

Proven Strength
Stability & Adaptability



SPRAY BOOMS



Hydraulic Fold Booms

TERRA FORCE 88', 90', 100', 120' & 132' Widths
(Three dimensional lattice construction)

TERRA FORCE is setting new standards for strength and performance for conventional booms.

The boom is made in a lattice construction for optimal strength. The layout is optimized to have only pushing and pulling forces all along the individual boom sections. Hydraulic folding locks are automatically activated to support the boom layout and prevent twisting forces in the boom construction.

The TERRA FORCE center section is simple with regard to service and maintenance and offers a very high boom performance. Two different set-ups of the center sections support this. The DynamicCenter has manual adjustment of the center characteristics. The setting is done on the go from the cab. It will change the boom from being 10% sprayer following (pendulum like), to be 80% sprayer following (trapeze like).



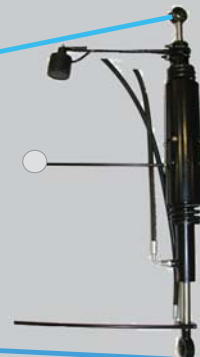
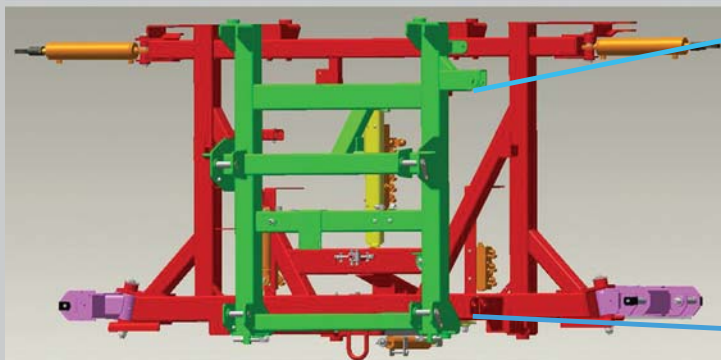
DynamicCenter or AutoTerrain

TERRA FORCE has two different center set-ups

DynamicCenter has manual adjustment of the center characteristics. The setting is done on the go from the cabin. It will change the boom from being 10% sprayer following (pendulum like), to be 80% sprayer following (trapeze like).

AutoTerrain

TERRA FORCE center is developed in respect of the functionality of automatic boom management. During the development phase NORAC performed parallel tests, and suggested changes in construction for optimum performance with automatic boom management. The boom behavior is measured and indexed. AutoTerrain is optimized to have the best stability in all conditions.



AutoTerrain has the standard sensors of an AutoHeight system (ultrasonic sensors) combined with 1 additional ultrasonic sensor spring suspended hydraulic roll cylinder. The cylinder attaches one end on the boom lift frame and the other end to the boom center section. This mounting allows for the sensor to measure the forces to the boom center section. This measurement allows the hydraulic system to be proactive and react on the cause rather than the symptom.

Hydraulic Fold Booms

TERRA FORCE AutoTerrain

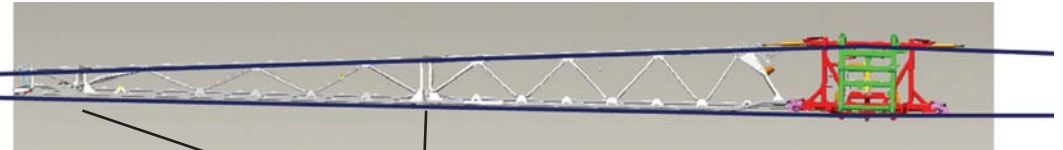
Ultrasonic sensor measuring the distance to the two pins below.

This pin is placed on a spring-loaded body. It will move up and down depending on the torque of the boom. This is what makes the system work pro actively.

This pin will move when the cylinder is activated. Activation of the cylinder will slant the boom.

