

MOBILITY

PRODUCT CATALOG



AIRYOSA™ PNEUMATIC SOLUTIONS

CONTENTS





INTRODUCTION

Vision & value proposition	p.4
Highly ergonomic & safe	p.5
Lightweight & compact	p.6
Environmentally responsible	p.6
Easily serviceable	p.7
Reliable through a single supplier solution	p.7

CONNECTORS & FASTENERS

AIRYOSA™ standard connectors	p.8
AIRYOSA™ fasteners	p.9
Connectors catalog selection	p.10- 11
AIRYOSA™ grip connectors for valves	p.12
Custom advanced interface solutions	p.13

TUBES

AIRYOSA™ tubes offer & expertise	p.14-19
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WORLDWIDE CONTACTS	p.20
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TRANSFORMING PNEUMATICS AND ASSEMBLY SOLUTIONS FOR COMMERCIAL VEHICLES

Leveraging our **unparalleled expertise in fluid handling**, we're here to innovate for the present and the future of commercial vehicle transportation. Through **cutting-edge pneumatic solutions**, we provide improved safety, ergonomics, and sustainability for the assembly process and the vehicle's lifetime.



HIGHLY ERGONOMIC AND SAFE

Designed for **operators' ease of use** and **for maximum safety** in demanding environments.



LIGHTWEIGHT AND COMPACT

Engineered to **optimize system footprint**, container payload, fuel consumption, and CO₂ emissions.



ENVIRONMENTALLY RESPONSIBLE

Eco-designed and manufactured with **bio-sourced materials**.



EASILY SERVICEABLE

Dust, tear, and wear resistant features that enable **maintenance** and **disassembly** with **standard tools**.



RELIABLE THROUGH A SINGLE SUPPLIER SOLUTION

Comprehensive pneumatic solutions including tubes, connectors and fastening.



HIGHLY ERGONOMIC AND SAFE

INSERTION EFFORT REDUCED¹



**130 tube insertions
& 110 end-piece connections**
per standard truck assembly.

In the demanding assembly line task, operators handle approximately **130 tube insertions** and **110 end-piece connections** per standard truck assembly.

Our innovative pneumatic connectors **significantly reduce the insertion effort** required by operators.

This reduction in physical exertion protects operators from musculoskeletal risks, improves working conditions, and enhances overall rate of productivity. Additionally, **easier insertion** for connections in hard-to-access positions, **reduces the chances of misassemblies** and the associated costs of verification and rework.

¹Compared to industry standards.



LIGHTWEIGHT AND COMPACT

Our pneumatic products are designed to be lightweight and compact in size.

Offering a **~17%** reduction in weight compared to industry standards, this translates to an average weight saving of 1kg per commercial vehicle.

Coupled with their compact design that improves system footprint, these features facilitate assembly, optimize container payload and fuel consumption, while reducing carbon emissions.



~17%¹
WEIGHT
REDUCTION



ENVIRONMENTALLY RESPONSIBLE

Our pneumatics products and solutions prioritize environmental responsibility.

They have been eco-designed, using our product lifecycle analysis, and manufactured with high quality bio sourced materials.

Their lower product weight, density, and size **diminish carbon emission by more than 50%¹**. The use of high-quality materials that improves resistance to harsh conditions extends the product durability.



~50%¹
CO₂
REDUCTION

¹Compared to industry standards.



EASILY SERVICEABLE

Our pneumatic products and solutions are engineered for both durability and ease of maintenance.

Designed to withstand dust, wear and tear, they make **maintenance** and **disassembly** feasible and **simple**, requiring only **standard tools**, thus prolonging the performance and durability of the vehicle.



RELIABLE THROUGH A SINGLE SUPPLIER SOLUTION

Benefit from our extensive expertise in creating custom fluid handling systems, tube extrusion, and fastening and assembly solutions.

Our advanced engineering skills ensure compliance with specific vehicle requirements as well as with industry standards.

By choosing ARaymond as your single source for pneumatic solutions, you streamline guarantees, quality, procurement processes, and costs.



