

TORNADO F1™ Blade Control



Complete hydraulic and electric kits are available for installation on different types, brands, and sizes of machinery. Kits for popular models of machinery are readily available and more are continually being added. The installation kits typically contain all the hydraulic valves, valve brackets, hydraulic hoses, fittings, and electric cables necessary for automatic control of a specific machine.

An optional remote switch puts the auto/manual selection at the operator's lever for quick access.



An optional coil cord is available for an extendable flexible connection from the receiver to the machine.



Your Apache representative can assist you with specific valve and electric kit recommendations as well as mounting requirements.

Control Box CB26 Specifications:

Accuracy Settings	16 total, 0 to 1.50 inch (38 mm) 0.10 inch (2.5 mm) increments
On-Grade LED's	Green
High / Low LED's	Red
Operating Voltage	10 to 30 Volts DC, reverse polarity protected
Electrical Connection	Standard military type
Valve Compatibility	Proportional Time (On/Off), Proportional Current, Proportional Voltage
Maximum Current	5 Amps per coil
Remote Switch Option	Auto/Manual, Raise/Lower switches
Weight	5 lbs. (2.25 kg)
Dimensions	7.0 x 5.3 x 4.8 in. (178 x 134 x 120 mm)

BULLSEYE 5MC Specifications:

Beam Reception	360 degrees
Operating Range	Over 1500 ft. (460 m) radius, laser dependent
Laser RPM	Minimum - 105; Maximum - 1200
Vertical Reception	6.75" (170 mm)
Accuracy	Set at Control Box
Power	Power Cable - 10-30 VDC
LED Display	Mini display for set-up
Out of Beam Indication	High and Low
Dimensions	13.5 x 5.6 x 5.9 in. (343 x 142 x 150 mm)
Weight	4.75 lbs. (2.15 kg)
Mounting Pipe	1.66" to 2.00" O.D. round tube (42 mm to 50 mm) and 1 1/2" (38 mm) square tube

Please refer to the individual brochures for details on Models 5+ and 6.

STM1 Mast Specifications:

Height Retracted	75.5 in. (192 cm)
Extension Length	48.0 in. (122 cm)
Tape Increments	1/16 th in. and 1 mm
Weight	52 lbs. (23.6 kg)

*Specifications subject to change without notice

A telescoping mast can be used for mounting the receivers on bulldozers and other implements. The mast allows the receiver to be positioned above the machinery for unobstructed laser reception. The mast has a 4-foot (1.2 m) telescoping adjustment range with an English/Metric scale for positioning at known elevations. Built-in shock mounts on all four sides provide excellent damping of the laser receiver in rough operating conditions.



Made in USA

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**TORNADO F1™ Blade Control
Finish Grade Done Right**



FINISH GRADE DONE RIGHT

With the TORNADO F1 line of laser machine control products, the price of automatic blade control is now more affordable than ever.

Productivity

Automatic Blade Control keeps your machines moving and operating at maximum speed. Save time, save fuel, save material, save labor - on every grading job.

Accuracy

System accuracy, while maintaining high operating speeds, is crucial on your jobsite. Proportional receivers and proportional hydraulic valves assure maximum system accuracy and smooth, precise operation.

Control

Switch from automatic to manual control with the quick flick of one switch. Adjust system accuracy settings and hydraulic blade speed from the cab mounted control box. Dynamic blade balancing is set during installation for smooth raise and lower response.

Flexibility

A selection of BULLSEYE® receivers can be used for automatic machine control on grading equipment and easily moved to excavators or backhoes for digging depth indication for excavation.

Reliability

Proven Apache quality and durability are built in. Receivers are waterproof and designed to stand up to tough construction and outdoor environments. Durable polycarbonate and aluminum die cast housings provide a robust exterior and internal isolating shock mounts protect the electronics.

The TORNADO F1™ Blade Control is used on construction grading machinery to automatically control the blade in earthmoving and grading applications. It is also used on agricultural land leveling and farm drainage machinery.

A BULLSEYE laser receiver is mounted above the cutting edge of the blade. A control box and a hydraulic installation kit are tied into the machine's hydraulic system. Grade information from a rotating laser is processed and automatically directs the machine's hydraulics to maintain the elevation of the blade.

