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SPICER®
BRAKE COMPONENTS

# Brake Ship Direct Distributor Program Guide

Heavy-Duty Components

**UHB3050-HVTSS**
**November 2002**

# Spicer® Heavy-Duty Brake Ship Direct Program Guide

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# Spicer® Heavy-Duty Brake Ship Direct Program Guide

## Welcome

Welcome to the Spicer® Heavy-Duty Brake Ship Direct Program. This program offers a full line of OE-certified, application-specific brake shoes and linings, which allows you to replace your customers' original-equipment brakes with genuine OE-certified replacement brake products.

## What does this mean to you?

By replacing original-equipment brakes with Spicer® brake components, your customers will enjoy the continued performance, reliability and quality that they've come to expect with their trucks or trailers. Why risk the possibility of an unhappy customer? That's why Spicer® offers only OE-certified products for both new production and service parts.

## OEM Products Offered in the Spicer® Heavy-Duty Brake Ship Direct Program

As a Spicer® Heavy-Duty Brake Ship Direct Program customer, you will receive the same OE-certified products that are installed on new trucks for your aftermarket applications. Products available through this program include:

- New Replace-A-Brake® Kits
- Relined Replace-A-Brake® Kits
- New Lined Brake Shoes
- Relined Brake Shoes
- Unlined Brake Shoes
- Brake Hardware Kits
- S-Cams and S-Cam Repair Kits
- Wheel Attaching Parts
- Manual and Automatic Slack Adjusters

## Two popular brake programs combined into one:

To offer you the most comprehensive application-specific program, the Spicer® Heavy-Duty Brake Ship Direct Program combined two popular programs into one full-line program, offering high-quality, OE-certified products.

- Eaton® Top Spec Program
- Spicer® Brake From Tradition Program

→ Spicer® Heavy-Duty Brake Ship Direct

# Spicer® Heavy-Duty Brake Ship Direct Program Guide

## Order Entry Information:

Orders for all parts and assemblies should be directed (via TRANSNET, fax, mail or phone) to:

Dana Corporation
Heavy Vehicle Technologies and Systems Service Division (HVTSS)
P.O. Box 321
Toledo, OH 43697-0321
Phone: (800) 621-8084
Fax: (800) 332-6124

Orders are accepted by phone from 8:00 a.m. to 6:00 p.m. EST.
Orders are accepted by fax 24 hours a day. Please include your P.O. # on the order form.

**Please Note:** A minimum $25.00 stock order must be placed per P.O. All orders less than $25.00 will be subject to a surcharge that will bring the total order to $25.00, excluding shipping and handling.

## Lead Times

- New Product: Orders will ship within 3 business days from receipt of a P.O.
- Emergency Breakdown Orders: See details on page 5.
- Relined Product: Orders will ship within 10 business days from receipt of a P.O.
- Spicer® Brake Mix and Match Program: Orders will ship within 10-15 business days from receipt of a P.O.

## Pricing

| | |
|---|---|
| Heavy-Duty Brake Components Distributor Net Pricing: | UHB80(X)-6 |
| Heavy-Duty Brake Components Suggested List Prices: | UHB80(X)-L |
| Relined Brake Shoes and Kits Distributor Net Pricing: | UHR80(X)-6 |
| Relined Brake Shoes and Kits Suggested List Prices: | UHR80(X)-L |
| Outrunner Oil Bath Seals Distributor Net Pricing: | OR80(X)-6 |
| Outrunner Oil Bath Seals Suggested List Prices: | OR80(X)-L |
| Spicer Brake Mix and Match Program Distributor Net Pricing: | UHB8903-(X)-HVTSS |

Spicer® Brake Mix and Match Program Quantity Breaks:

- 5% off purchases of 60 - 119 Replace-A-Brake® Kits
- 10% off purchases of 120 or more Replace-A-Brake® Kits
- 5% off purchases of 120 - 239 lined brake shoes
- 10% off purchases of 240 or more lined brake shoes

**Please Note:** All parts not in the above price lists are quote only.

# Spicer® Heavy-Duty Brake Ship Direct Program Guide

## Freight

New Lined and Unlined Brake Shoes, Kits, and Components:

– Freight will be prepaid on orders of $1,200 or more.

– Orders that do not meet the stated minimums will be shipped F.O.B. from the appropriate distribution center - Crossville, TN, Montgomery, AL, or Henderson, KY.

Relined Brake Shoes and Kits:

– Prepaid freight will apply on orders of 200 relined brake shoes or 100 boxes of relined brake shoe kits.

