

WORK CLASS ROVS



WORK CLASS ROV SYSTEMS

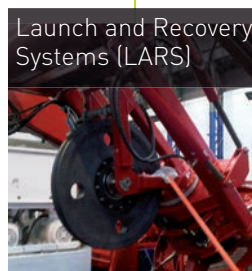
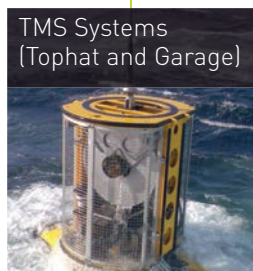
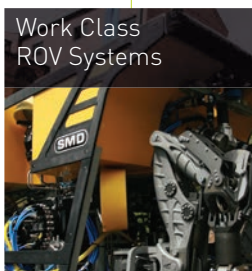
Building on a strong and unique legacy of over 40 years in subsea engineering, SMD entered the work class Remotely Operated Vehicle (ROV) market in 2004 following the acquisition of Hydrovision. Since then SMD have designed and manufactured over 125 ROV systems for the oil and gas, oceanographic, defence, salvage, telecoms, special projects and renewable markets.



SMD offer a complete turnkey ROV system solution including the design and manufacture of Launch and Recovery Systems (LARS), winches, Tether Management Systems (TMS) and control cabins. Training and world-wide aftermarket (including offshore) support can also be provided. All SMD vehicles use multi-platform components from SMD's Curvetech™ product range. The components are cross system compatible and offer easy expandability for quick configuration for different applications.

CONFIGURABLE,
CAPABLE AND CLASS
LEADING ROV
SYSTEMS

SMD ROV BUSINESS STREAM



COMPLETE TURNKEY ROV SOLUTION



1 SMD TMS

- Tophat or garage models available
- Thrusters option
- 250m to 1600m tether capacity
- Latest multi-platform Curevtech™ components

2 SMD LARS

- A-Frame, gantry or cursor model LARS available
- 5Te - 15Te Safe Working Load (SWL) variants
- Up to sea state 6
- Custom ROV LARS available

3 SMD ROVS

- Atom, Quasar, Quantum - compact to heavy duty work class
- 60hp to 250hp
- DVECS II SCADA Control
- Advanced Dynamic Positioning (DP)
- Latest multi-platform Curvetech™ components

4 SMD WINCHES

- 5Te - 15Te SWL variants
- Lift or storage winches
- 500m - 6500m umbilical capacity models
- Variable fleeting angles
- Direct drum braking
- Active Heave Compensator (AHC) options

CONTROL SYSTEMS LAYOUT

General

- Spacious and ergonomic layout
- Components can be cabin or ship mounted
- Layout seats 5 people

1 Vehicle Control Module

- Main system SCADA/PLC control components
- Control redundancy with automatic switchover

2 Control Desk Module

- Choice of operator panel design
- Twin touchscreens and hardwire controls
- Fighter or twin stick control options
- Cyberchair control option

3 Screen Module

- Choice of screen configuration
- 32" and 19" screen options
- HDTV compatible

4 Customer Interface Module

- Extensive free rack space
- Easy access to ROV communication channels
- Further expansion via survey kit options

5 HVTU/PDU Module

- Choice of input voltage
- Voltage, current and phase monitoring
- Easy access for maintenance



ULTRA COMPACT WORK CLASS ROV

SMD's Atom is an ultra compact work class ROV comparable in size to an electric ROV system. The vehicle is suitable for drill support, survey and light construction duties and can be mobilised on vessels and rigs with limited deck space. Designed with ease of operation and maintenance in mind, the Atom boasts the latest DVECSII distributed control, graphical displays and pilot aids coupled with proven powerful Curvetech™ components. The Atom can be supplied as a complete package with SMD's ultra compact TMS and LARS.

