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| Plant with Bristol Industries sign (Shot 20) | MUSIC: SWELLING FOR INTRO<br><br>NARRATOR (V.O.):<br>FROM BRISTOL INDUSTRIES . . . ONE OF THE NATION'S FOREMOST MANUFACTURERS OF NUTS AND BOLTS FOR THE AIRCRAFT FASTENER INDUSTRY . . . |
| Bristol Industries logo with copy below: "B-Prime Fastening System" (Shot 28) | MUSIC: UP FOR PRODUCT INTRO<br><br>NARRATOR (V.O.):<br>. . . INTRODUCING THE **B-PRIME NUT FASTENING SYSTEM** --<br><br>-- SPEEDY, EFFICIENT, EASY TO OPERATE, ECONOMICAL . . . THE STATE-OF-THE-ART IN NUT FASTENING SYSTEMS FOR AIRCRAFT STRUCTURAL ASSEMBLIES. |
| Wide shot **S** system chart showing nuts and pins (Shot 29) | THE B**S**PRIME SYSTEM MAKES THE NUT AND THE THREADED PIN **A FORMIDABLE PAIR** OF FASTENERS . . . **INVINCIBLE PARTNERS** IN THE FASTENING PROCESS. |
| CU **S** 8-spline aluminum nut (Shot 30) | THIS INVINCIBLE PARTNERSHIP INCLUDES THE 8-SPLINE ALUMINUM NUT -- |
| CU **S** threaded pin, head to left (Shot 31) | -- THE PROTRUDING-HEAD THREADED PIN -- |
| CU **S** 12-point nut, aluminum, steel or stainless steel (Shot 32) | -- THE 12-POINT NUT IN ALUMINUM, STEEL OR STAINLESS STEEL -- |
| CU **S** threaded pin, head to right (Shot 33) | -- THE FLUSH-HEAD THREADED PIN -- |
| CU **S** seal nut, hex or 12-point aluminum, steel or stainless steel (Shot 34) | -- THE SEAL NUT, EITHER HEX OR 12-POINT, IN ALUMINUM, STEEL OR STAINLESS STEEL. |

CU **S** hex nut, aluminum, steel or stainless steel (Shot 35)

-- AND THE HEX NUT IN ALUMINUM, STEEL OR STAINLESS STEEL.

CU **S** 8-spline nut, pull back to wide shot (Shot 37) [or CU **S** 12-point nut, pull back to wide shot (Shot 39)]

AVAILABLE THREAD SIZES RANGE FROM NUMBER 8 DASH 32 TO POINT FIVE THOUSANDTHS DASH 20.

CU **S** hex nut (Shot 76)

CU **S** 12-spline nut (Shot 77)

BRISTOL INDUSTRIES HAS DESIGNED AND MANUFACTURED THESE FLANGE NUTS SPECIFICALLY FOR USE WITH THREADED PINS. THEIR LIGHT WEIGHT AND COST-EFFECTIVENESS MAKE THEM THE LOGICAL CHOICE FOR LEADING AIRCRAFT MANUFACTURERS. ADD B-PRIME'S STATE-OF-THE-ART INSTALLATION TOOLING --

CU **S** 8-spline nut (Shot 78)

Medium shot **S** assorted nuts (Shot 65)

Medium shot **S** assorted pins (Shot 69)

Slide across screen:

**INVINCIBLE PARTNERS**

-- AND YOU HAVE AN **INVINCIBLE PARTNERSHIP** FOR FASTENING AIRCRAFT STRUCTURES.

MUSIC: UP FOR TRANSITION TO HAND TOOL

Wide shot **S** hand tool with pins and nuts (Shot 74)

NARRATOR (V.O.):

FOR SMALL FASTENING APPLICATIONS, THE B-PRIME SYSTEM INCLUDES A HAND POWER TOOL. ATTACHMENTS COME IN A VARIETY OF CONFIGURATIONS, FOR EASIER ACCESS IN AREAS WITH LIMITED CLEARANCE.

Wide shot **S** operator at Driv-Matic with 747 parts (Shot 1)

Medium shot **S** operator at Driv-Matic (Shot 2)

Another angle **S** operator at Driv-Matic (Shot 3)

FOR LARGER APPLICATIONS, THE DRIV-MATIC SUPER UNIT DELIVERS THE ULTIMATE IN AUTOMATION --

-- PROVIDING THE EFFICIENT PERFORMANCE, THE COST SAVINGS, AND THE STRUCTURAL AIRFRAME INTEGRITY THAT TODAY'S AIRCRAFT MANUFACTURERS DEMAND.