– Orders of less than 200 shoes or 100 kits will be shipped freight collect from the closet Spicer Authorized Regional Reliner.

## Emergency Breakdown Orders (EBO)

An EBO (truck-down order) will be shipped same day, freight collect, F.O.B. from the appropriate distribution center. The customer will determine the method of shipment (ground or air).

- A 5 percent handling charge will be added to all phone and fax EBO orders. This handling charge will be waived on DanaMate and Danamate.com orders.
- Orders under $25.00 will be subject to a surcharge as described in the ordering procedures on page 3, in addition to the 5 percent EBO handling charge.

On faxed orders, please indicate that this is an EBO, otherwise the order will be processed as a standard stock order.

Customers now have the option of placing EBOs through www.Danamate.com. **The 5% handling charge on EBOs will be waived**. Ask your Spicer® sales representative how to gain access to this valuable website or simply call our Customer Service team at (800) 621-8084. Access can also be achieved by contacting us at danamate@dana.com, or by following the “Sign Up” procedures on Danamate.com.

## Additional EBO Guidelines:

- Ship or Cancel.
- Inventory is committed when order is placed.

## Warranty

– New Product Warranty: 180 days from date of service for product replacement. New brake shoe warranty provides that products be “free from defects in material and workmanship” for the life of the original lining.

– Relined Product Warranty: The Spicer® Authorized Regional Reliners provide a 30-day product warranty “free from defects in material and workmanship” for service part replacement.

– All warranty issues should be directed to your Spicer sales representative.

# Spicer® Heavy-Duty Brake Ship Direct Program Guide

## Cores

New Shoes and Kits: No core procedures. Customers may dispose of cores as seen fit.

Relined Shoes and Kits:

- One-for-one, like-for-like exchange administered by Spicer® Authorized Regional Reliner.
- Customer will have 90 days from date of shipment to return cores to Spicer® Authorized Regional Reliner, after which customers will be billed for any shortage.
- At the discretion of the Spicer Authorized Regional Reliner, core charges will be based on the current local market value or on Dana's currently published core values.
- Customer can hold cores until the next reline shoe delivery from the Spicer® Authorized Regional Reliner, or pay freight to return cores.
- All excess and/or ineligible cores will be maintained in a positive core bank. No checks will be issued
- The Spicer® Authorized Regional Reliners may, from time to time, purchase at current market value, any cores the customer may have accumulated. Current market values may vary from region to region and from time to time, depending upon local supply and demand of the various cores. Customers should contact the Spicer® Authorized Regional Reliners directly to arrange for excess core buy backs.

## Return Policy

– New Lined and Unlined Brake Shoes, Kits, and Components: Product returns are allowed on an annual basis and will be limited to 3% of the previous year's purchases. A 10% restocking charge will apply. All parts (including superseded parts) returned against the stock adjustment return allowance must be in the current or previous published price list, and in the original carton. Loose parts, parts purchased on the HVTSS bulk program or parts not in the original Spicer carton will not be accepted and will be returned to the customer freight collect. Credit will be issued at the lowest published package price at the time of the return.

– Relined Brake Shoes and Kits: There are no return privileges for relined products.

– All product return issues should be directed to your Spicer® sales representative.

# Spicer® Heavy-Duty Brake Ship Direct Program Guide

## Features and Benefits of the Spicer® Heavy-Duty Brake Ship Direct Program

### Friction

All Spicer® Standard Platform Friction is color-coded for easy identification. Please see the Spicer® Friction Specification Sheets on pages 12 and 13 for details.

All Spicer® Extended Service Platform Friction is numerically coded the same as it is for new production applications, however the part numbers have been changed to Spicer® Brake part numbers for easy serviceability. More information is available on the Spicer® Friction Specification Sheets on pages 12 and 13.

### What is the difference between Spicer® Standard and Spicer® Extended Platform Frictions?

Extended service friction is 22% thicker than standard platform lining. Not only is it visible to the eye, but the density characteristics are also altered. Spicer® presses more friction material into the block to make it denser, so that the extended service friction has a 30% to 35% longer life compared to standard platform linings.

### Are all linings the same?

Absolutely not! Brake linings are designed to be application specific. Spicer® uses proprietary mixes that meet precise OE specifications. Examples include Spicer's® exclusive ES 310, 410 and 420 linings, which are designed to the strict standards of high quality and performance set forth by Spicer® engineers.

No other brake lining or shoe manufacturer comes close to the strict standards that are used to manufacture Spicer® brake linings. Other shoes or linings may pass TMC standards, even OE certification, but very few are able to withstand the grueling tests performed by Spicer® engineers.

