



To form the plastics in the best way

**THE BEST PLASTICIZING SCREWS & BARRELS**



New Face of a Long Experience...

## /// LONG LIFE PLASTICIZING SCREW & BARRELS with HIGH MELTING CAPACITY

FORMER Inc. was born as a new face of wide knowledge and experience in the field of Plastics and Rubber processing machinery industry. Profession of the company is the designing and manufacturing of plastics and rubber processing screws and barrels.

The experience and knowledge accumulated since 1973, has turned into an innovative company with highly qualified staff. The newest precise metal processing technologies and high quality up to date machineries enable us to produce high quality parts. Our experienced technical staff designs screws with the newest technology and provides solutions for customers' requirements and complex problems.

We concentrated our development effort on modifying screws and barrels for better wear resistance, higher performance, lower energy consumption as well as different surface treatment and coating techniques. Our aim is to be continuously renewing, customer oriented, leading organization in improving and growing plastic processing industry, which participates in national and international markets, by using our technical experience, quality intelligence and technical capacity.

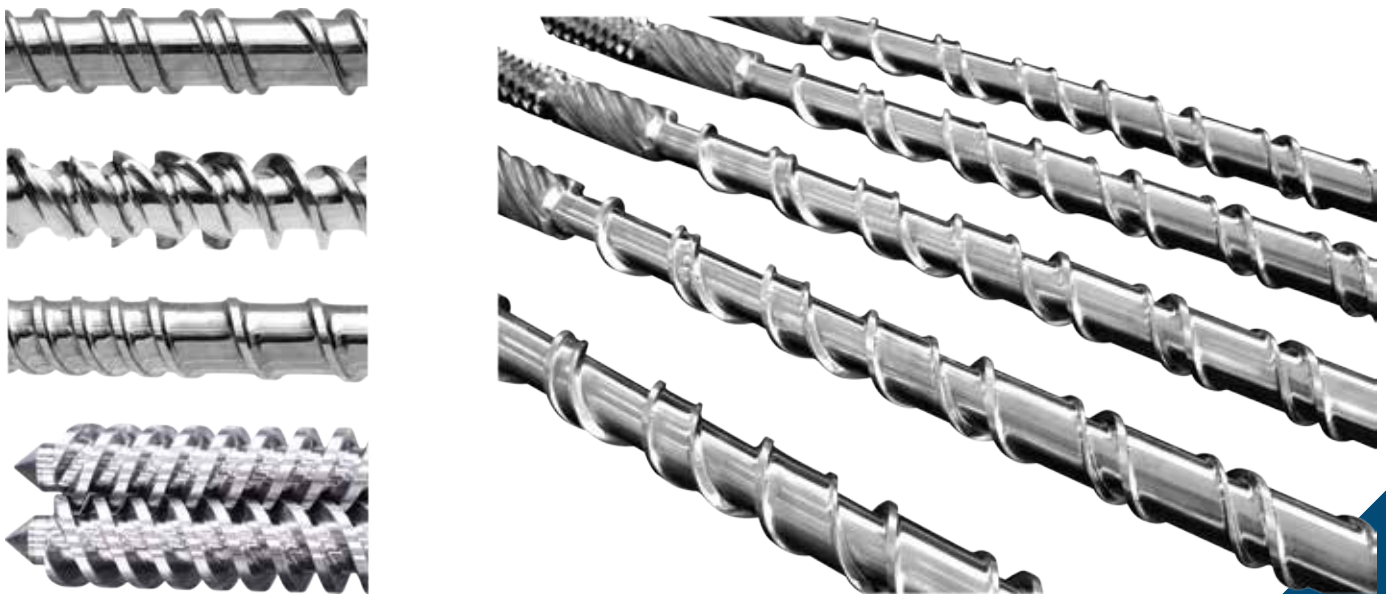


FORMER offers you almost all kind of screw and barrel units used in plastics extrusion and injection molding production. The proven screw and barrel designs, created to meet various process requirements, are generated with combination of experience, knowledge and engineering. They will meet your demands and give you the best solutions. Specifically chosen materials, hardening, welding and coating techniques will provide a long service life.