FEATURES

- Ultra compact work class ROV
- Easy to operate and maintain with small on-deck footprint
- Configurable for survey, drill support and renewables tasks
- The high performance alternative to an electric ROV



GENERAL

Depth rating	up to 4000msw
Dimensions	
Length	2520mm (99.2in)
Width	1500mm (59in)
Height	1500mm (59in)
Weight in air (base system)	2000kg (4409 lbs)
Payload (base system)	150kg (331 lbs)
Through frame lift	1500kg (3307 lbs)

PERFORMANCE

	Optional (low power)	Standard
Bollard pull		
Forward/aft	400kgf (882 lbs)	550kgf (1213 lbs)
Vertical (up)	330kgf (728 lbs)	330kgf (728 lbs)
Surface performance		
Forward	2.9kn	3.5kn
Lateral	2.3kn	2.8kn
Vertical	2.0kn	2.0kn

INSTRUMENTS/TOOLING

Hydraulic channels	
Standard	10ch iHCU (15LPM), 1ch (high flow)
Optional	Torque tool controller 2ch iHCU (95LPM)
Video capability	
Standard	6 x channels composite
Optional	2 x HDTV channels
Gyro	
Standard	Gyro compass
Optional	NS FOG
Lighting	2 x HID + 6 x halogen or LED
Manipulator	1 x 7F pos feedback (T4 compatible)
Grabber	1 x 5F rate, heavy duty

CONTROL CABIN

Control cabin	16 or 20ft, A60 ISO (optional zone II 3G)
Control system	SMD DVECSII ROV control hardware Dual touch screens TFT video wall
Incoming power supplies	380V-480Vac or 690Vac

UPGRADE OPTIONS

Survey kit 1	2 x cameras 4 x RS232 channels Ethernet (10/100T)
Survey kit 2	Interface for 2 x Seabat 7125 units or high band width instruments
Survey kit 3	Interface for 2 x Seabat 7125/8125 units or high band width instruments

TYPICAL ATOM SYSTEM

- 6te A-Frame
- 6te 3500m winch c/w 75kW HPU
- Ultra Compact TMS
- Options available to suit customer requirements



DRILL SUPPORT/GENERAL WORK CLASS ROV

Quasar is the medium size vehicle in SMD's Q-Series work class ROV range. Utilising the latest multi-platform Curvetech™ components, the vehicle offers class-leading in-current performance, tooling and instrument space and access for maintenance. Quasar is an excellent all round performer capable of survey, construction and drill support operations.

FEATURES

- Medium sized high power work class ROV
- Excellent performance and highly versatile
- Configurable for survey, drill support and construction tasks
- The essential all-rounder and backbone of your ROV fleet



GENERAL

Depth rating	up to 4000msw
Dimensions	
Length	3200mm (126in)
Width	1800mm (70.9in)
Height	1800mm (70.9in)
Weight in air (base system)	3500kg (7716 lbs)
Payload (base system)	250kg (551 lbs)
Through frame lift	3000kg (6614 lbs)

PERFORMANCE

Bollard pull	
Forward/aft	750kgf (1764 lbs)
Vertical (up)	550kgf (1213 lbs)
Surface performance	
Forward	3.5kn
Lateral	2.8kn
Vertical	2.2kn

INSTRUMENTS/TOOLING

Hydraulic channels	
Standard	12ch iHCU (15LPM), 1ch (high flow)
Optional	Torque tool controller 2ch iHCU (95LPM) 12ch iHCU (15LPM)
Video capability	
Standard	6 x channels composite
Optional	2 x composite + 2 x HDTV channels
Gyro	
Standard	Gyro compass
Optional	NS FOG
Lighting	2 x HID + 6 or 12 x halogen or LED
Manipulator	1 x 7F pos feedback (T4 compatible)
Grabber	1 x 5F rate, heavy duty

CONTROL CABIN

Control cabin	20ft, A60 ISO (optional zone II 3G)
Control system	SMD DVECSII ROV control hardware Dual touch screens TFT video wall
Incoming power supplies	380V-480Vac or 690Vac

UPGRADE OPTIONS

Survey kit 1	2 x cameras 4 x RS232 channels Ethernet (10/100T)
Survey kit 2	Interface for 2 x Seabat 7125 units or high band width instruments
Survey kit 3	Interface for 2 x Seabat 7125/8125 units or high band width instruments



