

Schilling Robotics ORION™ 4R Manipulator



Rate-Controlled ORION™ 4R

ORION™ manipulator systems are compact and light-weight. When outfitting light and medium-class ROVs, the ORION™ series offers a considerable range of motion and large linear motions.

The ORION™ 4R is the system of choice for compact size, light weight, and excellent payload capacity. The arm's structural segments are fabricated from hard-anodized extruded aluminum for strength and corrosion resistance. The ORION™ 4R handles deepwater tasks with ease, with a standard depth rating of 6,500msw, allowing it to be

mounted on a wide range of ROVs.

- ▶ Four-function, rate-controlled grabber arm
- ▶ Typically paired with the ORION™ 7P
- ▶ High wrist torque
- ▶ Compact stow

Cost Effective

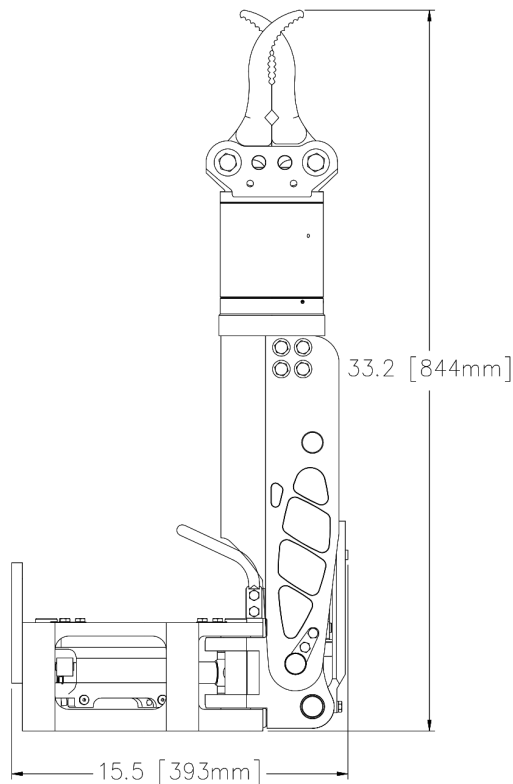
This arm offers a lower-cost alternative for tasks that do not require closed-loop control. The grabber arm comes with a 198mm, four-finger intermeshing gripper, requires no electrical connections and is designed for use on ROVs with onboard hydraulic power interfaces. Each joint or function is supplied by two hydraulic hoses

that can be controlled with simple, customer-supplied valves and a switch box.

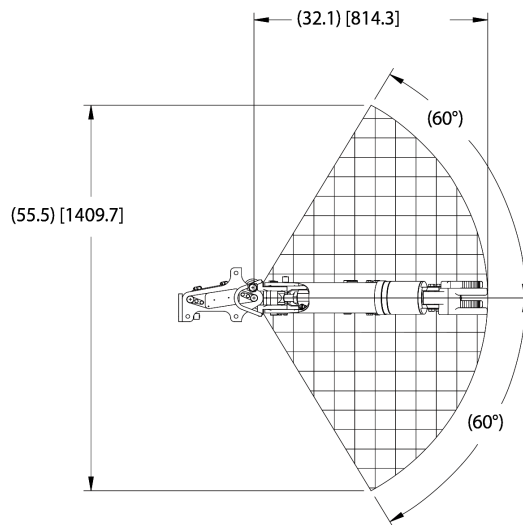
Options and Accessories

- ▶ Spares kit
- ▶ Technician's tool kit
- ▶ Hydraulic hose kits
- ▶ Ergonomic rate hand controller
- ▶ 4-inch parallel jaws
- ▶ 6-inch parallel jaws
- ▶ 7.5-inch three-finger intermeshing jaws
- ▶ 11.5-inch four-finger intermeshing jaws

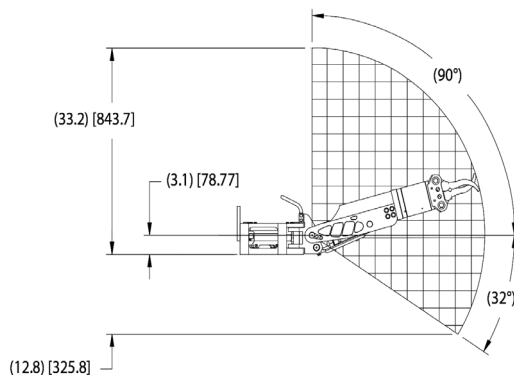
Stow Dimensions



Range of Motion, Plan View



Range of Motion, Elevation View



4R Specifications

Reach:	682mm
Type:	Rate Controlled
Function:	4
Materials:	Anodized aluminum, stainless steel, titanium

