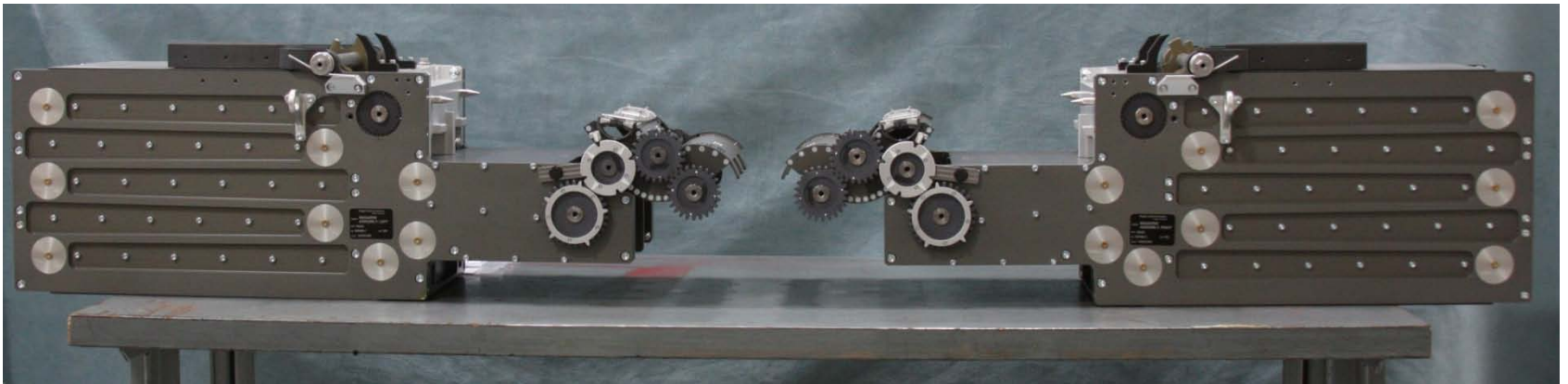


30mm Linear Linkless Ammunition Handling Technology in a Remote Weapon Station

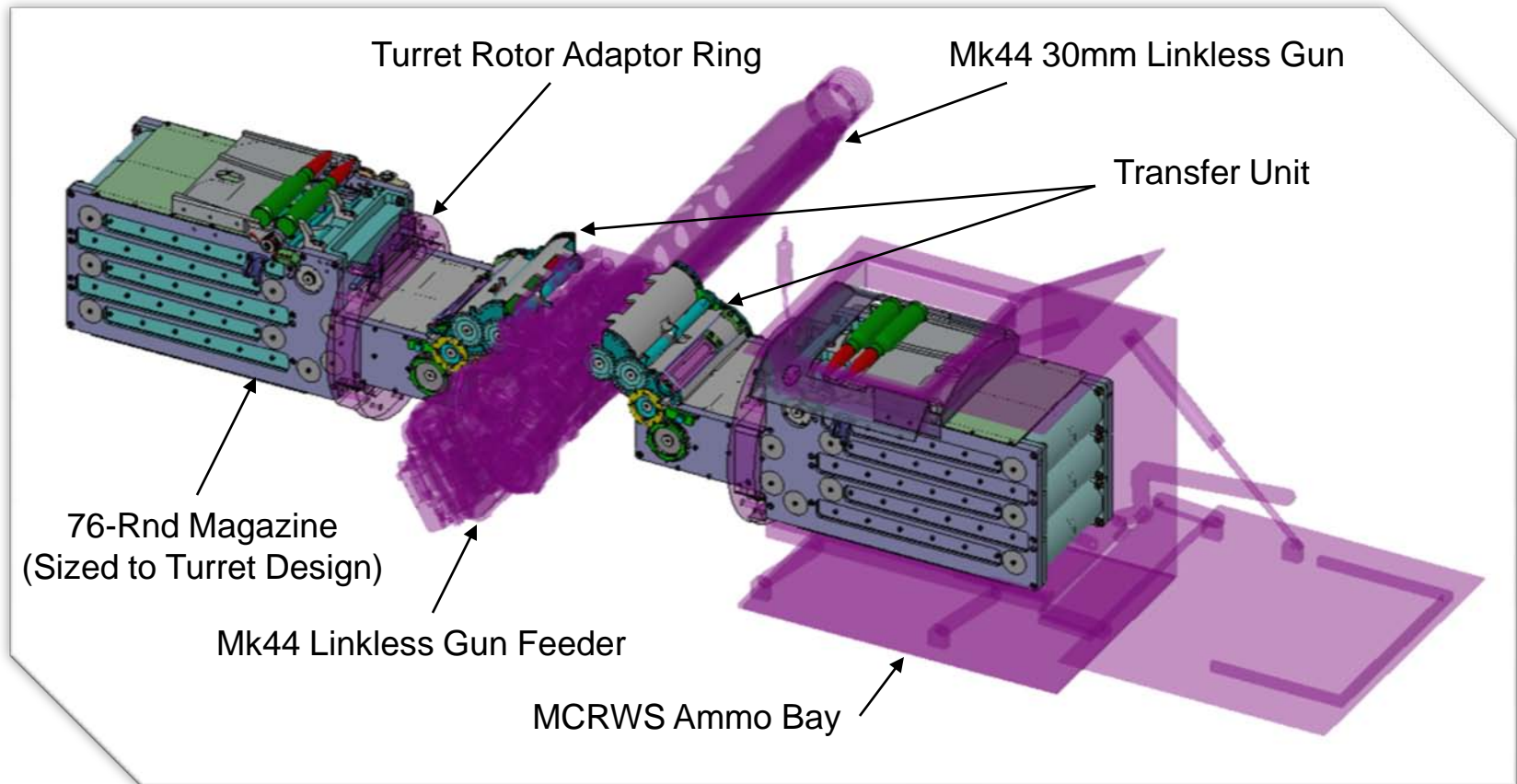


May 17, 2012

Josh Hearn

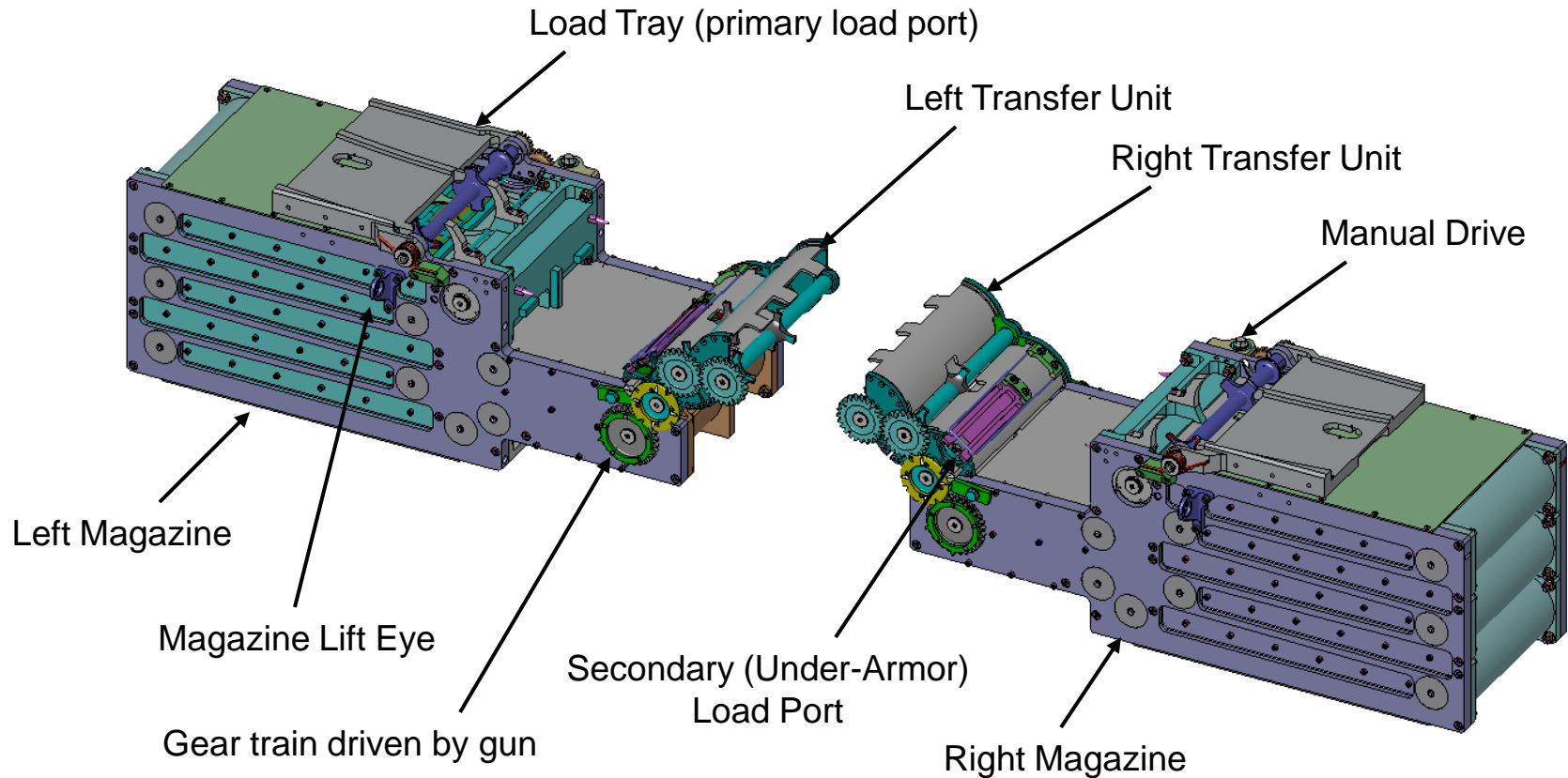
Senior Engineer, Ordnance Programs

