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A team of product and application consultants is looking forward to hearing from you. You can reach them under **+49 (0) 7022 72-3230** (Mon-Fri, 08:00 - 17:00 hours) or by email to anwendungsberatung@metabo.de.

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when it really counts

COMPETENCE GUIDELINE



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PROFESSIONAL POWER TOOL SOLUTIONS

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PROFESSIONAL POWER TOOL SOLUTIONS

THE PROFESSIONAL PROCESSING OF STAINLESS STEEL

**IF YOU WANT A PERFECT FINISH,
YOU NEED PERFECT MACHINES:
THE NEW METABO STAINLESS STEEL RANGE.**

The life blood of a Metabo flows from over 80 years of experience in the metal sector. The high quality demands that Metabo place on these specialist metal processing machines result in technically excellent tools. With a wide range of accessories to match Metabo can guarantee that when using a Metabo you will achieve perfect results. A bold statement that we back up with the Metabo XXL 3 year warranty. Be it when finishing surfaces, pipes or weld seams, from coarse grinding through to burnishing and high-gloss polishing perfection can be achieved. Metabo inox machines are available in both corded and cordless executions for on-site use, we know no boundaries. Within this booklet we hope to give you a short introduction to some best practice techniques, the Metabo guide to stainless steel finishing. However in the end there is only so much we can do, the rest is up to you. Professional stainless steel finishing now knows no limits. **Metabo. Work. Don't play.**



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STAINLESS STEEL, AN OPTICALLY ATTRACTIVE AND LONG-LASTING MATERIAL WITH A WORLD OF POSSIBILITIES.



Chrysler Building with stainless steel roof.

You will find stainless steel is used in a vast array of industries, be it nuclear reactors in power stations, to vats in food & beverage companies to more commercial areas such as hand rails in shopping centres to the more intricate details that may be found in the family kitchen. Wherever you will look it won't take you long to find its presence. Stainless steel has been used in construction since the start of the 20th century as it is an visually attractive and long-lasting material. One of the most famous buildings from this era is the Chrysler Building in New York, of which the roof dome is made from stainless steel.

The material is used for other purposes, such as medical technology, automobile construction and domestic furniture. In large-scale kitchens it is usually the material of choice due to its hygienic properties, it is also easy to clean and durable.

Stainless steel is a material with many versatile uses, a material which convinces as a result of its special characteristics, but it is also a material which requires special handling.

Known by the name Inox (taken from the French inoxydable = non-oxidising) this material will increase in importance in the future.

The wide range of processing options will be demonstrated in this Inox competence booklet step by step; including guidance on the right machine and accessory for the job.





The Cloud Gate in Chicago was designed by the British artist Anish Kapoor. It was constructed during 2004-2006 from 168 plates of stainless steel requiring 744 m of welded seam which were then perfectly polished using a 5-stage process to give a totally seamless like finish. The total cost of the project is estimated at \$23 million. Affectionately named "The Bean" by locals, this magnificent structure is regarded as a popular piece of public art bringing in locals and tourists from all over the world.

SURFACES

SURFACE PROCESSING

There are many surface effects you can achieve on stainless steel. From rough, matt surfaces to brush effects, to satin sheen, to a bright mirror finish like that found on the Cloud Gate in Chicago.

On open surfaces the best way to achieve either of these finishes is primarily through use of a burnishing machine like the Metabo SE 12-115. Professional surface results can only be achieved with low rpm tools in conjunction with special grinding and polishing accessories.

If the desired effect is anything close to a mirror polish the tool handler must take extra care to ensure the correct steps are taken especially in the early stages. If steps are missed or are not carried out correctly surfaces blemishes will become noticeable in the later stages of the project, after which expensive re-work will have to be carried out.

All the applications described on the following pages can be achieved perfectly and effectively using Metabo power tools. It doesn't matter if you are working in the fabrication shop or out on site, Metabo are unique in having both corded and cordless options available for each machine.

- Material removal – the first steps (opening up hot-rolled surfaces)**
- Removing scratches on sheet metal**
- Preparing the base structure**
- The satin finish**
- Preparation for polishing**
- High-gloss polishing to a mirror shine**



MATERIAL REMOVAL – THE FIRST STEPS (OPENING UP HOT-ROLLED SURFACES)

Before the steps of burnishing and polishing can commence, hot rolled stainless steel surfaces must first have their very hard surface skin removed. The skill is to "open up" the material in the first stage of the surface preparation. Without doing so, further processing of the surface would be near impossible.

1 RECOMMENDATION

Burnishing machine SE 12-115 (6.02115) or
Cordless burnishing machine S 18 LTX 115 (6.00154)
with the expansion roller (6.23470) or
pneumatic expansion roller (6.23542) and
the grinding belts P 40 (6.23512)

1 OPENING UP HOT ROLLED SURFACES



Hot rolled surface.



The rolled skin must be "opened up" in the first step using a P40 grit and full speed setting 6*, otherwise the metal will be left with an unworkable hard glaze in subsequent stages.



A longitudinal grinding pattern, the rolled skin has been removed completely.



Opening up the skin with a SE12-115, expansion roller and P40 grit zirconia sl

REMOVAL OF SCRATCHES ON SHEET STEEL

Incorrect transportation, bumps and scrapes, vandalism - there are many reasons why a surface may become damaged. Both deep and shallow scratches must be removed, not just for hygienic or aesthetic reasons, but also to restore protective coatings and to reduce the risk of corrosion setting in.

In preparation for the fine finishing stages any scratches must be removed first. Otherwise these will be even more noticeable when it comes to the final burnishing exercise.

One of the best practiced methods is using the rotation procedure, i.e. grinding in two directions parallel to the edge of the plate.

1 RECOMMENDATION

Angle grinder WE 14-125 Inox Plus (6.02131) or Cordless angle grinder W 18 LTX Inox (6.00174)

With fleece compact disc VKS (6.26368)

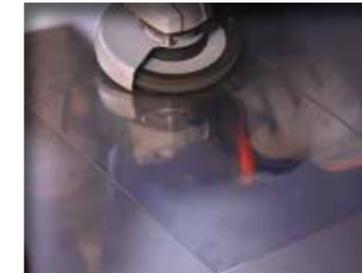
2 RECOMMENDATION

Angle grinder WE 14-125 Inox Plus (6.02131) with cling-fit sanding sheet, soft (6.23287) and the cling-fit sanding sheet Pyramid A 30 (6.26374)

1 REMOVING MINOR SCRATCHES



Minor scratches to the surface caused by transportation



Using the special VKS compact disc (6.26368), minor scratches can be removed in a single process (speed setting 5).