TYPICAL QUASAR SYSTEM;

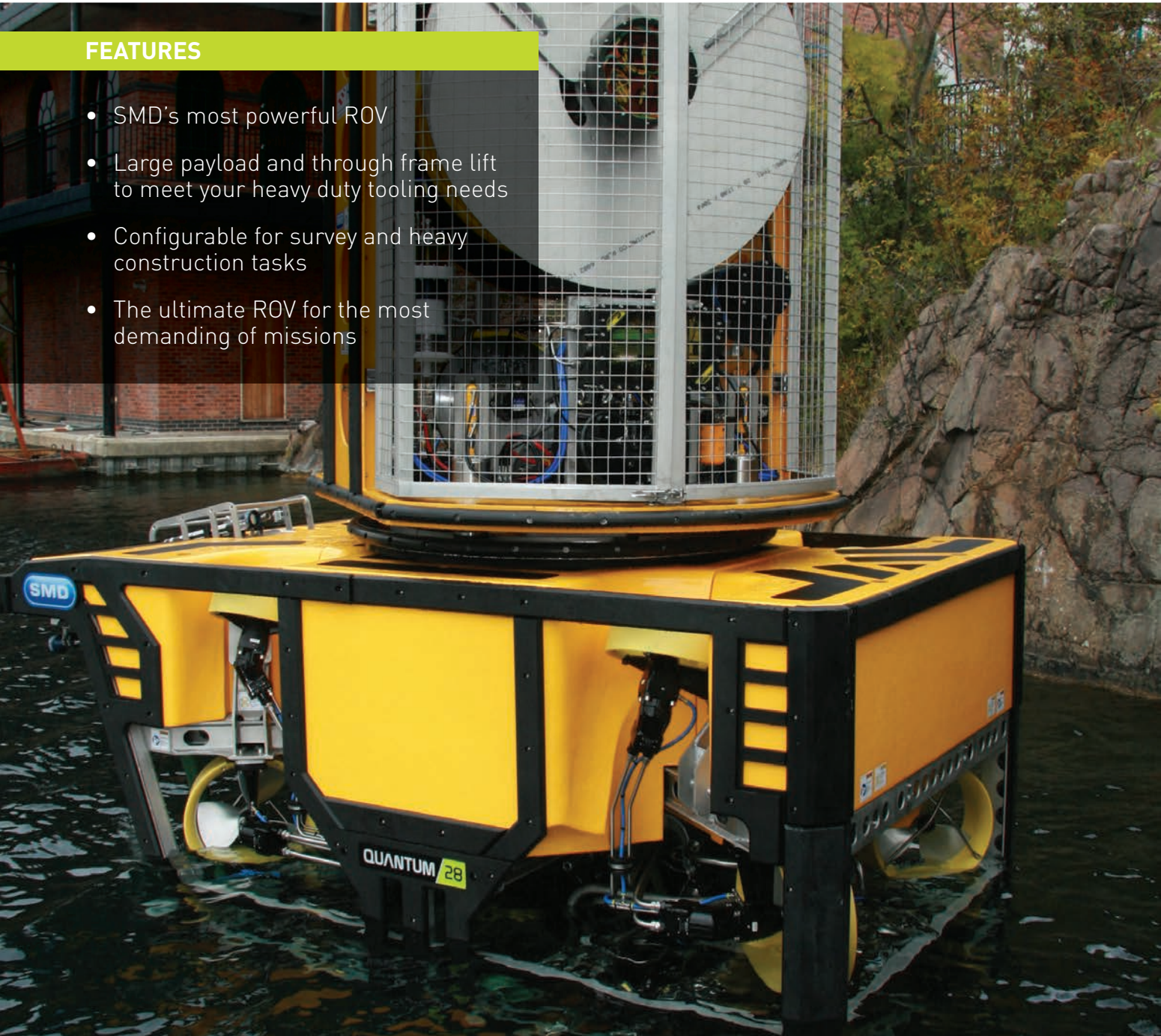
- 8te A-Frame
- 8te 3500m winch integrated 75kW HPU
- Compact TMS
- Options available to suit customer requirements

HEAVY DUTY CONSTRUCTION CLASS ROV

Quantum is SMD's largest work class ROV suitable for heavy construction duties. Utilising the latest multi-platform Curvtech™ components, the vehicle offers class-leading in-current performance and extensive free tool and instrument space. Designed to cope with power intensive deepwater tasks, the Quantum is the ultimate subsea construction and survey tool.