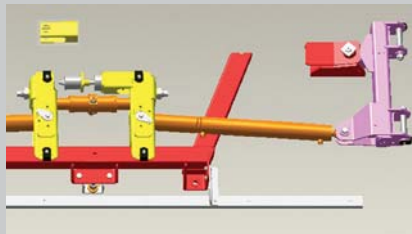


Construction & Design - Only straight pulling and pushing forces. No twisting transmission of forces.

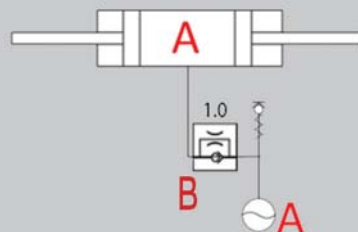


Locking mechanism is transferring the forces directly to next boom element.

Energy absorbing dampening

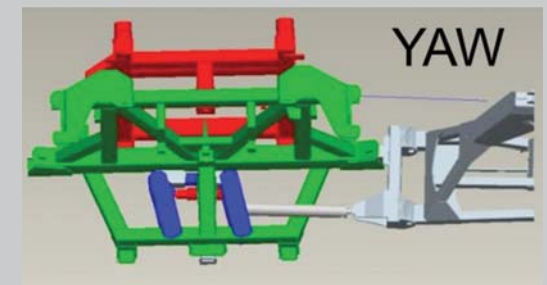


Yaw dampening



- Hydro pneumatic dampening cylinder with a nitrogen damper. **A**
- Fixed, one-way restrictor on hydraulic. **B**

A & B Active



Hydraulic Fold Booms

TERRA FORCE Tilt & Slant

- **Smooth boom ride**

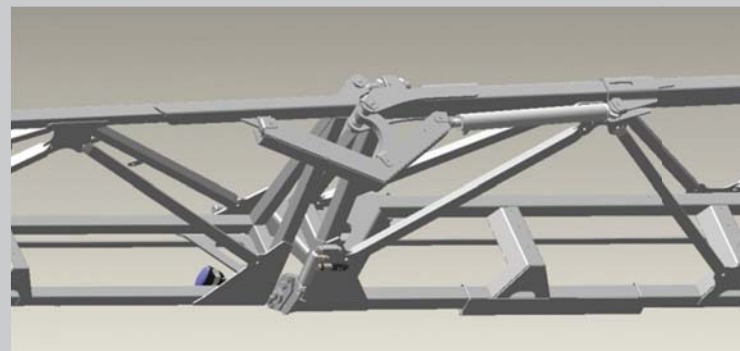
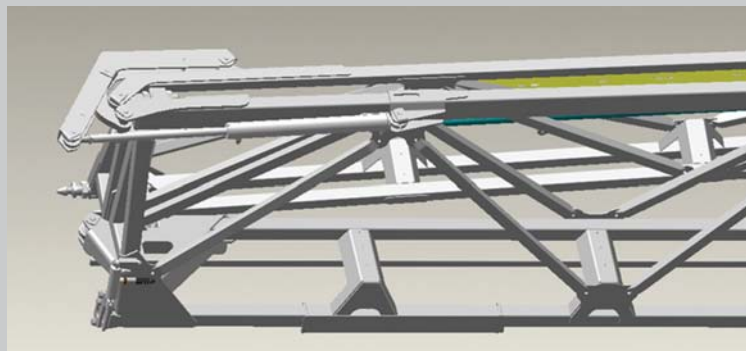
Tilt suspension is standard on booms with DynamicCenter and provides a smoother boom ride (not available with AutoTerrain)



- Slant is equipped with a potentiometer for slant indication. Same potentiometer is used for headland assist.

Outer wings

- Folding-mechanism and folding- lock are divided to optimize both functions.
- Folding mechanism is geometrically optimized for folding.
- Progressive fold. Slow start and stop at folding.



- Inner fold is progressive by mechanic restr in the cylinder.

