

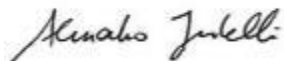
**Are you ready to move forward?**



**We have opened for a new way of thinking & building air coupling systems**

## It is time to make a change!

- ▶ The Raufoss ABC Coupling system by Kongsberg Automotive was launched in 2008 and has since then gained global recognition as the preferred coupling solution for pneumatic systems in commercial vehicles.
- ▶ We are proud to announce that we have a complete range of the Raufoss ABC Couplings fulfilling all requirements for the air brake system on commercial vehicles.
- ▶ Starting end at this year we will phase out the old brass product range, BRK push-in and the P5 swivel-system.
- ▶ Serial production will cease December 31<sup>st</sup> 2020.
- ▶ We will support you as much as we can to substitute all your old product range before December 31<sup>st</sup>, 2020 and prepare and agree on a last time buy if necessary.
- ▶ Enclosed you will find a detailed overview of the BRK parts affected, and corresponding Raufoss ABC couplings. Most of the ABC Couplings are already in use within your company.
- ▶ The KA coupling team will of course assist you in this move to our new and improved coupling systems.



Alessandro Indelli  
Operations Director



Hakon Amundsen  
Vice President Sales & Marketing



Bráulio Junqueira da Fonseca  
Engineering & Programs Director

## Raufoss ABC™ - Key Features & Benefits

### ▶ Customer System Cost Reduction

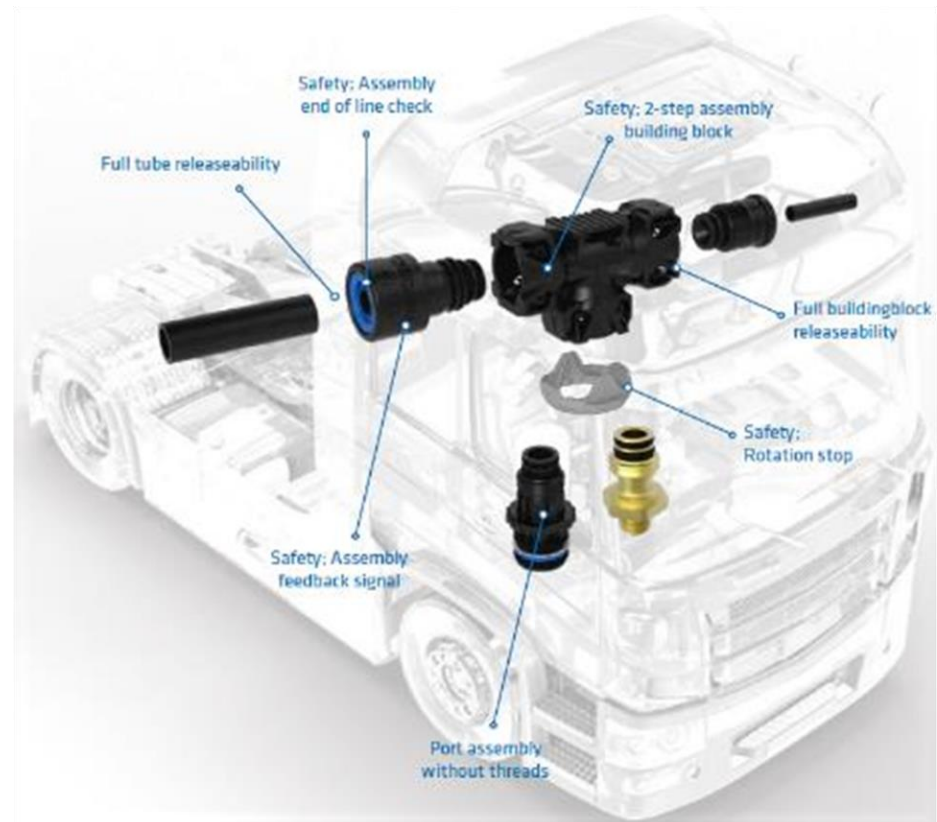
- Design flexibility
- Assembly time reduction
- Full release of tube & coupling
- Integrated safety
- Flexible assembly sequence
- Customized solutions
- Increased efficiency at EOL

