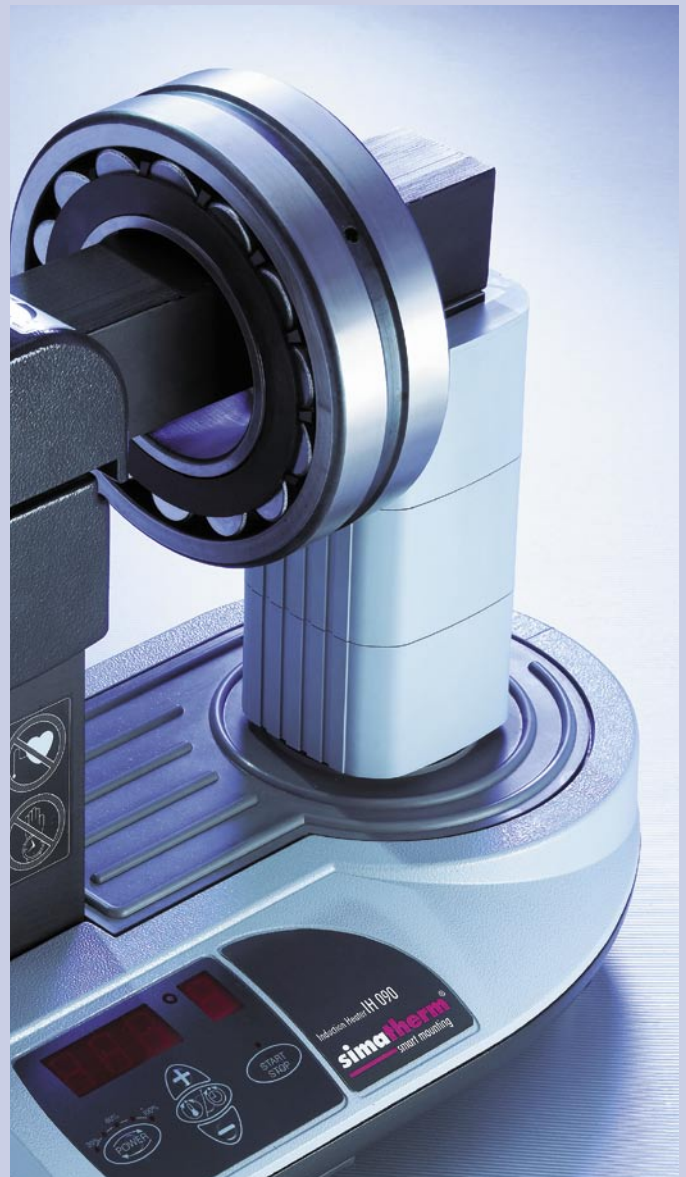


Mounting Tools
Dismounting Tools



Induction Heaters



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Mounting Tools

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Fitting tools for bearings and seals

Fitting Tool FT 33



Bearing Fitting Tool FT 33 Minimised danger of damaging the bearing

The simatool bearing fitting tools are designed for the fast, precise and secure mounting of bearings with bore diameters from 10 to 50 mm. The right combination of impact rings and impact sleeves makes sure that the mounting forces never go through the rolling elements of a bearing.

- Impact rings are made of extremely shock-resistant material
- Even power transmission to the bearing rings due to the special construction of the impact rings
- Nylon double-sided hammer head prevents damage of the bearings effectively
- Also suitable for the fitting of bushings, seals, pulleys, etc.
- Suitable for a wide range of bearing sizes
- Impact rings and impact sleeves are also available individually
- Blow-back proof hammer FT 33-H included
- No mechanical damage of the bearing during the cold mounting process



Cold mounting of bearings

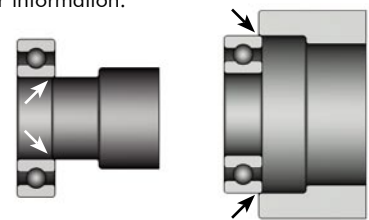
Incorrect mounting can lead to damages and to an early breakdown of the bearing.

Reasons for this can be:

- Damages caused during the mounting process
- Wrong tolerances of the bearing carrier on the shaft or inside the housing
- Loosening of the locknut during operation
- Burrs and damages on the shaft and the housing seats and shoulders

Interference fits - cylindrical bearing shaft

For most bearings either the inner or the outer ring (in certain cases even both) are mounted onto the shaft or into the housing with an interference fit. Please review the documentation of the bearing manufacturer for information.