Minor scratches are fully removed using the VKS wheel. Only very slight traces of disc rotation may remain. If required subsequent steps can be carried out using a burnishing machine with various grades of nylon web grinding wheels (speed setting 1-2*) or pyramid sanding belts (speed setting 5*) to achieve a perfect linear finish.

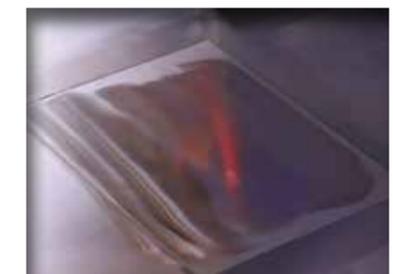
2 REMOVING DEEP SCRATCHES



Deep scratches on the surface



Remove scratches with a soft backing pad, e.g. (M14 6.23300) fitted with a Pyramid cling-fit sanding sheet, e.g. 6.26374 (speed setting 3*). The soft disc will help prevent any undulations forming in the surface material.



Deep scratches are fully removed. Only very slight traces of disc rotation may remain. If required subsequent steps can be carried out using a burnishing machine with various grades of nylon web grinding wheels (speed setting 1-2*) or pyramid sanding belts (speed setting 5*) to achieve a perfect linear finish.



Removal of minor scratches caused as a result of transportation with a VKS wheel.

* With mains-powered tools

PREPARING THE BASE STRUCTURE

Once the material surface has been 'opened-up' further processing can begin to achieve a whole range of different finishes.

An almost transition-free satin finish can be achieved in three steps:

1 RECOMMENDATION

Burnishing machine SE 12-115 (6.02115) or
Cordless burnishing machine S 18 LTX 115 (6.00154)

with the expansion roller (6.23470) or
pneumatic expansion roller (6.23542)
fitted with the zirconia alumina sanding belts P 80 (6.23474)
with flap/nylon web sanding wheel P 60 (6.23483)
with the sinus roller P 180 (6.23567)

1 PREPARATION OF THE SURFACE FOR A SATIN FINISH



Coarse longitudinal finish left after the surface skin has been 'opened'.



Preparation of the surface in three steps: start with sanding belt P 80 in speed setting 6*, then move on to the flap/nylon sanding wheel P 60 in speed setting 1-2* and then finish with the new sinus roller form P 180 in setting 1-2*. Part numbers on page A6.



Perfect satin finish with no transitions.



Linear finishing with a SE12-115 fitted with the pneumatic expansion roller (6.23542) and a sanding belt.

* With mains-powered tools

THE SATIN FINISH

In particular when working on large surfaces, attention must be paid to ensure that the transitions can not be seen and that the surfaces are without scratches.

In order to meet this challenge, we offer system solutions that are tailored perfectly to this need and ensure a professional result.

Power tools specifically designed with the right speed settings for processing stainless steel in combination with the appropriate accessories will support you.

At Metabo we can offer you both corded and cordless solutions.

1 RECOMMENDATION

Burnishing machine SE 12-115 (6.02115) or
Cordless burnishing machine S 18 LTX 115 (6.00154)

With the rubber sanding wheel P180 (6.23499)

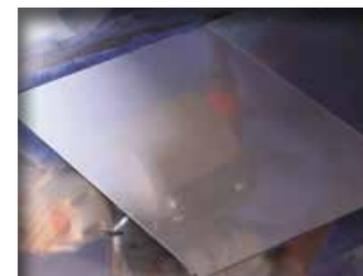


TIP:

Protect your surfaces from scratches using plastic mats when clamping.

1

BURNISHING COLD ROLLED SURFACES



Cold rolled sheet 1.4301.



Using the SE 12-115 with the P 180 6.23499 rubber sanding roller on speed setting 1*.



Very fine longitudinal satin finish achieved.



TIP:

Use an aluminium or copper sheet as underlay for stainless steel sheets. This draws off the heat when working helping to prevent the sheet from warping. In addition an underlay will prevent any possible contact corrosion with ferrous metals, e.g. an iron welding table.

PREPARATION FOR POLISHING

Mirror shine stainless steel surfaces not only reflect on a professional result, they also serve to reduce the risk corrosion. The lower and the finer the raw depth surface values, the lower the possibility of the formation of corrosion and discoloration.

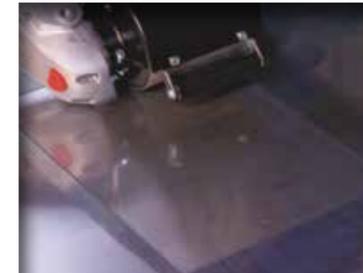
Remember that certain types of stainless steel are not suitable for high-gloss polishing. The more carefully you prep before the polishing stage, the better the end result will be. The overall working time will also be much quicker. By using the special Metabo Pyramid sanding media you can reduce the number of working steps even further v.s. using traditional media. With Metabo Pyramid sanding papers you will only need to go through four steps.

1 RECOMMENDATION

Burnishing machine SE 12-115 (6.02115) or
Cordless burnishing machine S 18 LTX 115 (6.00154)

and the inflatable expansion roller (6.23542) and
the Pyramid grinding belt A 45 P 400 (6.26407)
the Pyramid grinding belt A 30 P 600 (6.26408)
the Pyramid grinding belt A 16 P 1200 (6.26409)
the Pyramid grinding belt A 06 P 2000 (6.26410)