Hydraulic Fold Booms

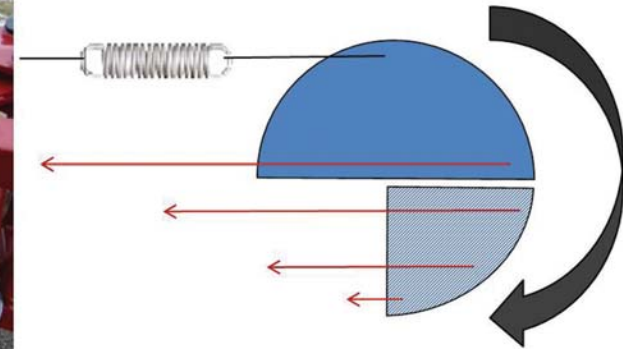
TERRA FORCE Breakaways

Progressive and dampened

The breakaway mechanism works progressively. It takes more forces to activate the breakaway than to turn it from just open to 90 degrees.

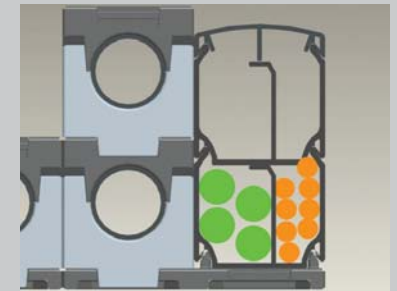
The progressiveness and the dampening avoid that the breakaway opens unintentionally, and it makes the breakaway stop faster after it has been activated.

Nozzles are well protected also on the breakaway section.



New HARDI developed cable trays and brackets for boom tubes

- Cable trays separate wires and hydraulic hoses.
- Modular system where boom tubes and cable tray can be stacked.
- Base for bracket / tray is riveted to the boom structure. Bracket and trays are clicked in the base and clicked together when stacked.

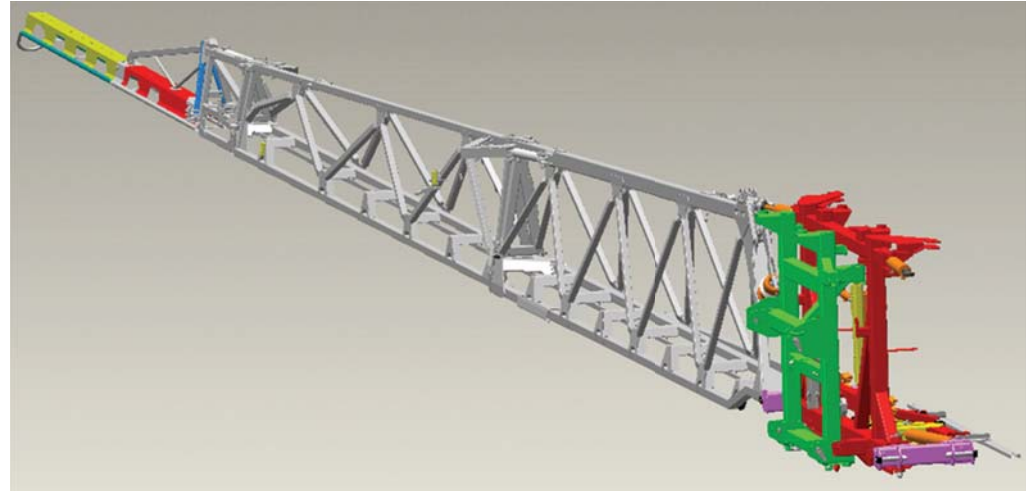


Hydraulic Fold Booms

TERRA FORCE Boom Tubes & Nozzle Holders

T25 - Tube diameter (1 inch)

- Optimized for capacity. (Approximately. 25% larger cross section in boom and feed tubes)
- Ultra flexible nozzle positioning.
- Strong and flexible nozzle holders.
- Click together assembly for easy and precise mounting.
- Mounted inside the boom profile for optimal nozzle protection.
- The steel profile in front of the nozzles is placed and angled to minimize turbulence on the nozzle at high speed.



All fittings for T-25 are new unique HARDI fittings

Fittings are constructed for external mounting on the boom tubes which reduces the pressure loss considerably.