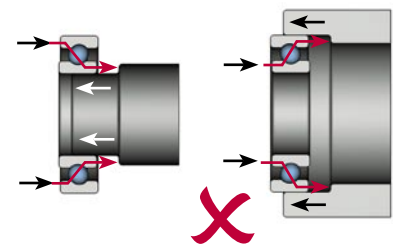


Shaft interference fit

Housing interference fit

Improper mounting

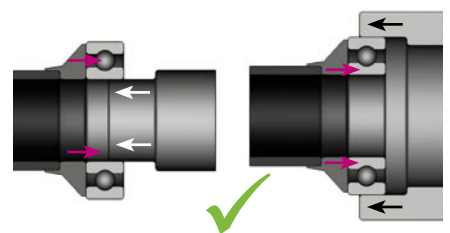
During cold mounting of a roller bearing, it must be made sure that the mounting forces are always applied to the ring with the interference fit. Mounting forces should never go through the rolling elements.



The raceway can be damaged by application of force on the wrong bearing ring.


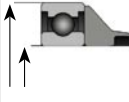








Proper mounting

The danger of damaging raceways can be minimised by the use of the specifically designed simatool fitting tools (FT 33, MK 10-30).



Raceway damages can be prevented with the correct tools.

Selection table Fitting Tool FT 33

impact sleeves	impact rings	roller bearings of the following series							
	 d / D	 60 63 62 64	 12 13 22 23	 72B 73B	 32 32	 222 223 213	 NU-NJ-N 2 3 4	 302 303 322	 313 323
A FT 33-A	10 / 26	6000	129						
	10 / 30	6200	1200		3200				
	10 / 30		2200						
	10 / 35	6300	1300						
	12 / 28	6001							
	12 / 32	6201	1201		3201				
	12 / 32		2201						
	12 / 37	6301	1301						
	12 / 37		2301						
	15 / 32	6002							
	15 / 35	6202	1202	7202 B	3202				
	15 / 35		2202						
	15 / 42	6302	1302		3302			30302	
	15 / 42		2302						
17 / 35	6003								
17 / 40	6203	1203	7203 B	3203			30203		
17 / 40		2203							
17 / 47	6303	1303	7303 B	3303			30303		
17 / 47									
B FT 33-B	20 / 42	6004		7204 B	3204		204		
	20 / 47	6204	1204						
	20 / 47		2204						
	20 / 52	6304	1304	7304 B	3304	22205/20	304	30304	32304
	20 / 52	6403	2304						
	25 / 47	6005							
	25 / 52	6205	1205	7205 B	3205	22205	205	30205	
	25 / 52		2205						
	25 / 62	6305	1305	7305 B	3305	21305	305	30305	31305
	25 / 62	6404	2305						32305
	30 / 55	6006							
	30 / 62	6206	1206	7206 B	3206	22206	206	30206	
	30 / 62		2206					32206	
	30 / 72	6306	1306	7306 B	3306	21306	306	30306	31306
30 / 72	6405	2306				405		32306	
C FT 33-C	35 / 62	6007							
	35 / 72	6207	1207	7207 B	3207	22207	207	30207	
	35 / 72		2207					32207	
	35 / 80	6307	1307	7307 B	3307	21307	307	30307	31307
	35 / 80	6406	2307				406		32307
	40 / 68	6008							
	40 / 80	6208	1208	7208 B	3208	22208	208	30208	
	40 / 80								
	40 / 90	6308	1308	7308 B	3308	21308	308	30308	31308
	40 / 90	6407	2308			22308	407		32308
	45 / 75	6009							
	45 / 85	6209	1209	7209 B	3209	22209	209	30209	
	45 / 85		2209					32209	
	45 / 85								
	45 / 100	6309	1309	7309 B	3309	21309	309	30309	31309
	45 / 100	6408	2309			22309	408		32309
	45 / 100*	6013	1211	7211 B	3211	22211	211		
	45 / 100*	6211	2211						
	50 / 80	6010							
	50 / 90	6210	1210	7210 B	3210	22210	210	30210	
	50 / 90		2210					32210	
	50 / 90*	6011							
	50 / 90*	6012							
	50 / 110	6310	1310	7310 B	3310	21310	310	30310	31310
50 / 110	6409	2310			22310	409		32310	
50 / 110*	6014	1212	7212 B	3212	22212	212			
50 / 110*	6015	1213	7213 B	3213	22213	213			
50 / 110*	6212	2212	7311 B	3311	21311	311			
50 / 110*	6313	2213			22311	410			
50 / 110*	6311	1311							
50 / 110*	6410	2311							

