



ARaymond™ fastening solutions for electrical distribution systems

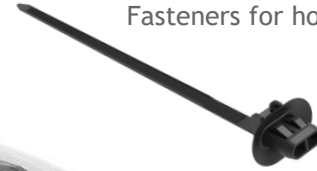
Swivel clips



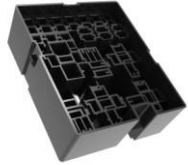
Fasteners for studs



Fasteners for holes



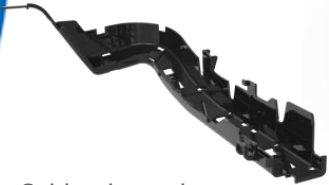
Fuseboxes and special components



Bi-inject fasteners



Cable channels



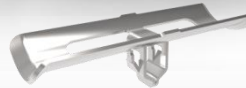
Fasteners for edges



Hi-voltage cable channels



Spring steel clips and brackets



Cable straps and Tape-on clips

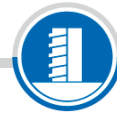
Standard range of cable straps and tape on clips for all common fastener strategies; holes, studs, edges and pipes.



钣金



孔



螺柱



Connector mounting clips and caps



Allowing secure fastening to vehicle suiting most types of automotive connectors

Protecting/covering/mounting connectors for any circuits unused at point of manufacture



钣金



孔



螺柱



胶带捆绑



Corrugated hose clips



Specifically designed to locate around the corrugated tubes of wiring assemblies

Prevents fasteners from moving along the wiring bundles

To suit all common tube diameters and fixings



钣金



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螺柱



管与管固定



Pre assembled or single mold swivel clips



Extensive range of individual parts giving many different solutions
Assembled swivel clips for wiring harness bundles to vehicle

Single molded swivel clips for standard harness to pipes/hoses (high volumes)



孔



螺柱



线束附件



一体成型



Channels



Custom designs can **reduce** the number of fixings required

Provide **robust** and **repeatable** condition of wiring harness

Used for protecting or forming wiring harnesses in complex packaging areas



High Voltage cable components



Robust designs specifically developed to carry the heavy, **high powered** orange cables used in hybrid and electric vehicles.

Manufactured from **plastic and metal**. Suitable for all locations, under floor, bonnet and vehicle cabin



Spring steel clips and brackets



Ideal for **high temperatures** and **harsh environments**.

Complex designs possible with integration of **many different functions**.

High-strength, light weight brackets with flexibility for **ergonomic fastening**.



Metal and plastic combinations/assemblies



Robust, economic designs
for complex engineered fasteners

Smart multi-purpose components
made from multiple materials
(metal + plastic)

Provide robust fastening
for all functional areas

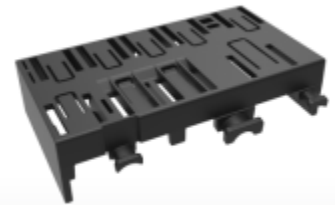


Special components



Specific designs incorporating mounting features for ECU holders, relays and other components

Suitable for boxes and covers for fuse and relay holders, through panel sealing



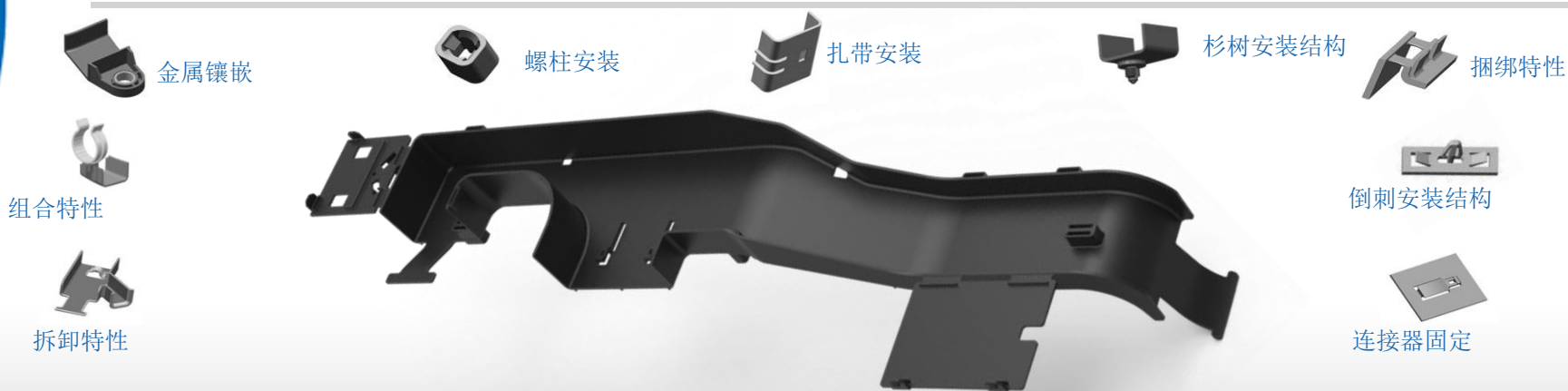
定制产品开发



使用完整的产品开发循环去设计、创造新的紧固方案

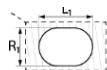
标准化-降低成本

- + 使用标准技术设计满足客户类似新开发需求
- + 为模具设计和生产降低成本和时间

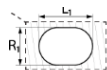


标准化-降低成本

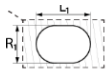
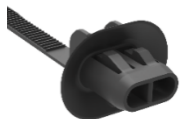
- 使用标准技术设计满足客户不同环境的需求
- 为模具设计和生产降低成本和时间



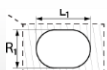
7x12mm



6.2x12.2mm



6.5x12.5mm



6.5x13mm



254387

))) Application

Sheet metal thickness range:0.6mm-6mm

Application oval hole sizes:

A. 6.2*12.2mm

B. 6.5*12.5mm

C. 6.5*13.0mm

D. 7.0*12.0mm

Applicable for cable bundle 1-45mm

))) Technical Details

Montagekraft F 1 = 45 N max.

