

## ELECTRO-HYDRAULIC COMBINATION TOOL

1. The tool is a designed hydraulically activated piston with two equal, opposite blade arms that are symmetrically opened by mechanical joints, thereby spreading, squeezing, pulling or cutting objects.
2. Electro-hydraulic devices do not need to be connected to an external hydraulic source, generation of the required hydraulic pressure takes place within the body of the device by either a quick exchange lithium/ion battery or an external power supply.
3. The electro-hydraulic tool is equipped with light-emitting diodes attached on the operating side to facilitate work under poor lighting conditions. For simplicity, the lights must be powered by the same Lithium-Ion battery that powers the electro-hydraulic tool and not a secondary battery
4. The cylinder of the tool shall be made of anti-corrosive light aluminium alloy for its lightweight, strength and long life. The body of the tool shall have a high impact, non-metallic housing. The housing shall have ventilation holes on both sides of the unit for cooling the motor. The protective housing shall protect the battery from being damaged protect the operator's hand from being pinched between object and the tool
5. The maximum spreading force shall be up to 337,230 lbf (1500 kN). NFPA HSF test point produced 9,667 lbf (43 kN), the LSF test point produced 7,419 lbf (33 kN).
6. The tool shall produce a spreading distance up to 14.5 in (368 mm) measured at the blade tips.
7. The tool shall produce a maximum pulling force of 13,714 lbf (61 kN). NFPA HPF test point produced 13,940 lbf (62 kN), the LPF test point produced 9,667 lbf (43 kN).
8. To maximize the capability of the combination tool the unit should utilize an optional chain and shackle package for pulling operations, use only HURST chain set KSV 11 along with the necessary pulling attachment.
9. The tool shall produce a pulling distance of 15 in (382 mm).
10. The tips are to be removable, multifunctional tips that can be used for spreading, peeling, squeezing and pulling without the need to be changed.
11. The removable tips shall have "Sharks Tooth" aggressive design for maximum performance and gripping capability
12. The maximum cutter opening shall be 12.2 in (309 mm).
13. The blades of the tool shall be of a straight serrated edge design for maximum cutting performance. The blades of the tool shall contain shackle holes for pulling applications. The blades of the tool should be attached to the piston rod via removable links, for ease of repair, efficient power transmission and smooth operation. The blades shall be made of heat treated, shock resistant, forged tool steel. The pivot points of the blades shall have rubber boot hand guard for safety purposes.
14. The control mechanism shall feature a star-grip control actuator for ease of operation by allowing 360 ° operations in any position. The tool must provide a non-interflow shear seal "dead man" actuator, whereby the unit stops functioning when thumb pressure is released. The star grip automatically returns to the central position, guaranteeing the full load-holding.
15. The tool shall have (2) two handles for ease of operation in any position. One shall be located toward the center of the tool to create an even balance. The second handle shall be located below the control mechanism and be an integral part of the protective housing and allow for easy operation of the Star Control with the thumb of the operator.
16. The tool will be equipped with a dual pilot check valve. This is to prevent accidental movement of the arms in the event of power loss.
17. The tool shall be protected by a pressure relief valve that prevents it from being over pressurized.
18. The tool dimensions without the battery shall not be any longer than 34.5 in. (876 mm), wider than 9.25 in (235 mm) or higher than 9.96 in (253 mm).
19. The maximum operating pressure to the tool will be 10,000 psi (70 MPa) (700 bar).
20. The tool must be compatible with three battery options; either a 5Amp/25.2 V or a 9Amp/25.2V battery capable of freshwater submersion up to 11ft. Tool must also be compatible with a 9Amp/25.2V battery capable of saltwater submersion up to 11ft .
21. The estimated current consumption at nominal voltage is 9A DC at idle mode and 43A DC at maximum load.
22. The tool shall have a noise pressure level of 69 dB(A) at maximum load.
23. The tool shall be able to tolerate an ambient temperature range of -4°F (-20°C) up to +131°F (+55°C).
24. The tool must be NFPA 1936; 2020 Edition certified and shall be labelled as such bearing the mark of the testing agency.

25. Cutting classification should be no less than A7 / B8 / C7 / D8 / E7/ F4 as defined in NFPA 1936;2020 and certified by a 3<sup>rd</sup> party testing agency.
26. The tool will not weigh more than 40.3 lbs (18.3 kg) excluding the power supply.
27. The tool shall be able to operate submerged in fresh water up to 11ft.
28. The tool shall have an IP rating of IP58 and utilize a battery with an IP rating of IP68.
29. Tool dashboard shall illuminate to notify the user of a higher than normal temperature in the main circuit board and shall discontinue the turbo feature while detected.
30. Tool dashboard shall illuminate an icon on the tools dashboard to indicate that the tool has a saltwater capable battery attached.
31. The tool dashboard shall display an indicator that illuminates when the turbo feature is active.
32. The tool dashboard shall display a pressure indicator that will continually change showing the level of pressure being produced by the tool throughout its operation.
33. The tool dashboard shall display an icon that shows the current battery state of charge for real-time awareness. The indicator lights shall consist of green, yellow, and red indication levels relative to the battery level
34. Open and Close icons shall illuminate on the tool dashboard when the trigger control valve is actuated in their respective direction.
35. The illumination of the power ring shall change from blue to red when the tool reaches a specified parameter and the tool detects a greater than 10-degree rotation along its linear axis. This shall alert end user.