CU **S** tool, where nut and threaded pin meet (Shot 4)

AIRCRAFT MAKERS HAVE ALSO INDICATED THEIR DESIRE FOR A LIGHT WEIGHT NUT TO MATE WITH THREADED PINS --

-- AND THEY'VE SHOWN THEIR PREFERENCE FOR NUTS RATHER THAN COLLARS. THE B-PRIME FASTENING SYSTEM WAS DEVELOPED TO MEET THESE VERY NEEDS.

CU **S** tool, over and under part (Shot 6)

ECU **S** zooming in, tool where it meets part (Shot 7)

ECU **S** lower part of tool, installing nuts (Shot 8)

FROM ABOVE AND BELOW, THE DRIV-MATIC SUPER UNIT AND THE BRISTOL NUT FEEDER OPERATE IN TANDEM THROUGHOUT THE FASTENING PROCESS. THE TWO UNITS WORK WITH GREAT PRECISION TO FASTEN THE PIN AND B-PRIME NUT SECURELY.

ECU **S** tool (Shot 19)

ONCE BROUGHT TOGETHER IN THIS WAY, PIN AND NUT ARE NO LONGER SEPARATE OBJECTS --

MUSIC: UP FOR SLOGAN

-- THEY HAVE, IN FACT, BECOME **INVINCIBLE** FASTENING **PARTNERS**.

ECU **S** finished fasteners, view from underneath (Shot 9)

THE B-PRIME NUTS ARE INSTALLED WITH TORQUE CONTROL TOOLS.

CU **S** side view, upper & lower parts of tool (Shot 10)

Med. shot **S** side view of tool, pulling back (Shot 11)

CU **S** same as scene 10, zooming in (Shot 12)

Med. wide shot **S** tool from left side (Shot 13)

Med. wide shot **S** same as scene 13, with operator entering frame (Shot 14)

CU **S** zooming in to tool and part (Shot 15)

THESE TOOLS OFFER SEVERAL GREAT ADVANTAGES, INCLUDING HIGH RELIABILITY --

-- EASE OF INSTALLATION IN AREAS WITH MINIMAL CLEARANCE --

-- AND CONSISTENT PRELOAD REPEATABILITY.

B-PRIME NUTS CAN ALSO BE RETORQUED IN FAYING SURFACE SEALANT APPLICATIONS --

-- AND EASILY REMOVED IF IT BECOMES NECESSARY TO REWORK OR REPAIR THE STRUCTURE.

ECU **S** tool and part, zooming in (Shot 16)

ECU **S** similar to scene 16 (Shot 17)

AND FINALLY, THE TORQUE CONTROL TOOLS ARE PRECISELY CALIBRATED AT THE PROPER TORQUE LEVEL FOR EACH NUT. BRISTOL INDUSTRIES RECHECKS THIS CALIBRATION EVERY 30 DAYS FOR ACCURACY.

Various views **S** fastening tool (Shots 10-17, cont. from above)

CIRCLE highlights each part as narration describes it.

THE PRINCIPAL COMPONENTS OF THE B-PRIME NUT FASTENING SYSTEM ARE THE NUT CONTAINER --

-- THE TUBE WHICH BRINGS THE NUTS INTO POSITION FOR FASTENING --

-- AND THE OVERHEAD POWER DRIVE THAT FEEDS THE THREADED PIN.

CU **S** profile, Driv-Matic operator (Shot 18)

THE DRIV-MATIC SUPER UNIT IS FULLY AUTOMATED. EACH STRUCTURE IS PULLED INTO POSITION, LEAVING THE OPERATOR FREE FOR OTHER TASKS.

CU **S** overhead view, nuts screwed onto pins (Shot 75)

A KEY FEATURE OF THE B-PRIME NUT FASTENING SYSTEM IS THE VERSATILITY OF THE NUT ITSELF. A SINGLE B-PRIME NUT CAN BE DEPENDED ON FOR BOTH SHEAR AND TENSION APPLICATIONS. A SINGLE NUT ACCOMMODATES STANDARD, FIRST AND SECOND OVERSIZE PINS.

ONLY ONE NUT TO PURCHASE MEANS LOWER INVENTORY COSTS --

-- PLUS COST SAVINGS THROUGH LARGER QUANTITY PURCHASES OF THAT ONE B-PRIME NUT.