*outer ring fitting only

**inner ring fitting only

Maintenance Kit MK 10-30



Maintenance Kit MK 10-30





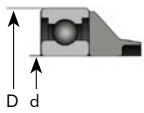

Universal tool kit for the easy and quick mounting and dismantling of bearings

With the MK 10-30 Maintenance Kit, simatec introduces a new tool kit, which is especially designed for users of smaller bearings, such as car and motorcycle shops, service plants for electro motors or maintenance companies. The Maintenance Kit MK 10-30 consists of a total of 50 components. It enables a quick, precise and secure mounting and dismantling of most common bearings with a bore diameter from 10 to 30 mm. For mounting, a multi-functional fitting tool with impact sleeve and impact rings is included, which is suitable for the mounting of bearings as well as bushings, sealings, belt pulleys or similar products.

For dismantling, a three-armed bearing puller is included. With the five attached puller arm sets, the puller even fits bearings with a bore diameter up to 85 mm.

The bearing puller is suitable for deep groove ball bearings with an interference fit on both rings or on the outer-ring without a shaft. All parts are neatly arranged in a display case. A selection table for the choice of the correct tool and a pictured instruction sheet are displayed in the case as well.

Selection chart MK 10-30

						
6000	M12	A1	1		A10/26	A
6200	M12	A1	1		A10/30	
6300	M12	A3	1		A10/35	
6001	M12	A1	2		A12/28	
6201	M12	A2	2		A12/32	
6301	M12	A3	2		A12/37	
6002	M12	A1	3		A15/32	
6202	M12	A2	3		A15/35	
6302	M12	A3	3		A15/42	
6003	M12	A1	4		A17/35	
6203	M12	A2	4		A17/40	
6303	M16	A4	4		A17/47	
6403	M16	A5	4		B20/52	
6004	M12	A2	5		B20/42	B
6204	M12	A3	5		B20/47	
6304	M16	A4	5		B20/52	
63/22	M16	A4	6		B25/52	
6005	M12	A2	6		B25/47	
6205	M12	A3	6		B25/52	
6305	M16	A5	6		B25/62	
63/28	M16	A5	7		B30/62	
6006	M12	A2	7		B30/55	
6206	M16	A4	7		B30/62	
6306	M16	A5	7		B30/72	
6007	M12	A3				
6207	M16	A5				
6307	M16	A5				
6008	M12	A3				
6208	M16	A5				
6009	M12	A3				
6209	M16	A5				
6010	M12	A3				
6210	M16	A3				
6011	M16	A4				
6211	M16	A5				
6012	M16	A4				
6013	M16	A4				
6014	M16	A5				
6015	M16	A5				
6016	M16	A5				
6017	M16	A5				

Dismounting tool benefits

- Power transmission onto the bearing by the use of hinged puller arms
- User friendly elastic locking ring, that keeps the puller arms in position
- All arms are clearly marked on each leg with their size
- Puller arms are made of high quality steel

Fitting tool benefits

- Impact damages to bearings are prevented effectively
- Impact rings are made of shock-resistant acetal resin, resulting in high mechanical strength
- Blow-back proof hammer with an impact surface made of nylon and a fibreglass handle for safe and ergonomic grip



Ball Bearing Puller BP 61



Bearing Puller Tool Kit

Easy dismounting of ball bearings in blind housings

The toolkit BP 61 enables the dismounting of ball bearings in blind housings. It consists of 6 puller arm sets and 2 supporting spindles and is suitable for deep groove ball bearings from 10 to 100 mm shaft diameter.

- 6 puller arm sets and 2 spindles in a display case weighing only 3.2 kg
- Hinged puller arms for power transmission to the bearing
- User-friendly because of the elastic locking ring, which keeps the puller arms in the right position
- Puller arms made of high quality steel
- Selection chart for deep groove ball bearings inside the case



