-26 to 70 C)

The switch housing has LED indicators for power on and switch activation/engagement status. There is a single four pin Micro (M12) male connector. The cable plug connector on the switch housing can be rotated through 90 degrees and locked in place. A connector cable is not supplied with the switch.
200 Roller-Cam™ Clamp Family

The Roller-Cam™ clamp is a pneumatic clamp that can produce clamping forces over 300 pounds. The unique design of the Roller Cam clamp enables stable clamping forces to be obtained for (end of arm) contact range of 1/8” (3mm). The stable clamping force allows consistent clamping forces to be obtained even when part thickness varies and as equipment wears.

The Roller-Cam™ standard arm (in closed position) extends 3.5” from the front edge of the housing and the arm pivot point is 2.25” back from the front edge of the housing. The torque capacity of the standard arm is 7,000 in-lbs. The standard arm will swing 70 degrees, so the open arm and some arm attachments will clear the front edge of the clamp housing. Arm swings of less than 70 degrees can be obtained by customized designs. The standard arm is the solid straight arm shown in the figures below. The straight section of the arm can be machined and the clamps can be supplied with custom arms and arm attachments.

Aluminum wall or stainless steel wall pneumatic cylinders are available. A variety of cylinder port positions can be specified. Add on options can include clamping position indicator switches and an arm opening bumper kit.

Roller-Cam™ Clamp with standard solid arm in fully closed position.

Roller-Cam™ Clamp with standard solid arm in fully opened position.