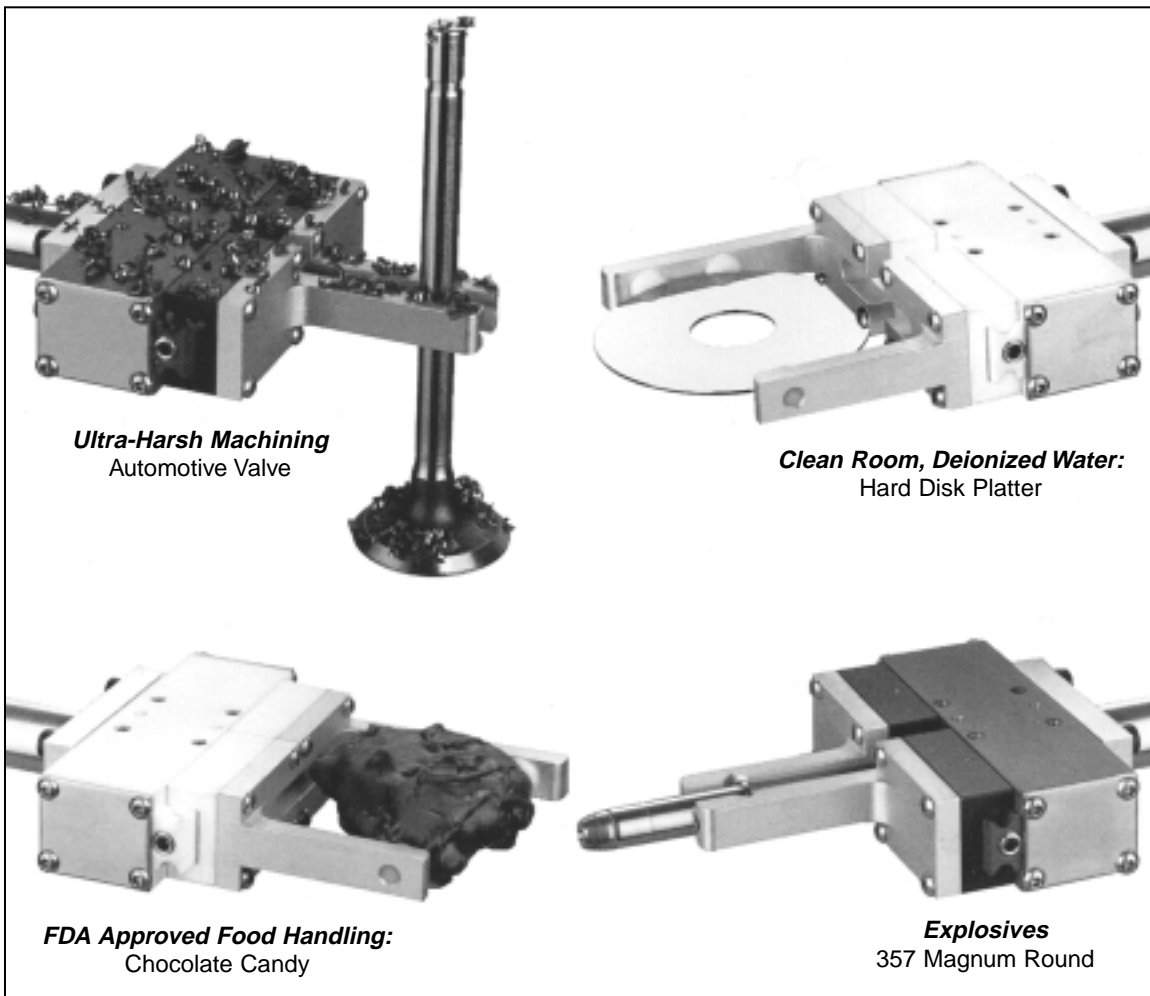


# Robotic Accessories **PT/AL Grippers**

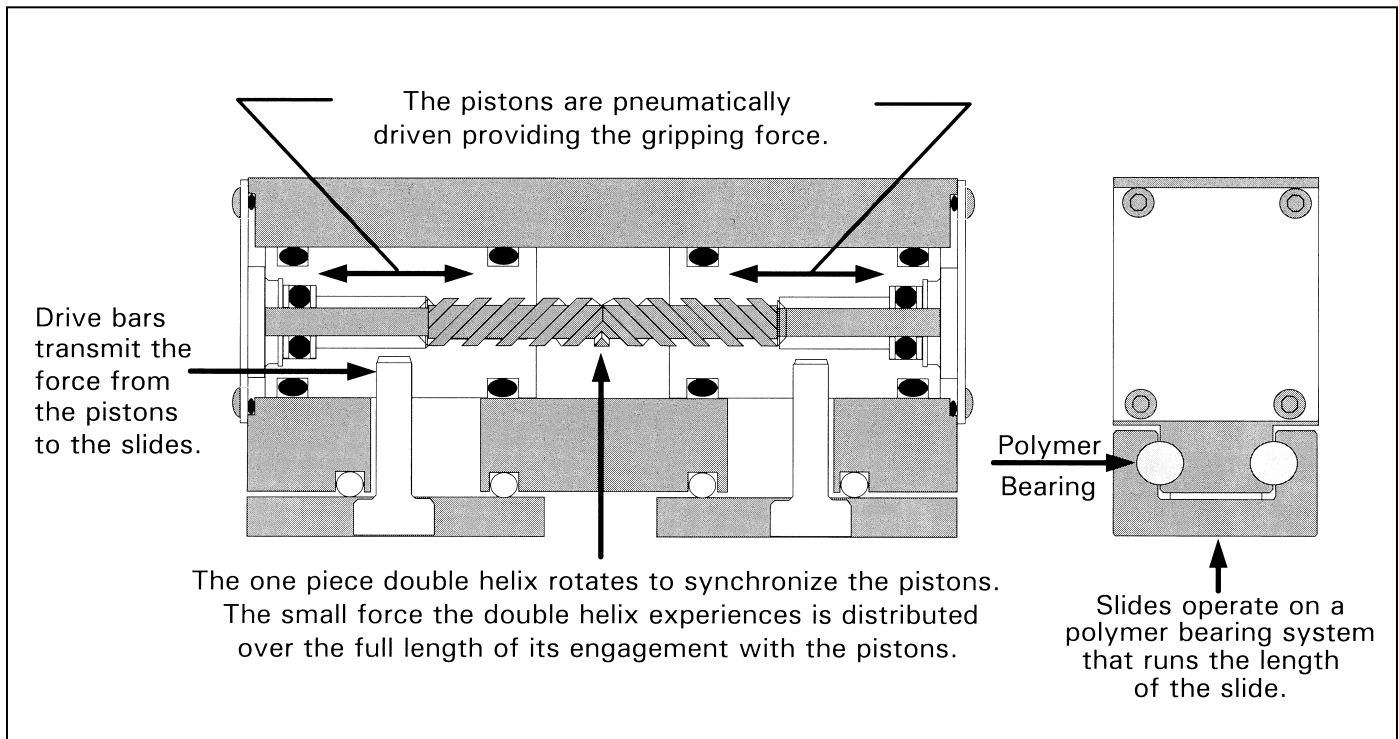
- ✓ Weld Immune
- ✓ Grinding/Carbide Dust Immune
- ✓ FDA Approved Materials
- ✓ Deionized Waterproof
- ✓ Class One Clean Room Certified
- ✓ Cost Effective



PT/AL grippers are universally applicable “out-of-the-box”. The use of third-generation ROBOTIC ACCESSORIES technology and the selection of super tough, corrosive resistant materials allows the PT/AL to efficiently serve day-to-day as well as tough, nearly impossible

applications. Examples of the range of PT/AL application environments include welding, grinding, machining, clean room, epitaxial wafer fabrication, hard disk fabrication, D.I. water and food processing.

## PT/AL Features



### Patented Synchronous Technology—Extended Life

The synchronous PT/AL gripper utilizes US patent numbers 4,591,199 and 5,657,973 with others pending. The force and synchronizing double helix are independent systems. The double helix works only to center the part to  $\pm 0.025$  mm ( $\pm 0.0010''$ ). All of the gripping force is provided by two pistons that are driven

pneumatically. The independence of the force and synchronization systems provides precision over the typical 10,000,000+ cycle life of the unit. In non-abusive applications the technology may deliver 20,000,000 or more cycles.