### ▶ Pre-assembly time reduction

Push-in vs. ABC Push-in  
OEM Up to 65% reduction in assembly time

### ▶ Weight reduction

4-6 kg reduction per vehicle



## ABC™ Building Block system Flexibility



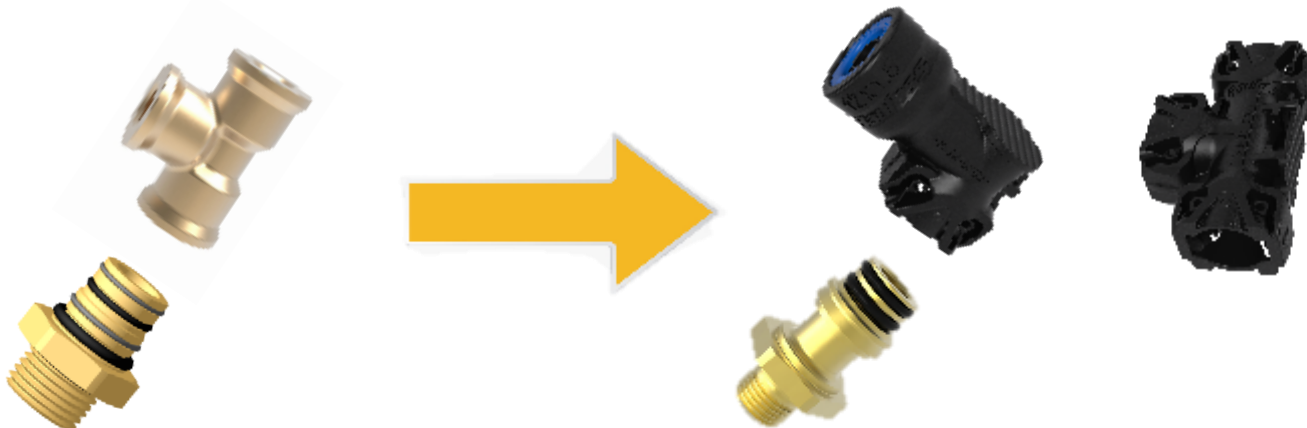
- ▶ With our Raufoss ABC system we have developed the next generation of push-in couplings
- ▶ The system provides significant improvements in the quality & safety of pneumatic system areas on your trucks, buses, trailers and off-road applications
- ▶ Our system gives you the best braking response, prevents pressure loss and protects the brake system from environmental threats.
- ▶ Our Push-in system assembles quickly and saves time during production. The couplings can quickly be released if needed.
- ▶ Composite materials increases durability while reducing weight up to 80%. No maintenance is required, and all materials are recyclable. With the ABC couplings system, we provide our customers a total system saving.
- ▶ The system supports all markets, whether inch or metric is required
- ▶ The safety, flexibility and sustainability features make Raufoss ABC couplings the most reliable system in the market.

## Affected parts

- ▶ The change over for Push-In Couplings can be done easily by exchanging the article numbers, as all main parameters are equal



- ▶ The change over for P5 Building block system must be done manually. A cross reference list enclosed in this document



- ▶ Our ABC Couplings are all validated and approved with similar requirements as the BRK system, but in addition these air couplings are improved to meet the demand required by the market with new advantages.

**CHANGE  
AHEAD**



## Difference of BRK-Push-In's to NewLine



	BRK	NewLine
Assembly torque		equal
Wrench size		equal
Push-In length		equal
Space requirement		Equal or less
weight		Up to -40%
Flow path		Improved or equal

## Difference of BRK-Push-In's to New Line



	BRK	NewLine
Integrated assembly check;		
Click element during assembly	no	yes
„Check valve“ during EOL-test	no	yes
Releaseability of tube	no	Yes, with special KA-Raufoss tool
Reuse of Coupling and Tube after release	no	Yes (max. 5 times)



## Change of P5-building block to ABC-building block



- ▶ The change for the building block system can't be done automatically.
- ▶ As the material has changed from brass to composite with several additional features like
  - Less assembly time for “Push-In’s”
  - Releaseability of the system
  - Less weight
  - Improved air flow
  - Improved flexibility



- ▶ This change of the BOM has to be done by the OEM application by application



## Difference of P5 building block to ABC-building block



	P5	ABC
Swivel Assembly torque	equal	
Swivel Wrench size	equal	

## Difference of P5 building block to ABC-building block



	P5	ABC
Weight (complete assembly)		Up to -83%; average -50%
Range of Building blocks		extended
Flexibility of building blocks		improved
Flow path		Improved

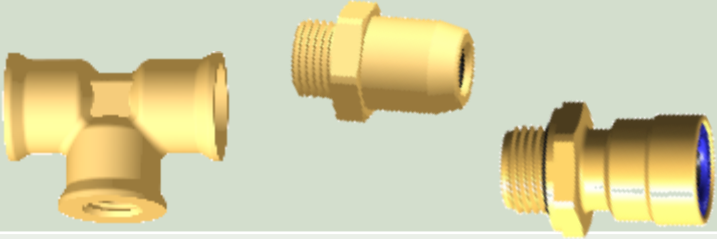

## Difference of P5 building block to ABC-building block



	BRK	NewLine
Assembly of "Push-In's"	Manual Screwing	Click
Integrated assembly checks:		
- 2 step assembly with Click-feature	no	yes
- Controlled leakage during EOL-test	no	yes
Releaseability of building block	no	Yes, with standard circlip plier
Reuse of Coupling after release	n/a	yes

## Time saving

- ▶ As the „ABC-System“ is changing the assembly process from „screw“ to „Click“ operation, a significant assembly time reduction can be realized
- ▶ Used parameters:

Screw in of BRK or NewLine (incl. correct torque)		25 sec
Click of „ABC“ ThreadLess		5 sec
Saving		20 sec



**Thank you for your attention**