Information on our company

The ACCU-LUBE Micro-Lubricating System for external and internal lubrication

Development:

1986:
The first applicators imported from the USA are sold in Germany by REXIM GmbH. Acceptance is so good that decisions are taken to found a Joint-Venture company to produce the precision applicators for the European market in Germany.

Since January 1988
ACCU-LUBE Manufacturing GmbH supplies applicators and lubricants to customers all over Europe with the help of exclusive distributors.

In the same way **ITW / USA** operates **on the American continent** and **Fuji Koeki, Japan** in the **Far East**, so that a global customer service is guaranteed. This is a very important point in a world with markets permanently moving closer.

You will particularly benefit from the experience transfer of the 3 production plants resulting in constant development and refinement of our applicators.
More than one decade of experience gained from the direct practice of our customers have made us experts in this field. Contact us to optimize your manufacturing processes, reduce your disposal costs, improve your working environment, achieve longer tool life and better surface quality and further advantages.

1998
ACCU-LUBE launched the MINIBOOSTER enabling **micro-lubrication** in connection with coolant fed tools as well.

ACCU-LUBE Manufacturing GmbH
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Distributed by:

ACCU-LUBE

the environmentally safe
Micro-Lubricating System eliminating waste disposal

ACCU-LUBE is a lubricating system,
which neither harms operators nor the environment.

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ACCU-LUBE **lubricants** are based on vegetable oils.
They do not contain any toxic additives like EP-additives,
chlorine sulphur, nitrite, phenol, heavy metals, silicones or biocides.

ACCU-LUBE is odourless and does not create any toxic mists

ACCU-LUBE **lubricants** have been tested by various institutions,
such as the Chemisch Technisches Prüfamt Stuttgart,
Berufsgenossenschaftlicher Arbeitsmedizinischer Dienst Elmshorn,
US Department of Labour, Occupational Safety and Health Administration.
Safety data sheets according to 91/155/EEC are available
for each of our ACCU-LUBE **lubricants**

Our mother company in the USA is constantly developing new ACCU-LUBE **lubricants**
to optimize ACCU-LUBE **applications.**

Naturally we are **TÜV certified.**

ZERTIFIKAT ◆ CERTIFICATE ◆ 認証証書 ◆ СВИДЕТЕЛЬСТВО ◆ CERTIFICADO ◆ CERTIFICAT

CERTIFICATE

TÜV MANAGEMENT SERVICE

The Certification Body
of TÜV Management Service GmbH
certifies that

ACCU-LUBE Manufacturing GmbH
Schmiermittel und -geräte
Glaitstrasse 29
D-75433 Maulbronn-Schmie

has established
and applies a Quality System for

Manufacturing and distribution of micro lubricating systems and lubricants

An Audit was performed, Report No. **960 064 754**
Proof has been furnished that the requirements according to
DIN EN ISO 9002:1994
are fulfilled. The certificate is valid until **May 2001**
Certificate Registration No. **70 100 F 186 TMS**
Mannheim, July 30, 1998

ACCU-LUBE

Is a lubricant far above the average for metal processing and partly for forming operations.

The basic idea
is not to carry the resulting heat away but to prevent heat building up.

The application:
We do not cool with large quantities of fluid,
but lubricate with **minute amounts** of ACCU-LUBE. With the help of the ACCU-LUBE applicator the lubricant is transported to the nozzle where it is broken down through the air and coats the cutting edge with a thin but long lasting film of lubricant. This film reduces the heat build-up in the tool and the work piece.

The effect:
High speeds are responsible for short tool life, not high feed rates.
The economical way of increasing productivity is with higher feed rates and lower speeds, this is not possible while using coolants. With ACCU-LUBE this economical way is possible.
The results are higher tool life and in many cases a shorter production cycle time.

Further advantages:
With ACCU-LUBE only the cutting tool edges are lubricated. Therefore there are no wet residues in the swarf bins. The results are dry machines, tools, workpieces and chips. Eliminates the need for wet disposal. Less mechanical and electrical down time because machines work dry. Work pieces are immediately ready for further processing - no cleaning is needed. Eliminates the necessity for mixing coolants as ACCU-LUBE is always applied in a concentrated form.

Result: great cost reduction

The ACCU-LUBE lubricating system can be used for various processes.

Some examples:

Sawing

Drilling
Internal lubrication possible
with coolant fed tools

Milling
Internal lubrication possible
with coolant fed tools

Punching

ACCU-LUBE lubricants-
tested, environmentally safe and non-toxic

Survey of ACCU-LUBE lubricants

For hand-held machining operations ACCU-LUBE **paste**
and solid products are most suitable.

