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TRAILER ANTILOCK BRAKE SYSTEMS

ABS CONTROL PRINCIPLES

Current systems generally fit one of the following:
- Individual control (IR)
- Modified axle control (MAR)
- Modified select high regulation (MSH)
- Modified side control (MSR)

Two other classifications were used in the 1970's
- Select high control (SH)
- Select low control (SL)
TRAILER ANTILOCK BRAKE SYSTEMS

INDIVIDUAL CONTROL (IR)

- 2S/2M ("WHEEL BY WHEEL") CONTROL

- EACH WHEEL CONTROLLED BY ITS OWN SPEED SENSOR & MODULATOR

- OPTIMUM STABILITY AND STOPPING PERFORMANCE PARTICULARLY ON SPLIT COEFFICIENT ROAD SURFACES

- DO NOT USE ON DOLLY OR STEER AXLE OF A FULL TRAILER: SEVERE SIDE TO SIDE BRAKING FORCE COULD DESTABILIZE COMBINATION VEHICLE

Wheel-by-wheel control system.
TRAILER ANTILOCK BRAKE SYSTEMS

2S / 1M (AXLE CONTROL)

VARIETY OF CONTROL PHILOSOPHIES:

- SELECT LOW CONTROL (SL)
- SELECT HIGH CONTROL (SH)
- MODIFIED AXLE CONTROL (MAR)
- MODIFIED SELECT HIGH CONTROL (MSH)

2S/1M Configuration
SELECT LOW (SL)

- SL PHILOSOPHY USED IN 1970'S
- 2S/1M - CONTROLS BRAKING PRESSURE OF BOTH WHEELS
- CONTROL BASED ON LO-CO WHEEL
- MUCH LONGER STOPPING DISTANCES ON SPLIT CO SURFACES

2S/1M Configuration
TRAILER ANTILOCK BRAKE SYSTEMS

SELECT HIGH (SH)

- USED IN THE 1970'S
- 2S/1M - CONTROLS BRAKING PRESSURE OF BOTH WHEELS
- CONTROL BASED ON HI CO WHEEL
- RESULTS IN SHORT STOPPING DISTANCES ON SPLIT CO SURFACES
- POTENTIAL FOR SOME TIRE FLAT-SPOTTING

Axle-control
TRAILER ANTILOCK BRAKE SYSTEMS

MODIFIED AXLE CONTROL (MAR)

- 2S /1M - CONTROLS BRAKING PRESSURE OF BOTH WHEELS

- SIGNIFICANTLY BETTER THAN "SELECT LOW" PHILOSOPHY
  - FAVORS LO-CO WHEEL
  - HIGHER UTILIZATION OF HI-CO WHEEL THAN SL
  - SHORTER STOPPING DISTANCE WITH SOME FLAT-SPOTTING PROTECTION
MODIFIED SELECT HIGH (MSH)

- 2S/1M - CONTROLS BRAKING PRESSURE OF BOTH WHEELS
- CONTROL FAVORS HI-CO WHEEL
- SHIFTS BALANCE TOWARD SHORTER STOPPING DISTANCES AT EXPENSE OF SOME WHL LOCK ON:
  - SPLIT CO SURFACES
  - CONDITIONS OF SIGNIFICANT TORQUE IMBALANCES.
TRAILER ANTILOCK BRAKE SYSTEMS

MODIFIED SIDE CONTROL (MSR)

- 4S/2M – USES:
  - 1 VALVE / ECU ASSEMBLY
  - 1 ABS MODULATOR
  - 4 SPEED SENSORS

- CURB AND ROAD SIDES OF TRAILER CONTROLLED SEPARATELY

- PROVIDES EXCELLENT CONTROL FOR A TANDEM AXLE TRAILER

- OPTIMIZES BRAKING CAPABILITY OF EACH SIDE WHILE ASSURING THAT ALL WHEELS AVOID LOCKING.

Buckman Consulting Services, Inc.