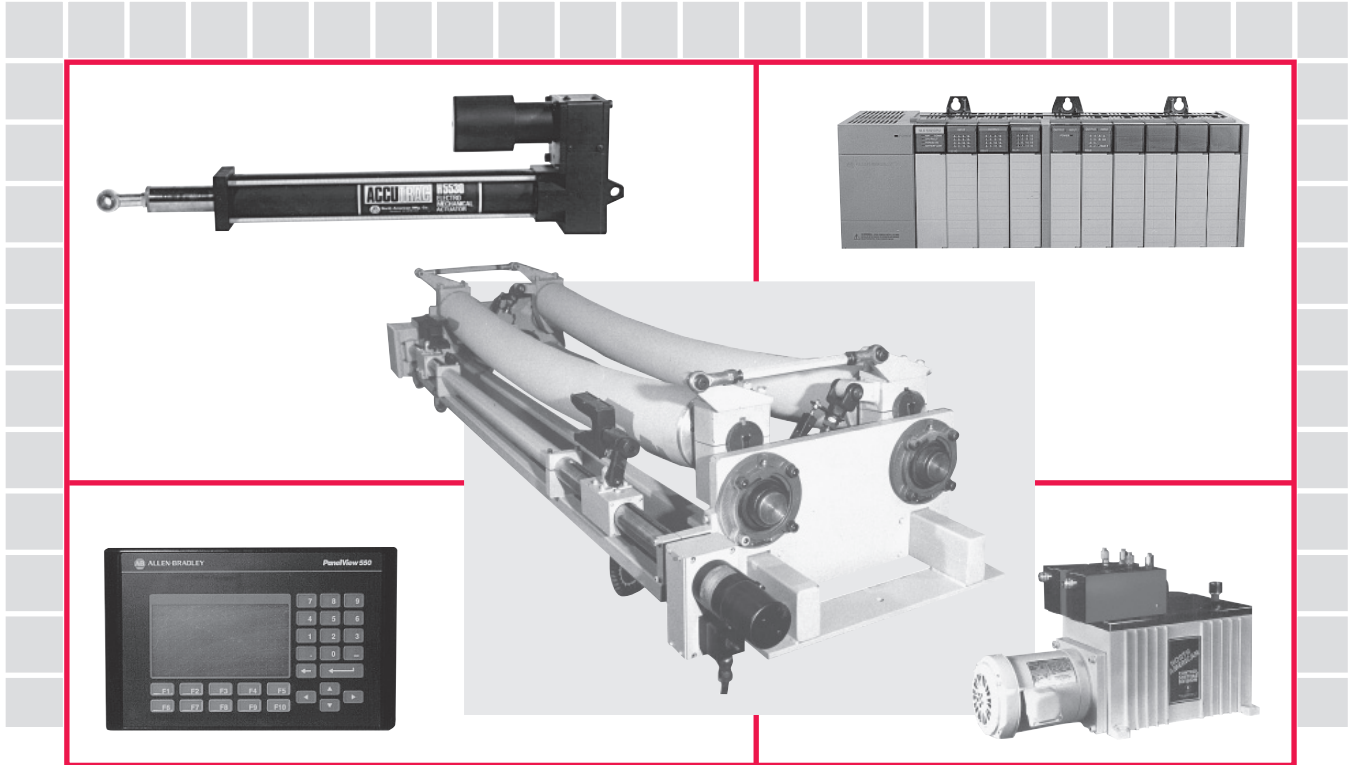


HSM 263, 245

SpreadMaster®

Tire Cord Spreading Systems
with Zero-Reset Transport Lag Control for Stable Operation
U.S. Patent Numbers 5,7,11,470 and 5,058,793