## /// "FORMER" SCREWS SHAPING PLASTICS

High quality plastic products requires well designed and precisely manufactured screws. Former's experience in design, engineering capabilities and CNC controlled up-to-date production line provides production of variety of complex screw geometries with the tightest tolerances. Additionally, Former can advise screw designs which would meet your requirements in the highest level. Related to your process conditions, standard nitrided, through hardened or bimetallic material option, whichever best meets your requirements, is advised.

- CLASSICAL THREE ZONE SCREW
- MULTI START SCREW
- BARRIER FLIGHT SCREW
- COUNTER ROTATING TWIN SCREW
- CO-ROTATING TWIN SCREW
- DEGASSING TYPE SCREW
- RUBBER / SILICONE SCREW
- DOUBLE DIAMETER SCREW
- DISPERSIVE / DISTRIBUTIVE MIXERS



## /// Integrated Barrier screws and Mixers

Grinded or regenerated plastics with low MFI value are hard to feed, flow and melt. In order to eliminate the problems resulting from such characteristics and to improve the melting capacity and quality, we offer Barrier and Maillefer type EBM screws and Grooved feeding systems.

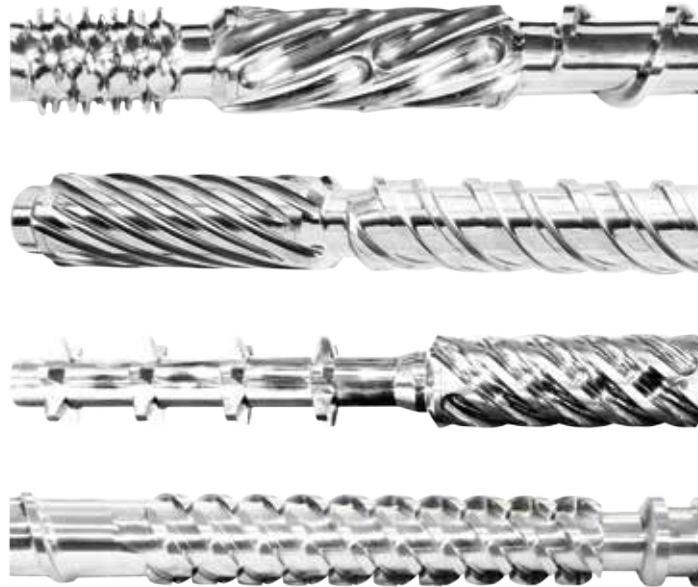
The Barrier design screws which separate molten plastics from solid plastics and Grooved fed barrels offer the following advantages;

- Stable and high output, compared to the classical screws,
- Minimal pressure and melt temperature change,
- Higher melt quality and lower melt temperature, Better dispersive mixing,
- Better results for processing of regenerated or grinded materials.



With the Application of Dispersive and Distributive Mixers;

- Effective mixing and distribution of color master-batches, additives, stabilizers and etc.
- Preventing agglomerations and improving the melt quality
- Better appearance and mechanical properties of the produced material
- Improvement of the product quality with process specific mixers for extrusion and injection molding can be obtained.



Single Screw Production Parameters	Screw Diameter (mm)	Max. Length (mm)
Nitrided Screws	18-250	9.000
Bimetallic Screws	18-250	9.000
Through Hardened Screws	18-100	1.500 mm