### Brake Shoes

Spicer® manufactures two distinct types of brake shoes. One is a standard platform that uses a welded assembly with a prime and paint process. The second is our exclusive Spicer® Extended Service (ES) shoe. The Spicer® ES shoe has many additional features to improve the form and fit of the brake shoe to the spider and the drum. This fit improves brake performance and service life. The Spicer® ES shoe is the only brake shoe manufactured with a patented "hot stake" process. This process creates the best fitting and most robust product in the market today.

### Hardware Kits

Hardware kits are available for all applications. Please consult UHB800-BRK for further information.

### S-Camshafts and S-Camshaft Overhaul Kits

We only manufacture one level of S-camshaft bushings and seals, once again offering the same products in the aftermarket as those used in OE production. All Spicer® S-camshafts are manufactured to the highest standards demanded by premium truck manufacturers.

# Spicer® Heavy-Duty Brake Ship Direct Program Guide

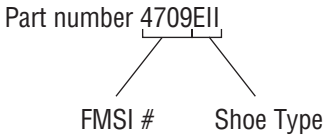
## Part Number Identification

Spicer® uses a smart part numbering system to make identification and replacement of brake products easy for you.

Here are some examples that illustrate how easy it is to use the smart part numbering system.

**Base Number = Your FMSI Number**

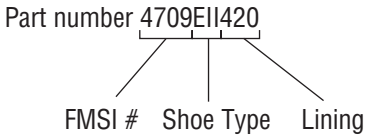
**Unlined Brake Shoe**




The new unlined brake shoe part number is 4709EII.

Part number 4709EII means that you have a FMSI# 4709 type EII new unlined brake shoe.

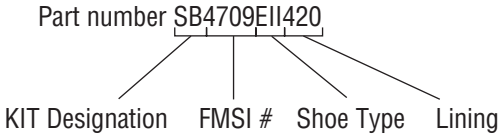
**New Lined Brake Shoe**




The new lined brake shoe part number is 4709EII420.

Part number 4709EII420 means that you have a FMSI# 4709 type EII new brake shoe with ES420 lining.

**New Replace-A-Brake® Kit**



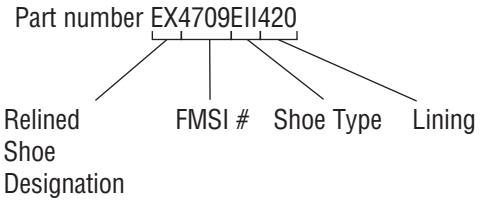

The new Replace-A-Brake® Kit part number is SB4709ESII420.

Part number SB4709EII420 means that you have a new Replace-A-Brake® Kit for FMSI# 4709EII with an ES420 lining.

Replace-A-Brake® kits contain two new lined shoes and a hardware kit.

# Spicer® Heavy-Duty Brake Ship Direct Program Guide

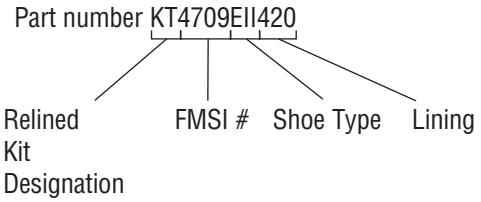
**Relined Brake Shoe**




The relined brake shoe part number is EX4709EII420.

Part number EX4709EII420 means that you have a FMSI# 4709 type EII relined brake shoe with ES420 lining.

**Relined Replace-A-Brake® Kit**

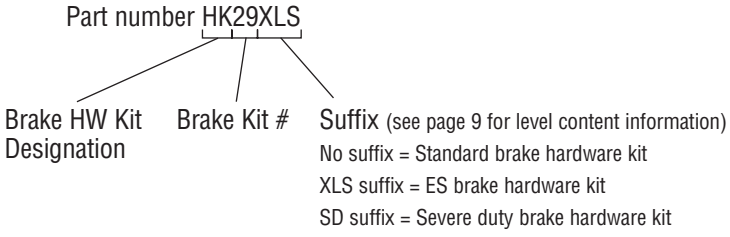



The relined Replace-A-Brake® Kit part number is KT4709ESII420.

Part number KT4709EII420 means that you have a relined Replace-A-Brake® Kit for FMSI# 4709EII with an ES420 lining.

Relined Replace-A-Brake® kits contain two relined shoes and a hardware kit.

