

Barrier booms

Barrier boom is designed to close level crossings with roads or access roads to industrial plants or other secured objects. Road (or level crossing or pedestrian crossing) is closed y means of lowering barrier boom to the position that is horizontal to the road and perpendicular to the road axis. Lowered barrier booms prevent access of road vehicles or pedestrians to the secured area.

Barrier booms are designed for outdoor operation in variety of climatic and environmental conditions. The following types of barrier booms are distinguished by material:

- aluminium barrier booms,
- polyester laminate barrier booms.

All types of barrier booms are suited for mounting of three signal lights.

RANGE OF APPLICATION

All types of barriers boom, aluminium type and polyester type, are suited for mating with the following types of gate machines:

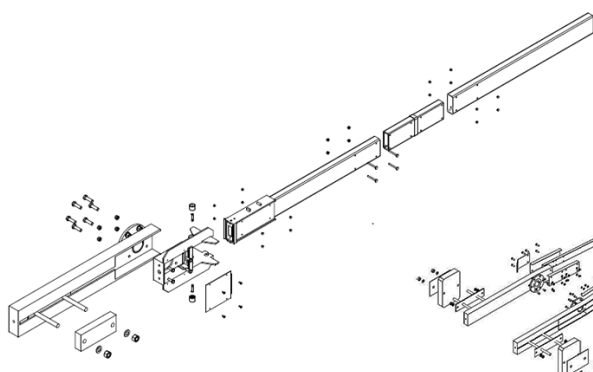
- JEGD-50; JEGD-50B; S6-JEGD-50; S6-JEGD-50B; JEGD-6; EEG – by Zwus Sp. z o.o. Katowice (Bombardier),
- HSM-10E – by Scheidt & Bachmann,
- SIM 6/13 – by Siemens,
- SPK 6-6 – by Pintsch,
- SPK 10 – by Zelisko/Thales.

Adapting of barriers boom to the a.m. gate machines enables their use in variety of gate machines and systems used at

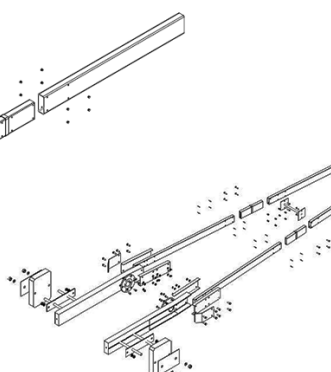
- category A level crossings, including those fitted out with the equipment type UP-1 (by MONAT); type SPR-1 (by Zwus Sp. z o.o. Katowice (Bombardier)),
- category B level crossings with automatic signals and half-barriers by ZWUS Sp. z o.o. Katowice (Bombardier), Scheidt & Bachmann, Siemens.

For detailed information see Operation and Maintenance Manual.

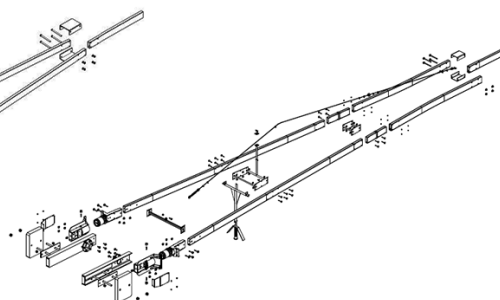
DTR-2004/ZDA; ZAA/ZDP; ZAP/ZMD



Example assembly drawing of the barrier boom ZDA



Example assembly drawing of the barrier boom ZAA



Example assembly drawing of the barrier boom ZAApkb



Rzeczpospolita Polska
Prezes
Urzędu Transportu Kolejowego

ŚWIADECTWO

Nr *U/2004/204*

dopuszczenia do eksploatacji urządzenia
przeznaczonego do prowadzenia ruchu kolejowego

Nazwa i typ urządzenia: *drażgi rogatkowe: aluminiowe, poliestrowe i drewniane*

Producent: *Wielobranżowa i Projektowa Sp. z o.o. MONAT, Gdańsk*

Rok budowy: *1997*

Charakterystyka urządzenia: *drażgi rogatkowe przeznaczone są do zamykania drogi na jednopoziomowych skrzyżowaniach linii kolejowej z drogami kołowymi. Ze względu na materiały zastosowane do produkcji drażgów rogatkowych wyróżnia się następujące rodzaje:*