Fittings are designed without casting or parting lines and for use of thick, less sensitive, o-rings to obtain best possible sealing.

Same fittings for synthetic and stainless steel boom tubes.



Hydraulic Fold Booms

TWIN FORCE 80', 90', 100', & 118' Widths
 Same boom as the FORCE boom with the addition of the air system. (Three dimensional construction)

Two powerful 25" blower units provide air to the left and right boom sides respectively. This provides a powerful and even air distribution through the whole boom. The large amount of air produced by the double fans allows for faster application speeds even under very difficult weather conditions.



A longitudinal air rail forms an air curtain behind the nozzles which transports the spray droplets to the target. This minimizes wind drift significantly, thus allowing for very low application rates using smaller droplets with better coverage and results. An even spray distribution is achieved by droplets meeting the air curtain 12" from the nozzle.

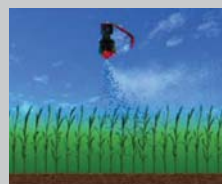


The angling of the air curtain together with the spray swath is a distinctive and important feature on the HARDI TWIN. This allows for more precise application depending on crop and weather conditions.



TWIN advantages:

- Spray faster - increase capacity up to 100%
- Save up to 30% in chemical consumption
- Optimal field timing
- Drift reduction



Conventional Spraying



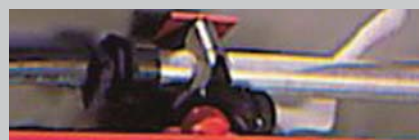
TWIN Air Rearward



TWIN Air Downward



TWIN Air Forward



3/4 inch stainless steel boom supply lines are Standard along with TRIPLET nozzle bodies.

Hydraulic Fold Booms

FORCE Boom (FORCE Suspension) 80', 88', 90', 100', 120' & 132' Widths
 (Three dimensional construction)

A cushion ride, unequalled in the industry, is provided by the adjustable parallel link arm suspension with the HARDI trapeze self-stabilizing feature where trapeze arms, coil springs and shock absorbers work together.

The operator has the ability to fine-tune the boom performance to different field conditions and spraying speeds. This can be accomplished by adjustment of the coil spring tension, and the positioning of the parallel link arms.

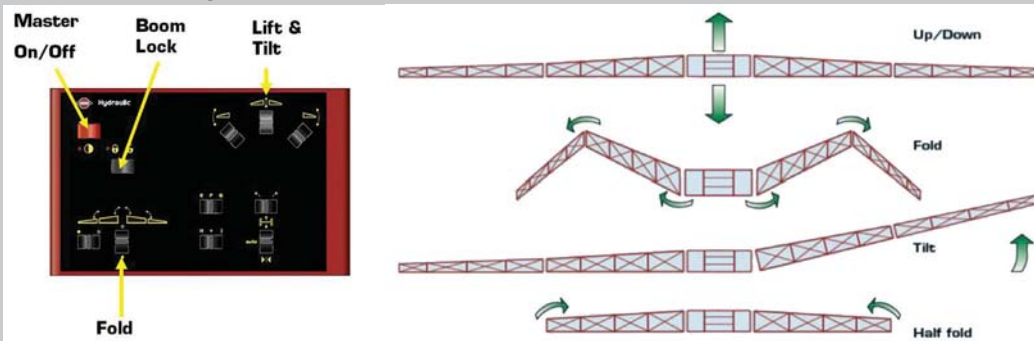
A hydraulic damper cylinder is mounted on the center section together with a hydraulic flow valve, which makes it possible to easily adjust the vertical boom dampening effect depending on field conditions and speed.



FORCE Suspension



DHP FORCE Hydraulic Control



3/4 inch stainless steel boom supply lines are standard along with TRIPLET nozzle bodies.



Hydraulic Fold Booms

EAGLE SPB & SPC Booms (SPA Suspension)

SPB - 45', 50', 60' & 66' widths / SPC - 80', 88', 90', 100' & 120' widths.
(All EAGLE booms are two dimensional construction)

The EAGLE booms are designed for high speed no-till field applications. Its rugged design and patented boom suspension ensures long boom life and optimal boom performance in even the most difficult field conditions!
A cushion ride, unequalled in the industry, is provided by the HARDI patented self-stabilizing boom suspension where trapeze arms, coil springs, and shock absorber work together.



