



Schilling Robotics

Athena™ Tooling Interchange System

The subsea industry relies on Schilling Robotics' equipment every day to execute subsea operations. Athena™ is TechnipFMC's latest evolution in subsea interchangeable tooling and controls. The Athena™ tooling interchange system is based on the field-proven TechnipFMC Atlas™ manipulator, providing consistent and reliable results during subsea operations. It can be installed as an upgrade to an existing Atlas™ manipulator or retrofitted to

existing vehicles, suited to work with today's highest-performing vehicles under the most demanding conditions.

The tool exchange wrist transfers power, communications, and control fluids to attached tools, and is designed to reduce binding forces during subsea tasks. With no need to return to deck to reconfigure tooling, operations are continuous - maximizing operational efficiency and productivity.

The tooling interface allows for zero-leak subsea tool exchange, ensures tools are appropriately

positioned, and prevents them from being dropped. The tools are integrated onto the ROV porch tool holder, the adjacent manipulator, or the non-ROV skid - outperforming current solutions and allowing operators to work more efficiently subsea.

Semi-automated tool exchanges are achieved with an integrated machine vision camera (MVC) and uniquely identified fiducial markers that enable the intelligent controls to track position and provide real-time guidance to the user.

Features and Requirements:

- ▶ Standard depth rating of 5,000 msw
- ▶ Standard tooling interface for hydraulics, optical communications, and inductive power
- ▶ 3,000-5,000 psi aux oil circuit
- ▶ 3,000-5,000 psi aux water glycol circuit
- ▶ High degree of field serviceability
- ▶ Plug-and-play topside configuration
- ▶ Semi-automated exchange controls
- ▶ Specially designed tool holders with locking mechanisms
- ▶ "No drop" tool locking mechanism

Topside Controls

The topside equipment is integrated into the control van via ethernet connection, miniPC, and a decoder connected to HUD. Athena™ can be controlled through the topside controller or game controller, allowing the user to operate the system, wrist camera, and tooling. The optimized performance of Athena™ simplifies repetitive tasks, removing complexity and risk.

The topside controller features a pendant arm to control the position of the system and a touchscreen to control the system hydraulic isolation valve, camera lights, tool functions, and wrist latches. The touchscreen can also be used as the primary GUI.

The game controller has tactile buttons to control system functions. Assisted and semi-automated controls, in addition to the force compliance of the wrist, help operators perform tasks quickly and more consistently across all operation skill levels.



Specifications

Reach*:	2.1 m
Type:	Position-Controlled
Functions:	7*
Materials:	Anodized Aluminum, Titanium, Stainless Steel
System Specifications	
Standard Depth:	5,000 msw
Weight in Air:	125 kg
Weight in Fresh Water:	82 kg
Max. Lift - Full Extension, nominal:	125 kg
Min. Lift - Full Extension, nominal:	113 kg
Standard Gripper Opening*:	152 mm
Grip Force, Nominal*:	5516 N
Wrist Torque, Max:	400 Nm
Wrist Rotate, Continuous:	6-35 rpm
Through-arm tool hydraulics	

Main Hydraulic Requirements

Fluid:	Royal Purple, Tellus, Panolin Atlantis
Viscosity:	10-200 cSt
Available Flow:	9.5 - 19 lpm
Max. Pressure:	3,100 psi
Max. Fluid Temperature:	54°C
Fluid Cleanliness:	ISO 4406 16/13/10
Aux Hydraulic Requirements	
Fluid, Aux 1:	Water Glycol
Fluid, Aux 2:	Oil
*with 6" parallel-acting jaws equipped	

Tool Holders

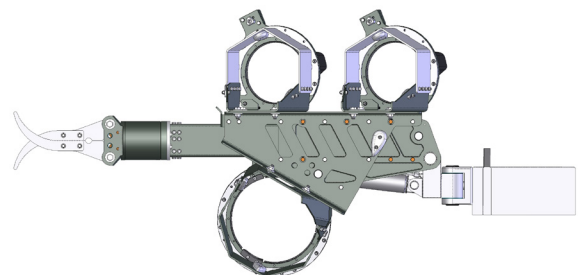
Standard and large tool holders have been built to mount onto Atlas™ or Rigmaster manipulators. These conveniently store various tools needed for subsea tasks so they can be exchanged subsea.

Each tool holder has three guides, ensuring the tooling exchange wrist is appropriately positioned to latch and lock onto the tool.