1 PREPARATION FOR POLISHING LARGE SURFACES



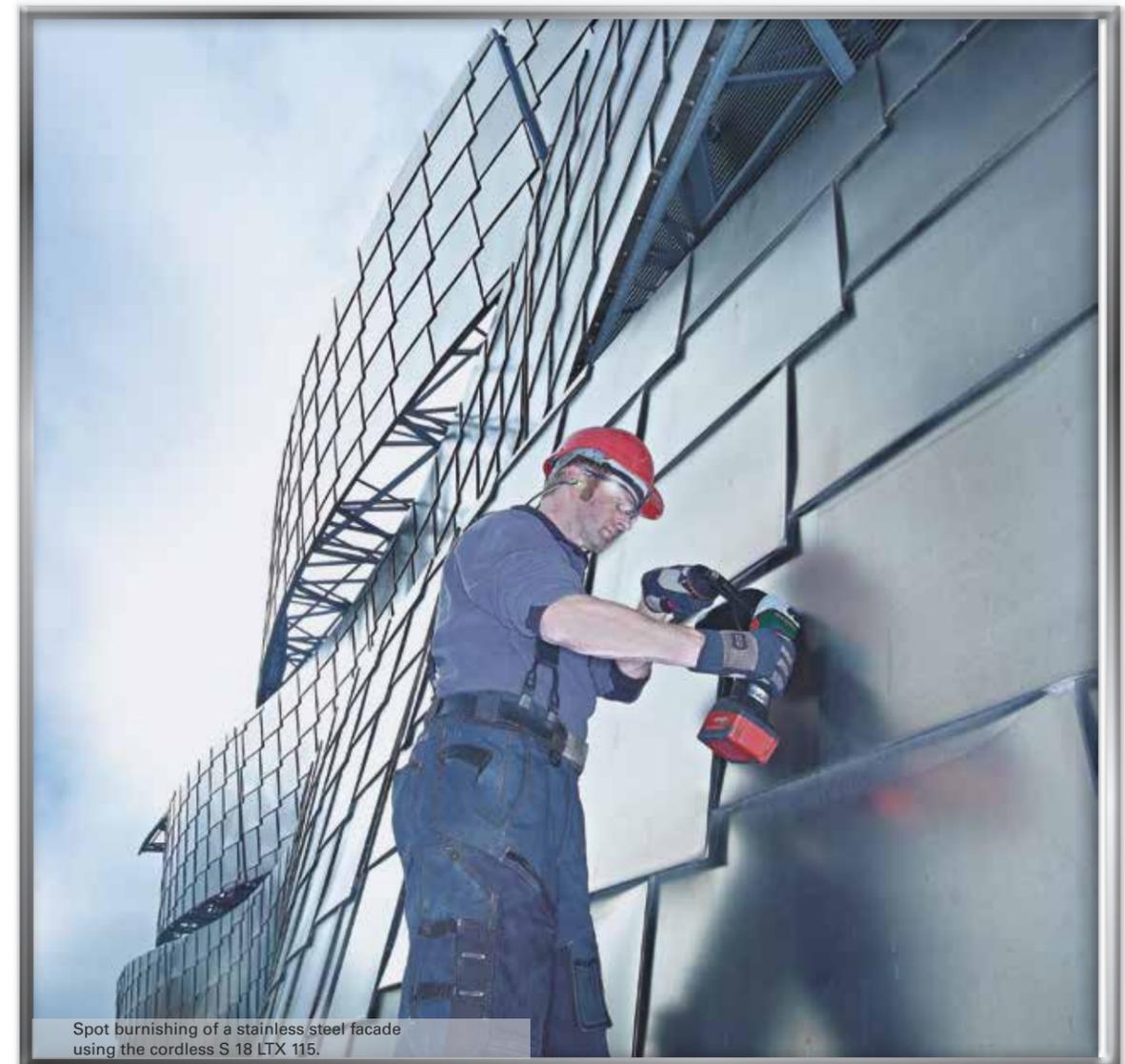
Cold rolled sheet 1.4301.



Using a "criss-cross procedure" systematically prepare the surface using the inflatable expansion roller fitted with the Pyramid sanding belts. Steadily work through the grits, A 45, A 30, A 16, A 06 one after the other with the burnishing machine on full speed setting 6*.



Sheet prepared for polishing.



Spot burnishing of a stainless steel facade using the cordless S 18 LTX 115.

HIGH-GLOSS POLISHING TO MIRROR SHINE

Now you are ready to shine: by working through the last stages of this process you will be able to achieve a mirror like finish, yes even on steel!

With this effect the risk of corrosion is greatly minimised, optical and hygienic requirements are also met. Professional power tools and accessories are available to help you carry out this stage. Of course if you need to go mobile, Metabo has cordless options to suit.

1 RECOMMENDATION

Angle grinder WE 14-125 Inox Plus (6.02131) or Cordless angle grinder W 18 LTX Inox (6.00174)

Pre-polishing:

Use cling-fit backing pad soft (6.23287) with cling-fit polishing fleece, hard (6.31242) with polishing paste, white (6.23520)

Final polish:

Use cling-fit backing pad, soft (6.23287) with cling-fit polishing fleece, soft (6.24964) with polishing paste, blue (6.23524)



TIP:

After each stage of polishing, remove the polishing residue with Metabo Talc (6.26399) and the soft micro-fibre cloth (6.26398).

1 POLISH TO A HIGH-GLOSS MIRROR LIKE FINISH



Pre-polish with a soft backing pad and hard polishing fleece in combination with white polishing paste. Start off slow and then build the speed up as the paste warms and works itself into the metal.



Final "shine" with a soft backing pad and a soft cling-fit fleece disc in combination with blue polishing paste at speed setting 4-5*. Start off slow, work the paste into the material and finish on high speed.