Typical AHS Installation – Mk44 Gun



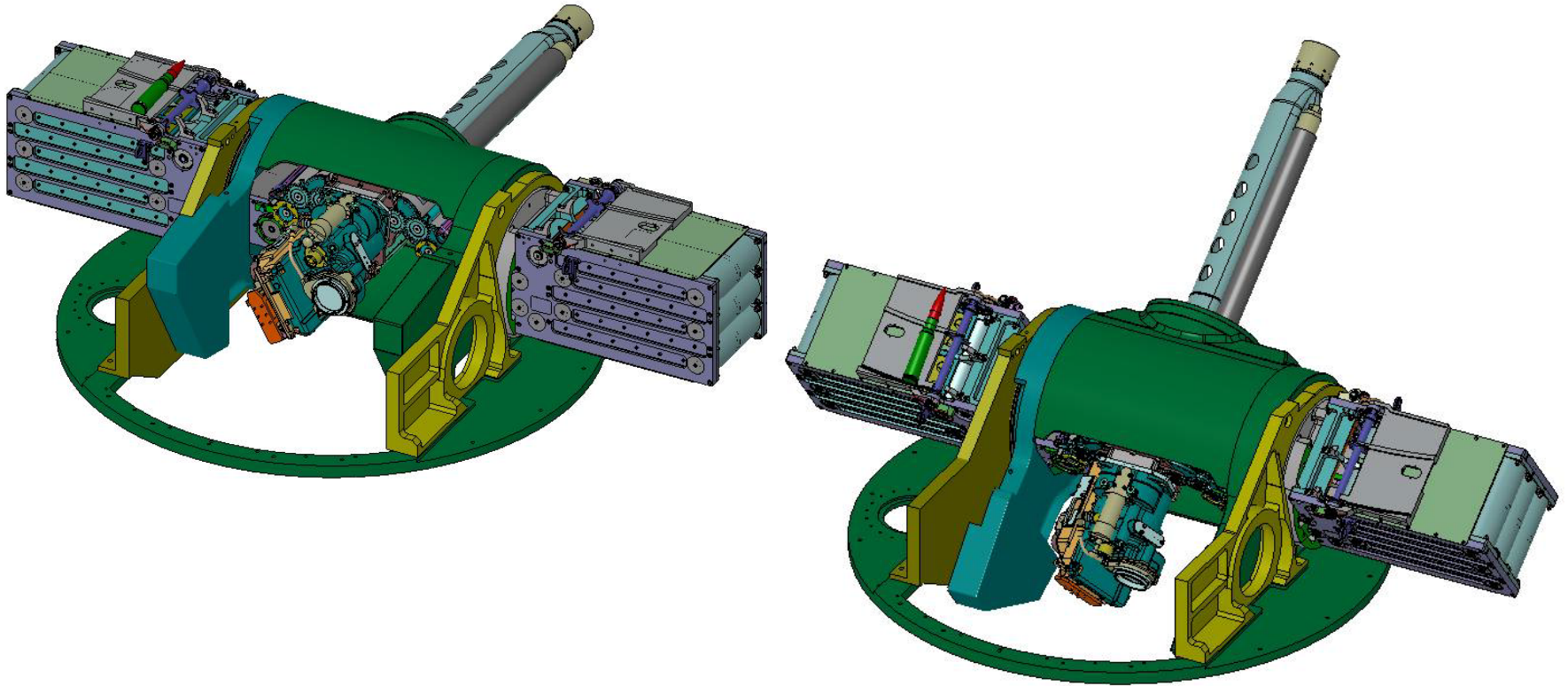
Dual feed AHS consists of two 76-Rnd magazines and two transfer units to move rounds from the magazines to the 30mm Mk44 dual feed weapon. The magazines mount to the turret rotor and rotate with the gun in elevation.