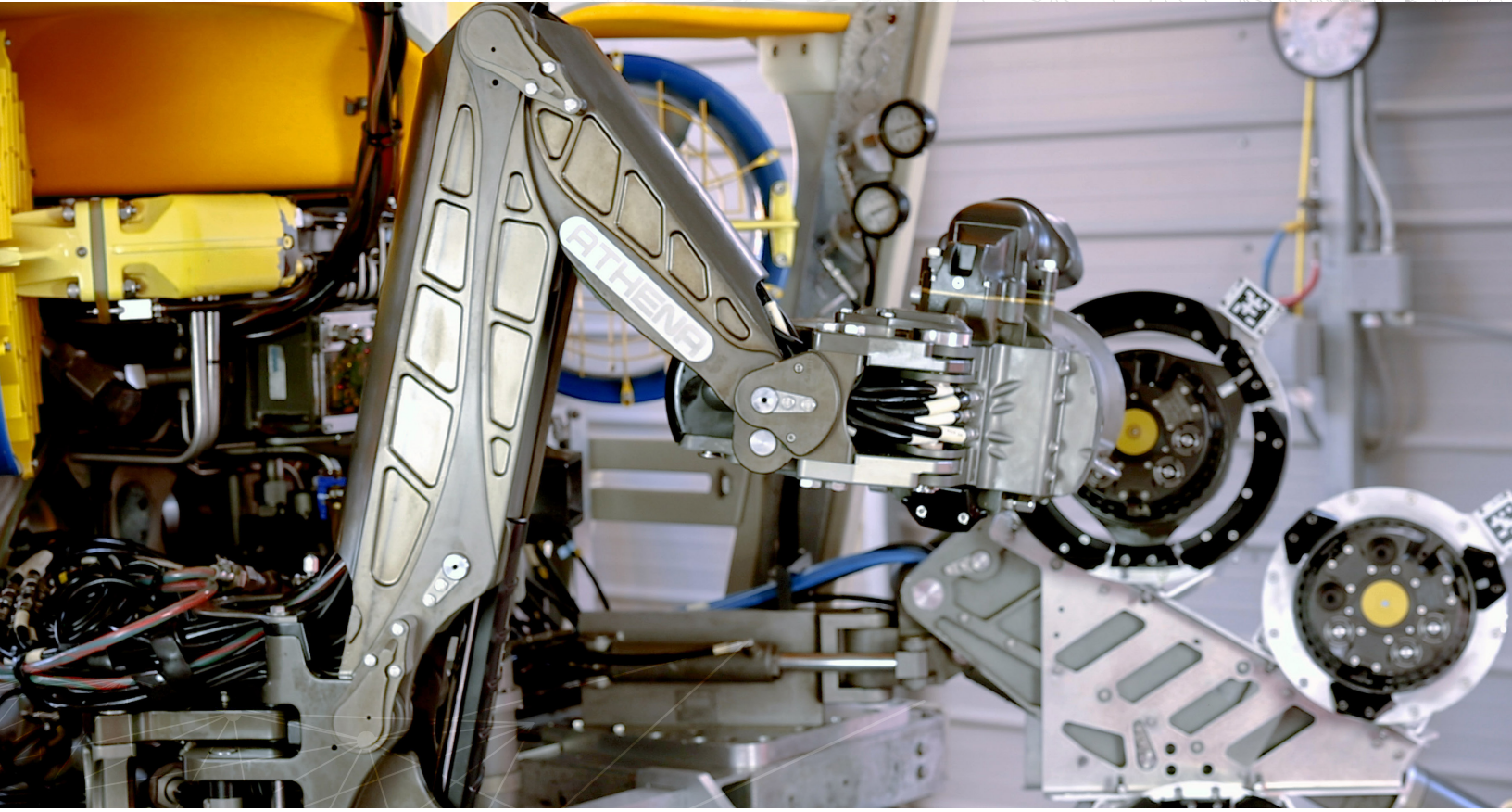
Optional Tools and Accessories

The following options and accessories are available for the Athena™ system:

- Mounting plate with kit
- Parallel jaw
- 3 finger jaw
- 4 finger jaw
- Class 3-4 torque tool
- Class 1-2 torque tool
- Hot stab, seal test, 15K
- High pressure water jet
- Dual port hot stab
- 2" Softline cutter
- Universal tooling adaptor puck
- Tool holders
- Atlas™ upgrade kit