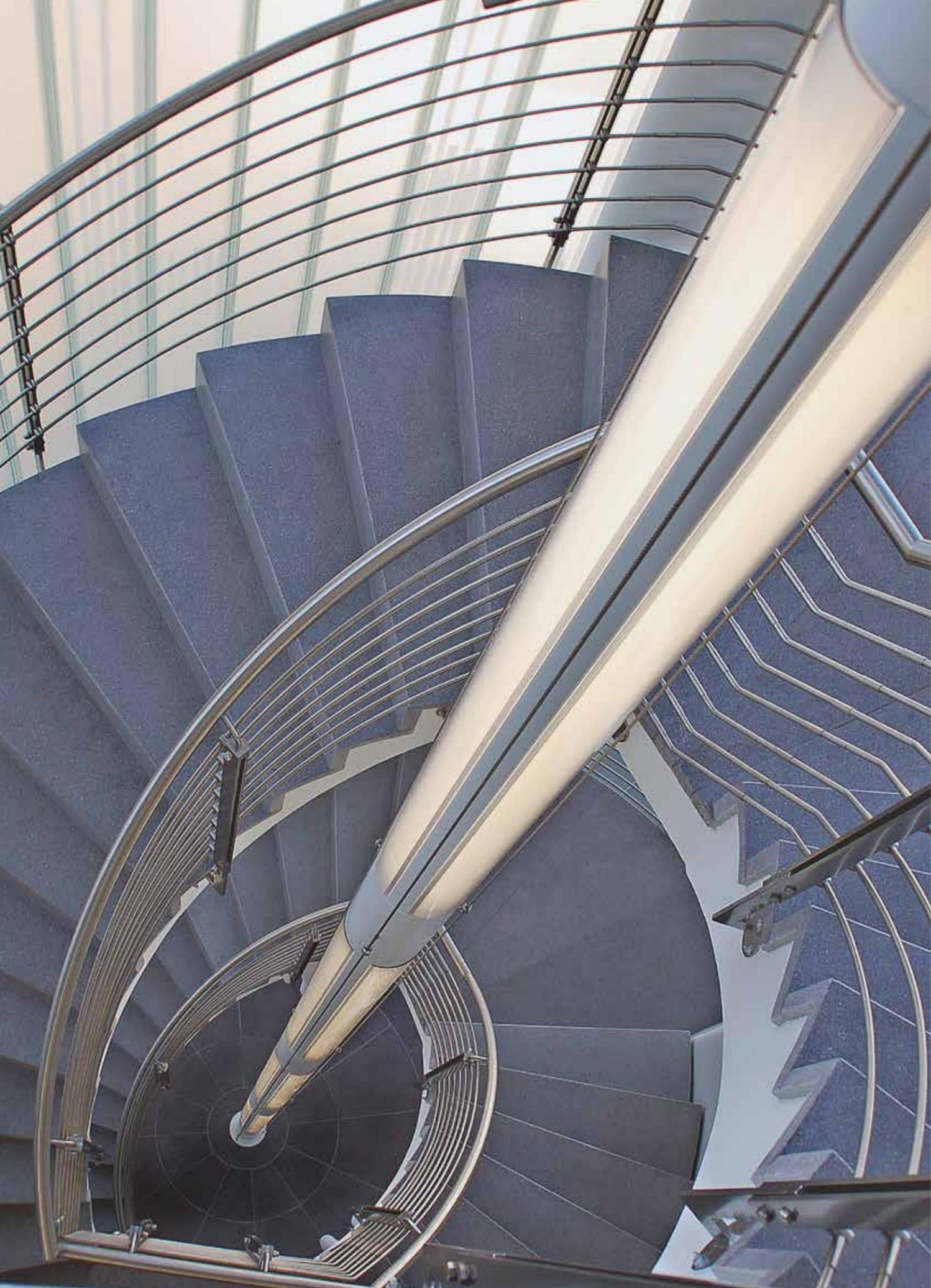


Perfect mirror-gloss surface achieved.



Pre-polishing using the rotation procedure

* With mains-powered tools



PIPES AND TUBES

PROCESSING THE SURFACES OF PIPES AND PROFILES

Round objects are no object

Pipes and profiles can be a real challenge when it comes to finishing or repairing surfaces. Access is usually the main issue, but also the shape of the profile. Straight, curved or even closed pipe systems should not really be attempted by hand as great expense in terms of time and labour will often result. Power tools should be the first choice for any professional looking to achieve a uniform finish in a cost efficient time frame. Metabo are again unique as we can provide both corded and cordless solutions to suit your needs.

- Removal of tarnish
- Grinding out welded seams
- Grinding out scratches
- The satin finish
- Preparation for polishing
- High-gloss polishing to a mirror shine



REMOVAL OF TARNISHING

Tarnish left after a fresh weld can damage stainless steel as it will often lead to subsequent surface corrosion.

This heat-caused tarnish must be removed completely in order to form the protective coating.

Alongside possible chemical methods of removal such as acid cleaning, there are some solutions that can be achieved using the appropriate hand-operated power tools and accessories. And cordless ones too.

1 RECOMMENDATION

Angle grinder WE 14-125 Inox Plus (6.02131) or
Cordless angle grinder W 18 LTX 125 Inox (6.00154)

With fleece compact disc VKS (6.26368)

1 REMOVING TARNISHING ON FINE TIG WELDING SEAMS



Typical tarnish related to a TIG welding seam



On a slow to medium speed setting use the angle grinder with the Metabo VKS wheel to remove the weld tarnish. The VKS wheel will gently remove the tarnish and any light scratches, but it will not drastically effect the weld profile, if anything a smoothing result will be obtained.



Slightly rounded welding seam, the tarnish has been removed.

TIP: Light pressure is only required for this procedure. Provided you use a VKS wheel you can carry out this stage of the work using an angle grinder without drastically changing the shape of the weld. The soft fleece material of the VKS wheel combined with a low grinder speed setting ensures cool surface processing and thanks to the rotating battery pack on the W 18 LTX for ease of access you can even get into places that are difficult to reach



Removal of tarnishing using a W 18 LTX and a VKS wheel

* With mains-powered tools

GRINDING OFF WELDING SEAMS

When removing weld seams on pipes with an angle grinder it can be all too easy to create flat spots in and around neighbouring surfaces to the weld. In order to ensure that time-intensive repair work is not necessary, there are system solutions available from Metabo which will help ensure you can remove the weld in one simple step, saving you both time and money.

1 RECOMMENDATION

Pipe belt sander RBE 12-180 (6.02132)
with the ceramic grain sanding belt P 80 (6.26309)

Or Cordless pipe belt sander RB 18 LTX 60 (6.00192)
with the ceramic grain sanding belt P 80 (6.26288)

2 RECOMMENDATION

Angle grinder WE 14-125 Inox Plus (6.02131) or
Cordless angle grinder W 18 LTX 125 Inox (6.00174)

with the combi lamellar grinding disc KLS, medium (6.26370)
for fine welding seams or with the combi lamellar grinding disc KLS,
coarse (6.26369) for coarser seams

3 RECOMMENDATION

Fillet weld grinder KNSE 12-150 (6.02133) or
Cordless fillet weld grinder KNS 18 LTX 150 (6.00191)

With fleece compact disc VKS, 6 mm, medium (6.26402)



TIP:

Match the disc profile to the weld profile before starting. Put a curved profile on the fleece compact disc VKS using the profiling file (6.26396) to ensure that the disc matches the rounding of the welding seam.

1 REMOVING A TIG WELD SEAM ON A STRAIGHT HANDRAIL SECTION



TIG welding seam on a straight handrail section.



Use either the corded or cordless RB machines with the ceramic grain P 80 grit sanding paper to remove the weld in one step. The ceramic grain paper offers high material removal rates together with extremely long life. Select high speed setting 6* and remove a TIG weld seam in seconds.



Right tools, right accessory, perfect results.

2 REMOVING A TIG WELD SEAM ON A BEVEL CORNER OF A HANDRAIL



TIG welding seam on a handrail corner.