MCRWS AHS Overview



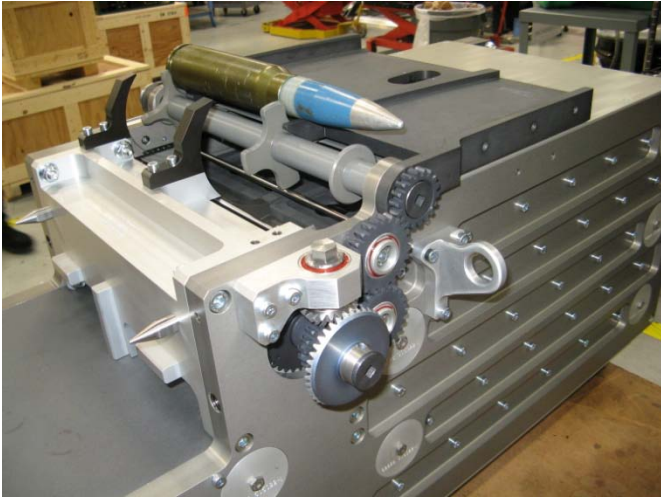
Block dimensions (per side): L x W x H – 1021mm x 442mm x 378mm

Mount Configuration - Elevation



Round transfer path is simplified because of direct feet to the Gun Feeder at all elevations.