Arm Specifications

Standard Depth:	6,500 msw
Weight in Air:	30kg
Weight in Water:	21kg
Maximum Lift, Nominal:	136kg
Standard Gripper Opening:	198mm
Grip Force, Nominal:	4,448N
Wrist torque, Nominal:	205Nm
Wrist rotate, Continuous:	6-35rpm

Actuator Function

Base Yaw:	Linear, 120°
Shoulder Pitch:	Linear, 120°
Wrist Roll:	Gerotor, 360°
Grip:	Linear, 198mm

Hydraulic Requirements

Fluid:	Mineral, Glycol, or Synthetic
Viscosity:	10-200 cSt
Available Flow:	5.7 - 19 lpm
Max. Pressure:	3,000 psi
Fluid Cleanliness:	ISO 4406 14/11
Actuator Return Pressure:	350psi
Filtration:	3 microns

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Schilling Robotics ORION™ 7P and 7R Manipulator

ORION™ Manipulator Systems

ORION™ manipulator systems are compact and light-weight. When outfitting light and medium-class ROVs, the ORION™ series offers a considerable range of motion and large linear motions.

The ORION™ manipulators are the system of choice for compact size, light weight, and excellent payload capacity. The arm's structural segments are fabricated from hard-anodized extruded aluminum for strength and corrosion resistance. The ORION™ manipulators handles deepwater tasks with ease, with a standard depth rating of 6,500msw, allowing them to be mounted on a wide range of ROVs.

ORION™ 7P and 7R

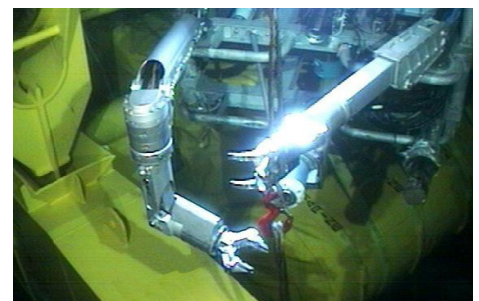
- ▶ Seven-function, dexterous systems
- ▶ Available in rate-controlled or position-controlled
- ▶ Both are also available in extended reach configurations, adding 318mm (12.5in)
- ▶ Kinematic configuration and rotary forearm joint
- ▶ Allow large linear motions that facilitate “hot stab” connections



Durable and Reliable

To ensure accurate and reliable operation of the ORION™ 7P and 7PE, position sensors are magnetically coupled and sealed inside laser-welded titanium housings for protection.

The ORION™ is designed to be serviced on-site, in less-than-ideal working conditions. All of its servo valves and subsea electronics are in one enclosure, allowing easy testing and replacement. The series was engineered to share common components within each arm, so that the spares requirements are minimal.



ORION and RigMaster Arms

Multiple Configurations

ORION 7™ is available in both a position-controlled model and rate-controlled model. Both models can also be configured for extended reach, adding 318mm to the arm's length.

Position-Controlled

The ORION™ 7P and 7PE are ideally suited for applications requiring the accuracy and sophisticated control of a closed-loop, position-controlled manipulator system. The turnkey systems include a manipulator arm with a 97mm parallel-acting titanium gripper, a compact master controller, a subsea controller/servo valve manifold, and a hydraulic compensator.

Operation with the miniature replica master arm and portable master controller is simple, comfortable, and intuitive. It also contains function keys for selecting menu options

and a display for viewing diagnostic and status information.

Many advanced operational features are standard with the system, including individual joint freeze, position scaling, password security, programmable stow/deploy routines, individual joint movement limits, incremental gripper movement, individual joint diagnostics, and automatic error checking.

Rate-Controlled 7R and 7RE

These offer lower-cost alternatives for tasks that do not require closed-loop control. The arms come with a 198mm, four-finger intermeshing gripper, require no electrical connections and are designed for use on ROVs with onboard hydraulic power interfaces. Each joint or function is supplied by two hydraulic hoses that can be controlled with simple, customer-supplied valves and a switch box.

7 P/R Specifications

Reach:	1,532mm
Type:	Position or rate controlled
Function:	4
Materials:	Anodized aluminum, stainless steel, titanium

Arm Specifications

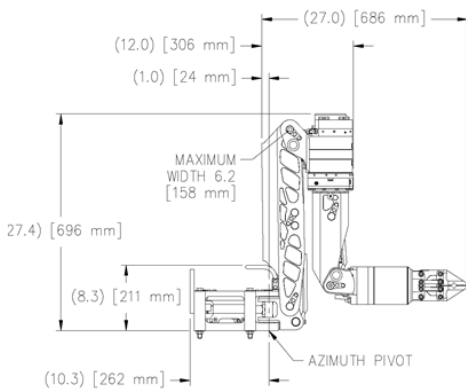
Standard Depth:	6,500 msw
Weight in Air:	54kg
Weight in Water:	38kg
Maximum Lift, Nominal:	136kg
Lift at Full Extension:	68kg
Maximum Lift, Nominal:	250kg
Standard Gripper Opening:	97mm
Grip Force, Nominal:	4,448N
Wrist Torque, Nominal:	205Nm
Wrist Rotate, Continuous:	6-35rpm