Using the KLS wheel you can remove the weld and achieve a high quality surface finish in just one step. Due to the tough yet flexible nature of the KLS wheel you can work with the form of the pipe profile. Select speed setting 3* and work in the direction of the pipe.



A perfect corner angle is formed and neighbouring surfaces are not damaged. The image shows a clean and precise result. Slight rotation marks may be left around the weld area. These can be later removed with one of the RB pipe belt sanders.

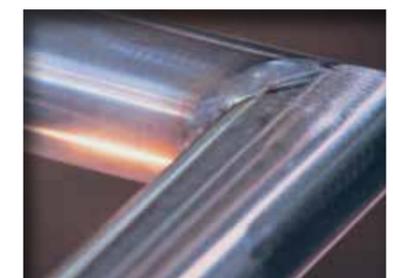
3 REMOVING A RIGHT ANGLE WELD SEAM ON A HANDRAIL



Right angle weld seam on a handrail.



The KNS fillet weld grinder is the machine of choice for this task thanks to its ultra slim profile. Select speed setting 5* and remove the fillet weld seam easily, even right into the corner without damaging neighbouring surfaces.



Ground fillet weld seam with perfect transitions.

* With mains-powered tools

REMOVING SCRATCHES ON PIPES

The use of stainless steel pipes for staircases, balconies or bridge railings is always in fashion due to their aesthetic and durable nature. Over time however, marks left by stickers, paint, rings or the influence of the weather can often result. Rather than remove sections and take them back to workshop the repairs are normally carried out in situ on-site. Even when it comes to hard to reach spots, for example tight up against the wall Metabo has a range of professional power tools for the job. Don not worry if power is not available on-site. Metabo has cordless solutions for every eventuality.

1 RECOMMENDATION

Pipe belt sander RBE 12-180 (6.02132)
with fleece belt, medium (6.26320)

Cordless pipe belt sander RB 18 LTX 60 (6.00192)
with fleece belt, medium (6.26297)

2 RECOMMENDATION

Burnishing machine SE 12-115 (6.02115) or
Cordless burnishing machine S 18 LTX 115 (6.00154)
with sanding belt roll (6.23529) and
fleece belt, medium (6.23537)

1 REMOVING SCRATCHES ON A HANDRAIL



Scratched handrail.



With a burnishing machine and a nylon web fleece belt you can remove minor scratches and achieve a smooth satin like finish in one easy step. Use on half speed, setting 3*.



Perfect surface, scratches have been removed completely.

2 REMOVING SCRATCHES ON A HANDRAIL LOCATED CLOSE TO A WALL



For closed off rail sections close to a wall the Metabo belt drum and "buttonhole" belt accessory option will prove particularly useful, especially if the rail is closed off with wall brackets on either side of your working area. With the buttonhole belts you can then loop & close the belt behind the rail. With this method you will achieve a perfect uniform result 360o around the handrail. Going mobile? Go cordless with the S 18 LTX 115.

* With mains-powered tools

THE SATIN FINISH

The aim of every stainless steel processor is to achieve that perfect seamless finish.

Achieving such a finish can be a real challenge when you are working with varying angles, especially on handrails. More steps are required, but with Metabo you can en-trust we have the right tools for the job.

1 RECOMMENDATION

Pipe belt sander RBE 12-180 (6.02132)
with fleece belt, medium (6.26320)

Cordless pipe belt sander RB 18 LTX 60 (6.00192)
with fleece belt, medium (6.26297)

2 RECOMMENDATION

Pipe belt sander RBE 12-180 (6.02132)
with fleece belt, fine (6.26322)

Cordless pipe belt sander RB 18 LTX 60 (6.00192)
with fleece belt, fine (6.26298)

3 RECOMMENDATION

Band file BFE 9-90 (6.02134) or

Cordless band file BF 18 LTX 90 (6.00321)

with fleece belt, medium, 13 x 457 mm (6.26388.00)

1 SATIN FINISHING HANDRAILS AND TUBES



Minor structural grooves on the pipe.



With a nylon web fleece belt select half speed setting 3* and get a transition-free satinised result.



Transition-free satin finished pipe surface.

2 SATIN-FINISHING A HANDRAIL WITH MITRE – MATCHING THE FINISH TO THE NEIGHBOURING FILLET WELD SEAM



Traces of rotation marks from the weld removal stage of the process, e.g. from the steps seen on page B 5. Grinding welding seams.



Select speed setting 3* and match the finish in the shortest of times.



Matched satin finish, rotation traces from the pre-grinding process have been eliminated.

3 SATIN-FINISHING A HANDRAIL WITH MITRE – STRUCTURE OF FINISH COMPARED TO THE NEIGHBOURING FILLET WELD SEAM



Minor structural grooves on the handrail corner can be seen.



For tight spaces such as these you will really need to use a band file to ensure you cover every angle. To get the desired satin effect use in conjunction with a nylon web fleece belt. Grade to your choice. Run on speed setting 6*.



Perfect satin finish on a handrail corner.

* With mains-powered tools

PREPARATION FOR POLISHING

Before the processed stainless steel item can be polished to a high gloss finish, it must first be professionally prepared. This involves a step by step process to ensure the surface raw depth values are uniformly smoothed out. Only this way is it possible to achieve a perfect gloss, mirror like finish. By using Metabo Pyramid sanding media as opposed to more traditional media like aluminium oxide belts it is possible to reduce the number of steps to an absolute minimum, this will vastly speed up the process.

1 RECOMMENDATION

Pipe belt sander RBE 12-180 (6.02132)

with Pyramid sanding belt A 45 (6.26313)
then with Pyramid sanding belt A 30 (6.26314)
then with Pyramid sanding belt A 16 (6.26315)
then with Pyramid sanding belt A 6 (6.26316)

Cordless pipe belt sander RB 18 LTX 60 (6.00192)

with Pyramid sanding belt A 45 (6.26292)
then with Pyramid sanding belt A 30 (6.26293)
then with Pyramid sanding belt A 16 (6.26294)
then with Pyramid sanding belt A 6 (6.26295)