- ✓ *drażgi rogatkowe aluminiowe – ZDA; ZAA,*
- ✓ *drażgi rogatkowe z laminatu poliestrowego – ZDP; ZAP,*
- ✓ *drażgi rogatkowe drewniane – ZMD.*

Wymienione rodzaje drażgów przystosowane są do współpracy z napędami rogatkowymi następujących typów: JEGD-50, JEGD-50B, S6-JEGD-50, S6-JEGD-50B, JEG-6, EEG-1, HSM-10E, SIM 6/13 i mogą być stosowane na przejazdach kategorii „A” i „B”. Dane techniczne oraz warunki techniczne wykonania zawarte są w Dokumentacji Techniczno-Ruchowej pt. „Drażgi rogatki: aluminiowy – typu ZDA; ZAA, poliestrowy – typu ZDP; ZAP, drewniany – typu ZMD” nr DTR-2004/ZDA; ZAA/ ZDP; ZAP/ZMD, opracowanej przez Wielobranżową i Projektową Sp. z o.o. MONAT, Gdańsk, sierpień 2004 r.

Dotychczasowa eksploatacja potwierdziła poprawność przyjętych rozwiązań. Świadczenie ważne: *bezterminowo – pod warunkiem, że ewentualna modernizacja drażgów rogatkowych będzie wykonana w uzgodnieniu i pod nadzorem Urzędu Transportu Kolejowego.*

Świadczenie wydano na wniosek *Wielobranżowej i Projektowej Sp. z o.o. MONAT w Gdańsku* (nr rejestru 837/04)

Podstawa prawna: *Ustawa z dnia 28 marca 2003 roku o transporcie kolejowym (Dz. U. nr 86, poz. 789 z późn. zmianami).*



Warszawa, dnia *23 listopada 2004 r.*

Prezes
Urzędu Transportu Kolejowego

Janusz Dyduch

Aluminium barrier booms

Aluminium gate booms are manufactured in two designs of road closing boom, i.e.

- A profile type - with two-sided mount on the gate machine main shaft (designation **ZAA** or **ZAApkb**),
- with single closure – one-sided mount on the gate machine main shaft (designation **ZDA**).

In addition, such booms may be manufactured as self-lowering (designation **ZDAs**, **ZAAAs**).

Aluminium barrier booms comprise the following components and parts:

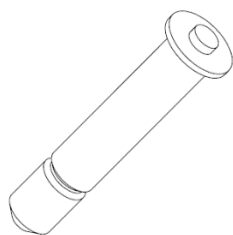
- barrier boom closing device – A profile or single type,
- steel holder, connecting the closing device with the gate machine main shaft by means of the flange,
- counterweight assembly, designed to balance the barrier boom,
- counterweight weights (bobs) – steel or concrete type,
- fixtures, bolts and stabilizing parts,
- barrier boom lock with safety device and boom integrity control device (only applies to **ZDA** and **ZAApkb**).

Barrier booms **ZDA** and **ZAApkb** are fitted out with safety module with barrier boom safety catch (metal bolt). In the event of a collision with a road vehicle, such a solution enables detaching the barrier boom from the gate machine. The safety module houses barrier boom integrity sensor which sends the barrier damage control signal (to the manipulator).

Aluminium booms are manufactured in following sizes:

- up to 6 m – single type (ZDA, ZDAs),
- 6 to 8 m – without guys (ZAA, ZAAAs),
- 8.5 m to 12 m with guys and support (ZAA, ZAAAs),
- 6.5 m to 9 m (ZAApkb).

As a standard, all aluminium barrier booms are fitted out with electric supply circuit for lights (3 pcs.) and mounting holes for front mounted LED lamps LDc and LDcU.



Safety catch of the barrier boom ZDA, ZAApkb

Polyester (plastic) barrier booms

Polyester barrier booms are manufactured in two designs of road closing boom, i.e.

- with single closure - one-sided mount on the gate machine main shaft (designation **ZDP**),
- A profile type - with two-sided mount on the gate machine main shaft (designation **ZAP**).