AIRYOSA™ CONNECTORS STANDARD RANGE

ERGONOMIC

LIGHTWEIGHT

SUSTAINABLE



AIRYOSA™
PUSH-IN



AIRYOSA™
QUICK CONNECTOR
With integrated push-in



AIRYOSA™
QUICK CONNECTOR



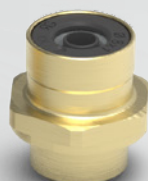
AIRYOSA™
ANTI-SWIVEL (Optional)



AIRYOSA™
THREADED
END PIECE



AIRYOSA™
THREADED
PUSH-IN



INNOVATIVE FASTENING FOR COMMERCIAL VEHICLE PNEUMATICS

Our fastening solutions for pneumatic systems in commercial vehicles ensure robust performance, durability, and seamless integration.

Our precision engineering and industry leading processes develop plastic based solutions that are lighter, more efficient, and more sustainable.

We understand that each vehicle's needs are unique. Through our customer centric approach, we work hand in hand with you to meet precise vehicle requirements, industry compliance and enhanced functionality.



HOLE MOUNT

CAVITY MOUNT

STUD MOUNT

SURFACE MOUNT

EDGE MOUNT

QC	AR10-0010	AR10-0020	AR10-0030	AR10-0050
	 T-SHAPE	 F-SHAPE	 Y-SHAPE	 45°
	AR10-0090			
	 90°			
THREADED END PIECE	AR11-0020	AR11-0040	AR11-0060	
	 M12x1.5	 M16x1.5	 M22x1.5	
ANTI-SWIVEL	AR12-0010	AR12-0030	AR12-0040	
	 Hex18	 Hex22	 Hex28	
PUSH-IN	AR13-0600	AR13-0800	AR13-1200	
	 Tube 6x1	 Tube 8x1	 Tube 12x1.5	

QC with INTEGRATED
PUSH-IN

AR14-0890



Tube 8x1

AR14-1290



Tube 12x1.5

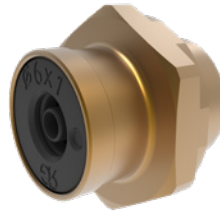
THREADED PUSH-IN

AR15-0620



Tube 6x1
M12x1.5

AR15-0640



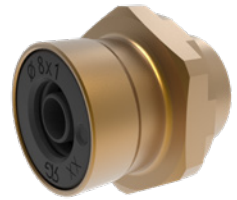
Tube 6x1
M16x1.5

AR15-0820



Tube 8x1
M12x1.5

AR15-0840



Tube 8x1
M16x1.5

AR15-0860



Tube 8x1
M22x1.5

AR15-1240



Tube 12x1.5
M16x1.5

AR15-1260



Tube 12x1.5
M22x1.5

DOUBLE END PIECE

AR16-0010



AIRYOSA™ GRIP CONNECTORS FOR VALVES

SAFE
& FAST
ASSEMBLY

CONNECTORS



AIRYOSA™ GRIP

AR33-0810

AR33-1220

GRIP PUSH-IN



Tube 8x1
Port 14.3



Tube 12x1.5
Port 19.7

CUSTOM SOLUTIONS FOR ADVANCED VALVE INTERFACES

In the rapidly evolving world of commercial vehicle manufacturing, at ARaymond we excel through our long-term expertise in fluid handling and advanced engineering skills.