Actuator Function

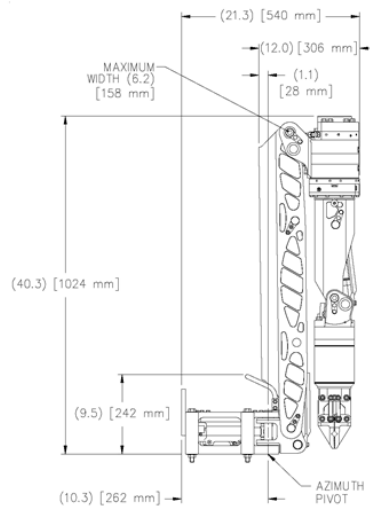
Base Yaw:	Linear, 120°
Shoulder Pitch:	Linear, 120°
Elbow Pitch:	Linear, 120°
Forearm Roll:	Rotary, 270°
Wrist Roll:	Gerotor, 360°
7 P Grip:	Linear, 97mm
7 R Grip:	Linear, 198mm

Hydraulic Requirements

Fluid:	Mineral, Glycol, or Synthetic
Viscosity:	10-200 cSt
Available Flow:	5.7 - 19 lpm
Max. Pressure:	3,000 psi
Max Fluid Temperature:	54°
Fluid Cleanliness:	ISO 4406 14/11
Actuator Max Return Pressure:	350psi
7 P Filtration:	3 microns
7 R Filtration:	10 microns

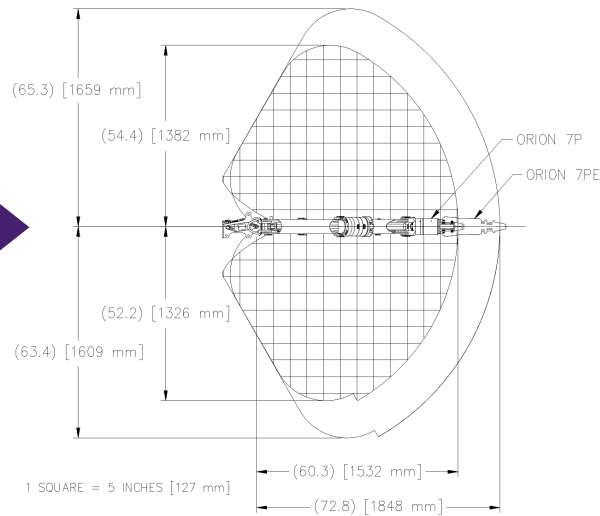


ORION 7P Stow Dimensions

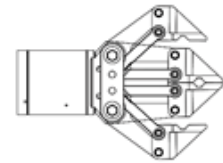


ORION 7PE Stow Dimensions

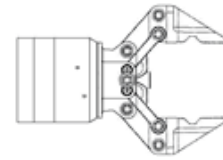
Range of Motion, Plan View



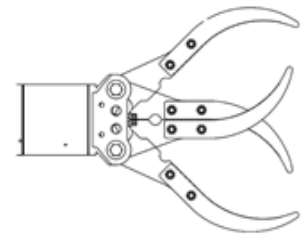
Schilling Robotics Manipulator Gripper Options



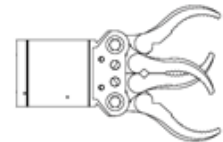
6" Parallel



4" Parallel



7.8" Four Finger Intermeshing

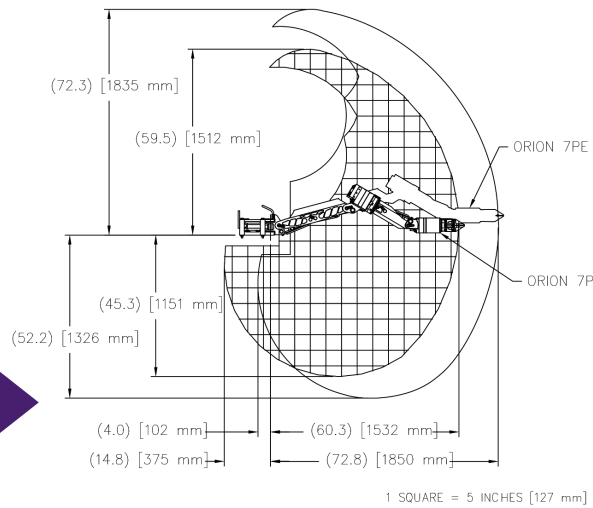


7.8" Four Finger Intermeshing



7.5" Three Finger Intermeshing

Range of Motion, Elevation View



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