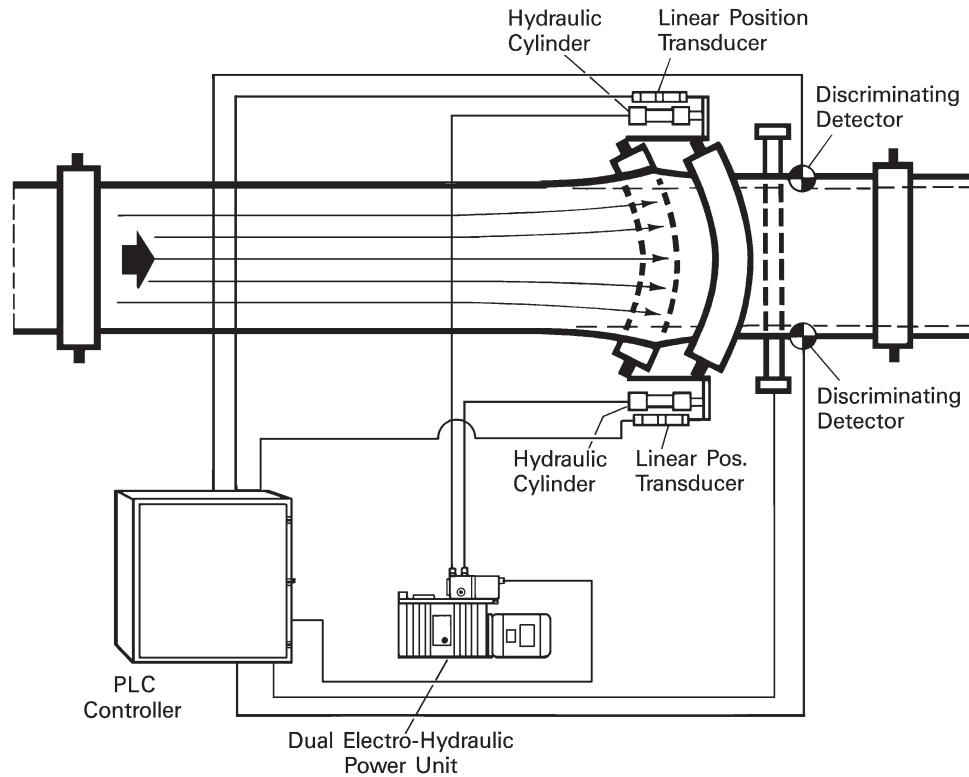


- ZERO-RESET control for stable operation
- SpreadMaster dual spreader-roll assembly
- Discriminating detectors--eight cords inch capability
- Electro-hydraulic or electro-mechanical servo controls
- Shaft encoder (yardage counter)
- Allen/Bradley Panelview Interface

The *SpreadMaster* tire cord spreading system features Fives North American's PLC based exclusive PLC based ZERO-RESET controllers which incorporate new control technology that compensates for the variable transport lag (hunting action) associated with other spreading devices. This allows the *SpreadMaster* to achieve stable and accurate ($\pm 1/16$ ") width control for tire cord fabric on treating lines and calender lines.

The *SpreadMaster* control system includes the following components: PLC controller, (2) photo-electric discriminating detectors mounted on a programmable left/right hand positioner, dual electro-hydraulic or electro-mechanical servo controls, shaft encoder, and dual double axle spreader rolls.

The "TOTAL SYSTEMS CONCEPT" is expertly designed into the *SpreadMaster* providing a user-friendly system. Contact your Fives North American sales engineer for an evaluation of your specific needs.



PLC Control

The exclusive use of the PLC based "Zero Reset" control is that it continuously analyzes the detectors and transducers to create an output signal proportional to the error signals received. The system then sends incremental correction signals to either electro-mechanical or electro-hydraulic actuators. The magnitude of the correction is proportional to the error "seen" at the detector and the rate is proportional to line speed. The PLC has battery backed memory and an EPROM for program storage.

Dual SpreadMaster® Spreader-Roll Assembly

The dual spreader-roll assembly includes two rubber-covered bowed rolls (operated in unison), two hydraulic cylinders, and two linear position transducers. The bowed rolls are constructed with universal joints at their centers so that each half operates independently. The dynamic movement of the rolls allows each side of the tire cord fabric to be spread to the desired width.

The rolls are positioned by hydraulic cylinders and include linear position transducers to insure stable control. The cylinders are controlled by electro-hydraulic servo valves.

The spreader-roll assemblies are sized for the specific tension zones of the calender lines.

Pulsed Discriminating Detector

The edge detector includes a high frequency, pulsed, LED light source and discriminating receiver for sensing the edge of untreated and treated tire cord. A visible LED is pulsed at 4-6 kHz and the receiver responds exclusively to the pulsed LED light output. The detector can "lock-on" the edge of tire cord fabric that has a minimum cord count of eight cords per inch.

Allen/Bradley Panelview Operator Interface

All control features available on the system can be accessed via the Panelview, as well as any necessary tuning parameters and settings. The Panelview also provides a graphical display of the system status, presets, etc. The Panelview features both pushbutton and touchscreen inputs and battery backed memory.