## MATERIALS and PROTECTION AGAINST WEAR

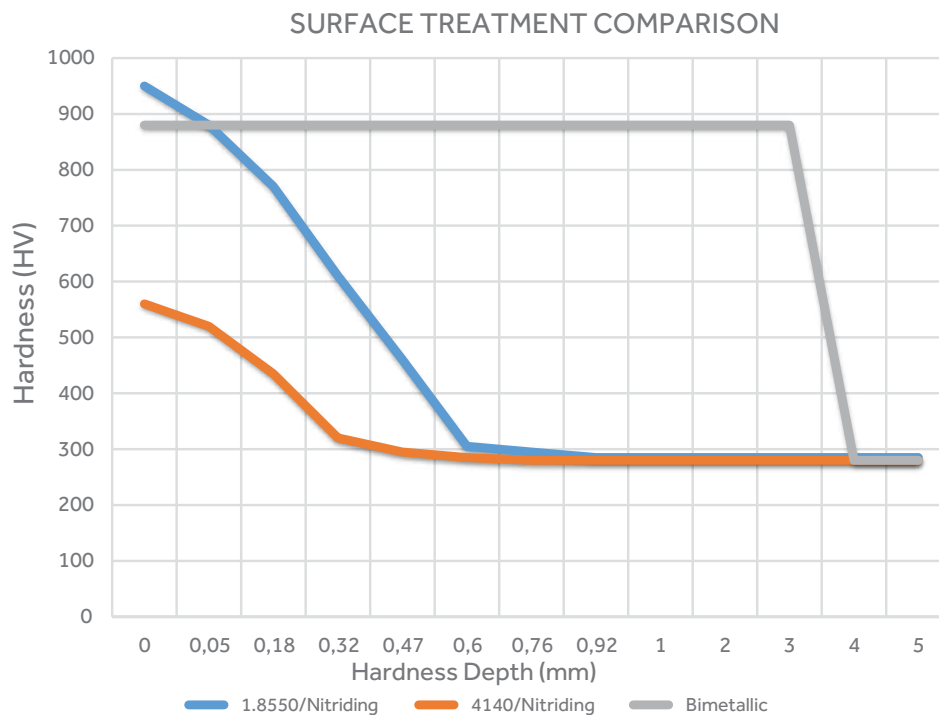
Today's plastics parts must meet the very specific needs, thus often requires some abrasive or corrosive additives (such as Glass fiber, CaCO<sub>3</sub>, Colors etc.) to achieve the specific characteristics. It is essential to take measures for continuous production. Former produces higher durability through hardened or Bimetallic Screws and Barrels as well as Nitrided ones.

