



Solutions for your success

Screws

Barrels

Plastification units



Bernex Group

Edition 09/13



A strong group

With a clear focus

Bernex: A name with a tradition. For more than 40 years, the company has been manufacturing bimetallic barrels for the plastics machinery industry at its Olten site.

Today Bernex is a group with companies in Switzerland, the Czech Republic and Italy. It is the brand for the leading European manufacturer of screws, barrels and plastification units.

Bernex manufactures its products with a clear focus on the plastics industry.

Swiss quality combined with Italian flexibility and the Czech tradition in mechanical engineering are a unique mix. The Bernex Group experts are dynamic, innovative people with comprehensive know-how. Our vast knowledge is entirely at the service of our customers. Because their success with our customized solutions is our success.



What you can expect from us

Expect a great deal from us where screws and barrels are concerned. This is what we are all about. Our product know-how is extensive, and we have an in-depth understanding of the processes in which our products are used. Therefore your expectations should not be limited to our products, you may also count on us in providing consulting on how to optimize your processes.

Our focus on screws and barrels for plastification is your benefit. This strong commitment means that you can expect us to deliver uncompromising quality.

You can expect us to take care of your requirements competently and to find the perfect solution for you. You may also expect us to turn your wishes into reality quickly and flexibly at our three production sites.



Screws

In all versions

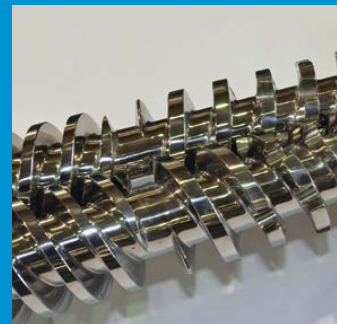


We manufacture all versions of screws for you. You will get precisely what you need – from base materials to the finish.

You have specific requirements? Good. We are specialized in making the most different types of screws. There are hardly any limits to the requirements concerning materials, geometries and coatings we can deal with.

All commonly used production techniques are available to us in screw manufacturing: whirling, milling, high-speed milling and grinding. The optimal production process for any screw geometry at hand.

Regarding wear protection: Our state-of-the-art PTA welding systems reliably hardface flight lands with all known alloys – top quality guaranteed.



Materials

Screw materials

Material no.	Abbreviation	Material group	Tensile strength (RT)	Heat treatment	Hardness
1.8519	31CrMoV9	Nitriding steel	850–1200 N/mm ²	Nitriding	700–900 HV5
1.8550	34CrAlNi7	Nitriding steel	800–1000 N/mm ²	Nitriding	900–1100 HV5
1.4122	X35CrMo17	Stainless steel	750–950 N/mm ²	Through-hardening	50–54 HRC
2.4819	NiMo16Cr15W	Nickel material	> 700 N/mm ²	–	Soft
2.4856	NiCr22Mo9Nb	Nickel material	> 700 N/mm ²	–	Soft
1.2379	X155CrVMo121	Tool steel	–	Through-hardening	59–63 HRC
Various		PM steel	–	Through-hardening	54–63 HRC

Other materials upon request

Dimensions

Screw dimensions

Standard materials	Single screws	Twin screws
Diameter	18–600 mm	40–200 mm
Length	9000 mm	6000 mm

Tool steel	Single screws
Diameter	18–80 mm
Length	2000 mm





Flight hardfacings

Wear protection on screw flights

Flight land armor	Base alloy	Alloy components	Hardness (HRC)	Wear resistance	Corrosion resistance
BC 1	Cobalt base	C, Cr, W	52–57	•••	•••
BC 6	Cobalt base	C, Cr, W	38–42	•	•••
BC 12	Cobalt base	C, Cr, W	44–48	••	•••
BN 56	Nickel base	C, Si, Cr, B, Fe	52–56	•••	•••
BF 60	Iron base	Stainless steel	51–58	••••	••
BF 62	Iron base	Tool steel	58–62	••••	••
BNW 830	Nickel base	Tungsten carbide	56–60	•••••	••••

Suitability: (• good) to (••••• excellent)