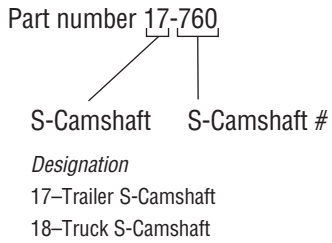
**Brake Hardware Kits**




The brake hardware kit part number is HK29XLS.

Part number HK29XLS means that you have ES brake hardware kit #29 (refer to catalog #UHB800-BRK for complete brake hardware kit application information).

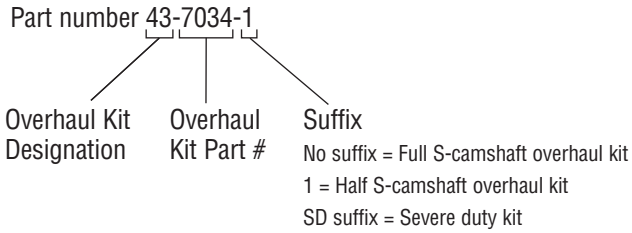
**S-Camshafts**




The S-Camshaft part number is 17-760.

Part number 17-760 means that you have a trailer S-camshaft #760 (refer to catalog #UHB800-CAM for complete Spicer® S-camshaft application information).

**S-Camshaft Overhaul Kits**

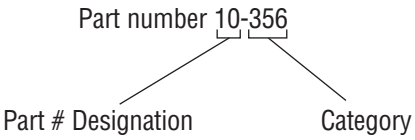



The S-Camshaft part number is 43-7034-1.

Part number 43-7034-1 means that you have S-camshaft half kit #7034 (refer to catalog #UHB800-CAM for complete Spicer® S-camshaft overhaul kit application information).

# Spicer® Heavy-Duty Brake Ship Direct Program Guide

## Slack Adjusters, Hardware and Wheel Attaching Parts




7 = Flange Gaskets
8 = Grease Seals & Hubcaps
10 = Slack Adjusters
12 = Spindle Nuts
13 = Tools
15 = Anchor Pins
16 = Anchor Pin Bushings
19 = Brake Return Springs
20 = Return Spring Pins
23 = Brake Shoe Bushings
24 = Brake Block Rivets & Bolts
27 = Cam Bracket Bushings
28 = Cam Spicer® Bushings
29 = Seals, Washers & Snap Rings
30 = Cam Brackets
31 = Cam Enclosures
32 = Rollers & Pins
33 = Dust Shields
34 = Lock Rings and Retainers
35 = Felts, Washers & Seals
50 = Disc Wheel Studs
51 = Disc Wheel Nuts
52 = Spoke Wheel Clamps
53 = Spoke Wheel Studs & Nuts
54 = Flange & Brake Drum Bolts

# Spicer® Heavy-Duty Brake Ship Direct Program Guide

## Kit Contents

### Replace-A-Brake® Kits

New Replace-A-Brake® kits contain two new lined shoes and a hardware kit.

Relined Replace-A-Brake® kits contain two relined shoes and a hardware kit.

### Brake Hardware Kits

Each brake hardware kit varies in content depending on the kit level, application and FMSI number. You may choose from 3 levels of hardware kits designed to meet the specific needs of your fleets.

| | Spicer® Kits | Spicer® XLS Kits | Spicer® SD Kits |
|---|---|---|---|
| **Application** | Standard Service Platforms | Extended Service Platforms | Severe Duty Environments |
| **Market** | Trailer, Line Haul | Large Fleets | Off-Highway, Refuse, Snow Removal |
| **Return Spring** | Standard Heat Treated Music Wire | Heavy-Duty Heat Treated Music Wire | Heavy-Duty Heat Treated Music Wire |
| **Cam Roller** | Smooth | Knurled | Knurled |
| **Anchor Pin Bushing** | Steel or Composite | Stainless Steel or Composite | Stainless Steel or Composite, Dimpled |
| **Lubricant** | Not Applicable | Not Applicable | Antiseize Lubricant |

- Spicer® hardware kits meet or exceed all OE standards and are specifically designed for trailer and line-haul applications.
- Spicer® XLS hardware kits meet the demands of Spicer® ES brake systems, and feature knurled rollers, heavy-duty return springs and stainless steel anchor pin bushings.
- Spicer® SD hardware kits are designed for the most severe applications, and feature an anti-seize lubricant and dimpled stainless steel bushings. The combination of these components reduces anchor pin to bushing seizure, making future brake changes easier.

### S-Camshaft Overhaul Kits

Each S-Camshaft overhaul kit varies in content depending on the application. Refer to catalog #UHB800-CAM for complete information on S-Camshaft overhaul kits.