Tooling



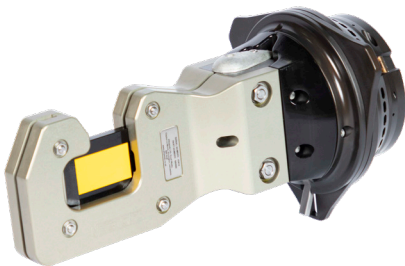
C 3-4 Torque Tool



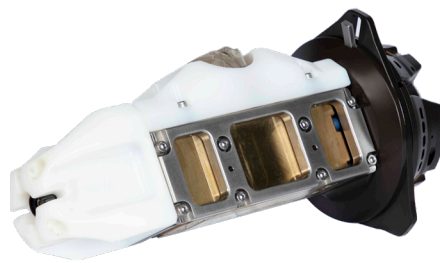
3 Finger Jaws



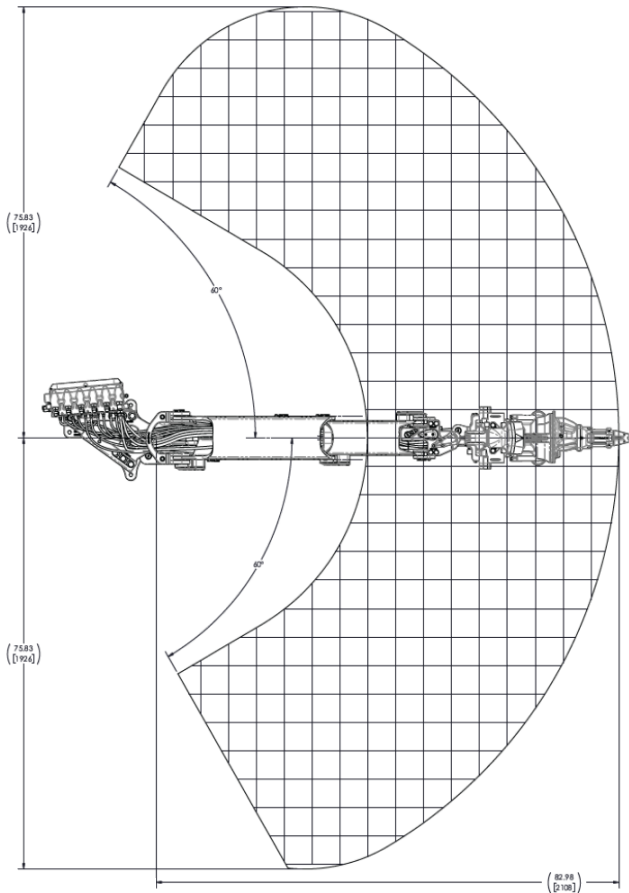
Dual Port Hot Stab



2" Softline Cutter



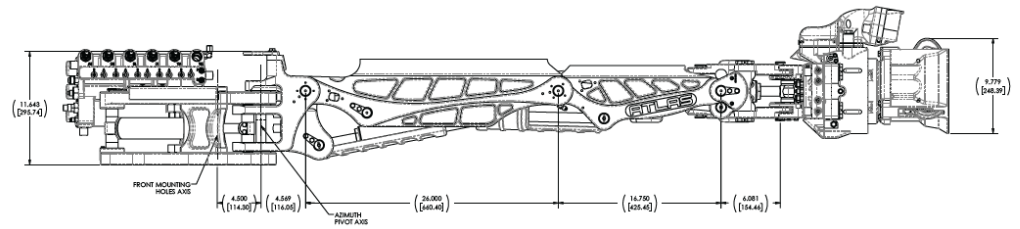
Hi PSI Water Jet



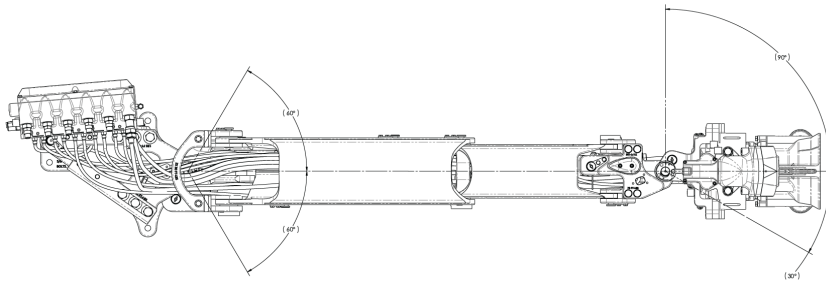
Range of Motion – Equipped with PA Rate Jaw



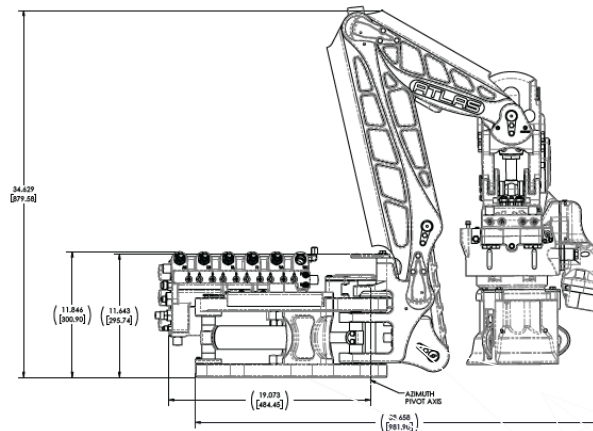
Joint and Wrist Range of Motion Side View



Joint and Wrist Range of Motion Top View



Dimensions with System Stowed



Corporate Headquarters
TechnipFMC
11740 Katy Freeway
Houston, Texas 77079 (USA)
P: +1 281 591 4000

TechnipFMC – Schilling Robotics
201 Cousteau Place
Davis, California 95618 (USA)
P: +1 530 753 6718