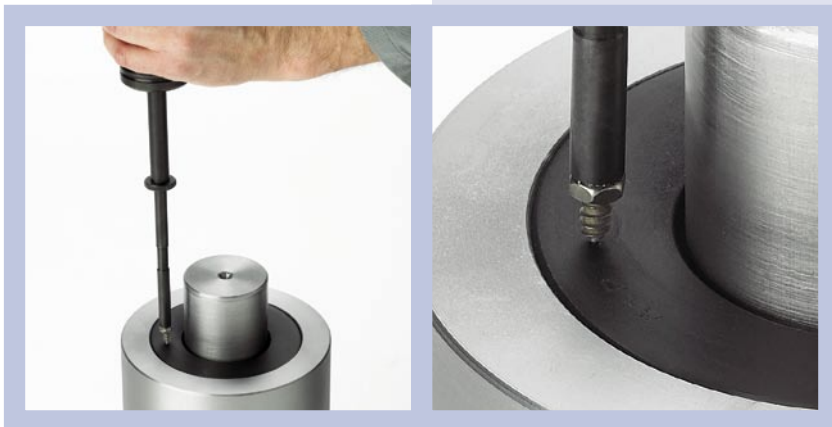
Selection chart BP 61

Ball bearing type				puller arm	spindle	
60..	62..	63..	64..			
6000	6200			BP A1		
6001						
6002						
6003						
6004	6201			BP A2	BP M12	
6005	6202					
6006	6203					
6007	6204	6300		BP A3		
6008	6205	6301				
6009		6302				
6010						
6011	6206	6303		BP A4		
6012		6304				
6013						
6014	6207	6305	6403	BP A5	BP M16	
6015	6208	6306				
6016	6209	6307				
6017	6210					
	6211					
6018	6212	6008	6404	BP A6		
6019	6213	6309	6405			
6020	6214	6310	6406			
	6215	6311	6407			
	6216	6312	6408			
	6217	6313	6409			
			6410			

Seal Puller SP 50

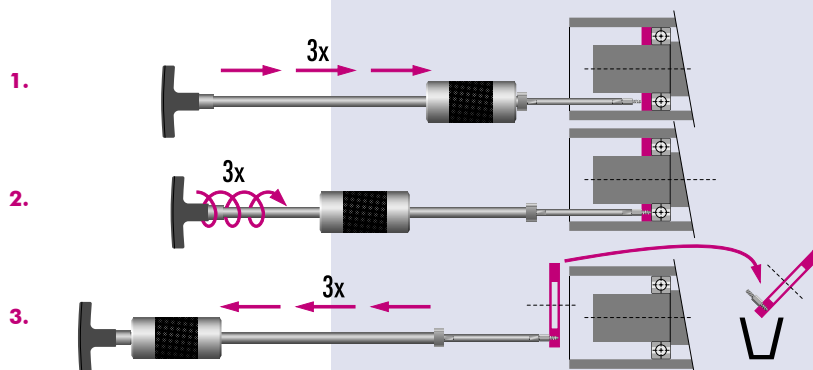
Seal Puller SP 50 Dismounting rotary shaft seals

The toolkit SP 50 provides a simple method for dismounting rotary shaft seals in a wide variety of applications. It consists of a sliding hammer, 2 extensions and 50 spare screws. With this basic equipment 50 seals can be dismounted.

