



Hydraulic Utility Actuators

Aircraft manufacturers have been selecting Arkwin Industries for over 60 years to design and manufacture a wide variety of utility actuators for civil and military applications. Arkwin's expert engineering team uses the latest design software to convert concepts into reality for a multitude of installations.

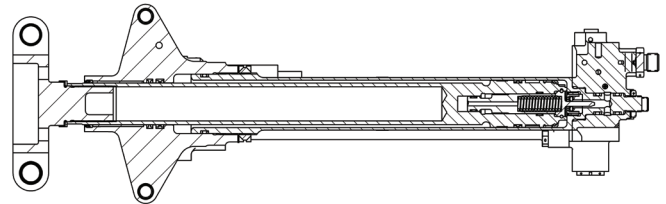
Arkwin has designed and manufactured over 125 unique hydraulic actuator designs, incorporating numerous customer options to fit customer specifications.

Applications include:

- Thrust Reversers
- Ramp operation
- Landing gear and utility door operation
- Landing gear retraction
- Ram Air Turbine operation

Platforms

| | | |
|------|--------|------|
| A320 | HA-420 | F-22 |
| A330 | C-141 | F-35 |
| B717 | CH-53E | H-92 |
| B777 | CH-53K | S-76 |
| CF6 | F-16 | V-22 |



Operational Characteristics

- Multiple integrated control features for flow and directional control
- Integral system filtration features
- Manual and solenoid control
- Extremely low leakage characteristics

Design Characteristics

- Operating pressures up to 5,000 psig
- Linear position sensing transducers
- 3"+ diameter bores and 25"+ strokes
- Multiple mounting options
- End of stroke velocity controls
- Advanced locking mechanisms
 - Various types: roller pawl locks, toggle locks, slider locks
 - Visual and electrical lock indication
 - Position sensing and lock integration
 - Unlocking with loads up to 20,000 pounds



Hydraulics Leader for
Aerospace and Defense

Selected Actuators

| Part Number | Bore Diameter | Rod Diameter | Stroke | Operating Pressure (PSI) | Locks | Retracted Length | Mounting | Application | Platform |
|-------------|---------------|--------------|---------|--------------------------|---------------------|------------------|------------------------------|-------------------|------------|
| 1211495 | 0.864" | 0.747" | 12.80" | 5000 | Extend Slide/Pawl | 19.78" | Sph. Bearing | Ramp Door | V-22 |
| 1211350 | 1.054" | 0.811" | 10.46" | 3000 | None | 14.70" | Clevis | Cowl Door | CF6 |
| 1211444 | 1.179" | 0.747" | 14.041" | 3935 | None | 17.633" | Gimbal | Lower C Duct | MD90/V2500 |
| 1211243 | 1.492" | 0.746" | 1.72" | 3000 | Extend Roller/Pawl | 7.38" | Sph. Bearing | Ground Spoiler | B737 |
| 1211252 | 1.617" | .872" | 8.04" | 3000 | None | 16.65" | Sph. Bearing | Thrust Reverser | G-III |
| 1211180 | 1.679" | 0.747" | 6.80" | 3000 | Retract Roller/Pawl | 12.92" | Sph. Bearing | Nose Gear | F-16 |
| 1211647 | 1.806" | 0.997" | 5.635" | 4000 | Retract Pawl | 12.07" | Clevis Head End Sph. Bearing | Equipment Door | F-35 |
| 1211176 | 1.993" | 0.999" | 9.75" | 3000 | Retract Roller/Pawl | 16.25" | Sph. Bearing | MLG Door & Uplock | F-16 |
| 1211471 | 2.119" | 1.006" | 5.71" | 3900 | None | 13.10" | Trunnion | Aileron | C-141 |
| 1211538 | 2.494" | 1.497" | 8.607" | 3000 | Extend Slide/Pawl | 18.203" | Sph. Bearing | Thrust Reverser | G-IV |

Key Features

- All Arkwin locks feature multiple pawl configurations manufactured from beryllium copper or high strength steel
- Proven designs capable of >250,000 cycles with high external loads applied
- Low unlock pressures
- High durability with minimal material wear
- Lock hydraulic signal referenced to return pressure which minimizes the potential for pressure spikes to inadvertently unlock the actuator



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