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Problem

John Deere needs the technical specifications of all headers to feeder house interface functions to attach a Deere header to competitive combines.

Background

Traditionally equipment manufacturers have built combine harvesters and front-end equipment to support these machines. Proprietary couplers and mounting devices accomplished the task of attaching the equipment. John Deere is requesting the technical requirements to attach a 645FD to competitive combines which will be leveraged to evaluate future designs.

Purpose

To design a process for collecting technical specifications of original equipment manufacturers header interface connections including:

- Physical dimensions
- Electrical specifications
- Latching mechanism
- Multi-coupler configurations
- Hydraulic specifications

The final solution will provide the company with a process to gather the information for design purposes.

Design Criteria

- Availability of technical documents
- Availability of machines for data collection
- Ease to add additional models to template
- Process should reduce engineering hours

Constraints

- Data must represent multiple machine brands accurately:
 - CaseIH 9240
 - Claas Lexion 780
 - New Holland CR9.90

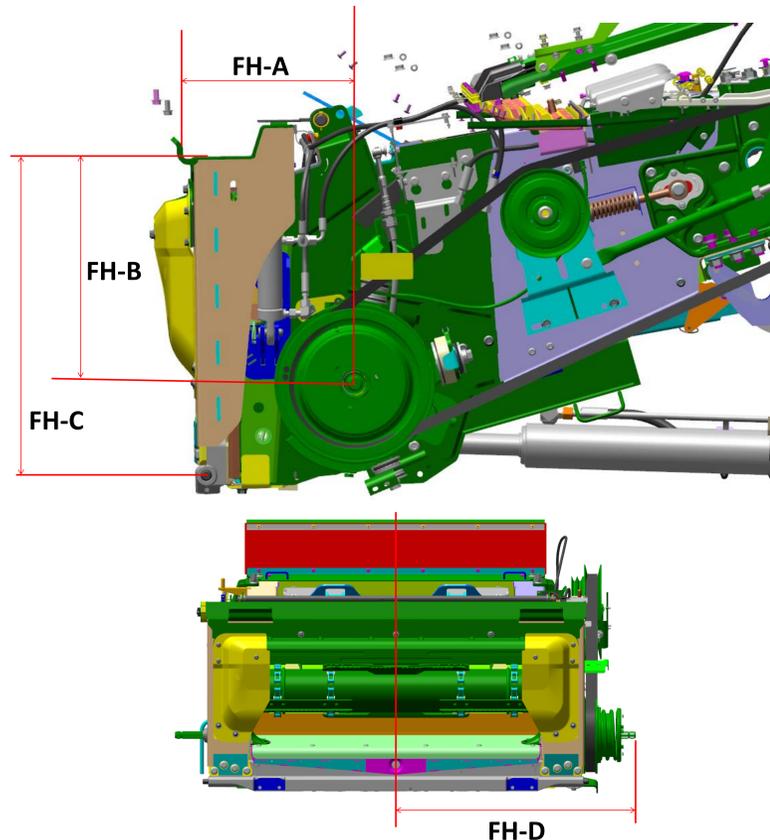
Multi-coupler Configurations



CNH John Deere Claas Lexion

Budget

| Item | | Cost (\$) |
|----------------------------------|-----------|-----------------|
| CNH Service Manual | 9240 | 2,654.34 |
| NH Service Manual | CR9.90 | 1,927.11 |
| Claas Service Manual | 780 | 363.78 |
| Mileage @ \$0.535/mi | 250 Miles | 133.75 |
| Labor – Not included in estimate | | |
| Total | | 5,078.98 |



Side and front view of John Deere S-series feeder house

Solution Process

| Potential Solution Combinations | CaseIH 9240 | Claas Lexion 780 | New Holland CR9.90 |
|---|-------------|------------------|--------------------|
| Combine Technical Manual | ✓ | ✓ | ✓ |
| Header Technical Manual | | | |
| Availability of Machine | ✓ | ✓ | |
| Measure combine feeder house | ✓ | ✓ | |
| Measure header | | | |
| Collect specifications from aftermarket headers | ✓ | | ✓ |

Impact & Sustainability

Having the ability to attach a Deere header to any combine in the market will provide Deere with a competitive advantage in the marketplace and allow them to capture more market share. With a streamlined data collection process, a design team will have the ability to more efficiently and accurately collect the needed specifications that will inform design decisions. Using the component nomenclature across all machines will reduce time deciphering differences in configurations.

Conclusion

Limited compatibility between header and feeder house interfaces will require substantial amounts of time and resources to design and build adapters. Standardizing components will provide the end-user with the ability to adapt the best combination of front-end equipment and combine harvesters to best suit the field conditions or economic constraints of the customer.

Recommendation

Deere & Company should propose a standard to ASABE similar to ANSI/ASABE AD730:2009 *Agricultural wheeled tractors – Rear-mounted three-point linkage – Categories 1N, 1, 2N, 2, 3N, 3, 4N, and 4 Standard* for combine harvester header attachment interfaces.