Item no. 805 021 ACCU-LUBE LB 5000 Paste (gel)
Item no. 805 020 ACCU-LUBE LB 5000 Paste (solid)
Item no. 805 035 ACCU-LUBE LB 5000 Solid Block

Item no. 805 040 ACCU-LUBE LB 5000 Solid Stick (62 g)
Item no. 805 041 ACCU-LUBE LB 5000 Solid Stick (368 g)

ACCU-LUBE **Spray** (222 g) filled with

Item no. 805 076 ACCU-LUBE LB 2000
Item no. 805 081 ACCU-LUBE LB 2500
Item no. 805 078 ACCU-LUBE LB 4000
Item no. 805 075 ACCU-LUBE LB 5000
Item no. 805 082 ACCU-LUBE LB 5500
Item no. 805 077 ACCU-LUBE LB 10000

LB 2000 : Based on refining of natural triglycerides appropriate for ferrous and non-ferrous metals requiring no post heat-treatment.

LB 2500 : Fatty alcohol, especially used for non-ferrous metals.

LB 4000 : Based on natural fatty acids, conditionally appropriate for non-ferrous metals requiring post heat-treatment.

LB 5000 : Fatty alcohol, especially used for non-ferrous metals requiring post heat-treatment (will not leave any stains after heat-treatment).

LB 5500 : Fatty alcohol especially used for non-ferrous metals.

LB 10000: Based on highly refined naturally occuring lipids appropriate for ferrous metals.

Your advantages

- **environmentally safe**
- **biodegradable**
- **no waste disposal**
- **neutral aroma**
- **non-toxic**
- **free of toxic additives such as EP - additives, chlorine, nitrite, sulphur, phenol and biocides**
- **not harmful to humans or environment**
- **no skin diseases**
- **no polluted ground**

ACCU-LUBE applicators for external lubrication

ACCU-LUBE **applicators** are produced in a modular system, this allows us to supply the most suitable ACCU-LUBE **applicators** for our customers.

There are 3 standard metal box sizes

Width mm:	Depth mm:	Height mm:	suitable for number of pumps
165	161	215	1-2
217	161	255	3-4
320	161	375	4-8

Of course larger metal boxes are available for applicators with more than 8 pumps.

Please choose the most suitable ACCU-LUBE **reservoir.**

A 0.3 L reservoir will be suitable for a **1-pump applicator**,
but certainly not for a **4-pump applicator** .

Reservoirs available without level indicator:

Item no.	Capacity in litres	Height mm
800 715	0,3	140
800 655	1,0	190
800 660	2,0	225
800 665	3,0	260

Reservoirs with level indicator offer process safety.

Reservoirs suitable for level indicator:

Item no.	Capacity in litres	Height including level indicator without signal lamp/mm
800 725	1,0	270
800 730	2,0	400
800 740	3,5	530

ACCU-LUBE **applicators** were especially designed for the application of ACCU-LUBE **liquid lubricants.**
A precision pump supplies an adjustable quantity of lubricant to the nozzle.
An adjustable frequency generator regulates the interval between the cycles.
Under normal conditions there is a cycle of 1/3 of a drop every 3 - 4 seconds.
The lubricant is supplied in a capillary tube to the end of the nozzle.
Through the concentric outer tube air is lead past the end of the capillary tube so that the lubricant is atomized and applied to the cutting edge.

When positioning the nozzles it is very important to ensure that the lubricant reaches the cutting edge.

Larger tools like face mills or circular saws require the use of multiple-pump applicators.

Coolant fed tools require the use of an ACCU-LUBE MINIBOOSTER-1 **or** MINIBOOSTER-2**.**

As the consumption chart shows lubricant consumption is minute.

Fluid Consumption Chart

Frequency generator setting (pump strokes / minute)

	15	20	30	45	60	90	120
0,5	5,4	5,4	7,2	12,6	15,3	15,4	22,5
1	5,4	7,2	15,3	18,0	22,5	22,5	22,5
1,5	7,2	9,9	19,8	22,5	25,2	40,5	54,0
2	12,6	18,0	27,9	33,3	47,7	55,8	76,5
2,5	20,7	25,2	36,0	43,2	50,4	79,2	140,4
3	22,5	30,6	40,5	50,4	61,2	91,8	183,6
3,5	25,2	33,3	45,9	56,7	66,6	99,9	232,2
4	32,4	40,5	63,9	73,8	81,0	122,4	285,3
4,5	36,0	48,6	68,4	81,0	91,8	137,7	297,9
5	43,2	58,5	72,0	89,1	104,4	157,5	354,6
5,5	51,3	69,3	88,2	107,1	126,9	193,5	379,8
6	54,0	72,0	88,2	117,0	147,6	221,4	510,3
6,5	79,2	104,4	122,4	150,3	189,0	283,5	579,6
7	89,1	122,4	130,5	168,3	207,0	311,4	684,0
7,5	94,5	125,1	135,0	176,4	214,2	321,3	699,3
8	97,2	130,5	150,3	207,0	265,5	397,8	821,7

Fluid consumption in ml per nozzle during an 8-hour-shift

What are the advantages of the micro-lubricating system:

- dry working place
- dry work pieces and chips
- no maintenance and controlling costs for emulsions
- considerable reduction of costs for storage and safety measures
- no disposal costs for used lubricants
- no dermatitis among the operators
- in many cases inrease of tool life and better surface quality.