# Spicer® Heavy-Duty Brake Ship Direct Program Guide

## Spicer® Linings Typical Application Chart


Refuse Truck

| Platform | GOOD | BETTER | BEST |
|---|---|---|---|
| Standard | YELLOW | GOLD | ORANGE |
| Extended Service | ES690 | ES440 | ES1100 |


Mixer (Tandem Axle)

| Platform | GOOD | BETTER | BEST |
|---|---|---|---|
| Standard | YELLOW | GOLD | ORANGE |
| Extended Service | ES690 | ES440 | ES1100 |


Tandem Dump

| Platform | GOOD | BETTER | BEST |
|---|---|---|---|
| Standard | YELLOW | GOLD | ORANGE |
| Extended Service | ES690 | ES440 | ES1100 |


Beverage

| Platform | GOOD | BETTER | BEST |
|---|---|---|---|
| Standard | BLUE | RED | GOLD |
| Extended Service | ES420 | ES600 | ES440 |


School Bus

| Platform | GOOD | BETTER | BEST |
|---|---|---|---|
| Standard | BLUE | RED | GOLD |
| Extended Service | ES420 | ES600 | ES440 |


Tri-Axle Dump Trailer

| Platform | GOOD | BETTER | BEST |
|---|---|---|---|
| Standard | RED | GOLD | ORANGE |
| Extended Service | ES600 | ES440 | ES1100 |


Tanker

| Platform | GOOD | BETTER | BEST |
|---|---|---|---|
| Standard | BLUE | RED | GOLD |
| Extended Service | ES420 | ES600 | ES440 |


Double

| Platform | GOOD | BETTER | BEST |
|---|---|---|---|
| Standard | SILVER | BLUE | RED |
| Extended Service | ES410 | ES420 | ES600 |


Moving Van - Low Profile

| Platform | GOOD | BETTER | BEST |
|---|---|---|---|
| Standard | – | – | RED |
| Extended Service | – | – | ES310 |


Tandem Axle Tractor Trailer

| Platform | GOOD | BETTER | BEST |
|---|---|---|---|
| Standard | SILVER | BLUE | RED |
| Extended Service | ES410 | ES420 | ES600 |


Flatbed

| Platform | GOOD | BETTER | BEST |
|---|---|---|---|
| Standard | SILVER | BLUE | RED |
| Extended Service | ES410 | ES420 | ES600 |


Single Axle Tractor Trailer

| Platform | GOOD | BETTER | BEST |
|---|---|---|---|
| Standard | RED | YELLOW | GOLD |
| Extended Service | ES600 | ES690 | ES440 |

# Spicer® Heavy-Duty Brake Ship Direct Program Guide

## Spicer® Friction Application Chart

| GAWR | Standard Platform | Extended Service Platform | General Application |
|---|---|---|---|
| **17,000** | Green | – | Light-duty friction for mid-range trucks and container chassis |
| **20,000** | – | ES310 | High-temperature friction formulated specifically for use with the 15" reduced envelope brake package |
| | Silver | ES410 | Medium-grade friction for line-haul, city pick-up and delivery applications |
| | Blue | ES420 | Premium-grade friction giving long lining life and long drum life for line-haul, city pick-up, delivery and school bus applications |
| | – | ES450 | Cohesive friction for long-haul applications |
| **23,000** | Red | ES600 | Long-life friction for typical over-the-road applications |
| | Yellow | ES690 | Premium-grade friction for line-haul and vocational applications |
| | Gold | ES440 | Quiet, long-life friction for high-duty cycle applications, such as school bus and beverage trucks |
| | Orange | ES1160 | Severe service combination friction |
| | Bronze | ES1100 | Severe service full metallic friction |
| **25,000** | – | ES1050 | Severe service friction for vocational applications |

**Standard Platform Friction -** Developed for use on all industry standard platform single and double anchor pin applications.
**ES Platform Friction -** Developed specifically for use with Spicer® single anchor pin extended service brake packages. This increased density friction is 22% thicker than the industry standard platform lining. The combination of increased density and increased thickness allows for a 30% to 35% wearable life expectancy increase when compared to the standard platform lining.

# Spicer® Heavy-Duty Brake Ship Direct Program Guide

## Literature

As a customer of the Spicer® Heavy-Duty Brake Ship Direct Program, you have access to valuable literature to assist you. Here is a list of available literature with descriptions to help you with your brake product replacement needs.