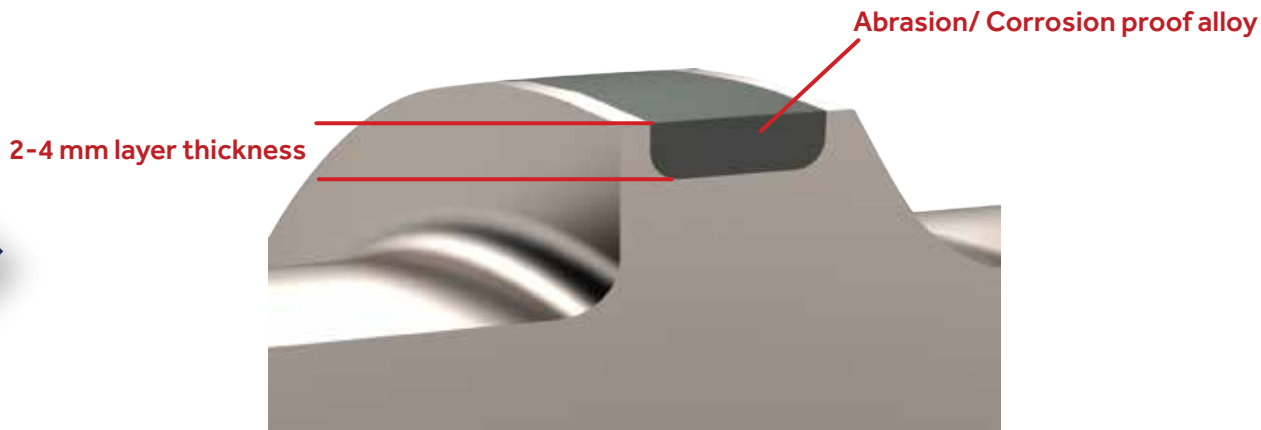
### SCREW MATERIALS

Norm	Material	Heat Treatment	Hardness	Tensile Strength (N/mm <sup>2</sup> )	Hardness depth (mm)
<b>Nitrided</b>					
1.7225	42CrMo4	Nitriding	560-630 HV5	800-950	0,2-0,3
1.8519	31CrMoV9	Nitriding	750-850 HV5	900-1100	0,3-0,4
1.8550	34CrAlNi7	Gas Nitriding	900-1050 HV5	850-1050	0,5-0,7
1.4122	X35CrMo17	Plasma Nitriding	1000-1050 HV5	750-900	0,15-0,20
<b>Through Hardened</b>					
1.2379	X155CrVMo121	Hardening	58-62 HRC	---	Through Hardened
PM. Steels	Various	Hardening	54-64 HRC	---	Through Hardened

## BIMETALLIC SCREWS" for Better Wear Protection

Screws flight, exposed to wear, leads to reduced capacity and disruption of process conditions. In order to protect the screw flights and to postpone the wear, we apply abrasion and corrosion proof coating layer on the top of the screw flights. We offer proper alloy depending on your process conditions and by this mean, screw life can be extended 2-5 times comparing to standard nitride screws.





### BIMETALLIC SCREWS COATING ALLOYS

Protection Type	Base of Alloy	Components	Hardness (RT)	Wear Resistance	Corrosion Resistance
C 12	Co	C, Cr, W	48-50 HRc	***	****
C 1	Co	C, Cr, W	52-57 HRc	****	****
N 56	Ni	C, Si, Cr, B, Fe	50-55 HRc	****	****
N 57	Ni	C, Si, Cr, B, Fe, W	50-52 HRc	****	*****
F 58	Fe	C, Si, Mn, Cr, Mo, V, W	56-60 HRc	****	**
NW 83	Ni	C, Si, Cr, B, Fe, W	56-60 HRc	*****	*****

