

Team Update 11

SECTION 5.1 FIELD

The FIELD is populated with the following elements:

- 1 HUB (including 1 UPPER HUB and 1 LOWER HUB),
- 2 HANGARS (a red HANGAR and a blue HANGAR),
- 2 TERMINALS, and
- 14 CARGO RINGS.

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A run of black HDPE cable protectors extends from the guardrail on the scoring table side of the FIELD to the nearest LOWER EXIT of the HUB, straddling the CENTER LINE. A cable protector run is made up of multiple floor segments and an exit segment. The total length of the cable protector run is 10 ft. 10 $\frac{5}{8}$ in. (~332 cm). The floor segments are $\frac{3}{8}$ in. (~2 cm) tall, 7 in. (~18 cm) wide, with ~45° lead in ramps on each leading edge.

SECTION 6.7 OTHER LOGISTICS

Note that, except via the TERMINAL, ROBOTS may not deliberately cause **opponent** CARGO to leave the FIELD (see G401).

SECTION 8.3 BEFORE/AFTER THE MATCH

H312 No CARGO shots after the MATCH. After the end of the MATCH (i.e. when the timer displays 0 seconds following TELEOP), DRIVE TEAMS may not enter CARGO into the FIELD.

Violation: FOUL and any CARGO scored as a result of a violation of this rule is negated.

SECTION 9.5 MOTORS & ACTUATORS

R502 *Don't modify motors (mostly). The integral mechanical and electrical system of any motor must not be modified. Motors, servos, and electric solenoids used on the ROBOT shall not be modified in any way, except as follows:

- A. The mounting brackets and/or output shaft/interface may be modified to facilitate the physical connection of the motor to the ROBOT and actuated part.
- B. The electrical leads may be trimmed to length as necessary and connectors or splices to additional wiring may be added.
- C. The locking pins on the window motors (P/N 262100-3030 and 262100-3040) may be removed.
- D. The connector housings on KOP automotive motors listed in Table 9-1 may be modified to facilitate lead connections.
- E. Servos may be modified as specified by the manufacturer (e.g. re-programming or modification for continuous rotation).
- F. The wiring harness of the Nidec Dynamo BLDC Motor may be modified as documented by FIRST in [Nidec Dynamo BLDC Motor with Controller](#).
- G. Minimal labeling may be applied to indicate device purpose, connectivity, functional performance, etc.
- H. Any number of #10-32 plug screws may be removed from the Falcon 500.

- I. Insulation may be applied to electrical terminals.
- J. Repairs, provided the performance and specifications are unchanged.
- K. Maintenance recommended by the manufacturer.

The intent of this rule is to allow teams to modify mounting tabs and the like, not to gain a weight reduction by potentially compromising the structural integrity of any motor.

SECTION 11.2 REFEREE INTERACTION

While FMS tracks quantities of FOULS, *FIRST* instructs REFEREES to not self-track details about FOULS and TECH FOULS; as a result, we don't expect REFEREES to recall details about what FOULS and TECH FOULS were made, when they occurred, and against whom.