### Double Sealed for Superior Integrity

The PT/AL mechanism is double sealed to assure that the mechanism is isolated from the environment. In clean rooms and food processing this ensures environmental

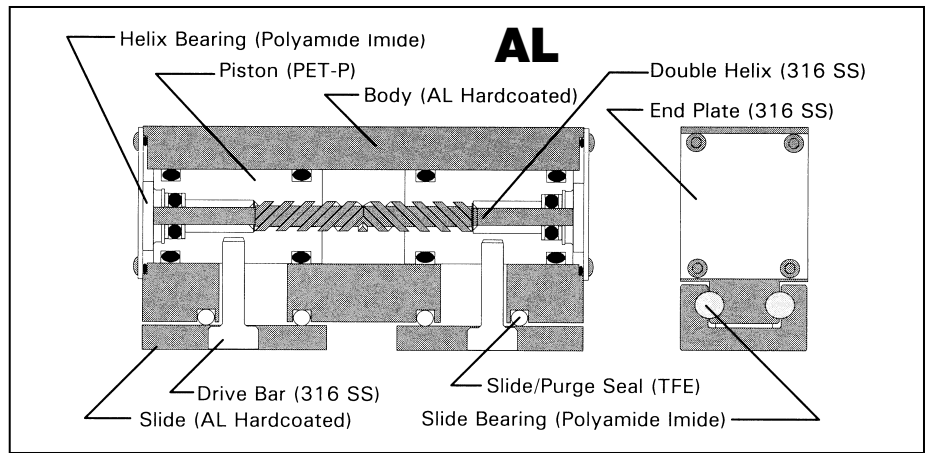
integrity. In harsh environments the double seals protect the gripper from contamination that could lead to failure.

### The Ultimate Materials—Force to Weight >200

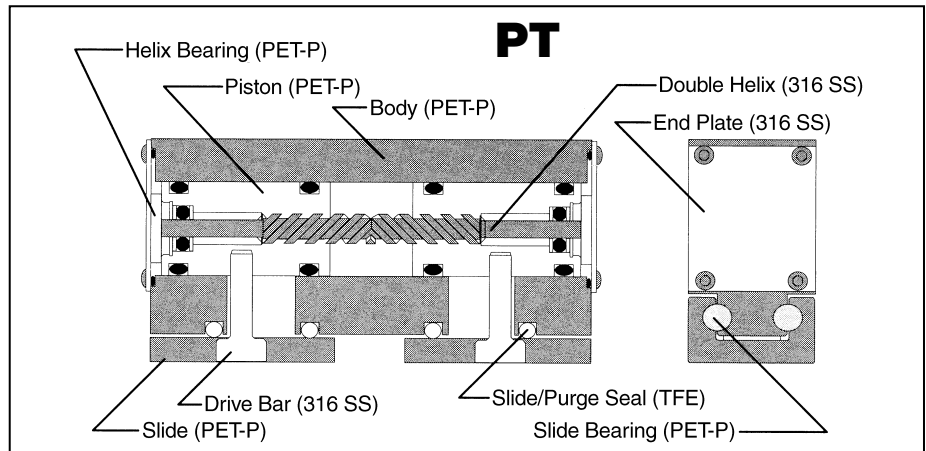
All materials of the PT/AL gripper are designed to eliminate maintenance and assure that the gripper functions in harsh environments. There are two material versions of the PT/AL gripper—aluminum and PET.

Each was developed to extend the out-of-the-box applicability of the PT/AL technology. The design and material selection allow the PT/AL to provide *Force/Weight ratios in excess of 200*.

The Aluminum version of the PT/AL is intended for use in very dirty and explosive environments as well as class ten clean rooms. All of the materials are chosen to be corrosive resistant as well as tough.



All materials used in the "PET" version of the PT/AL comply with FDA requirements for food handling. The PET unit is also class one clean room certified and Deionized Water tolerant for use in hard disk and epitaxial fabrication.



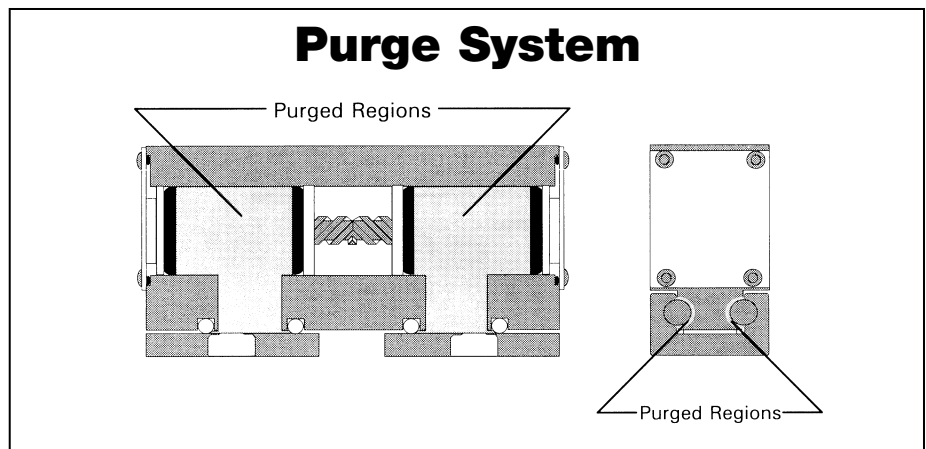
## Clean Room & Dirty Environment Purge System