Coatings

Screw coatings

Coating type	Coating thickness	Coating hardness	Wear resistance	Corrosion resistance
Hard chrome plating	0.020–0.035 mm	800–1100 HV 0.1	••••	••
Chemical nickel plating	0.015–0.025 mm	500–600 HV 0.1	••	•••••
PVD, TiN	0.004 mm	2500 HV 0.05	•••	••
PVD, CrN	0.004 mm	2100 HV 0.05	•••	•••
PVD, CrN multilayer	0.008 mm	2100 HV 0.05	••••	••••
BNW 8000	0.10–0.15 mm	1000–1400 HV 0.2	•••••	••••

Suitability: (• good) to (••••• excellent)





Materials

Base materials for barrels

Designation	Material group	Yield point at 300 °C	Application
BM 25	Heat treatable steel	250 N/mm ²	Extrusion/Twin barrel
BM 37	Heat treatable steel	370 N/mm ²	Extrusion
BM 63	Heat treatable steel	580–630 N/mm ²	Injection
BMC 13	Stainless steel	130 N/mm ²	Extrusion
Nitriding steel		480–600 N/mm ²	For all variants
Other materials upon request			

Dimensions

Barrel dimensions

Bimetallic	Single barrel	Twin barrel
Inside diameter	20–500 mm	30–200 mm
Length	7750 mm	3000 mm

Nitriding steel	Single barrel	Twin barrel
Inside diameter	20–610 mm	30–200 mm
Length	9000 mm	3000 mm



Barrels

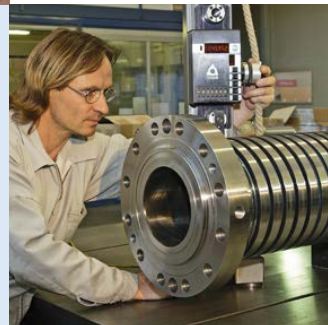
Quality in b i m e t a l

Bernex is a leader in manufacturing bimetallic barrels. Our production lines are optimally suited to spin cast and manufacture large, complex barrels. We produce highly wear-resistant bimetallic barrels as well as a wide range of nitriding steel barrels. Almost all versions are available as single and twin barrels.

Thanks to our advanced production process and to our state-of-the-art machining centers our lead times are extremely short. Therefore we can provide you with competitive delivery times.



In addition to our products, we also offer a comprehensive range of services. Please make use of our engineering know-how. We have developed precise methods for stress calculation in injection moulding and extrusion barrels. These methods have been proven in many years of successful implementation.

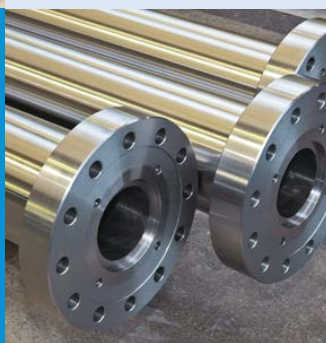


Barrel armors

Bimetallic alloys

Alloy type	Base	Alloy components	Hardness (HRC)	Wear resistance	Corrosion resistance
A 110	Fe base	Ni, C, B	58–65	••	•
AC 333	Fe-Cr base	Ni, Mo, Cu, C, B	62–69	•••	••
C 242	Ni-Co base	Cr, Mo, B	48–56	•	•••••
ACW 800	Ni base	Cr, Si, B, WC	58–66	•••••	••••

Suitability: (• good) to (••••• excellent)