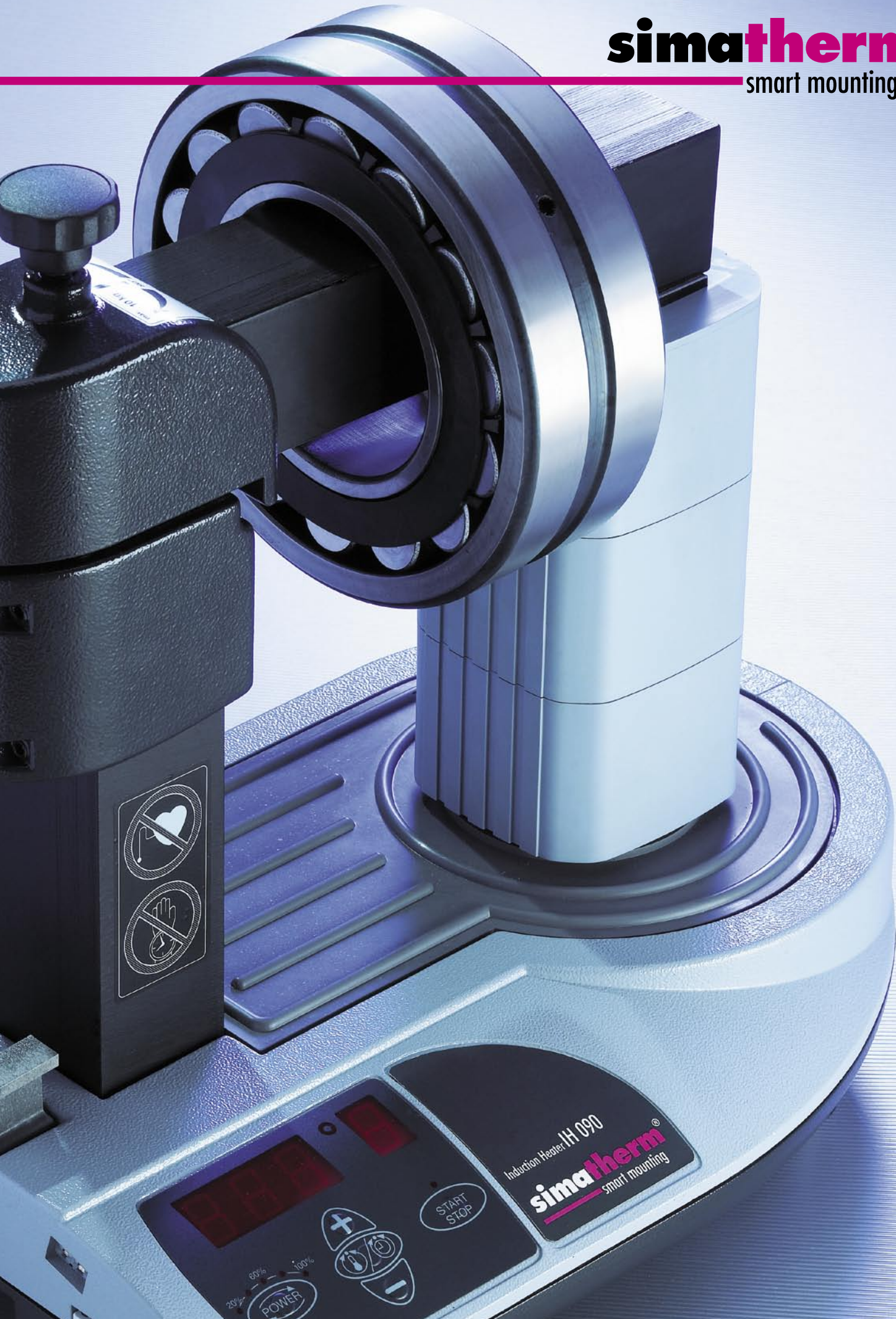


Process of dismounting:

1. Hit the screw into the seal with 3 impulses.
2. Turn in the screw with 3 turns.
3. Pull the seal out of its original position by 3 impulses into the opposite direction.



simatherm[®]
smart mounting



Mounting bearings using heat

The force needed to mount a bearing increases considerably with the size of the bearing. If the heat expansion of metals is made use of, bearings or other ring-shaped parts can easily be mounted onto a shaft or into a housing. For the fast warm-up of bearings, you can use an induction heater where a hot oil bath was often used in the past.

Induction Heater

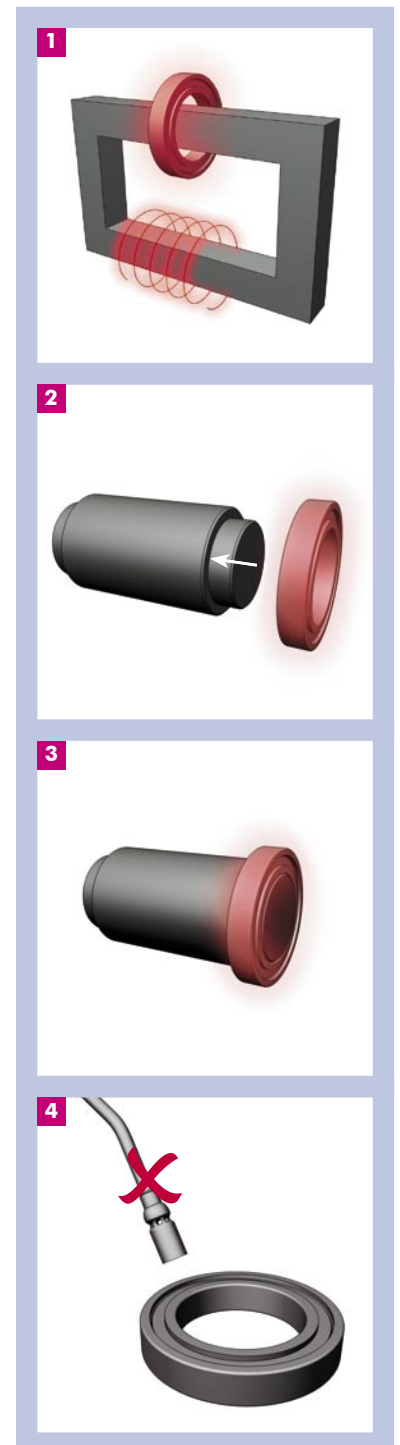
Its function equals that of an electric transformer. With an induction coil, a very high amperage with a low voltage is induced into a ring-shaped workpiece. Thereby, it is heated consistently within minutes. Heat is only induced to the workpiece whereas the heater itself remains at ambient temperature and can be touched without risk at any time. The inductive heating is very efficient, as the workpiece is being heated directly with the inductive flow. Non-metallic parts such as sealings, lubricant and cages are not heated. The advantage is that the cold bearings can be lubricated before mounting. Since inductively heated bearings become magnetised, the simatherm induction heaters are always equipped with a demagnetisation unit. It prevents the bearings from attracting metal particles which could cause long-term damage to the bearing.