EAGLE SPC DualFold Booms 90'/60' & 120'/90' Widths (Two dimensional design)



The HARDI ParaLift ensures high clearance above any crops. The long lift arms allow for very flexible height adjustment, the boom can be adjusted from 16" to 88", depending on sprayer type and wheel configuration. Wide attachment to the boom suspension ensures high performance of the boom.
The 40" wide ParaLift ensures very stable attachment of the boom.

The spray boom is trapeze mounted to the SPA suspension system that is mounted to the lift frame. This allows for self stabilization and absorption of vertical shock.

Hydraulic Fold Booms

SPB/SPC Hydraulic Fold Boom



The **HY boom system** utilizes the tractor's hydraulic switches to operate the EAGLE boom.

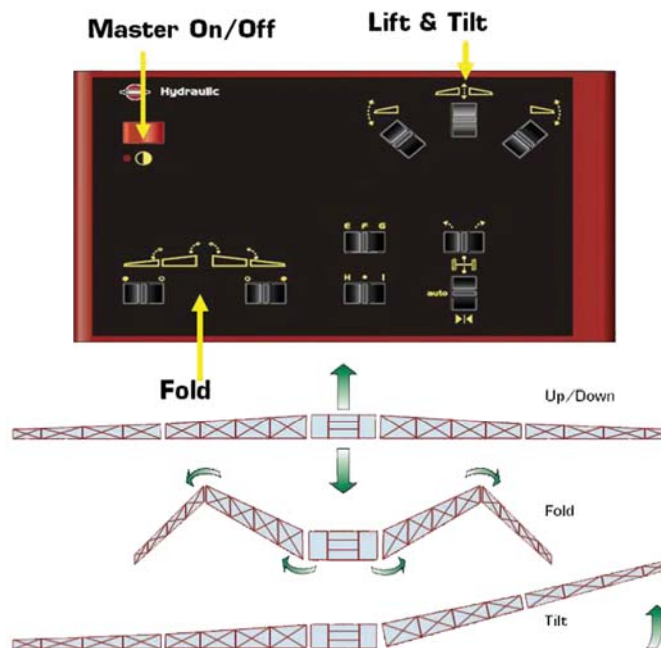
Functions are:
Raise, Lower, Fold & Unfold



The **HZ boom system** utilizes one tractor hydraulic remote with a sprayer mounted electric over hydraulic system to operate the boom. The DHP (direct acting hydraulic) system is controlled by the DHP Hydraulic box. If required, an optional system for open, closed, and load sense hydraulic systems can be added to the sprayer.

Functions are:
Raise, Lower, Individual Wing Fold & Individual Wing Tilt

DHP SPB/SPC Hydraulic Control



3/4 inch boom supply lines are Standard.

Single nozzle bodies or triplet nozzle bodies are available depending on sprayer model. (Excluding 120'/90' DualFold booms.) DualFold booms use the new T-25 boom Plumbing.

All fittings for T-25 are unique HARDI fittings

- Fittings are constructed for external mounting on the boom tubes which reduces the pressure loss considerably.
- Fittings are designed without casting and parting lines and for use of thick, less-sensitive, o-rings to obtain the best possible seal.



T-25 - Tube diameter (1 inch)

- Optimized for capacity. (Approximately 25% larger cross-section in boom- and feed tubes)
- Ultra flexible nozzle positioning.
- Strong and flexible nozzle holders.
- Click together assembly for easy and precise mounting.
- Available with triplet or pentalet nozzle bodies



Manual Fold Booms

SB Booms (Rigid mount) - 20', 26', & 33' widths
(Two dimensional construction)

SB boom with manual boom height setting and manual cross fold. With rugged construction, an adjustable breakaway section, and SNAP-FIT nozzle bodies with non-drip diaphragm check valves.



