



AIR BRAKE SYSTEMS — HDTT 1103

A. Course Description

- **Credits:** 6.00
- **Lecture Hours/Week:** 2.00
- **Lab Hours/Week:** 4.00
- **OJT Hours/Week:** 0
- **Prerequisites:** None
- **Corequisites:** None
- **MnTC Goals:** None

This course covers the theory of compressed air and its application to the brake system. Air system components will be identified and their functions studied individually and within the entire system. Emphasis will be placed on general repair and trouble-shooting. The course will cover identification of the mechanical components of the foundation brake system and their application, including all wheel/axle components. Theory of operation, removal, repair, and replacement along with diagnostic and testing procedures are covered in this course. Prerequisites: None

B. Course Effective Dates: 3/20/98 – Present

C. Outline of Major Content Areas

As noted on course syllabus

D. Learning Outcomes

1. adjust air governor
2. adjust automatic slack adjuster [manually]
3. adjust brake chamber plunger
4. adjust drive axle bearings
5. adjust s-cam brakes [manually]
6. adjust steering axle wheel bearings
7. adjust trailer axle bearings
8. adjust wedge brakes [manually]
9. check spoke wheel alignment
10. clean wheel bearings
11. demonstrate spring brake caging procedures
12. describe #1 emg. brake application

13. describe #2 emg. brake application
14. describe air dryer
15. describe air governor operation
16. describe auto-drain valves
17. describe bendix compressor operation
18. describe circuit operation
19. describe cummins compressor operation
20. describe double check valves
21. describe dual circuit components
22. describe dual circuit treadle valve
23. describe foot pedal service pressure
24. describe foundation brake purpose
25. describe limiting quick release valve
26. describe low pressure indicator
27. describe midland compressor operation
28. describe pp3 trailer supply valve
29. describe pp7 trailer supply valve
30. describe pressure protection valve
31. describe pressure reducing valve
32. describe quick release valve
33. describe ratio valve
34. describe relay emergency valve
35. describe relay valve
36. describe s-cam brake operation
37. describe safety valve operation
38. describe service brake chambers
39. describe service system pressure
40. describe single check valves
41. describe single circuit components
42. describe single circuit treadle valve
43. describe spring brake air pressure
44. describe spring brake safety procedures
45. describe stop lite switches
46. describe supply air pressure
47. describe tractor parking brake valve
48. describe tractor protection valve
49. describe tractor spring brake valve
50. describe trailer hand valve
51. describe trailer hand valve service pressure
52. describe trailer spring brake valve

53. describe trouble-shooting techniques
54. describe wedge brake operation
55. describe wedge components
56. disassemble air dryer
57. disassemble air governor
58. disassemble s-cam brakes
59. disassemble wedge brakes
60. exhibit safe work practices
61. identify air line types
62. identify compressor problems
63. identify dual circuit components
64. identify dual circuit systems
65. identify foundation brake types
66. identify s-cam components
67. identify single circuit components
68. identify single circuit systems
69. identify wedge brake components
70. inspect brake drums
71. inspect wheel bearings
72. install automatic slack adjuster
73. install wheel bearings
74. measure brake drums
75. mount disc-type wheels
76. mount spoke wheels
77. reassemble s-cam brakes
78. reassemble wedge brakes
79. remove automatic slack adjuster
80. remove disc-type wheels
81. remove service brake chambers
82. remove spoke wheels
83. remove wheel bearings
84. replace air governor
85. replace c/r brand wheel seal
86. replace national brand wheel seal
87. replace stemco brand wheel seal
88. torque disc-type wheels
89. torque spoke-type wheels

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

F. Learner Outcomes Assessment

As noted on course syllabus

G. Special Information

None noted