FEATURES

- SMD's most powerful ROV
- Large payload and through frame lift to meet your heavy duty tooling needs
- Configurable for survey and heavy construction tasks
- The ultimate ROV for the most demanding of missions



GENERAL

Depth rating	up to 4000msw
Dimensions	
Length	3680mm (145in)
Width	2000mm (78.7in)
Height	2000mm (78.7in)
Weight in air (base system)	5000kg (11023 lbs)
Payload (base system)	350kg (772 lbs)
Through frame lift	4000kg (8819 lbs)

PERFORMANCE

Bollard pull	
Forward/aft	1100kgf (2425 lbs)
Vertical (up)	900kgf (1984 lbs)
Surface performance	
Forward	3.5kn
Lateral	2.8kn
Vertical	2.2kn

INSTRUMENTS/TOOLING

Hydraulic channels	
Standard	2 x 12ch iHCU (15LPM), 4ch iHCU (HFlow)
Optional	Torque tool controller
Video capability	
Standard	8 x channels composite
Optional	2 x HDTV channels
Gyro	
Standard	Gyro compass
Optional	NS FOG
Lighting	12 x halogen or LED + 2 x HID
Manipulator	1 x 7F pos feedback (T4 compatible)
Grabber	1 x 5F rate, heavy duty

CONTROL CABIN

Control cabin	20ft, A60 ISO (optional zone II 3G)
Control system	SMD DVECSII ROV control hardware Dual touch screens TFT video wall
Incoming power supplies	380V-480Vac or 690Vac

UPGRADE OPTIONS

Survey kit 1	2 x cameras 4 x RS232 channels Ethernet (10/100T)
Survey kit 2	Interface for 2 x Seabat 7125 units or high band width instruments
Survey kit 3	Interface for 2 x Seabat 7125/8125 units or high band width instruments



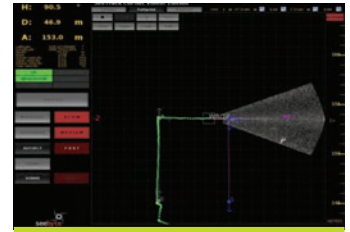
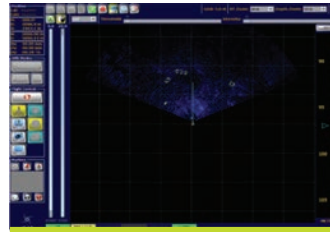
TYPICAL QUANTUM SYSTEM;

- 12Te Telescopic A-Frame
- 12Te 3500m winch
- 150kW HPU
- Extended TMS
- Options available to suit customer requirements

CONTROL SYSTEM

ROV DYNAMIC POSITIONING (DP)

SMD offers a range of advanced vehicle control options for each ROV system. Example flight modes include Bottom Lock DP and Mid-Water DP which allow hover, cruise, step, rotate round and flight by designated way points. The ROV pilot can utilise data from multi-beam sonars to control the ROV relative to objects in the workspace, this enables accurate navigation and control during inspection and construction tasks.



TOPSIDE CONTROL

SMD's latest range of control cabins have been functionally and ergonomically designed to maximise productivity. Operator fatigue and discomfort is also reduced with an advanced easy to use touchscreen based Human machine Interface (HMI). SMD control cabins are highly configurable to meet specific requirements; from the type and layout of monitors right down to the style of joystick and even a choice of mood lighting. Alternatively the SMD control system can be built in to a dedicated control space on a new or existing vessel.