Mounting of the heated workpiece

In order to mount a bearing to its seat, a heating temperature of 110 °C (230 °F) is recommended. Higher temperatures are not necessary and must be prohibited. Temperatures higher than 125 °C (257 °F) can cause structural changes of the bearing material. The bearing temperature must therefore be observed with a temperature probe. Shrink collars or other ring-shaped parts, however, can be heated up to a temperature of about 400 °C (752 °F) with an induction heater.

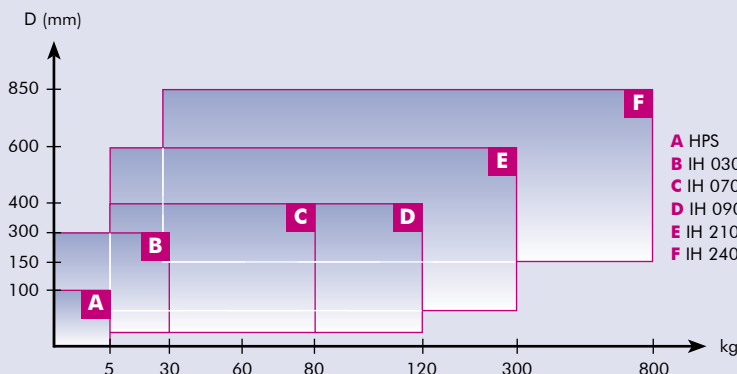
During mounting hot bearings, clean protective gloves must be worn. The mounted bearing must be pushed along the shaft up to the abutment and held in this position until a tight fit is obtained. For heating of bearings and other ring-shaped workpieces, simatec supplies a wide range of simatherm induction heaters for almost all mounting requirements.

- 1 principle of an induction heater
- 2 bearing before mounting
- 3 bearing after mounting
- 4 never heat a bearing using an open flame



The suitable heater for your application

The choice of a simatherm induction heater depends largely on the geometrical dimensions and the weight of the workpiece you want to heat. The graphic serves as a selection guide.



The latest generation of simatherm induction heaters

IH 070 / IH 090 / IH 210

Heating bearings can cost a lot of time and energy, however, with the latest simatherm induction heaters from simatec you can save both. A workpiece of 210 kg (460 lb) can be heated up to a temperature of 110 °C (230 °F) in less than 20 minutes. The new generation of induction heaters includes three different sizes. To obtain maximum heating efficiency, the induction coil was transferred to the outside of the heaters housing allowing the bearing to be placed around it. This improvement results in a reduction of the heating time and the power consumption by up to 80%, ultimately saving up to 70% on heating cost. All heaters are provided with the following technical characteristics:

Characteristics:

- Four-step power reduction in the range of 20 - 80%. In combination with smaller yokes, smaller bearings can be heated securely at lower power consumption.
- Thermal overheating protection of the induction coil and electronics
- Automatic time and temperature control for the heating of bearings and other ring-shaped metal parts
- Automatic demagnetisation
- Compact construction, modern design
- Light weight
- A range of standard yoke sizes is included with every induction heater

Induction Heater IH 070



simatherm IH 070

For heating small and medium size bearings with a weight up to 80 kg (176 lb), the IH 070 is the perfect choice.

- Available in two power versions: 230 V/50 Hz and 110 V/60 Hz
- Three yokes are included
- Very compact design, 35 kg (77 lb) overall weight including three yokes
- Swivel arm is available as an option
- Other power versions are available on request

Induction Heater IH 090



simatherm IH 090

For heating small and medium sized bearings with a weight up to 120 kg (260 lb) and for permanent operation, the IH 090 is the best solution.