**ENVIRONMENTALLY FRIENDLY
& SUSTAINABLE SOLUTIONS**

**SEAMLESS & SIMPLE
INTEGRATION**

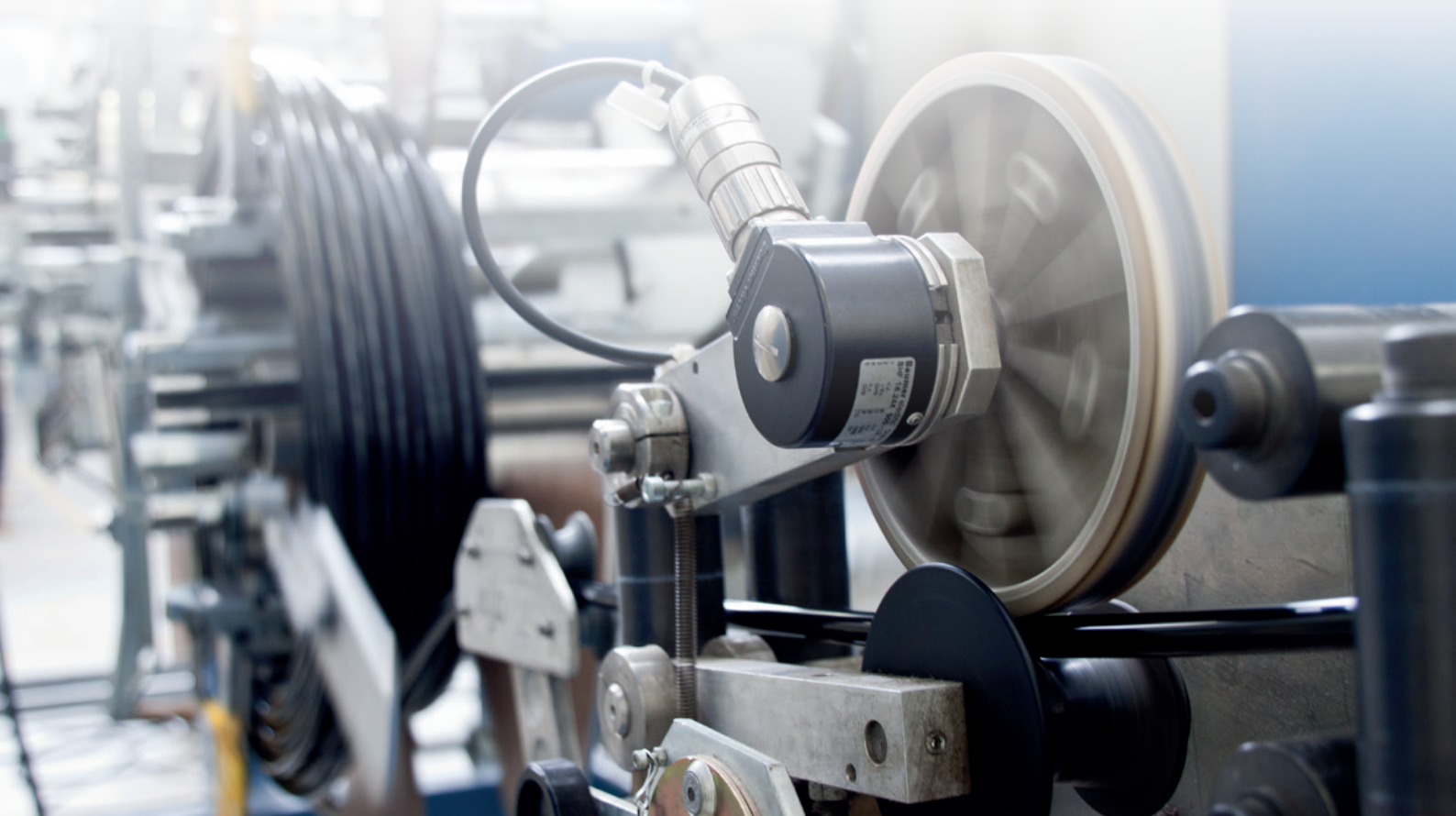
**OUTSTANDING FLUID
CONNECTIONS & SAFETY**

AIRYOSA™ TUBES

OPTIMAL FOR COMMERCIAL VEHICLE APPLICATION

Our extensive tube portfolio is ideal for a wide range of commercial vehicle applications, including braking systems, air suspensions, and other fluid handling systems.