Please note that this literature is also available on line at www.SpicerBrakes.com.

| Number | Description |
|---|---|
| UHB800-BRK | Spicer® Brake Shoe and Hardware Kit Book |
| UHB800-CAM | Truck and Trailer S-Camshafts and Camshaft Overhaul Kits |
| UHB800-CAM-ID | Truck and Trailer S-Camshaft Quick Identification Guide |
| UHB3001-CVSP | Brake Products Information Guide |
| UHB3002-CVSP | Brake Lining Guide |
| UHB3003-CVSP | Spicer® ES 310 Lining Spec Sheet |
| UHB3004-CVSP | Spicer® ES 410 Lining Spec Sheet |
| UHB3005-CVSP | Spicer® ES 420 Lining Spec Sheet |
| UHB3007-CVSP | Spicer® ES 440 Lining Spec Sheet |
| UHB3008-CVSP | Spicer® ES 450 Lining Spec Sheet |
| UHB3009-CVSP | Spicer® ES 600 Lining Spec Sheet |
| UHB3012-CVSP | Spicer® ES 690 Lining Spec Sheet |
| UHB3014-CVSP | Spicer® ES 1050 Lining Spec Sheet |
| UHB3015-CVSP | Spicer® ES 1100/600 Combo Lining Spec Sheet |
| UHB3016-CVSP | Spicer® ES 1100 Lining Spec Sheet |
| UHB3017-CVSP | Spicer® Blue Lining Spec Sheet |
| UHB3018-CVSP | Spicer® Bronze Lining Spec Sheet |
| UHB3020-CVSP | Spicer® Gold Lining Spec Sheet |
| UHB3021-CVSP | Spicer® Green Lining Spec Sheet |
| UHB3022-CVSP | Spicer® Orange Lining Spec Sheet |
| UHB3023-CVSP | Spicer® Red Lining Spec Sheet |
| UHB3024-CVSP | Spicer® Silver Lining Spec Sheet |
| UHB3025-CVSP | Spicer® Yellow Lining Spec Sheet |
| UHB3042-CVSP | Spicer® Brake Shoe Poster |

## Literature Order Information

To obtain literature, please contact HVTSS Customer Service at (800) 621-8084.

# Spicer® Heavy-Duty Brake Ship Direct Program Guide

## Glossary

**ABS:** Anti-lock braking system

**Actuator:** A device which physically initiates the mechanical motion of a brake system component.

**Air Disc Brakes (ADB):** Air-actuated brakes, which upon application, employ a caliper to clamp force of two brake pads against a rotor. Air discs, compared with drum-type brakes, have superior ability to resist fade.

**AL Factor:** A mathematical expression of the brake chamber and slack adjuster combination. “A” equals the effective area, in square inches, of the brake chamber. “L” equals the effective length, in inches, of the slack adjuster. For example, 30 (air chamber) x 6 (slack adjuster) = 180AL Factor.

**Anchor Pin:** A pin or pins inserted in the brake spider to which the brake shoes attach and pivot upon.

**Anti-compounding**: A system that prevents application of service brakes from compounding (adding) to the force exerted by parking brakes. Functionally, this guards against brake drum cracking or brake shoe and brake lining damage.

**Anti-Lock:** Optional on trailers until March 1, 1998, a safety-oriented system which senses wheel rotation (at one or more axles) during braking and cycles the brakes to prevent wheel lockup.

**ASA:** Automatic slack adjuster

**ATA:** American Trucking Association

**ATC:** Automatic traction control

**BBW:** Brake by wire

**BCN:** Brake certification notice

**Bell-Mounted Drum:** Drum with variation of inner diameter (i.e., greater at open end), preventing full contact with brake linings.

**Blue Drum:** Brake drum with friction surface blued from high temperature. High temperature may result, for example, from dragging of brakes caused by weak return springs. Blue drum also may result from lack of brake balance.

**Brake Block:** Friction material or lining attached to brake shoe.

**Brake Chamber Diaphragm:** A device within the brake chamber that converts air pressure to mechanical force via a push rod.

**Brake Drag:** Failure of one or more brakes to release immediately and/or completely after driver removes his foot from the brake pedal. Constant drag, unrelated to a brake application, also can exist.

**Brake Fade:** Brake fade results from a reduction in friction between linings and drums caused by exposure to water, dragging brakes on a down-grade, or over-adjusted brakes resulting in an overheated brake drum. Heat fade occurs when linings overheat and become less aggressive. Gradual and predictable fade is desirable as a warning. (Silver and Yellow will glaze if not burnished.)