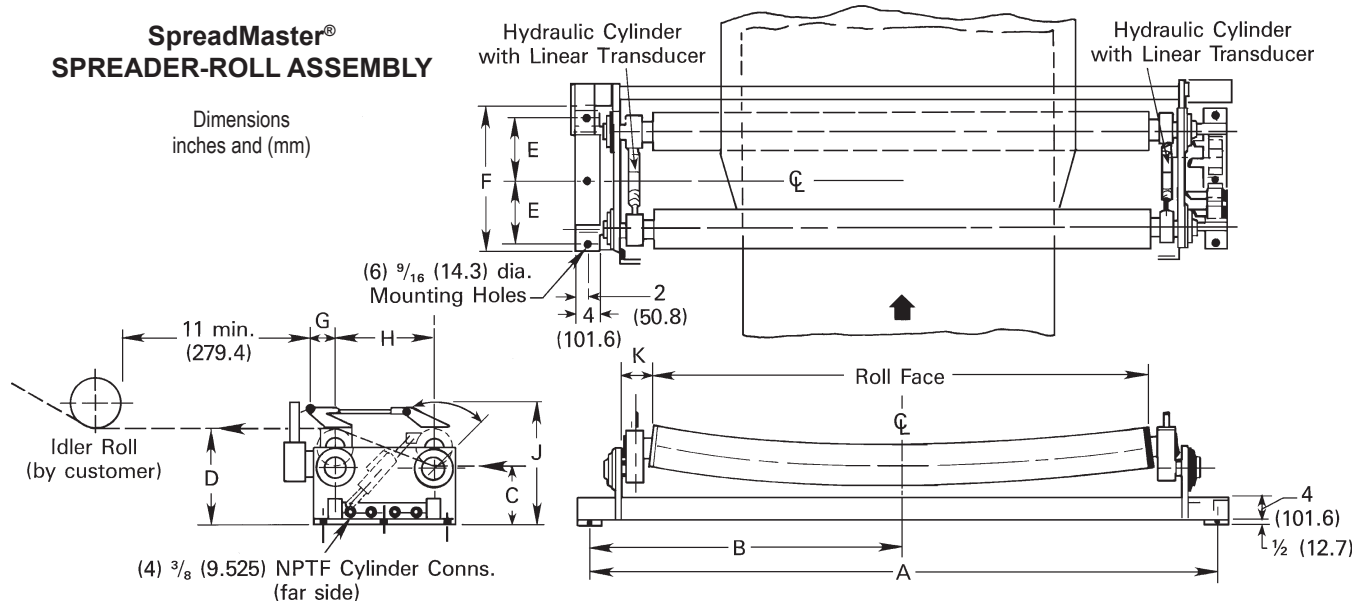
Electro-Mechanical Actuators

Fives North American's range of electro-mechanical drives and actuators offer a low maintenance alternative to electro-hydraulic systems. Systems are available to cover a wide variety of load requirements to accommodate virtually any field application. Either platform offers high performance, efficiency, and reliability.

Dual Servo Valve/Electro-Hydraulic Power Unit

The hydraulic power unit is a totally engineered packaged system that includes two precision hydraulic servo valves that provide the necessary proportional hydraulic force to move the spreader rolls. The servo valve is powered by an exclusive dc linear motor for high performance, efficiency, and reliability.

SpreadMaster® SPREADER-ROLL ASSEMBLY



HSM 263 6.3 dia. Rolls -- dimensions in inches and (mm)