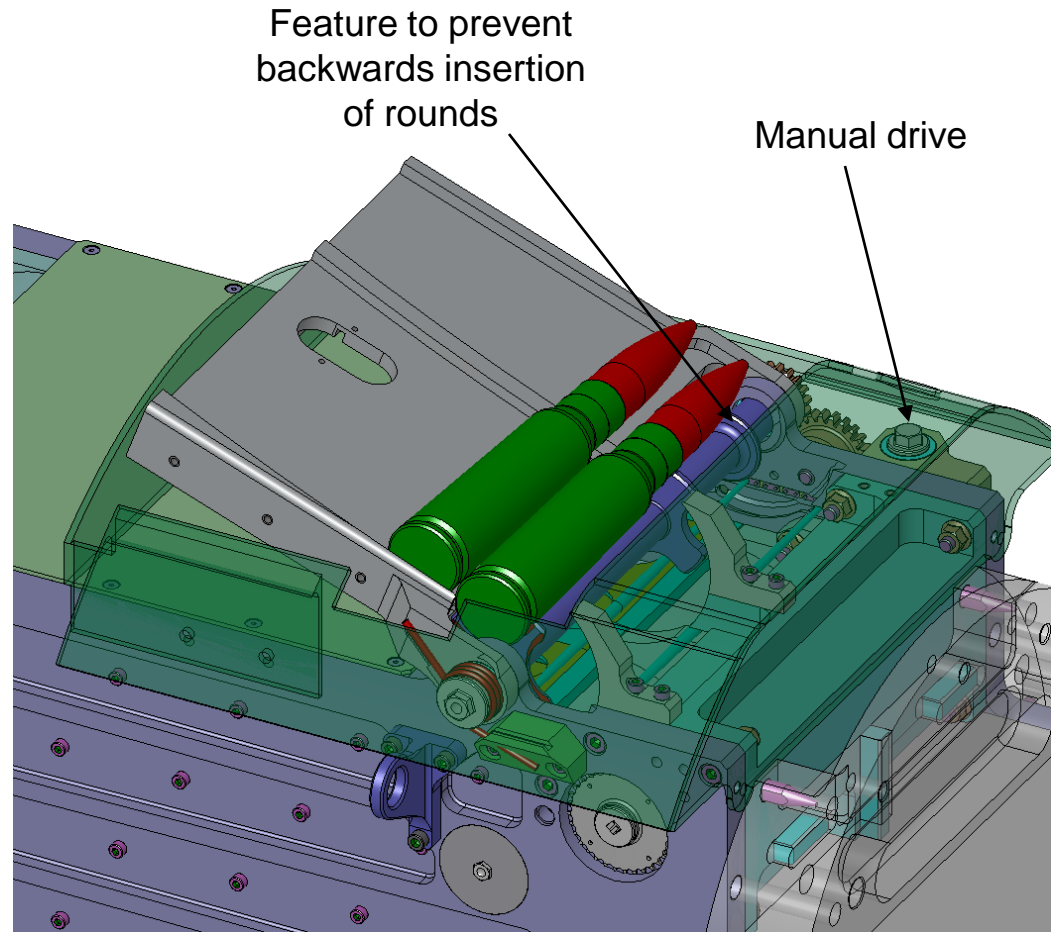
Loading the Magazine (Primary Load Port)



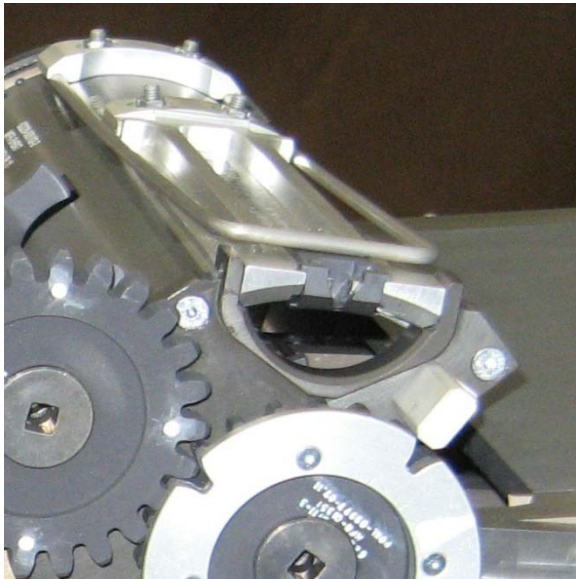
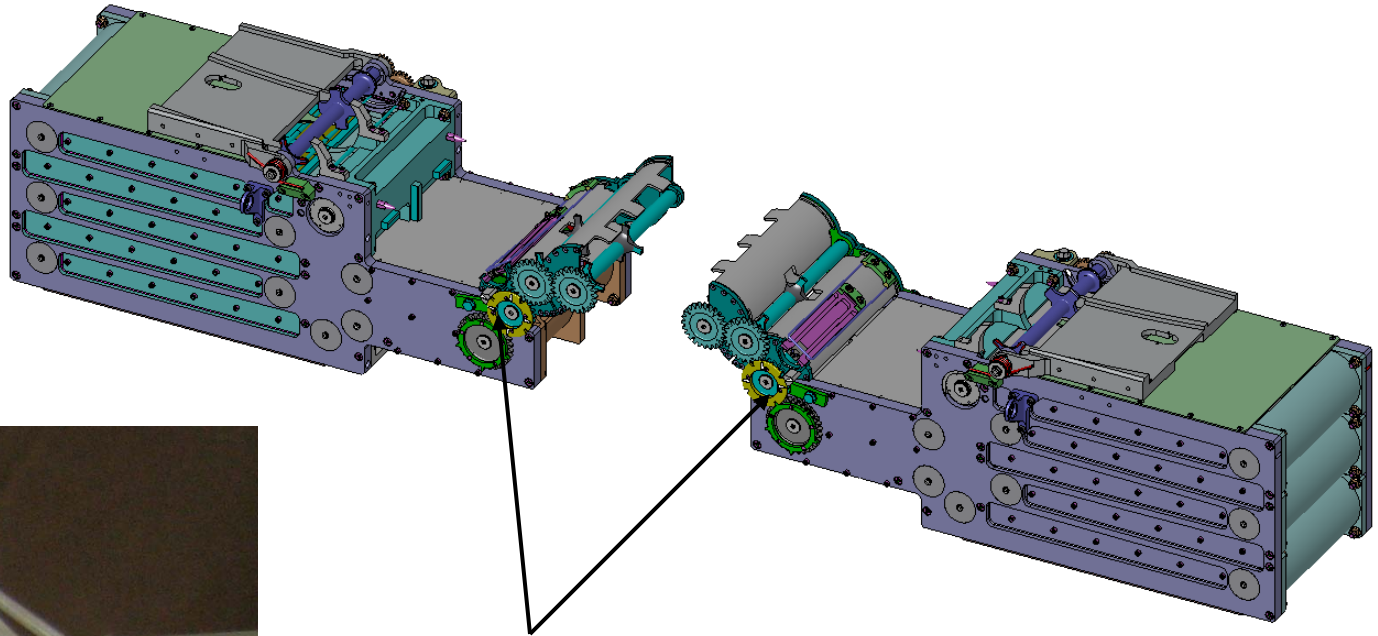
Using the gun feed-select solenoid, select the feed corresponding to the side being loaded