1 POLISHING PREPARATION ON HANDRAILS AND PIPES



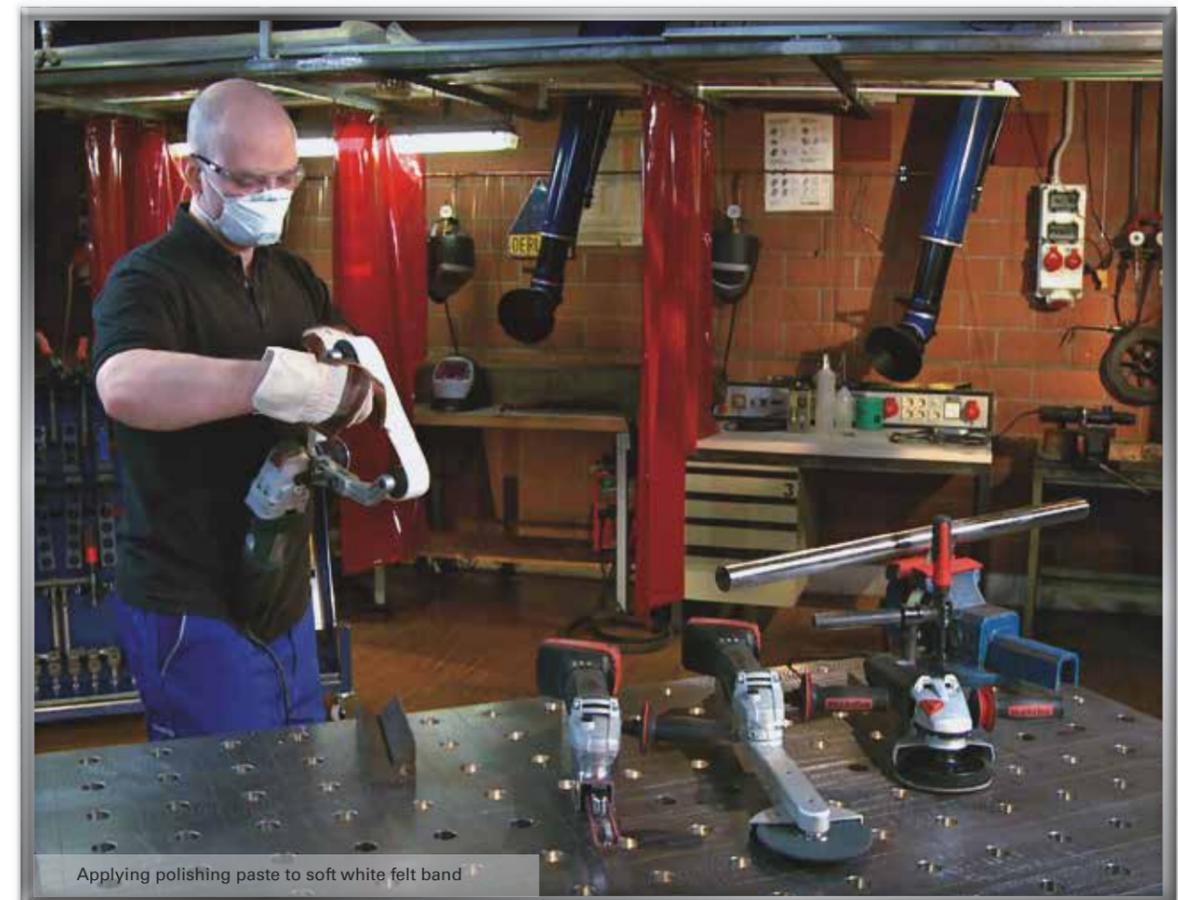
Ground handrail.



Preparation for polishing in 4 stages. Starting with A45/A30/A16/A6, measured raw depth approximately Rz 0.59 µm/ RA 0.06 µm. Select speed setting 3 to 5*.



Excellent raw depth values, optimum prerequisite for subsequent polishing.



Applying polishing paste to soft white felt band

* With mains-powered tools

HIGH-GLOSS POLISHING TO MIRROR SHINE

A mirrored surface offers little point of attack for corrosion and optically reflects the skill level of the craftsman in the finished piece.

For a professional and long lasting result.

1 RECOMMENDATION

Pipe belt sander RBE 12-180 (6.02132)
with fleece belt (6.26323) and
white polishing paste (6.23520)

Cordless pipe belt sander RB 18 LTX 60 (6.00192)
with fleece belt (6.26299) and
white polishing paste (6.23520)

1 HIGH GLOSS POLISHING OF PIPES



This shows a surface which has been pre-ground to Pyramid belt grade A6, P 2000. The surface is now silky smooth with a high sheen finish. With this finish we are now at the perfect stage to start polishing.



Using the white felt belt, a low rpm and the white polishing paste evenly work over the surface. For a really high gloss finish clean with talc and a cloth, change belts and repeat the process using polishing paste blue. Increase the belt speed after the paste warms into the metal.



A perfect high-gloss mirrored profile.



TIP:

Remove any polishing paste residue evenly and gently from stainless steel surfaces using talc (6.26399) and a micro-fibre cloth (6.26398).



CORNERS AND PROFILES

CORNERS AND PROFILES REPRESENT ANOTHER CHALLENGE.

When space is restricted it becomes even more difficult to remove welded seams or to match a surface finish from two adjoining sections. For such tasks specialist tools are required. Tools that are small enough and flexible enough to operate in tight spaces. These tools must also be high performance. With what many would consider the best power tool drive trains in the world, Metabo has the answer in both corded and cordless solutions.

We would like to explain the following procedures for corners and profiles below:

- Deburring**
- Repairing a small surface**
- Grinding off a TIG welding seam on a profile welded into a mitre**
- Satin finish on a profile welded into a mitre**
- Preparation for polishing**
- High-gloss polishing to a mirror shine**



DEBURRING

De-burring edges can be achieved quickly and effortlessly with a band file. At Metabo we have both corded and cordless machines available. With the right accessory, set at the right speed and a steady hand perfectly uniform results can be achieved even in the smallest of spaces.

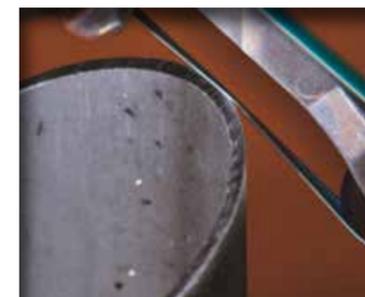
1 RECOMMENDATION

Band file BF 9-90 (6.02134) or
Cordless band file BF 18 LTX 90 (6.00321)
with grinding arm 13 mm (6.26381) and
fleece belt, coarse (6.26387)

1 DEBURRING A PIPE



Typical saw burr.



Effective deburring the coarse nylon web fleece belt on speed setting 6*.



A pipe that has been deburred fully both inside and out.