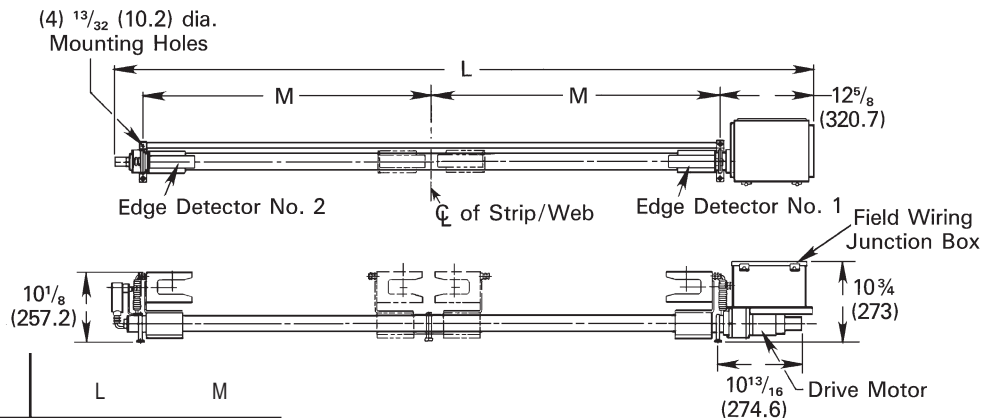
Roll Face	A	B	C	D	E	F	G	H	J	K	Cylinder Bore × Stroke
72" (1829)	90 (2286)	45 (1143)	8 ³ / ₈ (213)	14 ⁵ / ₈ (371)	10 ¹ / ₂ (267)	23 (584)	4 ³ / ₈ (111)	16 (406)	20 (508)	5 ¹ / ₂ (140)	2 ¹ / ₂ × 6 (63.5 × 152.4)
80" (2032)	98 (2489)	49 (1245)	8 ³ / ₈ (213)	14 ⁵ / ₈ (371)	10 ¹ / ₂ (267)	23 (584)	4 ³ / ₈ (111)	16 (406)	20 (508)	5 ¹ / ₂ (140)	2 ¹ / ₂ × 6 (63.5 × 152.4)

HSM 245 4.5 dia. Rolls -- dimensions in inches and (mm)

Roll Face	A	B	C	D	E	F	G	H	J	K	Cylinder Bore × Stroke
72" (1829)	90 (2286)	45 (1143)	7 (179)	11 ¹ / ₂ (292)	9 (229)	20 (508)	3 ¹ / ₂ (89)	13 (330)	16 ¹ / ₂ (419)	4 ¹ / ₄ (108)	2 × 3 (50.8 × 76.2)
80" (2032)	94 (2388)	47 (1194)	7 (179)	11 ¹ / ₂ (292)	9 (229)	20 (508)	3 ¹ / ₂ (89)	13 (330)	16 ¹ / ₂ (419)	4 ¹ / ₄ (108)	2 × 3 (50.8 × 76.2)

DETECTOR POSITIONER

Dimensions
inches and (mm)



Roll Face	Detector Positioner Model No.	L	M
72" (1829)	H5536-200-63	95 ³ / ₈ (2423)	39 ¹ / ₂ (1003)
80" (2032)	H5536-200-75	107 ³ / ₈ (2727)	45 ¹ / ₂ (1156)

SPECIFICATIONS

Width range:

HSM 245 (4.5" dia., 72" face): 36" to 60"
(914 mm to 1524mm)
HSM 245 (4.5" dia., 80" face): 36" to 68"
(914 mm to 1727 mm)
HSM 263 (6.3" dia., 72" face): 36" to 60"
(914 mm to 1524 mm)
HSM 263 (6.3" dia., 80" face): 36" to 68"
(914 mm to 1727 mm)

Allen/Bradley SLC 500 family of PLC's

Microprocessor Based PLC
Non-volatile Memory
Easily interfaced with customer PLCs
Standardized ladder logic programming

Allen/Bradley Panelview Interface

Easy to use touch screen
Graphical display for system status in a glance
Battery-backed memory
Individually tailored for each customer's needs

Overall dimensions:

Mounting dimensions: 30" wide × 49.25" long
(762 mm × 1251 mm)

Tension:

HSM 245: 1200 lb (544 kg)
HSM 263: 10 000 lb (4536 kg)

Speed:

HSM 245: 600 fpm (182 mpm)
HSM 263: 600 fpm (182 mpm)

Electro-Mechanical Actuator

H6350 DC drive tuned to the actuator type
Several models of actuators available

Motorized Detector Positioner

Reversing Ball Screw dc Motor Drive
Junction Box
(2) Discriminating Edge Detectors with Pulsed LED Light Source for Tire Cord

Dual Electro-Hydraulic Power Unit

HSM 245:
1/4 hp Power Unit
(2) Servo Valves
(2) Linear Motors
(2) Solenoid Operated 4-Way Lockout Valves
Motor Voltage: 230-460/3/60
220-415/3/50

HSM 263:
1/2 hp Power Unit
(2) Servo Valves
(2) Linear Motors
(2) Solenoid Operated 4-Way Lockout Valves
Motor Voltage: 230-460/3/60
220-415/3/50