- Available in the power versions 400 V/50 Hz and 460 V/60 Hz
- Three yokes are included
- Very compact design, 35 kg (77 lb) overall weight including three yokes
- Swivel arm is included
- Fan radiator for permanent operation is included
- Other power versions are available on request

Induction Heater IH 210



simatherm IH 210

The IH 210 is a large and exceptionally powerful high end induction heater

Suitable for workpieces up to 300 kg (660 lb) of weight.

- Available in the power versions 400 V/50 Hz or 460 V/60 Hz
- A sliding arm permits easy placement and removal of the bearing
- Two yokes are included
- Compact design, 75 kg (165 lb) overall weight including two yokes
- A fan version IH 210F for permanent operation is available
- Other power versions are available on request

Induction Heater IH 240



simatherm IH 240

Fast and safe heating of large workpieces

The simatherm induction heater IH 240 is designed for the heating of large size bearings up to 800 kg (1777 lb) or other large metal components with a weight up to 300 kg (660 lb) (depending on bearing and workpiece geometry and material). The control system is equipped with all operational functions of the smaller heaters.

- Fast heating of extremely large size components, e. g. a bearing of 445 kg (980 lb) weight can be heated up to 110 °C (230 °F) in only 10 minutes (temperature at the inner ring).
- Designed for easy transport using a fork lift truck
- Automatic demagnetisation of the workpiece

Special heaters for large components

simatec can also offer custom-made special heaters for large size components. In order to provide a quotation we would need the following information from you:

- Dimensions of the component to be heated (d x D x H)
- Sketch or drawing of the workpiece to be heated
- Weight and material of the workpiece
- Desired heating time
- Available mains voltage
- Stationary or mobile use

Induction Heater IH 030



Induction Heater IH 030

Compact and electronically controlled

Most powerful induction heater in the category for small workpieces up to 30 kg (66 lb). Thousands of this reliable heater are in use around the globe today.

- Available in the power versions 230 V/50 Hz and 110 V/60 Hz
- Fast reacting temperature probe for temperature control between 0 - 250 °C (32 - 482 °F)
- Electronic timer (0 - 60 minutes)
- Digital display
- Three yokes are included

Hot Plate Small HPS



Hot Plate Small HPS

Electric hot plate with thermostat-controlled bearing heating

The electric hot plate small HPS is especially suitable for heating small bearings or small machine parts. The temperature is infinitely variable from 50 °C to 200 °C (122 °F to 392 °F) execution 200 °C, or from 50 °C to 300 °C (122 °F to 572 °F) execution 300 °C.

- Available in the power versions 230 V/50 Hz and 110 V/60 Hz
- Temperature adjustable from 50 °C to 200 °C (122 °F to 392 °F) or 50 °C to 300 °C (122 °F to 572 °F)
- Protective cover prevents from contamination of the workpieces during the heating process. Additionally, the parts are heated faster if the cover is closed
- With temperature display
- Contact surface: 380 x 180 mm