Up to five rounds may be stacked on the tray

Rounds will naturally feed into the organizer rotor. Replenish tray until rounds reach the hard stop in the gun feeder.

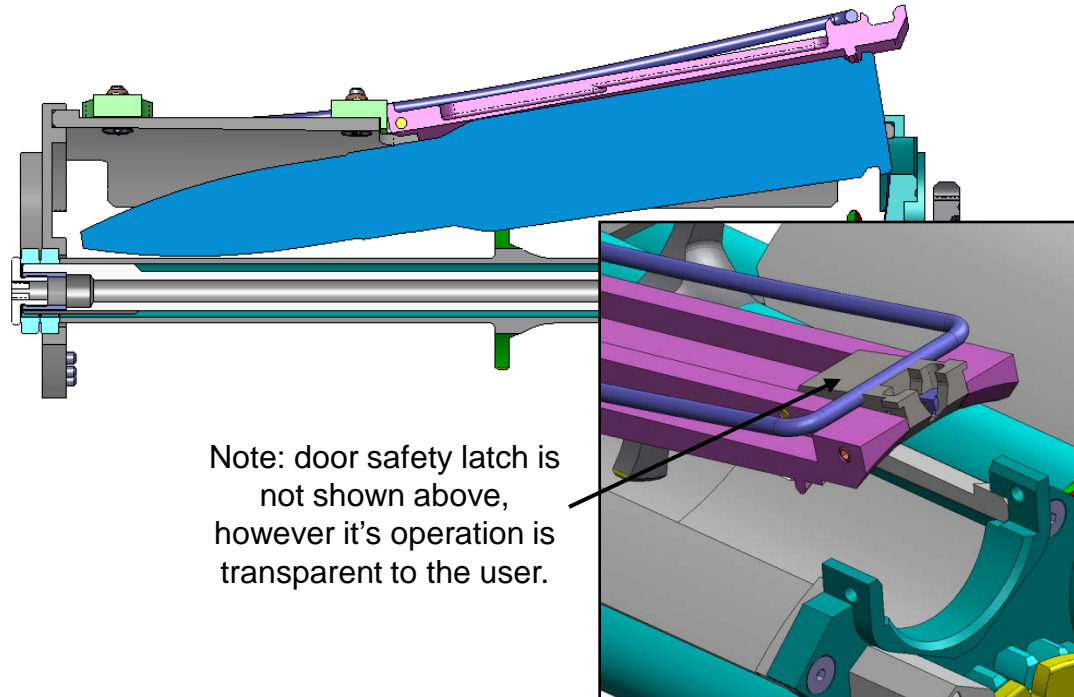
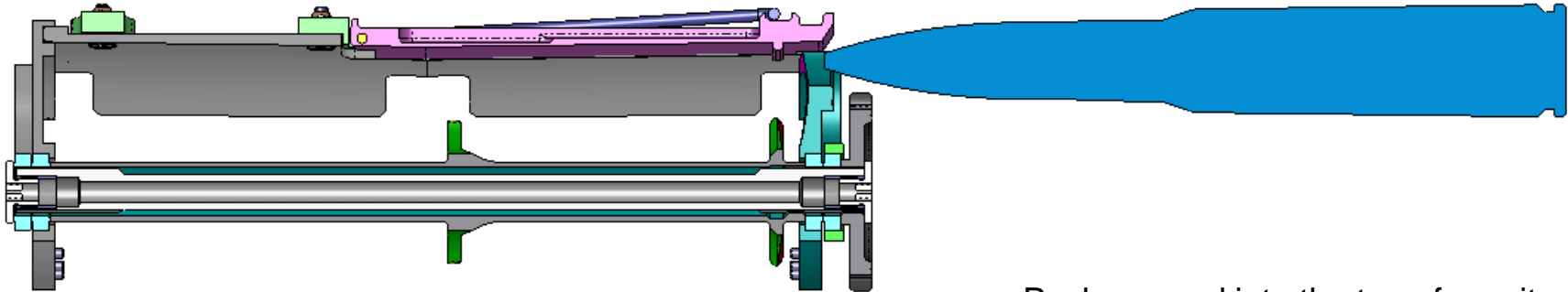


Under-Armor Reload – Optional Feature



Under-armor reload ports located in both left and right transfer units. Some gun elevation is desired for optimal reload position.