**Burnish:** The conditioning or seasoning of a brake lining by wear and temperature via a test procedure or in-service operation.

**Caliper:** In an air disc brake system, the clamping device to which the friction material is attached. When actuated, the caliper applies braking force to both sides of the rotor.

# Spicer® Heavy-Duty Brake Ship Direct Program Guide

**Cam Base Circle Radius:** The perpendicular distance from the center of the s-cam to the vector defined by the center of the cam roller and the intersection of the cam roller with the s-cam profile. Most CBCRs are designed to be at or near 1/2 inch.

**Clevis Pin:** Pin connecting the arm of slack adjuster to a brake chamber push rod yoke.

**CMVSS:** Canadian Motor Vehicle Safety Standard

**Coefficient of Friction:** Developed by Friction Materials Standards Institute, a double-letter code printed on the edge of a brake block to designate its range of aggressiveness. (Examples: EE, FF, GG and FG)

**Cracked Drum:** Brake drum cracked all the way through by excessive heat build-up (perhaps signifying inadequate drum weight and/or driver abuse) and/or resurfacing of a drum beyond the manufacturer's limit.

**CTI:** Central tire inflation

**Dual Brake System:** Mandated by FMVSS 121, the use of a dual air system (primary and secondary) in order to retain braking ability in the event one system fails.

**Dust Shield:** A plate made of metal or polyethylene that is mounted behind a brake drum to minimize the entry of dirt and road splash.

**EBS:** Electronic braking system

**ECU:** Electronic control unit

**Edge Code:** The information found on the edge of a brake block. Spicer® friction edge coding includes the type of friction and the coefficient of friction.

**Emergency Brake System:** Not a separate system, emergency braking (in the event of air loss) involves various portions of the parking and service brake systems.

**Engine Brake:** An optional device that converts a diesel engine into a power-absorbing air compressor to slow a vehicle on downgrades.

**ES:** Extended Service, Eaton's term for brake design using thicker-than-standard lining.

**ESII:** Eaton's redesigned Extended Service brake shoe, introduced in 1996. It employs a new hot staked manufacturing process, redesigned retaining springs, lighter weight and elimination of the tabs from the previous design table.

**Exhaust Brake:** An optional device that uses engine exhaust back pressure to slow a vehicle on downgrades.

**FC:** Fast Change, Spicer's® term for brake design with an open anchor pin rib. Interchanges with Rockwell Q design.

**FCII:** Spicer's® redesigned 12-1/4 Fast Change brake shoe, introduced in 1996. It includes a redesigned table, thicker rib material, an improved welding process, and standardization of brake hardware components.

**FMSI:** Friction Materials Standards Institute

**FMVSS:** Federal Motor Vehicle Safety Standard

**Foundation Brake System:** A term inclusive of mechanical components involved in mechanically providing braking force: brake chambers, slack adjusters, brake drums and brake shoe assemblies.

**FT:** Fabricated/Tapered, Spicer's® term for brake design with a closed anchor pin rib. Interchanges with Rockwell P design.

**GAW:** Gross axle weight

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**GAWR:** Gross axle weight rating, a rating in pounds of brake lining material or axle carrying capacity.

**GCW:** Gross combination weight, the total weight carrying capacity of a combination vehicle as determined by axle ratings.

**GCWR:** Gross combination weight rating

**Grease-Stained Drum:** A brake drum with discoloration of the friction surface caused by, for example, improper greasing of brake camshaft.

**GVW:** Gross vehicle weight, the total weight carrying capacity of one vehicle, (such as a truck, bus, tractor, or trailer) as determined by axle ratings.

**GVWR:** Gross vehicle weight rating

**HA:** Suffix used to denote brake shoes used on axles produced by Dana Corporation's Spicer Heavy Axle & Brake Division.

**HDBMC:** Heavy-Duty Brake Manufacturer's Council

**Heat-Checked Drums:** A brake drum with a pattern of hard, slightly raised, dark spots on its friction surface. Caused by localized overheating and sudden cooling. These spots should be ground off to prevent drum cracking, uneven lining wear and loss of braking efficiency. If spots cannot be removed, the drum should be discarded.

**Lining Growth:** Permanent swelling of brake linings due to heat exposure.

**Lining Number:** Numbers shown are FMSI (Friction Materials Standards Institute) standards and fit the corresponding brake shoe core.

**NHTSA:** National Highway Transportation Safety Administration

**Out-Of-Round Drum:** A brake drum with variations in its inner diameter, causing reduced braking efficiency and excessive wear on one side of the brake linings. An out-of-round drum often can be machined, within manufacturer's limits, to restore concentricity.