In addition, such booms may be manufactured as self-lowering (designation **ZDPs, ZAPs**).

Polyester barrier booms comprise the following components and parts:

- barrier boom closing device – A profile or single type,
- steel holder, connecting the closing device with the gate machine main shaft by means of the flange,
- counterweight assembly, designed to balance the barrier boom,
- counterweight weights (bobs) – steel or concrete type,
- fixtures, bolts and stabilizing parts (guys, supports),
- barrier boom lock with safety device and boom integrity control device (only applies to **ZDP**).

Barrier booms **ZDP** are fitted out with safety module with barrier boom safety catch (metal bolt). In the event of a collision with a road vehicle, such a solution enables detaching the barrier boom from the gate machine. The safety module houses barrier boom integrity sensor which sends the barrier damage control signal (to the manipulator).

Polyester laminate booms are manufactured in following sizes:

- up to 6 m – single type (**ZDP**) - without guy and support,
- 6.5 to 8 m – with guy and support (A profile type, designation **ZAP**).

As a standard, all polyester barrier booms are fitted out with electric supply circuit for lights (3 pcs.) and mounting holes for front mounted LED lamps LDc and LDcU.

LIST OF STANDARD BARRIER BOOMS

	Title of new type assembly drawing	Holder parameters	Guide parameters	Bobs (counterweight)			
				concrete, type B 16.5 kg	cast iron, type A 32 kg	cast iron, type U 16 kg	Weight of bobs in kg
Single closure aluminium boom barriers	ZDA-02	160-800	110			1	16
	ZDA-035	160-800	110			1	16
	ZDA-03	160-800	110			1	16
	ZDA-035	160-800	110			1	16
	ZDA-04	160-800	110			1	16
	ZDA-045	160-800	110			1	16
	ZDA-05	160-1000	160			2	32
	ZDA-055	160-1000	160			2	32
	ZDA-06	160-1000	200			3	48
A profile aluminium boom barriers	ZAA-055	140-1000	240	6			99
	ZAA-06	140-1000	240	6			99
	ZAA-065	140-1000	340	8			132
	ZAA-07	140-1000	340	8			132
	ZAA-075	140-1000	390	10			165
	ZAA-08	140-1000	390	10			165
	ZAA-085	140-1200	340	8	2		196
	ZAA-09	140-1200	340	8	2		196
	ZAA-095	140-1200	420	10	2		229
	ZAA-10	140-1200	420	10	2		229
	ZAA-105	140-1200	390	6	6		291
	ZAA-11	140-1200	390	6	6		291
	ZAA-115	140-1200	450	8	6		324
	ZAA-12	140-1200	450	8	6		324
Single closure polyester boom barriers	ZDA-02	160-800	110			1	16
	ZDA-035	160-800	110			1	16
	ZDA-03	160-800	110			1	16
	ZDA-035	160-800	110			1	16
	ZDA-04	160-800	110			1	16
	ZDA-045	160-800	110			1	16
	ZDA-05	160-1000	160			2	32
	ZDA-055	160-1000	160			2	32
	ZDA-06	160-1000	200			3	48
A profile polyester boom barriers	ZAP-055	140-1000	240	6			99
	ZAP-06	140-1000	240	6			99
	ZAP-065	140-1000	340	8			132
	ZAP-07	140-1000	340	8			132
	ZAP-075	140-1000	390	10			165
	ZAP-08	140-1000	390	10			165
	ZAAP-09	140-1200	300	4	4		194
	ZAAP-09	140-1200	300	4	4		194
A profile boom barriers with bc	ZAApkb-065	160-1000	390	8	2		196
	ZAApkb-07	160-1000	390	8	2		196
	ZAApkb-075	160-1000	340	6	4		227
	ZAApkb-08	160-1000	340	6	4		227
	ZAApkb-085	160-1000	420	8	4		260
	ZAApkb-09	160-1000	420	8	4		260

Barrier boom lights

Barrier boom lights are divided by light source into two groups:

- Incandescent lights (LŽ),
- LED lights (LD).

INCANDESCENT LIGHTS

Incandescent lights utilize a light bulb 24V with power 10W (BA 15s).