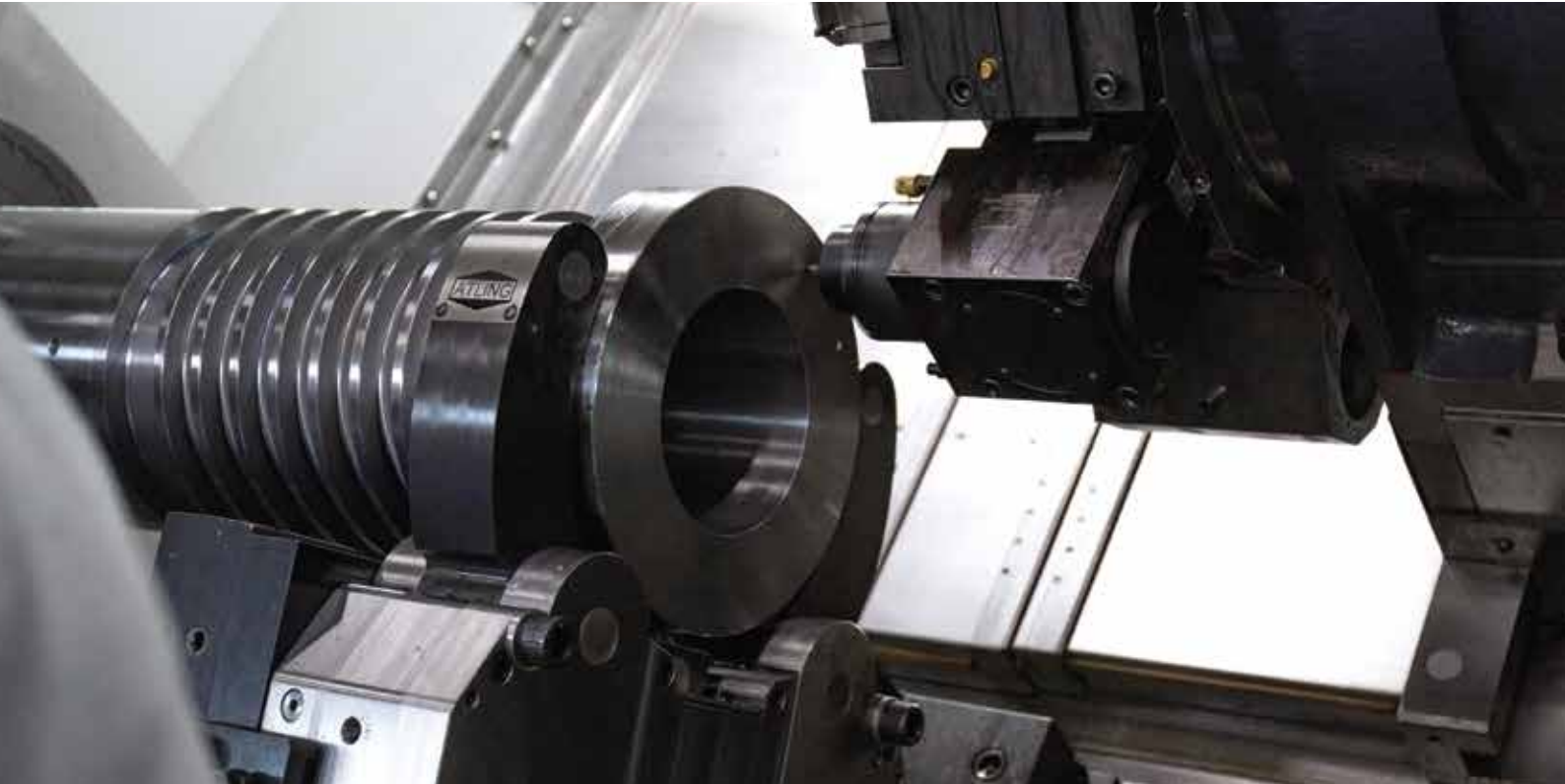
\*Some other alloys can be used depending on request

We offer proper corrosion or abrasion proof alloy depending on your process conditions and by this mean, screw life can be extended 2-5 times comparing to standard nitride screws.



## BARRELS

Former produces almost all types of barrels used in injection molding or extrusion processes. While the injection barrels must be resistant to high injection pressure, extrusion barrels may require the use of degassing type barrels to take volatiles out and the use of grooved feeding systems for difficult-to-feed materials. Our designs meet these requirements and correct material selection and the proper hardening, coating technics will provide optimum lifetime efficiency.



## Grooved Barrel

Feeding grooves are used in most of today's extrusion applications. With the use of "Soft" or "Hard" feeding grooves, benefits such as higher throughput, stable and higher mold pressure generation and more efficient feeding of high viscosity materials are obtained. FORMER produces grooved feeding barrels with various channel profiles and in straight and spiral forms.



### BARREL MATERIALS

Norm	Material	Heat Treatment	Hardness	Tensile Strength (N/mm <sup>2</sup> )	Hardness depth (mm)
1.8550	34CrAlNi7	Nitrasyon	900-1050 HV5	850-1050	0,5-0,7
1.8519	31CrMoV9	Nitrasyon	750-850 HV5	900-1100	0,3-0,4
1.7225	42CrMo4	Nitrasyon	560-630 HV5	800-950	0,2-0,3



## BIMETALLIC BARRELS

If the lifetime of the barrel is not long enough because of abrasive or corrosive additives or fillers, the right solution is Bimetallic barrel. Thanks to special centrifugal casting technique for application of highly abrasion and corrosion proof alloys on the wear surfaces of the barrel. These alloys allows to run the barrel long time without changing it even with up to 50 % glass fiber including materials. Former will offer you proper base material for extrusion or injection molding with the suitable coating alloy for the efficient lifetime.