**Over-Sized Drum:** This refers to a brake drum having an inner diameter greater than the discard diameter marked on the drum by its manufacturer.

**P Brake:** Rockwell's term for brake design with a closed anchor pin rib. Interchanges with Spicer® FT design.

**PM:** Preventive maintenance

**Polished Drums:** A brake drum with a friction surface polished to a mirror-like finish by unsuitable brake linings. Remove gloss from drum with eighty grit emery cloth.

**Push Rod:** A rod, protruding from a brake chamber, which is connected to the arm of a slack adjuster via a clevis pin.

**Q Brake:** Quick-change, Rockwell's term for brake design with an open anchor pin rib. Interchanges with Spicer® FC design.

**Q Plus:** Rockwell's term for a quick-change design brake shoe using thicker than standard lining.

**R12:** Pilot control air valve with quick dump.

**R14:** Pilot control air valve with quick dump and anti-compounding.

**REB:** Eaton's new 15" design Reduced Envelope Brake.

**Replace-A-Brake:** Spicer's® term for a kit to service one brake assembly. It includes two new lined brake shoes and the necessary anchor pins, rollers, springs, etc.

**Retarder:** Auxiliary brake device, including engine brake, exhaust brake, hydraulic retarder or electric retarder.

**Return Springs:** Springs that retract brake shoes upon release of the brake actuator valve.

**RFI:** Radio frequency interference

**Roll Over:** A term denoting that an s-cam has traveled beyond its designed stopping position during brake application.

**RP:** Recommended practice

**SAE:** Society of Automotive Engineers

**SAP:** Single Anchor Pin, Eaton's term for brake design using one non-replaceable anchor pin per brake assembly.

**S-cam Brake:** A type of brake where mechanically induced rotation of an S-shaped cam forces brake linings against the brake drum.

**Scored Drum:** Brake drum with a grooved friction surface, resulting in excessive lining wear. Severe scoring requires that a drum be machined, within manufacturer's limits, before replacing the linings.

**Service Brakes:** As opposed to parking brakes, that portion of the brake system used for normal brake applications.

**Slack Adjuster:** A lever, connecting the brake push rod with the foundation brake camshaft, which provides torque to rotate the brake camshaft when the brake treadle is depressed. Used only on cam-actuated brakes, it also provides a means of adjusting clearance between the brake shoes and the drum to compensate for lining wear. Some models are automatic, requiring proper installation procedures and requiring periodic inspection to ensure proper functioning. Manual slack adjusters require proper installation and manual adjustment at maintenance intervals.

**SLR:** Static loaded radius

**Spring Brake:** Generally refers to a tandem chamber actuator that incorporates an air-applied service brake chamber or an air-released/spring-applied parking or emergency brake chamber. Spring brakes apply upon sudden air loss (emergency mode) or activation of a dash-mounted parking brake control. Spring brakes remain applied until that chamber is recharged or the spring is manually compressed or caged. The spring portion often is referred to as the piggyback. Some spring brake actuators do not incorporate a service air chamber and are solely parking and emergency brakes. For example, some parking brakes are applied by air pressure and subsequently held mechanically by a pawl that drops into a notch on the brake chamber push rod.

**Stroke:** Refers to a total distance traveled by a brake chamber push rod or slack adjuster arm during brake application.

**Supply Tank:** The air reservoir immediately downstream of the air compressor.

**T Brake:** Rockwell's term for a front brake shoe design using a single web with a closed anchor pin end.

**Threaded Drum:** Brake drum resurfaced on a lathe too quickly, resulting in a friction surface similar to that of a scored drum.

**Tire Rolling Radius:** The distance, expressed in inches, from the center of a tire to the pavement, measured when mounted on a vehicle and loaded to its maximum capacity.

**TMC:** Maintenance Council

**Turned Drum:** A brake drum that has been resurfaced on a lathe to remove scoring or other defects.

**Wedge Brake:** As opposed to a brake applied by an s-cam, this type of brake is applied by a single or double wedge-type mechanism. This type of brake is self-adjusting, and as such, does not use a slack adjuster.

**XEM:** Xtra Easy Maintenance, Fruehauf's term for brake design with an open anchor pin rib. This shoe will not interchange with Rockwell Q and Spicer® FC shoes.

**XtraLife:** Spicer's® term for a quick-change design brake shoe using thicker-than-standard lining. Available in both the original and XtraLife.

**Notes**