Another unique feature of the PT/AL family is a dual usage purge system (patent pending) that is part of every gripper. The purge system

facilitates use in clean rooms (***CLASS ONE clean rooms, an independent Lab report is available***) and very dirty environments.

In ***clean rooms*** the purge system is evacuated. Any contaminants from the pneumatic system that pass the seals of the gripper are eliminated from the environment.

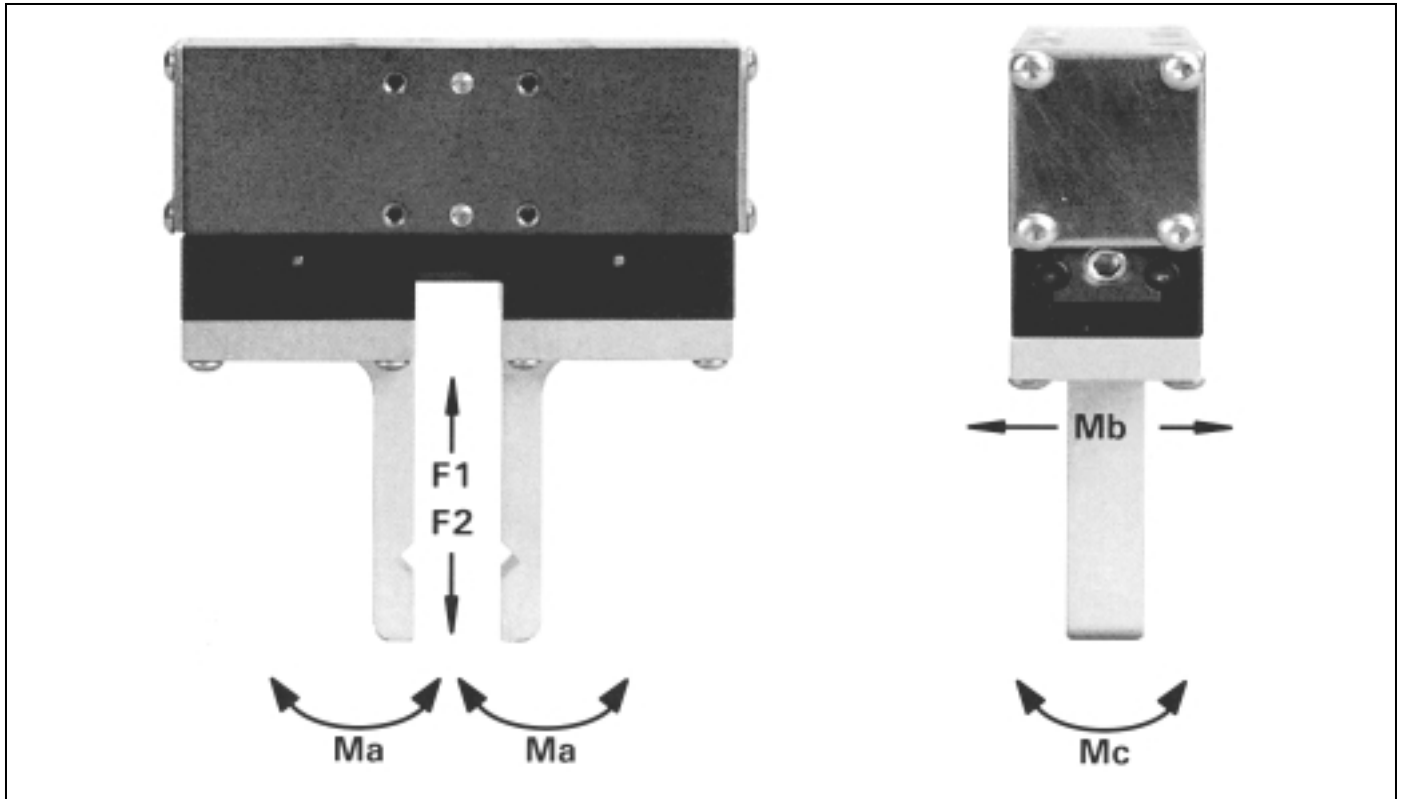
In very ***dirty environments*** the purge system is pressurized. Any debris that attempts to make its way under the slide bearings is cleared away by the pressure at the purge port.