Push - in - force

Demontagekraft F 2 = 110 N min.

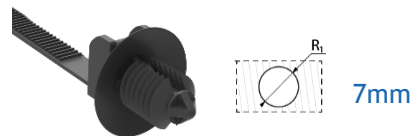
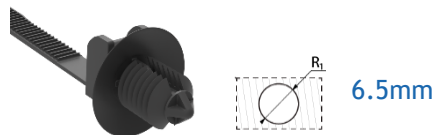
Pull - off - force

Bandanzugskraft 120N max.

Tightening force

标准化-降低成本

- 使用标准技术设计满足客户不同环境的需求
- 为模具设计和生产降低成本和时间



214383

))) Application

Befest. - Loch = $\emptyset 6,3 \dots \emptyset 7$

Fastening hole

Befest. - Dicke = 0,7 7

Fastening thickness

passend f. Kabelbündel - $\emptyset 1 \dots 35$
applicable for cable bundle

))) Technical Details

Montagekraft F 1 = 45 N max.

Push - in - force

Demontagekraft F 2 = 112 N min.

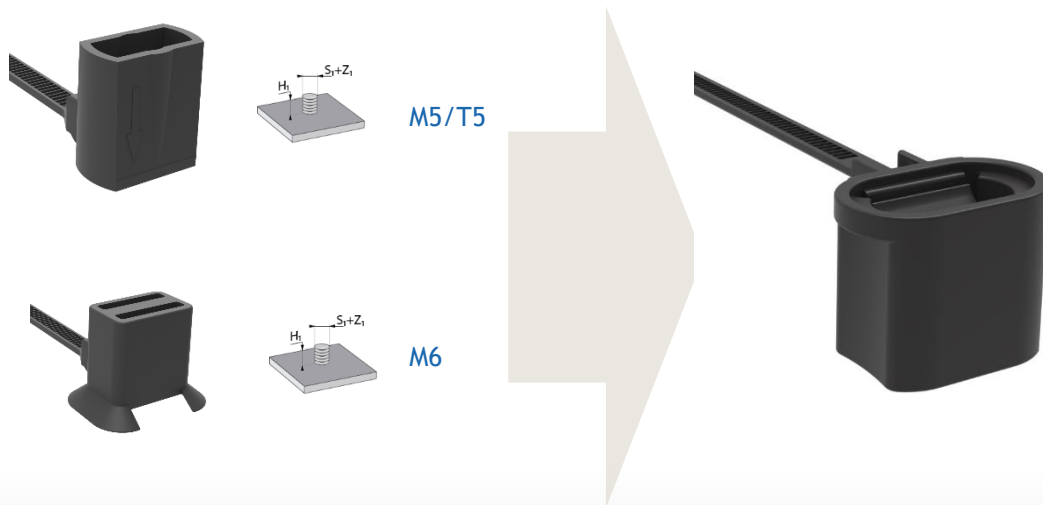
Pull - off - force

Bandanzugskraft 120N max.

Tightening force

标准化-降低成本

- 使用标准技术设计满足客户不同环境的需求
- 为模具设计和生产降低成本和时间



252286

))) Application

Fastening M5\T5\M6 stud
aplicable for cable bundle $\phi 1-45\text{mm}$

))) Technical Details

STUD PUSH ON FORCE	STUD PULL OFF FORCE	STRAP TIGHTENING FORCE
45N MAX	110N MIN	110 \pm 10N

创新-降低成本

扎带轻量化

调查

绝大多数线束使用扎带的捆绑直径小于25mm

特点

轻量化扎带适用绝大多数的安装需求从而降低生产成本

- 更小的模具/降低生产所需设备吨位
- 运输成本 (同样的包装能够容纳更多零件)
- 减少生产线剪断废料



Cost saving through innovation

Current solution

4 different orientations of the wiring harness to an edge, requires 9 individual parts



Innovative solution



Four different orientations of wiring harness to an edge, with tape-on or cable strap. Only two parts required.

Offering the same four wiring harness orientations for both tape-on and cable straps



*RAY-Part No 208738 001: Panel thickness 1.5-4.0mm

RAY-Part No 220737 001: Panel thickness 3.0-6.0mm

**RAY-Part No. 224250 3-00

Technology days and line-walks

我们希望更加接近我们的客户，理解客户需求并提供更优化的解决方案。

Technology Days

展示我们的产品和创新理念，进一步加深或培养相互之间的理解及关系

Customer line walks

寻找或发现更优化的成本节约方案，优化、改善装配过程



先进的技术

依据市场大趋势进行针对性设计



降低装配成本

- 自动化装配工具/无废料
- 紧固件向模块化转移
- 产品系列标准化

轻量化

- 集成功能组件
- 优化线槽重量
- 碳纤维材料紧固/粘接
- 小型化连接技术
- 替代螺栓的高强度卡扣

减少二氧化碳排放

- 能源回收
- 传感器和互联网
- 智能感应

倡导绿色汽车

- 生物材料
- 可降解或回收
- 混合式紧固





Thank you for your time and attention

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