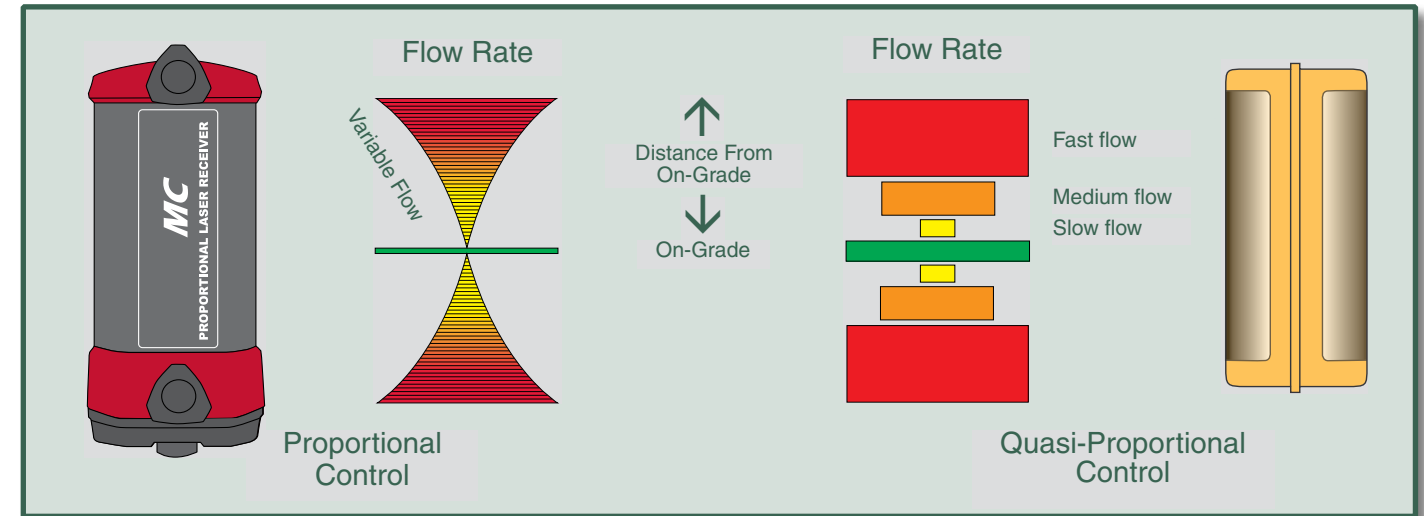


TORNADO F1 Blade Control can be used on most fine grading equipment including dozers, box blades, drag scrapers, and carry-all type scrapers as well as trenchers and drainage plows.



The Proportional Control Advantage

Proportional receivers direct the machine's hydraulics to correct the blade "in proportion to" the distance the blade is from on-grade.



Apache's patented proportional photocells provide precise beam positioning data. Combined with ultra fast receiver to valve signal processing, our 1200 RPM rotating laser and today's infinitely variable proportional hydraulics, the TORNADO F1 gives you the smoothest blade response and highest accuracy available.

Non-proportional receivers can only direct valve corrections at predefined speeds. Three levels of corrections - fine, medium, and coarse - are typical. This stepped flow control results in rougher operation and does not take full advantage of the proportional valve design.



The F1 cab mounted control box has 16 on-grade accuracy settings from 0 to 1.5 inches (38 mm). These provide optimum accuracy selections for various types of machinery and jobsite requirements.

- Simple controls for quick set up and operation
- Works with proportional time, proportional current, and proportional voltage valves
- Compact design for easy installation
- Bright LED display with green on-grade for quick grade reference

BULLSEYE receivers work with all rotating lasers and feature

- 360° reception for quick set-up and continuous reception
- Tough waterproof construction withstands harsh conditions
- Super bright LED's for high visibility in bright light
- Quick secure mounting, easy to move to different machinery

BULLSEYE Models 5+ and 6 have additional features when used as indicate systems, specifically for use in excavating operations.



BULLSEYE 5MC
Economic automatic control receiver
Mini LED display for setup



BULLSEYE 5+
Grading and Excavating
Large LED display
Plumb indication built in



BULLSEYE 6
Grading and Excavating
Extended reception height
Angle Compensation for Excavators - ACE