LED LIGHTS

Compared with incandescent lights, LED lights feature

- significantly reduced intake of electric energy,
- significantly improved resistance to vibrations,
- extended life cycle of reliable operation.



Light type LDcU 24 V DC

Front mounted LED light, with universal mount

Power supply voltage: 20 - 30 VDC

Light source: LED group

Power intake: 33 mA

NO INCANDESCENT EQUIVALENT AVAILABLE

Light type LDcU 24 V DC

Front mounted LED light, with universal mount

Power supply voltage: 12 - 15 VDC

Light source: LED group

Power intake: 70 mA

NO INCANDESCENT EQUIVALENT AVAILABLE



Light type LŽp

Incandescent light with a square mount

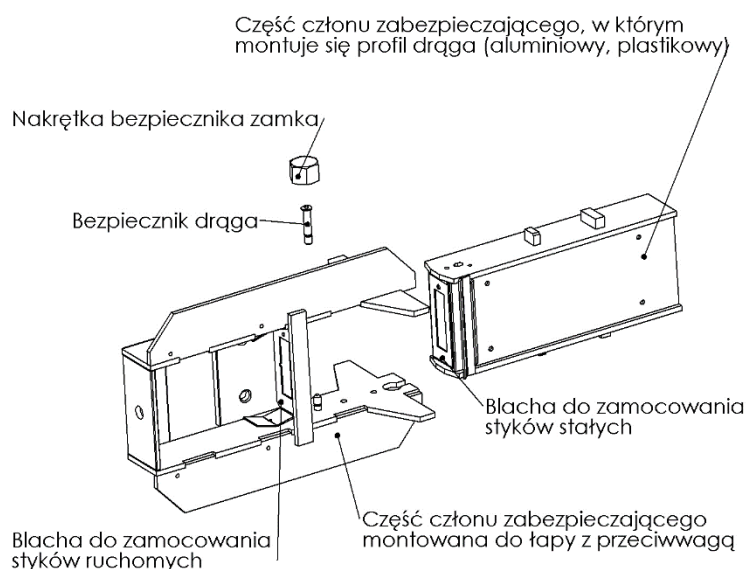
Power supply voltage: 24 VDC

Light source: : incandescent light bulb BA 15s

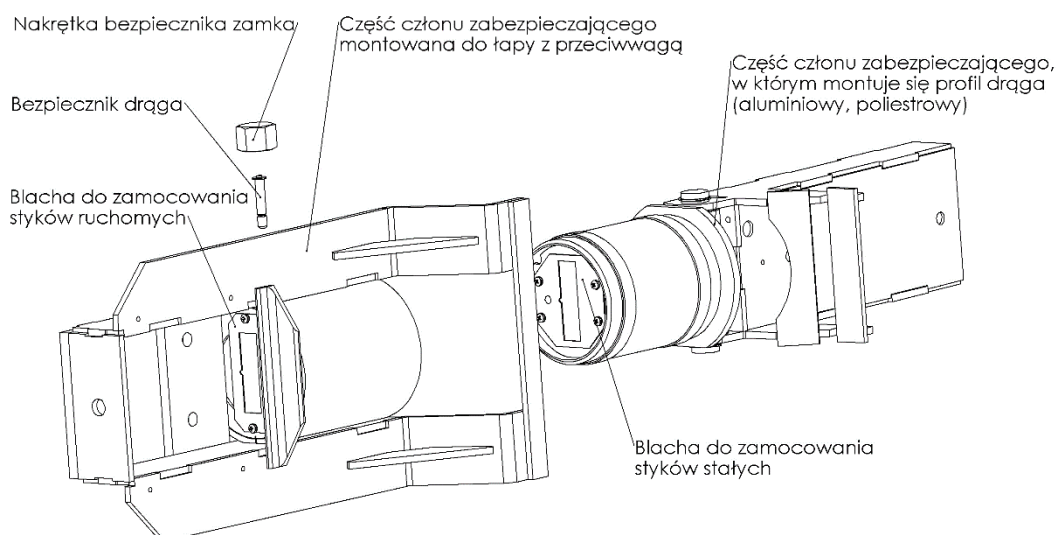
Power intake: 400 mA

Barrier boom safety module

Barrier booms **ZDA** and **ZAapkb** are fitted out with safety module with barrier boom safety (metal bolt). In the event of a collision with a road vehicle, such a solution enables horizontal movement of the barrier boom without damaging the gate machine or reducing the effect of damage. The safety module is then broken, and on the impact against the boom the „ejector” disconnects the boom from the gate machine. The safety module houses barrier boom integrity sensor which sends the barrier damage control signal (to the manipulator).