Spray boom is rigid mounted to sprayer frame

MB Booms (Trapeze mount) - 40', & 45' widths
(Two dimensional construction)

The MB boom features a trapeze suspension for self stabilization and prolonged boom life, boom locks between intermediate and outer boom sections, adjustable spring-loaded breakaway section and SNAP-FIT nozzle bodies with built-in non-drip diaphragm check valves.



3/4 inch boom supply lines are Standard.
SB and MB booms can be ordered with single nozzle bodies or triplet nozzle bodies.



MB spray boom is trapeze mounted to sprayer frame to allow for self stabilizing movement

HARDI Spray Booms

Boom Chart

Boom	# of Nozzles	Spacing	Actual Spray Width	22" Rows	30" Rows	36" Rows	38" Rows	40" Rows
20' MB	12	20"	20'	10.9	8.0	6.7	6.3	6.0
26' MB	16	20"	26'-8"	14.5	10.7	8.9	8.4	8.0
33' MB	20	20"	33'-4"	18.2	13.3	11.1	10.5	10.0
40' MB	24	20"	40'	21.5	15.8	13.1	12.4	11.8
45' MB or EAGLE	27	20"	45'	24.5	18.0	15.0	14.2	13.5
48' EAGLE or MEGA	29	20"	48'-4"	26.8	19.3	16.1	15.3	14.5
50' EAGLE	30	20"	50'	27.3	20.0	16.7	15.8	15.0
60' EAGLE	36	20"	60'	32.7	24.0	20.0	18.9	18.0
60' EAGLE or MEGA	37	20"	61'-8"	33.6	24.6	20.5	19.5	18.5
60' TWIN FORCE	37	50cm	60'-8"	33.1	24.3	20.2	19.2	18.2
66' EAGLE	40	20"	66'-8"	36.4	26.7	22.2	21.1	20.0
66' TWIN FORCE	43	50cm	70'-6"	38.5	28.2	23.5	22.3	21.1
72' EAGLE or MEGA	43	20"	71'-8"	39.1	28.7	23.9	22.6	21.5
80' EAGLE or FORCE	48	20"	80'	43.6	32.0	26.7	25.3	24.0
80' TWIN FORCE	49	50cm	80'-5"	43.8	32.2	26.8	25.4	24.1
88' EAGLE or FORCE	53	20"	88'-4"	48.2	35.3	29.4	27.9	26.5
88' EAGLE or FORCE	48	22"	88'	48.0	35.2	29.3	27.8	26.4
90' / 60' EAGLE Dual	54 / 36	20"	90'	49.1 / 32.7	36 / 24	30 / 20	28.4 / 18.9	27 / 18
90' EAGLE or FORCE	54	20"	90'	49.1	36.0	30.0	28.4	27.0
90' TWIN FORCE	55	50cm	90'-3"	49.2	36.1	30.1	28.5	27.1
100' EAGLE or FORCE	60	20"	100'	54.5	40.0	33.3	31.5	30.0
100' TWIN FORCE	61	50cm	100'-1"	54.6	40.0	33.4	31.6	30.0
118' TWIN FORCE	72	50cm	118'-1"	64.4	47.2	39.4	37.3	35.4
120' / 90' EAGLE Dual	72 / 54	20"	120' / 90'	65.5 / 49.1	48 / 36	40 / 30	37.9 / 28.4	36 / 27
120' FORCE & EAGLE	72	20"	120'	65.5	48.0	40.0	37.9	36.0
132' FORCE	72	22"	132'	72.0	52.8	44.0	41.7	39.6
132' FORCE	80	20"	133'-4"	72.7	53.3	44.4	42.1	40.0
120' TERRA FORCE	72	20"	120'	65.5	48.0	40.0	37.9	36.0
132' TERRA FORCE	72	22"	132'	72.0	52.8	44.0	41.7	39.6



PRESIDIO with EAGLE boom



COMMANDER with FORCE boom



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