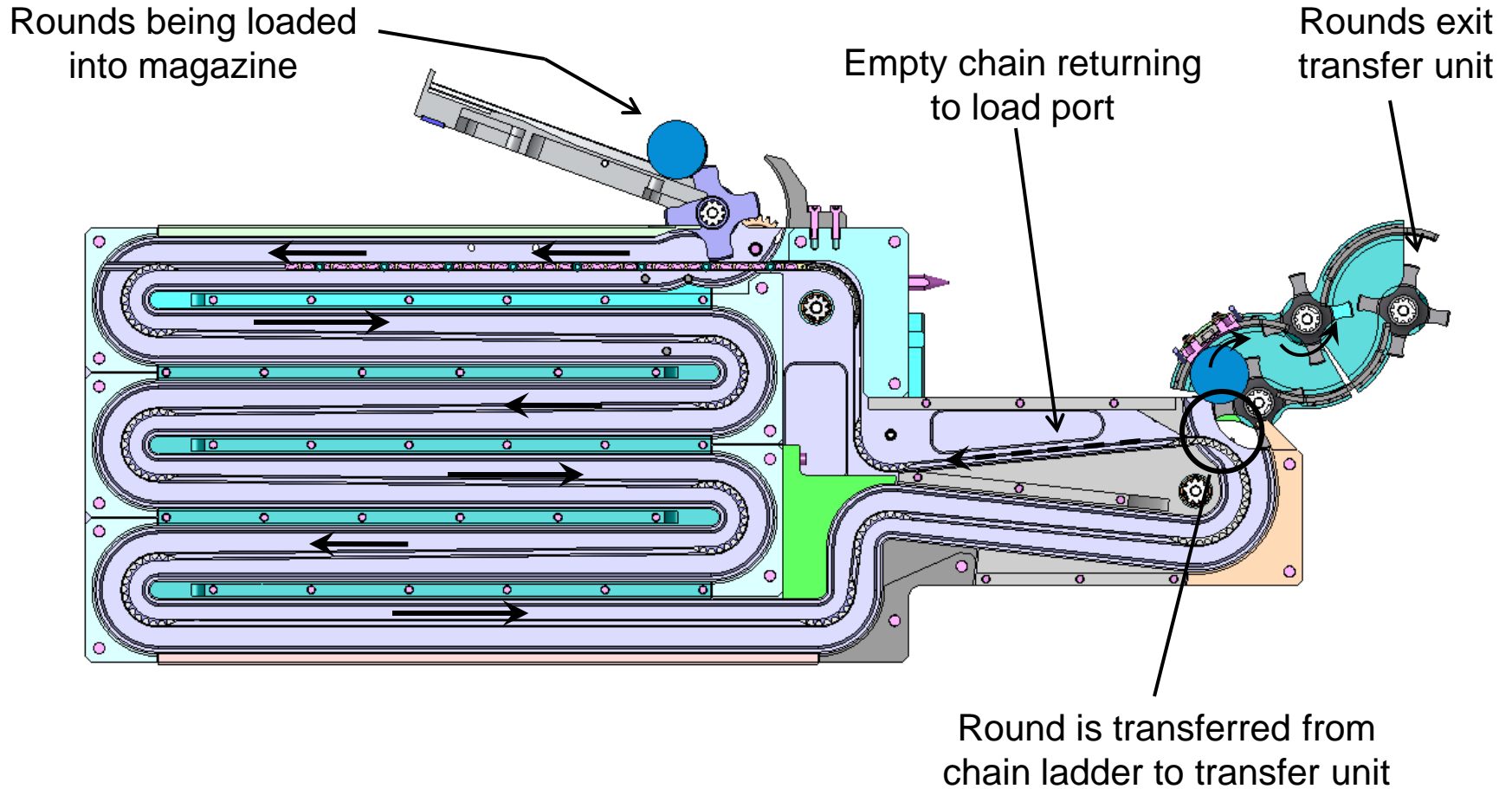
Under-Armor Load Procedure



Note: door safety latch is not shown above, however it's operation is transparent to the user.

Push a round into the transfer unit, defeating the door-spring, the round will slip in to the feed path rotor. The reload-door lip will stop forward motion when in correct position. The door will close, holding the round precisely positioned in the feed path. Advance the magazine one position for insertion of the next round.