- **High-tech plastics:** crafted from advanced materials like POLYAMIDES (PA 10.12, PA 11, PA 12) for superior performance.
- **Versatile designs:** available either smooth or corrugated with mono or multi-layer structures.
- **Superior production:** our advanced manufacturing processes ensure durability, flexibility, and resistance to chemicals, pressure and temperature variations.
- **Tailored to Multi-Layer Tubes:** we offer custom solutions for multi-layer tubes to meet your exact requirements.
- **Comprehensive assembly solutions:** specialized thermoforming and assembly solutions for coils are also available to complete your setup.





AIRYOSA™ 11 tubes are produced using a fully bio-sourced polymer named Polyamide 11 (PA11).

AIRYOSA™ 11 tubes fulfill all requirements of the well-known standards DIN 73378 and DIN 74324.

AIRYOSA™ 11 tubes are mainly used in low temperature application below -40°C or when long term resistance to high temperature is required.

All dimensions in mm / Other dimensions and variants on request.

External Ø (mm)	Internal Ø (mm)	Thickness (mm)	Bend radius* (mm)	Burst pressure at 23°C in bar			Norm	
				HL**	PHLY	PHL	DIN 74324**	DIN 73378
4	2	1	20	267	180	135	o	o
4	2,3	0,85	19	216	147	108		o
4	2,5	0,75	19	186	126	93		o
5	3	1	25	201	135	99		o
6	2	2	31	399	270	201		o
6	3	1,5	31	267	180	132		o
6	4	1	30	159	108	81	o	o
8	4	2	43	267	180	132		o
8	5	1,5	43	186	126	93		o
8	5,5	1,25	43	147	99	75		o
8	6	1	40	114	78	57	o	o
9	6	1,5	45	159	108	81	o	o
10	7	1,5	55	141	95	70		
10	7,5	1,25	60	114	78	57	o	o
10	8	1	60	90	45***	45	o	o
11	8	1,5	60	126	84	63	o	o
12	8	2	67	159	108	81		o
12	9	1,5	60	114	78	57	o	o
12,5	10	1,25	70	90	60	45		o
14	10	2	75	132	90	66	o	o
15	12	1,5	90	90	45***	45	o	o
15	13	1	85	57	39	30		o
16	12	2	95	114	78	57	o	o
18	14	2	100	99	51***	51	o	o
20	16	2	115	90	60	45		o

TOLERANCES

The tolerances on external diameter, according to DIN 73378, are:

- External diameter from 4 to 10 mm ± 0,1 mm, except for:

8x4 / 9x6 mm ± 0,15 10x7,5 mm ± 0,12

- External diameter from 11 to 20 mm ± 0,15

Tubes with narrow tolerances can be provided upon demand.

USE TEMPERATURE

-60°C / +130°C (according to DIN 73378)

For DIN 74324 temperature range varies per diameters (For more details, please contact us).

* Data to be confirmed based on application and test method.

** HL grade not part of DIN 74324.

*** Value based on DIN 74324.

MARKING

DIN 73378	8x1mm	PA11PHLY	C.BIO	07001485-18-134-14:51
Standard	External diameter for thickness	Raw material	Product name	Batch number



AIRYOSA™ 12 tubes are made of Polyamide 12 (PA12), a polyvalent material, derived from petroleum

AIRYOSA™ 12 tubes are fully compliant with DIN 73378 and DIN 74324 standards.

All dimensions in mm / Other dimensions and variants on request.