## Torque and Force Unmatched

The PT/AL family uses a linear bearing system much like those used in machine tools. However, to minimize weight and size, advanced polymers are utilized rather than ball bearing rails. The torque and force capabilities

of the PT/AL family are maintained over the life of the gripper due to the length of the bearing surface over which the loads are distributed.



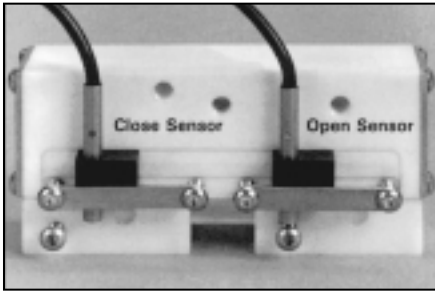
Model	Ma IN•Lbs (Nm)	Mb IN•Lbs (Nm)	Mc IN•Lbs (Nm)	F1 Lbs (kg)	F2 Lbs (kg)
AL-2000/2100	212 (24)	177 (20)	141 (16)	55 (25)	44 (20)
PT-2000/2100	88 (10)	88 (10)	88 (10)	44 (20)	33 (15)
AL-2200	840 (100)	700 (80)	530 (60)	123 (56)	150 (68)

## Lifetime Lubrication

The universal application of the PT/AL grippers is made possible with the use of a *lifetime lubricant*. This allows the use of “dry air” and compliance with new and proposed

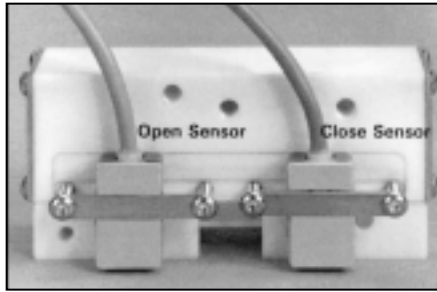
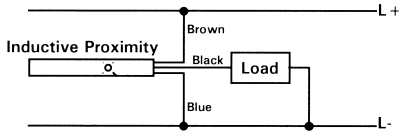
OSHA regulations that forbid the use of lubricants in air lines. With an FDA rating of H1, this lifetime lubricant is also people and food “friendly”.

# PT/AL Sensor Systems



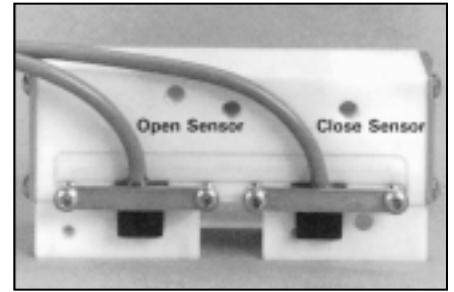
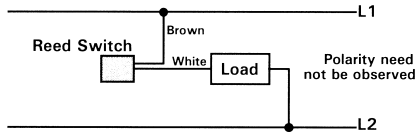
## Inductive Proximity Sensor Kit, 4mm DC-Sourcing, PNP, 2M Cable

10-30 VDC, 100 mA Max Current & Inrush  
Status Indicator: LED, Supply Current < 9.5 mA



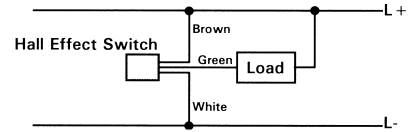
## Reed Switch Sensor Kit SPST Normally Open, 9' Cable

10-120 VDC/VAC, 0.5 Amp Max Current, MOV protection  
Status Indicator: LED, Switching Power 10 Watts Max



## Hall Effect Sensor Kit DC-Sinking, NPN, 9' Cable

6-24 VDC, 20 mA Max Current  
Supply Current < 14 mA



## Inductive Proximity Sensor Kit, 4mm DC-Sinking, NPN, 2M Cable

10-30 VDC, 100 mA Max Current & Inrush  
Status Indicator: LED, Supply Current < 9.5 mA

