

## Sub Sea Abrasive Water Jet Cutting With ECTs

NCA's ROV-carried External Cutting Tools (ECT) are based on NCA's powerful Abrasive Water Jet Cutting (AWJC). The AWJC method uses a high energy jet of water-borne abrasive particles which will cut even the hardest steel alloys quickly and safely.

The ECTs are carried and mechanically operated by a work ROV and require only the high pressure slurry hose from surface. The slurry hose and nozzle can be docked to the ECT by the ROV, providing maximum flexibility and operational efficiency.

The ECTs come in several different sizes covering 16" to 72" OD pipe. Each tool is neutral buoyant in water and consists of a hydraulic clamp, a C-ring that rotates the nozzle around the pipe, and an optional nozzle with axial functionality. All tool functions are controlled via the ROV, while the high pressure pump and abrasive mixer units are operated on deck.

The ECTs are deployed separately from the ROV in tool baskets or with a unique docking system that enables the ROV to mechanically and hydraulically connect to the ECT, sub sea.

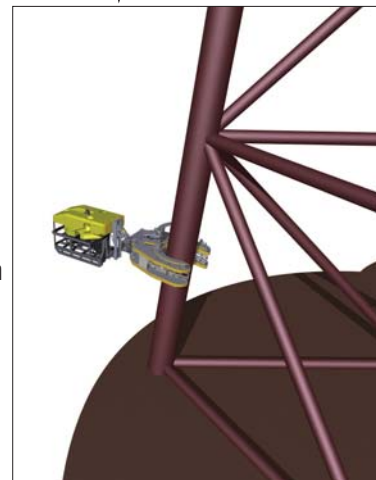
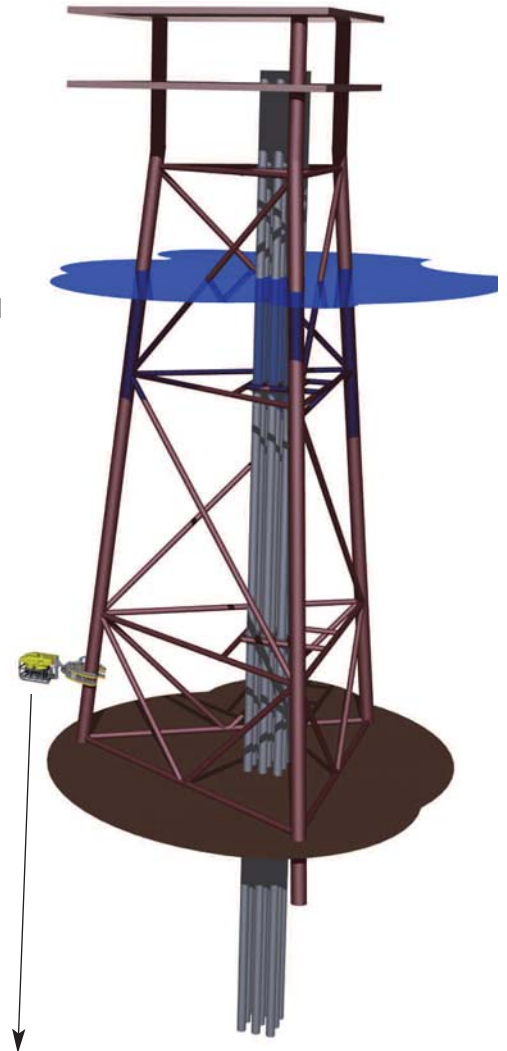
NCA also has a range of diver installed sub sea AWJC tools.

### Applications

- Sub sea diverless cutting of jacket legs, pipelines and bracings
- Sub sea "castellated" (shaped) or window cutting in tubular

### Features and Benefits

- Diverless cutting
- Extreme cutting power – can cut more than 10" wall thickness and several layers
- Superior cutting speed – up to 20"/min
- Operational friendly handling – reduced time between cuts
- Cutting method is independent of internal stresses in material being cut
- Verification of cut by use of camera or hydrophones is available
- Can do multiple cuts in one deployment
- All tool functions controlled from the ROV
- Multidimensional clamp – no top-side changes required to change sizes in machine's range
- All tools can also be installed by divers
- Castellated or window cutting



## Specifications

Cutting medium	Water (salt or fresh water) and environmentally friendly abrasives
Pressure	500-2,000 bar / 7,000-30,000 psi
Water flow rate	30-120 lpm / 8-32 gpm
Utility requirements from vessel/platform (typ.)	Sea water (120 lpm / 32 gpm @ 2 bar / 30 psi) Fresh water for cleaning Crane (15T capacity) and rigging assistance for handling of equipment Electric power (110 V and 220 V) Work air
Deck space requirement	Approximately 80 sqm / 800 sqf

## Available Versions

Tool	Dimension	Dimensions (LBH)	Eqt. weight excl. basket (in air/subsea)
ECT 1624	16-24" pipe	1.4 x 1.3 x 1.4 m 55 x 51 55 in	450 / 30 kg 992 / 55 lbs
ECT 2436	24-32" pipe	1.7 x 1.5 x 1.4 m 67 x 59 x 55 in	650 / 30 kg 1,433 / 110 lbs
ECT 3660	36-60" pipe	3.3 x 2.8 x 1.2 m 130 x 110 x 47 in	2300 / 30 kg 5,070 / 66 lbs
ECT 6072	60-72" pipe	3.3 x 2.9 x 1.2 m 129 x 112 x 47 in	1500 / 30 kg 3,307 / 56 lbs

Other versions are available on request

## Typical Equipment List

Tool	Quant.	Eqt. weight	Dimensions (LBH)
High pressure water pumps	1*	6,800 kg 15,000 lbs	4.3 x 2.0 x 2.5m 171 x 77 x 99 in
Abrasive Mixer Units (AMU) (item is split during transport)	1*	13,000 kg 28,660 lbs	1.9 x 1.9 x 5.1 m 76 x 76 x 200 in
External Cutting Tool w/basket	1	see above	see above
Umbilical winch with high pressure hose	1	1,500 kg 3,307 lbs	1.8 x 1.9 x 2 m 71 x 75 x 79 in
Hydraulic Power Unit	1	1,500 kg 4,100 lbs	2.6 x 1.2 x 1.6 m 100 x 45 x 62 in
Control and / workshop container	1	4,500 kg 10,000 lbs	4.9 x 2.4 x 2.6 m 192 x 96 x 102 in
Transport basket	1	1,818 kg 4,000 lbs	21 x 0.8 x 0.5 m 85 x 31 x 21 in

\*Backup recommended



## Typical Equipment Layout



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