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|---|---|
| Med. shot **S** pins with collars fastened to sample block, rear view (Shot 70)<br><br>Med. shot **S** front view of above (Shot 71)<br><br>Med. shot **S** same as scene 71, zooming in (Shot 72)<br><br>CU **S** pins with collar (Shot 73) | THE MANY BENEFITS OF THE B-PRIME SYSTEM FOR YOUR PRODUCTION FACILITY ARE PARTICULARLY IMPRESSIVE WHEN YOU COMPARE THE B-PRIME NUT WITH THE FRANGIBLE COLLAR. |
| CU **S** Hi-Lok pin collar (Shot 54) | THE HI-LOK COLLAR'S HIGH PROFILE MAKES ACCESS DIFFICULT IN AREAS WITH MINIMAL CLEARANCE. |
| CU **S** Hi-Lite pin collar (Shot 53) | THE HI-LITE COLLAR PROVIDES ONLY SLIGHTLY MORE ACCESSIBILITY -- |
| CU **S** Hi-Lite pin and B-Prime nut (Shot 55) | -- BUT WITH THE B-PRIME NUT'S LOWER PROFILE, THE INCREASE IS ACCESS IN OBVIOUS! |
| CU **S** Cost advantage chart (Shot 56)<br><br>CU **S** Cost advantage chart, pan from quantity to cost savings (Shot 57) | IN A **COST COMPARISON**, THE B-PRIME NUT ONCE MORE HAS THE CLEAR EDGE ON ITS COMPETITOR. DEPENDING ON THE SIZE AND WEIGHT OF THE NUT, YOUR ASSEMBLY REQUIRES, YOUR COST SAVINGS COULD BE AS HIGH AS 75%! |
| Wide shot **S** graph, bolt pre-load comparison, B-Prime nut vs. Hi-Lok collar (Shot 58) | WHAT ABOUT **PRE-LOAD CAPABILITY**? HERE AGAIN, THE B-PRIME NUT IS WELL AHEAD OF THE FRANGIBLE COLLAR. THE PRECISION TOOLS THE B-PRIME SYSTEM USES FOR INSTALLATION INDUCE A HIGHLY CONSISTENT PRE-LOAD IN THE JOINT. |

CU **S** still photo, lap shear joint fatigue test setup (Shot 42)

Medium shot **S** still photo, group shot joint fatigue test specimens (Shot 43)

ECU **S** lap joint fracture with collars (Shot 44)

CU **S** lap joint fracture with collars (Shot 45)

CU **S** lap joint fracture with nuts (Shot 46)

CU **S** Fig. 5, lap shear joint fatigue, pull back to wide shot of chart (Shot 63)

Wide shot **S** graph, installation torque comparison, zoom in (Shot 59)

CU **S** engineering test report, installation torque test (Shot 61)

THIS PRE-LOAD CONSISTENCY MEANS THE JOINT WILL HAVE A SIGNIFICANTLY LONGER FATIGUE LIFE WITH A B-PRIME NUT THAN WITH A COLLAR.

BUT THE MOST IMPORTANT BENEFIT THE B-PRIME NUT OFFERS IS THAT IT CAN ALWAYS BE RE-TORQUED --

-- WHILE THE FRANGIBLE COLLAR IS RENDERED USELESS ONCE ITS HEAD HAS BEEN TORN OFF. AND SINCE FRANGIBLE MEANS BREAKABLE, IT ALSO MEANS THERE'S COSTLY CLEAN-UP OF COLLAR DEBRIS. THE B-PRIME NUT, ON THE OTHER HAND, FORMS AN **INVINCIBLE PARTNERSHIP** WITH THE THREADED PIN.

Repeat earlier shots for wrapup of advantages:

CONSIDER THE ADVANTAGES OF THE B-PRIME FASTENING SYSTEM --

Bristol Industries logo with "B-Prime Fastening System" below (repeat scene 28)

CU **S** Hi-Lite pin and B-Prime nut (Repeat scene 55)

-- EASIER INSTALLATION IN AREAS WITH MINIMAL CLEARANCE --

Wide shot **S** graph, bolt pre-load comparison, B-Prime nut vs. Hi-Lok collar (repeat scene 58)

-- CONSISTENT PRELOAD REPEATABILITY --

CU **S** Fig. 5, lap shear joint fatigue chart (repeat scene 63)

-- EXTENDED FATIGUE LIFE --

Several views **S** fastening tool (repeat one or more of scenes 10-17)

-- RETORQUING CAPABILITY IN FAYING SURFACE SEALANT APPLICATIONS --

CU **S** cost advantage chart (repeat scene 56)

-- LOWER INSTALLED COST --

CU **S** overhead view, nuts screwed onto pins (repeat scene 75)

-- AND NO DEBRIS CLEANUP AFTER INSTALLATION.

MUSIC: UNDER NARRATION, FOR CLOSE

CU **S** one nut and one collar, collar disappears

IN THE FINAL ANALYSIS, THE COMPETITION BETWEEN THE B-PRIME NUT AND THE FRANGIBLE COLLAR IS NO CONTEST! THE WINNER BY A KNOCKOUT, AND STILL CHAMPION --

-- **THE B-PRIME FASTENING SYSTEM**!

MUSIC: UP FOR CLOSE

# THE B-PRIME FASTENING SYSTEM

by Richard Bellikoff

for J.M. Straus Co.

4/2/90