External Ø (mm)	Internal Ø (mm)	Thickness (mm)	Bend radius* (mm)	Burst pressure at 23°C in bar				Norm	
				HL**	PHLY	HIPHL	PHL	DIN 74324**	DIN 73378
4	2	1	20	267	180	147	135	o	o
4	2,3	0,85	19	216	147	120	108		o
4	2,5	0,75	19	186	126	102	93		o
5	3	1	25	201	135	111	99		o
6	2	2	31	399	270	219	201		o
6	3	1,5	31	267	180	147	132		o
6	4	1	30	159	108	87	81	o	o
8	4	2	43	267	180	147	132		o
8	5	1,5	43	186	126	102	93		o
8	5,5	1,25	43	147	99	81	75		o
8	6	1	40	114	78	63	57	o	o
9	6	1,5	45	159	108	87	81	o	o
10	7	1,5	55	141	95	77	70		
10	7,5	1,25	60	114	78	63	57	o	o
10	8	1	60	90	45***	48	45	o	o
11	8	1,5	60	126	84	69	63	o	o
12	8	2	67	159	108	87	81		o
12	9	1,5	60	114	78	63	57	o	o
12,5	10	1,25	70	90	60	48	45		o
14	10	2	75	132	90	72	66	o	o
15	12	1,5	90	90	45***	48	45	o	o
15	13	1	85	57	39	30	30		o
16	12	2	95	114	78	63	57	o	o
18	14	2	100	99	51***	54	51	o	o
20	16	2	115	90	60	48	45		o

TOLERANCES

The tolerances on external diameter, according to DIN 73378, are:
 - External diameter from 4 to 10 mm ± 0,1 mm, except for:
 8x4 / 9x6 mm ± 0,15 10x7,5 mm ± 0,12
 - External diameter from 11 to 20 mm ± 0,15
 Tubes with narrow tolerances can be provided upon demand.

USE TEMPERATURE

-60°C / +130°C (according to DIN 73378)
 For DIN 74324 temperature range varies per diameters
 (For more details, please contact us).

* Data to be confirmed based on application and test method.

** HL grade not part of DIN 74324.

*** Value based on DIN 74324.

MARKING

ISO 7628	8x1mm	PA12PHLY	C.BEST	07001485-18-134-14:51
Standard	External diameter for thickness	Raw material	Product name	Batch number



AIRYOSA™ 10.12 tubes are produced with a very innovative bio-sourced polymer named polyamide 10.12 (PA 10.12). Developed to overcome PA12 and PA11 shortages, AIRYOSA™ 10.12 tubes comply fully with ISO 7628-2010 standard and fulfill the requirements of DIN 73378 and 74324.

Widely used in the automotive sector for years, AIRYOSA™ 10.12 tubes have similar characteristics to PA12 or PA11 with excellent resistance to impact at -40°C and very good behavior above 125°C.

All dimensions in mm / Other dimensions and variants on request.

External Ø (mm)	Internal Ø (mm)	Thickness (mm)	Bend radius* (mm)	Burst pressure at 23°C in bar			Norm ISO 7628
				HL	PHLY	PHL	
4	2	1	20	266	180	147	o
6	4	1	30	160	108	88	o
8	6	1	40	114	77	63	o
9	6	1,5	45	160	108	88	o
10	7,5	1,25	60	114	77	63	o
10	8	1	60	88	60	49	o
11	8	1,5	60	126	85	69	o
12	9	1,5	60	114	77	63	o
14	10	2	75	133	90	73	o
15	12	1,5	90	88	60	49	o
16	12	2	95	114	77	63	o
18	14	2	100	100	68	55	o
19	15	2	109	94	64	52	o

BURST PRESSURE ASSOCIATED WITH ISO CLASS

Class	Operating pressure (bar)	Temperature		Burst pressure (bar)			
		Min	Max	23°	80°	100°	125°
0	10	-40	80	> 40	> 25	-	-
1	10	-40	100	> 40	> 25	> 25	-
2	12.5	-40	100	> 50	-	> 31.3	-
3	12.5	-40	125	> 50	-	> 31.3	> 25

TOLERANCES

The tolerances on external diameter, according to ISO 7628-2010, are:
 - External diameter from 4 to 10 mm: +/- 0,10 mm
 - External diameter from 11 to 19 mm : +/- 0,15 mm
 Upon special request tubes with narrow tolerances.

USE TEMPERATURE

According ISO 7628.
 * Data to be confirmed based on application and test method.

MARKING

ISO 7628	CAT.1	8x1mm	PA1012HL	C.PRO	07001485-18-134-14:51
Standard	Product category	External diameter for thickness	Raw material	Product name	Batch number



AIRYOSA™ MLT tubes are produced using state-of-the-art multilayer extrusion technology. They fully comply with ISO 7628-2010 standards and are a very cost-effective alternative to PA12 or PA11 tubes.