### BIMETALLIC BARREL PROTECTION ALLOYS

Protection Type	Base Alloy	Alloy Components	Hardness-R.T (HRC)	Wear Resistance	Corrosion Resistance
F 121	Fe -Cr	Cr, Mo, Ni, B, C	65-69	***	***
N 115	Fe -Cr	Cr, Mo, Co*, B	49-53	*	*****
N 216	Ni	Cr, Mo, Co, B, W*, C	53-57	*****	****

Depending on the test trials, bimetallics barrels last 2-5 times longer than standard nitrided ones.

**F 121:** It can be used instead of nitrided barrel and can last 2 times longer. Abrasion and corrosion resistance balanced alloy. Can be used up to %30 glass fiber including materials

**N 115:** Especially used for corrosion resistance.

**N 216:** Used for extreme abrasive applications (like %50 glass fiber including materials), micro tungsten carbide particles including anti-corrosive alloy.

### BIMETALLIC BAREL BACKING MATERIALS

Material	Yield Point at RT (N/mm <sup>2</sup> )	Yield Point at 300°C (N/mm <sup>2</sup> )
M 36	800	360
M 58	980	580

Barrel Production Parameters	Diameter (mm)	Max. Length (mm)
Nitrided barrel	20- 200	5.000
Bimetallic barrel	20- 200	5.000



## /// TWIN SCREWS AND BARRELS

Counter rotating twin screws and barrels are designed with a detailed engineering and produced precisely with very tight tolerances, in order to process dry blend hard PVC efficiently without any problem. FORMER provides the best quality and precision with the help of modern CNC screw production line, highly qualified staff as well as strict quality control criteria. We can replace your existing screw and barrel and we can offer design solutions or improvements for the existing screw as well.



## /// BIMETALLIC TWIN SCREWS AND BARRELS

In order to extend the service life of the twin screws and barrels working under heavy conditions (high filled or recycled materials), we offer Bimetallic twin screws and barrels solution as well. Bimetallic Twin Screws and barrels can offer 2-4 times longer service life comparing to nitrided one.

Production Parameters for Twin Screws and Barrels	Diameter (mm)	Max. Length (mm)
Nitrided	50- 160	4.500
Bimetallic	50- 160	4.500

## REBUILDING SCREWS AND BARRELS

Sometimes, regaining of the old units saves time and money. We are inspecting the worn out screws and barrels carefully and if we see that it can be regained, we offer you to make it like new with a quite good offer.



## Non-return valves and Front end components

Former produces, non-return valves, screw tips and other front end components of Injection and Extrusion units with various geometries and material selection.



## Engineering Services and Quality

Quality is not only in the products we produce, but in the services we provide with passion is our principle.

With the continuous improvements in our quality system, we aim to deliver our products flawlessly to our customers, that's why we control our production at any stage.

Our qualified technicians can give the following services;

- Making drawings for your existing screws and barrels
- Give in house wear control
- Re-evaluation of the design of the plastification unit you are not satisfied with
- Training of your staff about related topics



## Extrusion Melt Filters



BF Series

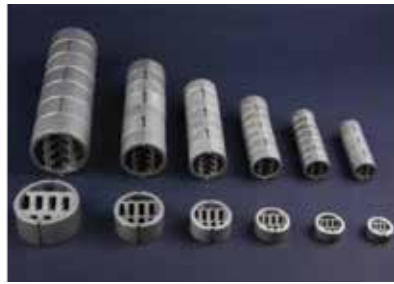


CF Series



CF-L Series

## Static Mixers for Injection Molding and Extrusion



## Shut-off Nozzle for Injection Molding machines



BHP



HP



A(S)



SHP



NE





**FORMER**

FORMER MAKİNE A.Ş  
5. Cd. No:3, 34520  
Beylikdüzü Osb/ Beylikdüzü/ İstanbul

www.former.com.tr  
info@former.com.tr  
+90 (212) 854 20 55