TIP:
With a choice of 4 sanding belt arms available you can always pick the right sized arm for the job. These arms can also be rotated left and right, with an arc radius of about 270°.

REPAIRING A SMALL SURFACE

The band file is particularly well suited to specific area grinding or finishing. For the best results use sanding belts that are made from ceramic media. These offer the best material removal rates and last a particularly long time.

RECOMMENDATION

Band file BF 9-90 (6.02134) or
Cordless band file BF 18 LTX 90 (6.00321)
with grinding arm 13 mm (6.26381) and
fleece belt, medium (6.26388)

1 SANDING ON A SMALL AREA



Scratched glass holder.



Sand the area using a nylon web fleece band on full speed with the grinding belt arm 6.26381 which has a 13 mm wide support pad.



Perfect surface.



Securing a stainless steel glass holder

GRINDING OFF A TIG WELD SEAM ON BOX SECTION STEEL WITH A 45° MITRE.

When dealing with narrow steel sections it is recommended to use rigid base plates to help prevent rounding of the edges. Care from the operator also plays a crucial part.

RECOMMENDATION

Angle grinder WE 14-125 Inox Plus (6.02131) or
Cordless angle grinder W 18 LTX 125 Inox (6.00174)

with cling-fit sanding disc, hard (6.23300) and
Pyramid cling-fit sanding sheet A 45 (6.26373),
A30 (6.26374)

1 GRINDING OFF A TIG WELD SEAM ON BOX SECTION STEEL WITH A 45° MITRE.



TIG welding seam.



With a half speed setting of around 3* you can use the hard backing pad with the Pyramid sanding media to remove the weld seam. Select the grit of your choice. A 45 or A 30 grit could be used here. By using the hard backing pad option instead of the soft and flexible KLS disc your edges will stay intact, thus helping to avoid any 'rounding off'.



Weld seam removed. Turn to the next page for further steps.



Grinding a TIG welding seam using the cordless W 18 LTX 125 Inox grinder.

* With mains-powered tools

SATIN FINISH ON BOX SECTION STEEL WITH A 45° MITRE.

After removing the weld, one design requirement may be to re-form the surface grain back to its original state, for example back in the linear direction of the beam. To achieve this effect in two different directions can be tricky as it is all too easy to accidentally go over the previous work. At Metabo we recommend the use of special stainless steel masking tape. Use this to protect one side of the work while working on the other.

1 RECOMMENDATION

Burnishing machine SE 12-115 (6.02115) or
Cordless burnishing machine S 18 LTX 115 (6.00154)

with flap/nylon web fleece sanding wheel P 60, 50 mm wide (6.23526)
and stainless steel adhesive tape (6.26376)

1 SATIN FINISH ON BOX SECTION STEEL WITH A 45° MITRE.



After the weld seam has been removed burnish one side of the box section using the P 60 wheel in a linear motion. If so required be careful to not round the edges.



Use the stainless steel tape to mask off the fresh burnished area. Make sure it is fixed securely. Thus protecting the mitre joint from the next step.



Again in a linear motion now burnish the other side.



Remove the tape to reveal a perfectly finished mitre joint effect.



TIP:
With the stainless steel adhesive tape it possible to achieve extremely professional mitre effects. Press the tape firmly on to the surface to ensure it is not lifted up by the abrasive nature of the accessories from the power tool.

PREPARATION FOR POLISHING

When it comes to preparing the surface for the polishing stage it is best to avoid taking risks which could lead to costly rework at the end. By using Metabo Pyramid sanding media and going through the following recommended grits perfect results can easily be achieved.

RECOMMENDATION

Angle grinder WE 14-125 Inox Plus (6.02131) or
Cordless angle grinder W 18 LTX 125 Inox (6.00174)

with cling-fit sanding sheet, soft (6.23287)
cling-fit sanding sheet Pyramid A 45 (6.26373)
cling-fit sanding sheet Pyramid A 30 (6.26374)
cling-fit sanding sheet Pyramid A 16 (6.26403)
cling-fit sanding sheet Pyramid A 6 (6.26404)

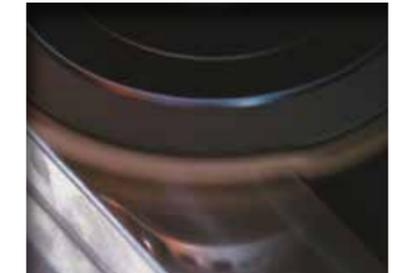
1 PREPARING A NARROW SURFACE FOR POLISHING



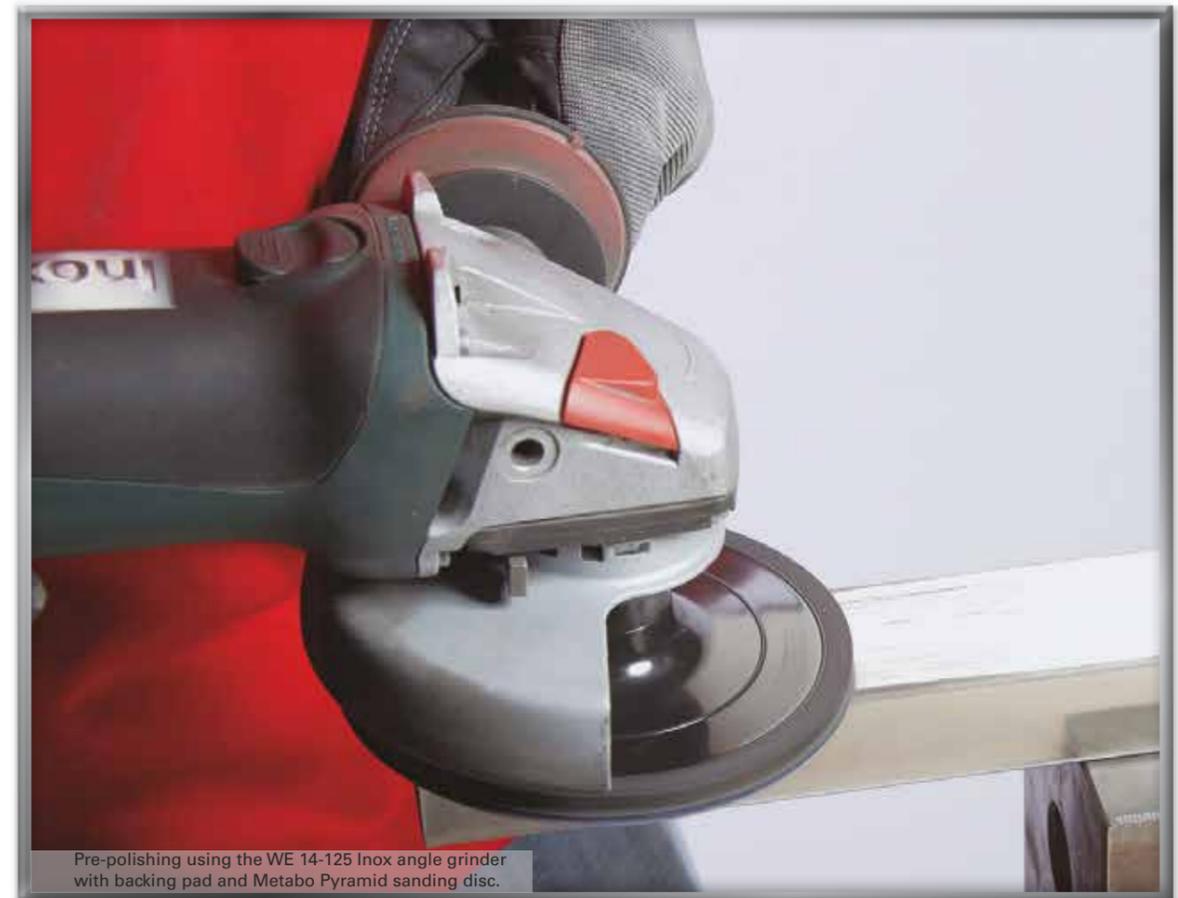
Example of surface finish prior to the preparation stage.