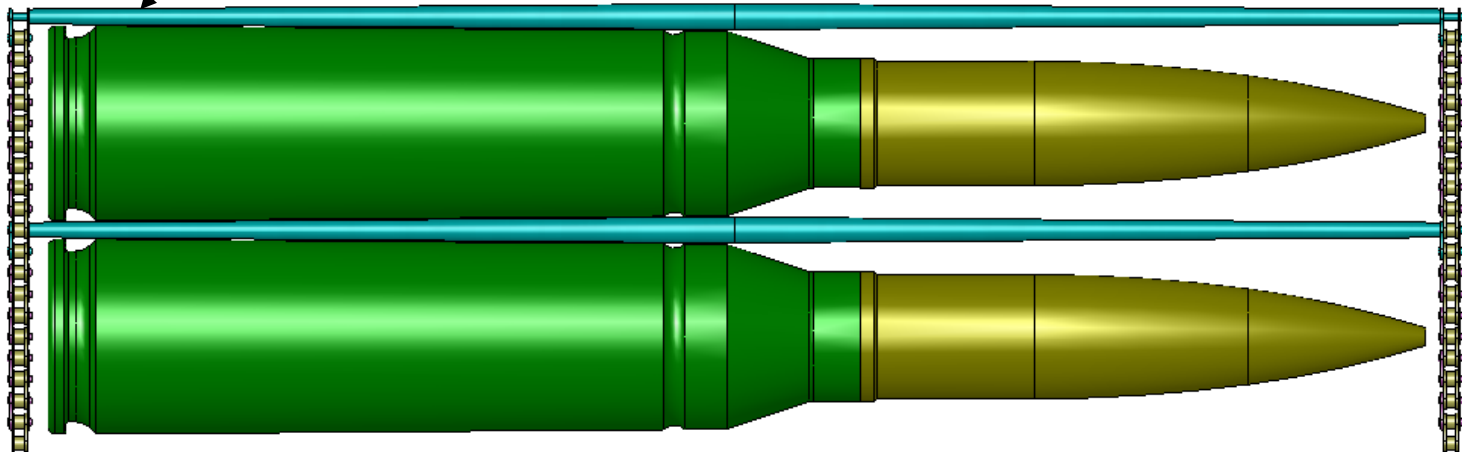
Ammunition Flow Path Within AHS



Chain Ladder Details

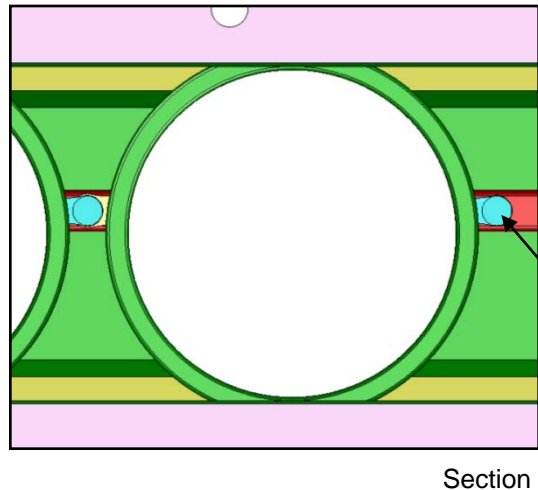
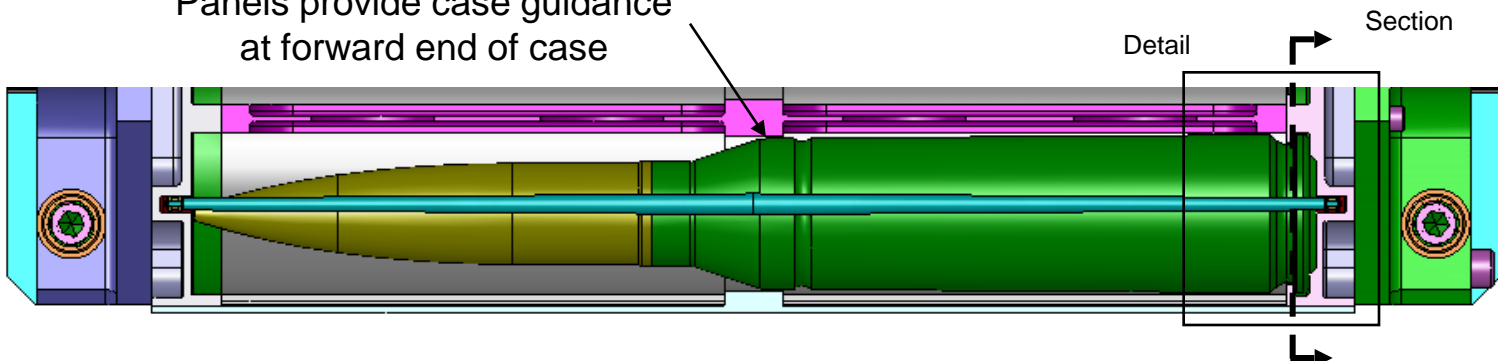
Crossbar (81X)

- ▶ **Material: stainless steel**
- ▶ **Symmetric about mid-plane (Bidirectional)**
- ▶ **Crossbar taper matches case taper (30mm & 40mm)**
- ▶ **Weight: 52 grams**