Lock ZDA/ZDP



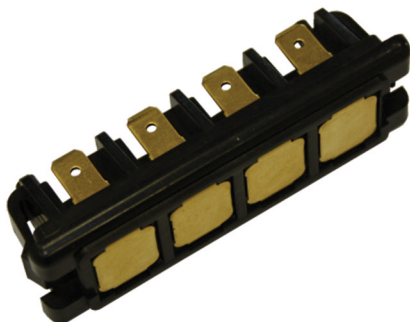
Lock ZAapkb

Safety module is a universal component - may be used both with aluminium booms and polyester booms. Additional safety module is fitted out with moving contacts and fixed (electric) contacts, that are unfortunately not visible in the drawing above.

Contacts unit ensuring the continuity of electric connections

The fixed and moving contacts unit is installed on booms type **ZDA, ZDP** and their variants, whereas socket connectors (male and female) are used in booms type **ZAApkb**. Contacts and connectors are a part of the safety module of the barrier boom, the purpose of which is to ensure the integrity of electrical connection with boom lights and the integrity of boom continuity control system. In general operation mode the unit with contacts or connectors functions as a connector ensuring the integrity of both a.m. circuits. When the boom is broken, however - when the safety module is activated, the unit with contacts or connectors has to open, in a non-destructive manner, boom lights and boom integrity control circuits. The contacts unit or female socket is installed in the cassette of the safety module on the boom profile end, whereas the contacts unit or male sockets is installed on the safety module end that remains with the gate machine after the barrier boom is broken off.

Fixed contacts unit of the barrier boom ZDA/ ZDP



Moving contacts unit of the barrier boom ZDA/ZDP (cat. A)



Moving contacts unit of the barrier boom ZDA/ZDP (cat. B)



Female connector of the barrier boom ZAApkb



Male connector of the barrier boom ZAApkb



Flange for the gate machine JEGD-50

A flange for the gate machine is designed to adapt the gate machine JEGD-50 with bush mount of the boom to booms with the flange mount. Such a solution facilitates significantly mounting of barrier booms to gate machines. The boom with flange mount may be conveniently assembled, e.g. on the ground, and then attached to the gate machine fitted with flanges. In the event of the gate machine JEGD-50 (with bush mount for the boom) attaching the boom to the gate machine is much more labour-consuming.



A photo of the flange for the gate machine JEGD-50

Polyester connector of aluminium profiles

The polyester connector of aluminium profiles connects two aluminium profiles of the barrier boom so that profile lengths are achieved exceeding 4 m. The second function of the connector is electrical separation of two conductive parts - two aluminium profiles of the boom. Since the connector is made of polyester, it has high mechanical strength and is easily processed.

It is connected to aluminium profiles with break rivets or bolts - the choice of specific solution is defined by boom design.



A photo of polyester connector of aluminium profiles

Parameter	Value
Length	390 mm
Width	40 mm
Height	105 mm
Weight	0.8 kg

Barrier boom support

The function of boom support is to reinforce the mechanical structure of the boom barrier when in horizontal position, by providing additional point of support. The support is attached to all A-profile booms (ZAA, ZAP, ZAApkb).

The support comprises a tube, ending on end with boom barrier mount, and on the other end with a special spring and a rubber cap. The spring and cap assembly dampen the impact of boom barrier falling to the ground. Boom barrier mount is fitted with a thread which enables adjustment of the support length to match boom height above the ground. It is important that following the adjustment the counter nut is secured against unscrewing by bending of dedicated washer.



A photo of the boom barrier support

Parameter	Value
Length	950 mm
Width	40 mm
Depth	40 mm
Weight	1 kg