Using 4 steps from grits Pyramid A 45 / A 30 / A 16 to A 6. Use the grinder on mid/high speed, setting 3-5*.



After grit A 6, P 2000 using Metabo Pyramid paper the surface will be at its optimum stage for polishing.



Pre-polishing using the WE 14-125 Inox angle grinder with backing pad and Metabo Pyramid sanding disc.

HIGH-GLOSS POLISHING TO MIRROR SHINE

By changing the working direction, i.e. using the 'rotation procedure' flawless mirror polish effects can be achieved. For this section soft backing pads, polishing pads and polishing pastes are required.

1 RECOMMENDATION

Angle grinder WE 14-125 Inox Plus (6.02131) /
Cordless angle grinder W 18 LTX 125 Inox (6.00174)
with cling-fit sanding sheet, soft (6.23287)
and cling-fit polishing fleece, hard (6.31242)
polishing paste, white (6.23520)

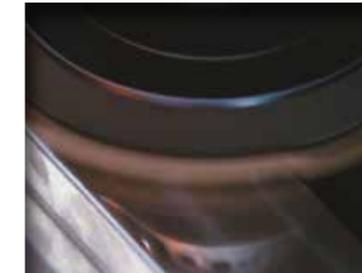
2 RECOMMENDATION

Angle grinder WE 14-125 Inox Plus (6.02131) /
Cordless angle grinder W 18 LTX 125 Inox (6.00174)
with cling-fit sanding sheet, soft (6.23287)
and cling-fit polishing fleece, soft (6.24964) and
polishing paste, blue (6.23524)

1 PREPARING TO CREATE MIRROR FINISH ON A PROFILE



A perfectly prepared surface using Metabo Pyramid sanding media A6. Raw depth Ra approximately 0.7 µm.



Apply the white polishing paste gently at first on slow speed setting 1*. Gradually bring the speed up, working the paste into the steel. Add more paste where and when required.



Pre-polishing: traces of rotation from polishing preparation are fully removed.

2 CREATING A MIRROR FINISH ON A PROFILE



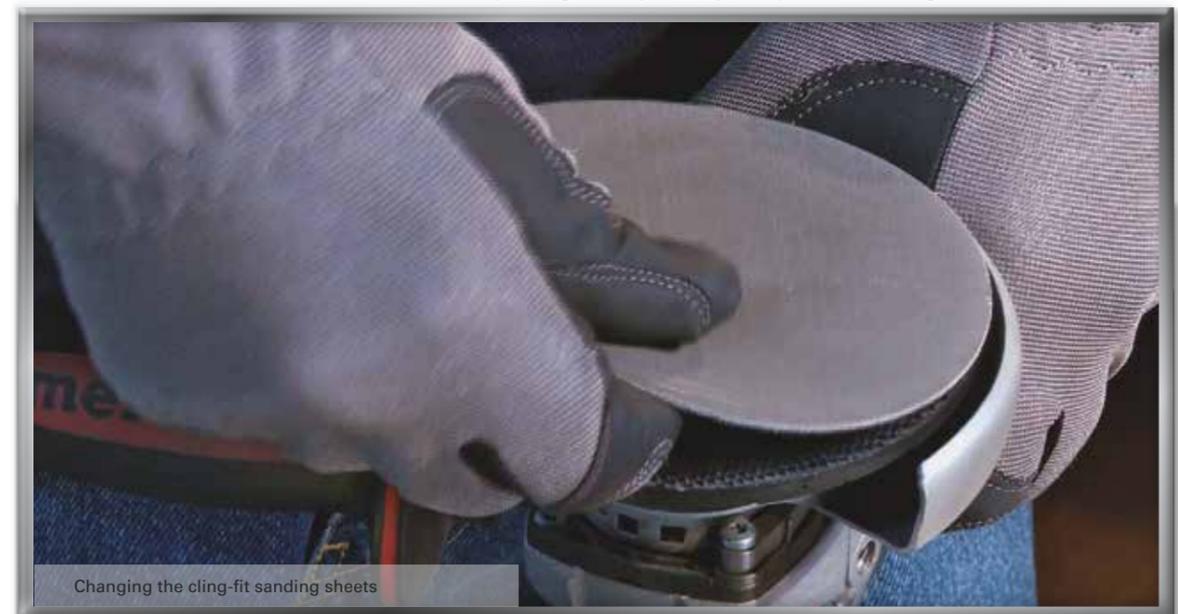
Example of the surface effect after using the white 'pre-polishing' paste.



In the interim, remove any white paste residue with talc and a cloth. For a true mirror effect apply the blue polishing after the white polishing phase. With a fresh polishing pad apply the blue paste and slowly work it into the steel using speed setting 1*. Gently work the polish into the steel adding further polish where and when required, gradually build up the speed to achieve glass like results.



A perfect mirrored surface.



Changing the cling-fit sanding sheets

* With mains-powered tools