FEATURES

- Modular configuration
- Ultra stable PLC hardware
- Intuitive SCADA front end
- Real time diagnostics
- Touch screen control pads
- Proven architecture



UPGRADABILITY – SURVEY KITS

SMD can provide advanced functionality with the use of additional survey kit options. These kits can be installed and removed as required and are available on all SMD ROVs to provide extra serial data channels, composite video channels and ethernet to support high data bandwidth applications such as multi-channel HDTV and SeaBat 7125/8125 sonar systems.

TETHER FRIENDLY SYSTEMS

Four standard sizes of tophat Tether Management Systems (TMS) are available from SMD to suit a wide variety of applications. Standard units utilise a unique fleeting drum arrangement which offers a simple tether path for extended tether life. A variety of tether sizes can be accommodated with options. The Ultra Long Excursion (ULX) TMS can also accommodate vectored thrusters for subsea positioning.

ULTRA COMPACT TMS

	Metric	Imperial
Suitable for use with ATOM		
Depth rating	3000, 4000msw	9842ft, 13123ft
Dimensions (Dia x H)	1500 x 1800mm	59.05 x 70.86in
Weight in air (base system)	1500kg	3307lb
Main lift capacity	6000kg	13228lb
Latch capacity	4000kg	8818lb
Tether capacity	300m (24.5mm tether)	984.25ft
Tether speed	0.5m/sec	1.64ft/sec

COMPACT TMS

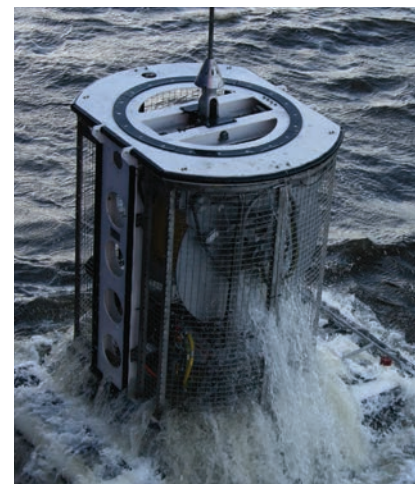
	Metric	Imperial
Suitable for use with ATOM, QUASAR, QUANTUM		
Depth rating	3000, 4000msw	9842ft, 13123ft
Dimensions (Dia x H)	1775 x 2265mm	69.9 x 90.4in
Weight in air (base system)	2100kg	4630lb
Main lift capacity	12000kg	26456lb
Latch capacity	12000kg	26456lb
Tether capacity	400m (27mm tether)	1312ft
Tether speed	1m/sec (variable)	3.28ft/sec (variable)

EXTENDED TMS

	Metric	Imperial
Suitable for use with QUASAR, QUANTUM		
Depth rating	3000, 4000msw	9842ft, 13123ft
Dimensions (Dia x H)	2175 x 2475mm	85.7 x 97.5in
Weight in air (base system)	2750kg	6063lb
Main lift capacity	12000kg	26456lb
Latch capacity	12000kg	26456lb
Tether capacity	915m (27mm tether)	3001ft
Tether speed	1m/sec (variable)	3.28ft/sec (variable)

ULX TMS

	Metric	Imperial
Suitable for use with QUASAR, QUANTUM		
Depth rating	3000, 4000msw	9842ft, 13123ft
Dimensions (Dia x H)	2435 x 2320mm	95.9 x 91.4in
Weight in air (base system)	4500kg	9921lb
Main lift capacity	12000kg	26456lb
Latch capacity	12000kg	26456lb
Tether capacity	1600m (27mm tether)	5249ft
Tether speed	1m/sec (variable)	3.28ft/sec (variable)



GARAGE TMS

ROV PROTECTION & OPERATIONAL VERSATILITY

Three sizes of Garage Tether Management System (TMS) are available from SMD suitable for accommodating a wide variety of work class ROVs. All offer height adjustment and space for installation of tooling. Many parts are interchangeable with SMD's ROV and tophat TMS range. The SMD Garage TMS can also be offered with thrusters for subsea positioning.