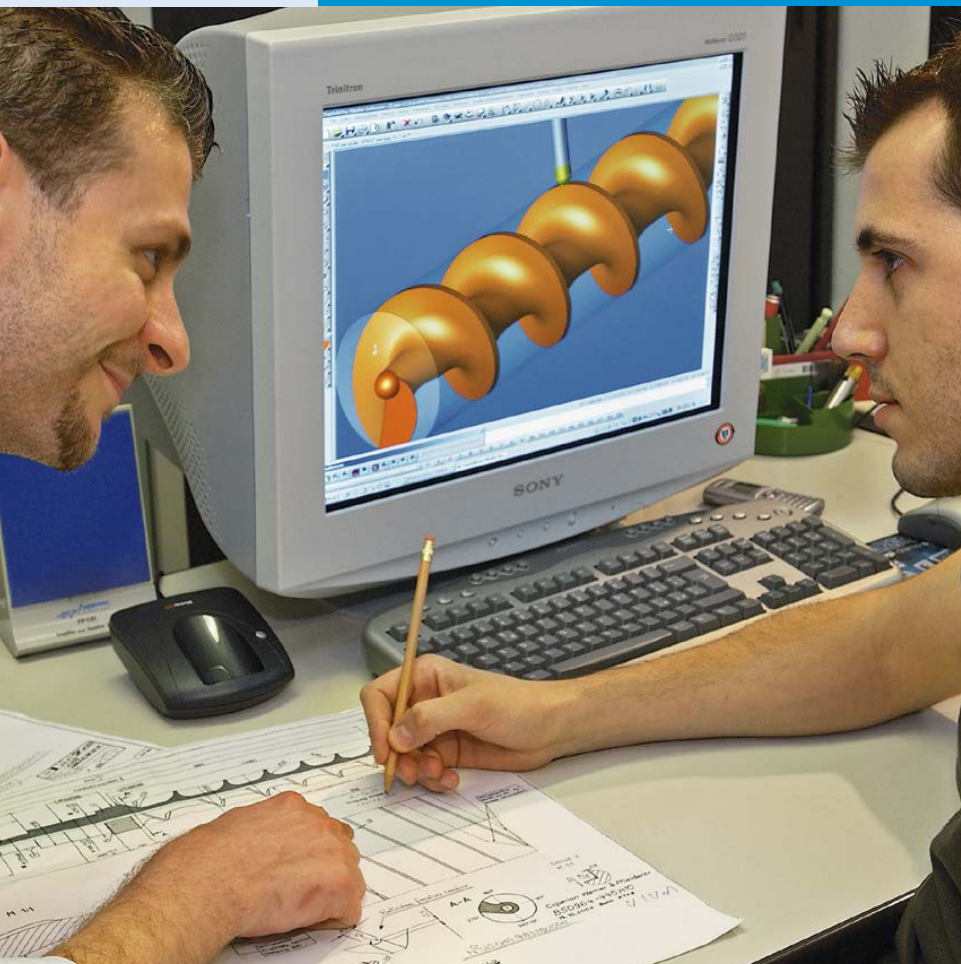


System solutions

Second to none

Bernex also provides complete system solutions. These are, of course, tailored precisely to your needs. For example, we determine the optimal design of the frictional screw-barrel combination, which has a decisive impact on maximizing the life of your plastification unit.

In both metallurgy and engineering we are constantly working on new solutions and product-specific improvements. Structures and wear characteristics are evaluated using high-sensitivity measuring equipment in our laboratory which empowers us to continually expand our engineering expertise. We gladly share this know-how with you to full fill your individual requirements.



One-stop shopping

A single partner



We are also a reliable partner when it is required to replace plastification units to reduce wear in your systems or undertaking complex modifications of your existing extrusion or injection system.

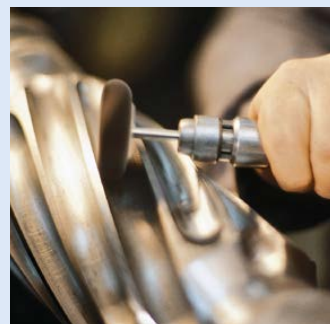
In short words: You work with a single, experienced partner – from consulting and planning all the way through to production. A partner who is second to none.

Screws and barrels

Screw and barrel combination

Barrel	Screw									
	Tool steel	PM steel	Nitride steel	Nitride steel with hard faced flights						
				BC 1	BC 6	BC 12	BN 56	BF 60	BF 62	BNW 830
A 110	•••	–	••	••	•	••	•••	••	•••	–
AC 333	•••	••	••	••	•	••	•••	••	•••	••
C 242	–	–	–	–	•••	••	••	–	–	–
ACW 800	••	•••	–	•	–	–	••	•••	••	•••
Nitride steel	••	–	••	••	••	••	•••	•	••	–

Suitability: – not suitable • low suitability •• suitable ••• highly suitable



Talk to us

We are glad to consult you



If you have questions, or you need information about screws and barrels, do not hesitate to contact us. We will be happy to assist you.

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