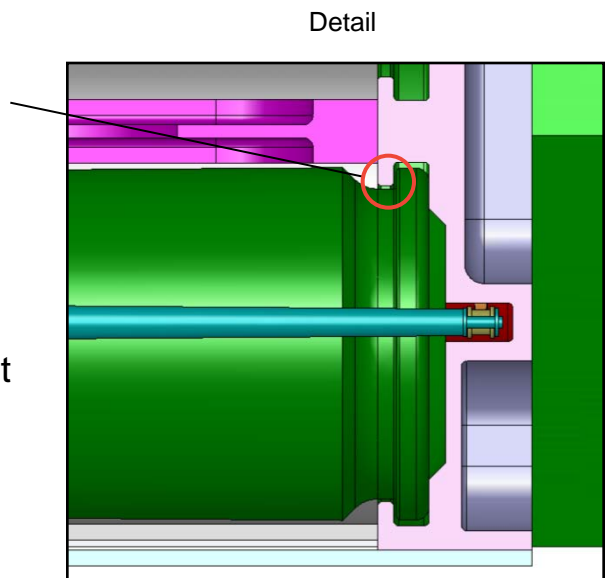
Round Guidance Detail

Panels provide case guidance at forward end of case

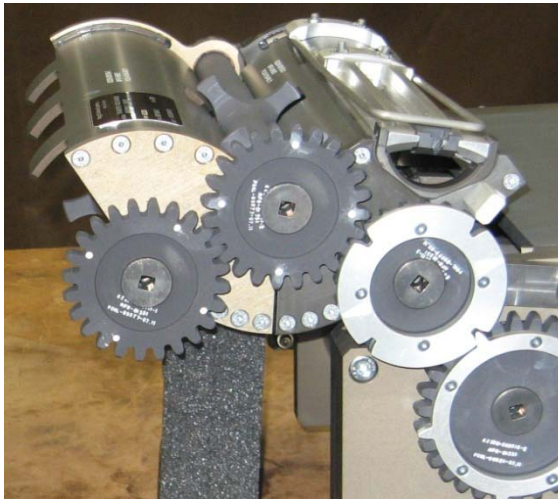


Side plate undercut retains round axially and normal to path

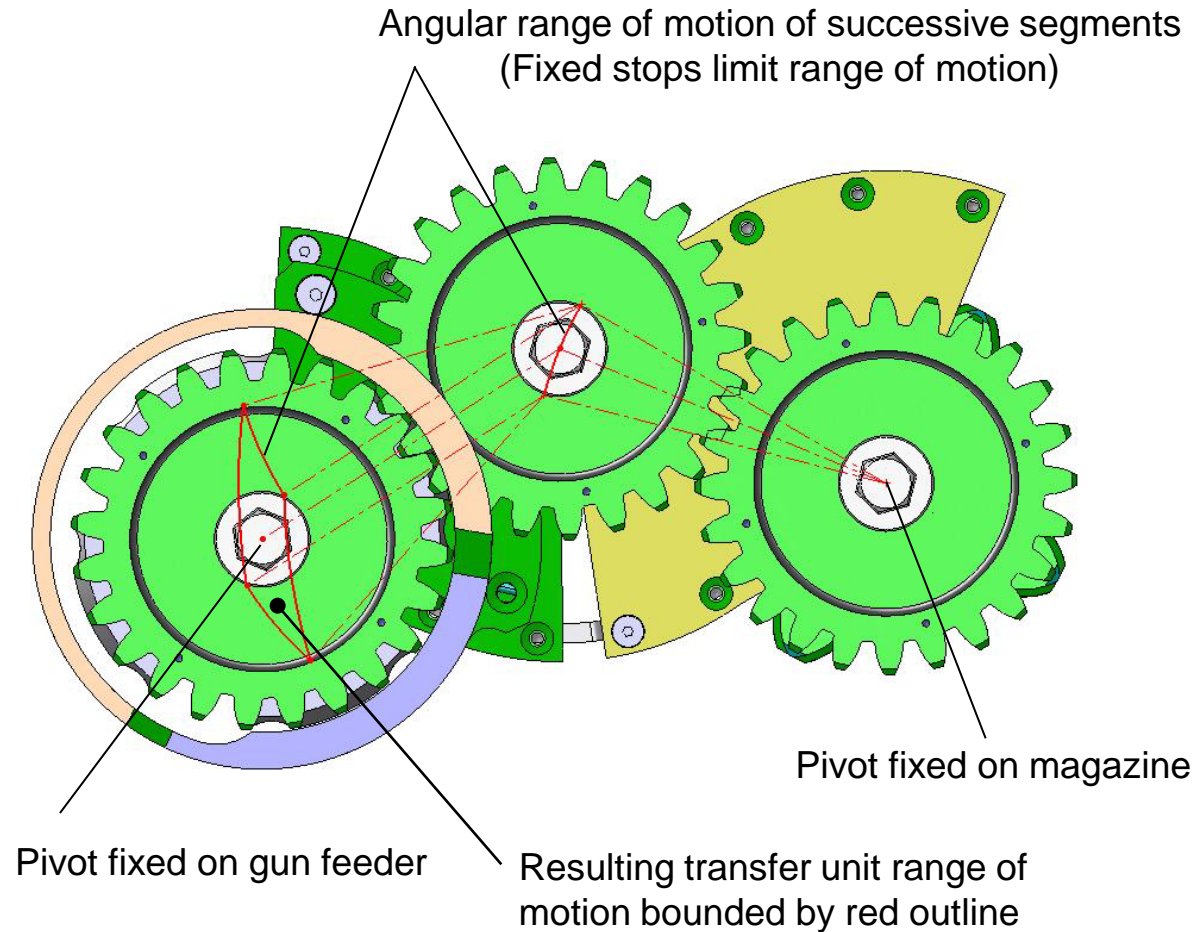
Crossbars guide round along bullet path



Transfer Unit Range of Motion



Articulating transfer unit accommodates tolerance stack-up between magazine and gun feeder. Allows relative motion between magazine and feeder expected during gun fire.



30mm Linkless AHS Summary

- ✔ System elevates with the gun / round path does not change eliminating the need for traditional flexible chutes
- ✔ System is solely mechanical / no electronics
- ✔ Power required to cycle is minimal and is smooth / no power required to strip links
- ✔ No scheduled maintenance / chain is pre-lubricated / bearings are sealed / FOD has tendency to fall through
- ✔ Over 1000 rounds fired to date
- ✔ System operation video... [Kongsberg30mmAHS_Short.wmv](#)