COMPACT GARAGE

	Metric	Imperial
Suitable for use with ATOM, QUASAR		
Depth Rating	3000, 4000msw	9842ft, 13123ft
Overall Dimensions (L x W x H)	3650 x 2340 x 4355mm	143.7 x 92.2 x 171.5in
Garage Dimensions (L x W x H)	3175 x 1830 x 2410mm	125 x 72.1 x 94.9in
Weight in air (base system)	3600kg	7937lb
Main lift capacity	8000kg	17637lb
ROV wt capacity	4000kg	8819lb
Tether capacity	400m (27mm tether)	1312ft
Tether speed	1m/sec	3.28ft/sec

EXTENDED GARAGE

	Metric	Imperial
Suitable for use with QUASAR		
Depth Rating	3000, 4000msw	9842ft, 13123ft
Overall Dimensions (L x W x H)	3650 x 2490 x 4945mm	143.7 x 98.1 x 194.7in
Garage Dimensions (L x W x H)	3175 x 1980 x 2700mm	125 x 78 x 106.3in
Weight in air (base system)	5000kg	11024lb
Main lift capacity	12000kg	26455lb
ROV wt capacity	7000kg	15432lb
Tether capacity	915m (27mm tether)	3001ft
Tether speed	1m/sec	3.28ft/sec

HEAVY DUTY GARAGE

	Metric	Imperial
Suitable for use with QUANTUM		
Depth Rating	3000, 4000msw	9842ft, 13123ft
Overall Dimensions (L x W x H)	4825 x 3015 x 4945mm	190 x 118.7 x 194.7in
Garage Dimensions (L x W x H)	4000 x 2020 x 3000mm	157.5 x 79.6 x 118.1in
Weight in air (base system)	6000kg	13228lb
Main lift capacity	15000kg	33069lb
ROV wt capacity	8000kg	17637lb
Tether capacity	915m (27mm tether)	3001ft
Tether speed	1m/sec	3.28ft/sec



WORK IN ALL CONDITIONS

SMD have been designing and manufacturing Launch and Recovery Systems (LARS) for over 20 years. ROV systems can be offered from 5Te – 15Te safe working load in a variety of configurations to suit various applications. A-Frame launch systems are generally offered but gantry and heavy weather cursor launch systems are also available.

6TE A-FRAME (FIXED – FREE SWIM)

	Metric	Imperial
Suitable for use with ATOM, QUASAR (no TMS)		
SWL	6Te	13,227lb
Weight	10.1Te	22,266lb
Operational Dimensions* (L x W x H)	5500 x 3020 x 6875mm	216.6 x 118.9 x 270.7in
Outreach	3320mm	130.8in
Width between legs	2300mm	90.6in
Snubber		Latch and rotate

6TE A-FRAME (FIXED)

	Metric	Imperial
Suitable for use with ATOM, TMS		
SWL	6Te	13,227lb
Weight	12.5Te	27,557lb
Operational Dimensions* (L x W x H)	6060 x 2500 x 8305mm	238.6 x 98.5 x 327in
Outreach	3490mm	137.4in
Width between legs	2028mm	79.8in
Snubber		Latch and rotate

8TE A-FRAME (FIXED)

	Metric	Imperial
Suitable for use with QUASAR, TMS		
SWL	8Te	17,637lb
Weight	15.5Te	34,172lb
Operational Dimensions* (L x W x H)	6000 x 3400 x 9390mm	236.3 x 133.9 x 370.7in
Outreach	4355mm	171.5in
Width between legs	2860mm	112.6in
Snubber		Latch and rotate

12TE A-FRAME (TELESCOPIC)

	Metric	Imperial
Suitable for use with QUANTUM, QUASAR, TMS		
SWL	12Te	26,456lb
Weight	25Te	55,116lb
Operational Dimensions* (L x W x H)	7000 x 3630 x 10100mm	275.6 x 143 x 397.7in
Outreach	5410mm	213in
Width between legs	2900mm	114.1in
Snubber		Latch and rotate
Short Base Option		
Operational Dimensions* (L x W x H)	6000 x 3630 x 10100mm	236.2 x 143 x 397.7in

* Excluding deck mounts



WINCH SYSTEMS

WORK IN ALL CONDITIONS

SMD winch systems are designed to compliment SMD LARS. Various sizes and styles are available with umbilical capacities ranging from 500m to 6500m. Models are available capable of handling Steel Wired Armour (SWA) or aramid (soft) umbilicals.