Technical Data of the Induction Heaters



Designation	IH 030	IH 070	IH 090	IH 210
Designation	Heater for small and medium sized workpieces	Heater for small and medium sized workpieces	Heater with fan cooling for permanent operation and small and medium sized workpieces	Heater for big workpieces
Voltage V/Hz *	230 V/50 Hz or 110 V/60 Hz	230 V/50 Hz or 110 V/60 Hz	400 V/50 Hz – 460 V/60 Hz 500 V/50 Hz – 575 V/60 Hz	400 V/50Hz – 460 V/60Hz 500 V/50Hz – 575 V/60Hz
Workpiece - maximum weight - bore diameter	30 kg 20 – 400 mm	80 kg 20 – 400 mm	120 kg 20 – 400 mm	300 kg 60 – 600 mm
Temperature control - range - magnetic probe - accuracy (electronics)	0 – 250 °C yes, type J ±3 °C	0 – 250 °C yes, type K ±3 °C	0 – 250 °C yes, type K ±3 °C	0 – 250 °C yes, type K ±3 °C
Time control - range - accuracy	0 - 60 minutes ± 0.01 seconds	0 - 60 minutes ± 0.01 seconds	0 - 60 minutes ± 0.01 seconds	0 - 60 minutes ± 0.01 seconds
Maximum temperature (approx.)	400 °C	400 °C	400 °C	400 °C
Thermometer mode	yes	yes	yes	yes
Bearing temperature mode	yes	yes	yes	yes
Power reduction	no	4-step / 20-40-60-80%	4-step / 20-40-60-80%	4-step / 20-40-60-80%
Automatic demagnetisation residual magnetism	yes <2A/cm	yes <2A/cm	yes <2A/cm	yes <2A/cm
Can heat sealed bearings	yes	yes	yes	yes
Can heat pre-greased bearings	yes	yes	yes	yes
Error guiding codes	yes	yes	yes	yes
Thermal overload protection	yes	yes	yes	yes
Maximum magnetic flux	1,5 T	1,5 T	1,5 T	1,5 T
Control panel	Keyboard with LED-display	Keyboard with LED-display	Keyboard with LED-display	Keyboard with LED-display
Size of the operating area (WxH)	130 x 95 mm	145 x 205 mm	145 x 205 mm	250 x 250 mm
Coil diameter	–	115 mm	115 mm	135 mm
Dimensions (WxDxH)	290 x 255 x 255 mm	420 x 280 x 345 mm	420 x 280 x 420 mm	600 x 350 x 420 mm
Overall weight including yokes	27 kg	35 kg	38 kg	75 kg
Maximum power consumption	3,7 / 2,2 kVA	3,7 / 2,2 kVA	6,4 / 7,4 kVA	10 / 11,5 kVA
Number of standard yokes	3	3	3	2
Standard yokes	55 x 55 x 240 mm for bearings with bore diameters of 78 mm 28 x 28 x 240 mm for bearings with bore diameters of 40 mm 14 x 14 x 240 mm for bearings with bore diameters of 20 mm	55 x 55 x 275 mm for bearings with bore diameters of 78 mm 28 x 28 x 275 mm for bearings with bore diameters of 40 mm 14 x 14 x 275 mm for bearings with bore diameters of 20 mm	55 x 55 x 275 mm for bearings with bore diameters of 78 mm 28 x 28 x 275 mm for bearings with bore diameters of 40 mm 14 x 14 x 275 mm for bearings with bore diameters of 20 mm	70 x 70 x 420 mm for bearings with bore diameters of 100 mm 40 x 40 x 420 mm for bearings with bore diameters of 60 mm
Core cross section	55 x 55 mm	55 x 55 mm	55 x 55 mm	70 x 70 mm
Yoke storage	yes	yes, internal	yes, internal	yes, internal
Sliding arm	–	no	–	yes
Swivel arm	–	optional	yes	–
Cooling fan	–	–	standard	optional
Housing material	Glass-fibre reinforced polyester	Aluminium	Aluminium	Aluminium

*Other power versions are available on request



IH 240	
Heater for big and very big workpieces	
400 V/50 Hz – 460 V/60 Hz 500 V/50 Hz – 575 V/60 Hz	
up to 800 kg 142 – 850 mm	
0 – 250 °C yes, type J ±3 °C	
0 - 60 minutes ± 0.01 seconds	
400 °C	
yes	
yes	
yes / 50%	
yes <2A/cm	
yes	
yes	
yes	
yes	
1,5 T	
Keyboard with LED-display	
330 x 355 mm	
186 mm	
750 x 400 x 935 mm	
300 kg	
24 / 27,6 kVA	
1	
100 x 100 x 570 mm for bearings with bore diameters of 142 mm	
100 x 100 mm	
-	
yes	
-	
optional	
Steel	

Subject to change without notice



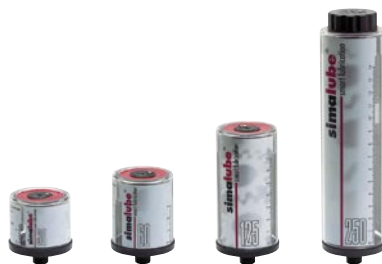
simatec ag, Wangen a. Aare, Switzerland

simatec maintenance products

World class lubrication, mounting and dismounting

With 3 products lines, simatec takes care of your critical machinery and plant operation to ensure maximum uptime.

The automatic single point lubricator simalube can be adjusted from 1 to 12 months using the unique gas-producing drycell that is patented world-wide. The drycell generates pressure that pushes the grease or oil into the lubrication point.



The simatherm induction heaters provide fast warm-up of circular metal parts, for example bearings, for hot-mounting parts with an interference fit. Inductive heating of metal workpieces is cost-effective, time-saving and protects the environment. simatec is a global leader in thermal mounting technologies.



The simatool product range is designed for a quick, precise and safe mounting and dismounting of bearings and seals. simatools are used around the globe in machinery repair and maintenance shops.