Developed for Air brake applications using quick connectors, AIRYOSA™ MLT 533 tubes are available in black only.

AIRYOSA™ MLT 533

All dimensions in mm / Other dimensions and variants on request.

External Ø (mm)	Internal Ø (mm)	Thickness (mm)	Bend radius* (mm)	Burst pressure at 23°C in bar	Norm ISO 7628
6	4	1	30	94	o
8	6	1	40	71	o
10	8	1	60	55	o
12	9	1.5	60	82	o
15	12	1.5	90	53	o

BURST PRESSURE ASSOCIATED WITH ISO CLASS

Class	Operating pressure (bar)	Temperature		Burst pressure (bar)			
		Min	Max	23°	80°	100°	125°
0	10	-40	80	> 40	> 25	-	-
1	10	-40	100	> 40	> 25	> 25	-
2	12.5	-40	100	> 50	-	> 31.3	-
3	12.5	-40	125	> 50	-	> 31.3	> 25

TOLERANCES

The tolerances on external diameter, according to ISO 7628-2010, are:
 - External diameter from 6 mm to 10 mm $\pm 0,1$ mm
 - External diameter from 12 mm to 15 mm $\pm 0,15$ mm
 Upon special request tubes with narrow tolerances.

USE TEMPERATURE

According ISO 7628.

* Data to be confirmed based on application and test method.

MARKING

ISO 7628	CAT.2	12x1.5mm	PA12/PA6/PA12	C.MLT 533	04002154-18-154-09:27
Standard	Product category	External diameter for thickness	Raw material	Product name	Batch number

BASED ON CUSTOMER SPECIFICATIONS, OTHER AIRYOSA™ MLT STRUCTURES CAN BE DEVELOPED.

These products flyers are provided for information purposes only and do not constitute an offer or an agreement. ARaymond makes no warranty or representation whatsoever, express or implied, including but not limited to the accuracy, reliability, novelty, completeness, fit for a particular purpose or merchantability of the information contained in it. If you need further information, please contact ARaymond.



SINGLE ROLLS

We offer a wide range of solutions for the packaging of our products to satisfy all market needs. Depending on their sizes, the hoses can be wound in rolls or in large coils on wooden or plastic supports. STANDARD ROLLS are available in 25 mt, 50 mt, 100 mt. Other sizes are available upon request.



BOXES

Boxes are specially designed for the supply of small quantities. Available in 3 different sizes (255 x 255 x 70 mm, 300 x 300 x 80 mm, 400 x 400 x 110 mm), depending on the material and the dimensions of the tubes to be contained, they can include 25, 50 and 100 meter rolls.

DRUMS

Upon customer request, we can deliver our tubes wound on drums. Standard drums are made of wood or plastic. Upon special request, tube delivery can be organized on cardboard drums. More information on drum sizes and tube length per drum can be found on our website.



COILS



The brake coil is a fundamental component that allows you to safely extend braking power from the tractor to the trailer at any time.

AIRYOSA™ COILS are suitable for all commercial vehicles, providing excellent durability, exceptional flexibility and high resistance to weather and chemical agents such as lubricants and fuels.

AIRYOSA™ COILS are marked with DIN 73378 or DIN 74324 or ISO 7628 (tube norms). Marking according to DIN 74323 or ISO 7375 or other norms can be developed upon request.

Material	Ø (mm)	Color	Nr. of turns	Tails	Fittings	Mandrel
PA 12 HIPHL	12x9	Red / Yellow / Black	17	2 x 125 mm	M16 - M18 - M22	100
PA 12 HIPHL	12x9	Red / Yellow / Black	21	2 x 100 mm	M16 - M18 - M22	75
PA 12 HIPHL	12x9	Red / Yellow	7	200 x 2500 mm	-	75

Other configurations possible on demand, depending on volumes.

ARAYMOND, AROUND THE WORLD



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