6TE SWA WINCH

	Metric	Imperial
Suitable for use with ATOM		
SWL	6Te	13227lb
Capacity	3500m (27.2mm umbilical)	11483ft
Weight (exc. Umbilical)	10.25Te	22597lb
Operational Dimensions* (L x W x H)	3400 x 2900 x 2680mm	133.9 x 114.2 x 105.6in
Main Drive		Bosch Rexroth
Brake		Full load, direct band
Built in HPU		Yes (75kW)

8TE SWA WINCH

	Metric	Imperial
Suitable for use with QUASAR		
SWL	8Te	17637lb
Capacity	3500m (31.5mm umbilical)	11483ft
Weight (exc. Umbilical)	13.4Te	29542lb
Operational Dimensions* (L x W x H)	3400 x 2900 x 3190mm	133.9 x 114.2 x 125.6in
Main Drive		Bosch Rexroth
Brake		Full load, direct band
Built in HPU		Yes (75kW)

12TE SWA WINCH

	Metric	Imperial
Suitable for use with QUASAR, QUANTUM		
SWL	12Te	26455lb
Capacity	4500m (35mm umbilical)	14763ft
Weight (exc. Umbilical)	14.8Te	32629lb
Operational Dimensions* (L x W x H)	3400 x 2900 x 3360mm	133.9 x 114.2 x 132.4in
Main Drive		Bosch Rexroth
Brake		Full load, direct band
Built in HPU		No (separate 110/150kW)

15TE SWA WINCH

	Metric	Imperial
Suitable for use with QUASAR, QUANTUM		
SWL	15Te	14763lb
Capacity	4500m (43mm umbilical)	11483ft
Weight (exc. Umbilical)	19.6Te	43211lb
Operational Dimensions* (L x W x H)	6060 x 2440 x 3660mm	238.6 x 96.1 x 144.1in
Main Drive		Bosch Rexroth
Brake		Full load, direct band
Built in HPU		No (separate 150/220kW)

* Excluding deck mounts



BESPOKE SUBSEA SOLUTIONS AND SPECIALIST HANDLING EQUIPMENT

Drawing on many years of experience and expertise SMD can supply bespoke products ranging from a specific tool skid to a fully integrated ROV system to meet unique functional, operational or environmental requirements.

This capability also extends to developing new equipment which is complementary to an existing fleet of vehicles to enhance performance and competitive advantage whilst maintaining an established corporate identity or unique selling point. Past projects include customer specific ROV systems for trenching applications, oceanographic exploration, hazardous fluid salvage, and military range maintenance.



RESEARCH AND DEVELOPMENT PROJECTS

Advanced Vehicle Controls (AVC)

With the utilisation of various sensor equipment on a workclass ROV, there is the opportunity and potential to combine the acquired data to enable autonomous and/or semi-autonomous functionalities on the vehicle. SMD, in collaboration with SeeByte, have developed an AVC Suite which is integrated with SMD's DVECS platform. On top of the current DVECS functions such as mid water and pipe tracking, the AVC (with the relevant sensor equipment) enables the operator/pilot to perform tasks such as object recognition, target tracking/locking, cruise control and automatic waypoint navigation, all with a single click of a button on an intuitive controls interface.



A WROV for Challenging Environments

By being the only ROV supplier who manufactures complete systems, SMD are aware of the challenging environments which our systems are subjected to. We employ specific engineering tools to analyse and simulate the work class ROV under specific conditions in order to obtain performance and efficiency figures. This enables the design process to meet the clients' requirements.

SMD Simulator

In addition to the evolution of the DVECS platform, SMD is also advancing our simulator technology with the latest physics engine capabilities. This enables SMD to create new scenarios for mission planning and training for clients, thus optimising the customer interaction.



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