What is very important when using ACCU-LUBE **applicators:**

Always use the correct nozzles and make sure that the lubricant is applied direct to the cutting edge.

Below a list of all nozzles and useful accessories available.
We are constantly improving and developing special nozzles to meet our customer's demand.

Item-no. 800 966 Loc-line nozzle 300 mm length
Item-no. 800 954 Loc-line nozzle 450 mm length
Item-no. 800 958 Loc-line nozzle 600 mm length

Item-no. 800 943 Flexible metal spray nozzle 320 mm
Item-no. 800 942 Flexible metal spray nozzle 400 mm

Item-no. 800 920 Magnet Ø 80 mm for nozzles and metal box
Item-no. 800 921 Magnet Ø 50 mm for nozzles

Item-no. 802 032 Copper nozzle 150 mm with connecting parts
Item-no. 802 035 Copper nozzle 300 mm with connecting parts
Item-no. 802 038 Copper nozzle 450 mm with connecting parts
Item-no. 802 043 Copper nozzle 600 mm with connecting parts

Item-no. 802 046 Steel nozzle 150 mm with connecting parts
Item-no. 802 047 Steel nozzle 300 mm with connecting parts
Item-no. 802 048 Steel nozzle 450 mm with connecting parts
Item-no. 802 044 Steel nozzle 600 mm with connecting parts

Item-no. 801 175 Single mounting block with screws and nuts
Item-no. 801 170 Double mounting block with screws and nuts

Nozzle for bandsaws with a width between 13 mm and 25 mm with connecting parts (1 entry 3 exits)
Item-no. 802 120

Nozzle for bandsaws with a width between 27 mm and 34 mm with connecting parts (1 entry 3 exits)
Item-no. 802 125

Nozzle for bandsaws with a width between 19 mm and 25 mm with connecting parts (2 entries 3 exits)
Item-no. 802 110

Nozzle for bandsaws with a width between 34 mm and 41 mm with connecting parts (2 entries 3 exits)
Item-no. 802 127

Nozzle for bandsaws with a width between 41 mm and 54 mm with connecting parts (3 entries 3 exits)
Item-no. 802 130

Nozzle for bandsaws with a width between 54 mm and 67 mm with connecting parts (3 entries 3 exits)
Item-no. 802 132

Nozzle for circular saws with connecting parts (1 entry 3 exits)
Item-no. 802 135

Miniature nozzle
Item-no. 802 255

Nozzle tips for copper and steel nozzles

Wide angle nozzle tip
Item-no. 800 980

Standard nozzle tip ø 3 mm
Item-no. 800 981

Point nozzle tip ø 1,5 mm
Item-no. 800 982

The MINIBOOSTERs

ACCU-LUBE **applicators** provide excellent performance, as long as the tool comes out of the work piece during the process and a new film of ACCU-LUBE can be applied.

In order to enable perfect lubrication with ACCU-LUBE in such processes as well, where the tool does not come out of the workpiece, e.g. turning, grooving, parting-off and drilling, we have designed the MINIBOOSTER.

MINIBOOSTERs are applicators additionally equipped with a booster-pump.
With the help of this pump a fine aerosol is produced and applied under pressure through the cooling channel of the tool to its cutting edge.

The* MINIBOOSTERs *are not to be used for external lubrication

2 versions are available:
MINIBOOSTER-1 for coolant fed tools with accumulated cooling channel- Ø between 1,2 and 5 mm
MINIBOOSTER-2 for coolant fed tools with accumulated cooling channel - Ø between 1,2 and 13 mm

The MINIBOOSTER-2 can be operated as follows:

- Operation of **1. booster-pump** for tools with cooling channel- Ø between 1,2 and 5 mm
- Operation of **2. booster-pump** for tools with cooling channel- Ø between 3 and 8 mm
- Operation of **pump 1 and 2** simultaneously for tools with cooling channel- Ø between 5 and 13 mm

The* ACCU-LUBE *rule: More is not better!
applies to the operation of* MINIBOOSTERs *as well.

MINIBOOSTER-1

MINIBOOSTER-2

Actuation of ACCU-LUBE applicators

Air-actuated - very rare and recommended only for very simple machines.
Toggle switch - recommended for simple machines with non-serial production.
Foot-pedal - very rare, only used on simple machines.
Roller valve - we prepare the applicator, the roller valve is supplied by the customer.
Solenoid valve 24 V / 220V / 110 V . the solenoid valve 24 V DC is the preferred kind of actuation.

On applicators with more than one pump, each pump can be controlled individually

Materials ACCU-LUBE can be used on:

- all metals both ferrous and non-ferrous
- all hard plastics
- composites
- hard rubber materials
- wood

Primary tools where ACCU-LUBE is most effective:

- **High speed steel:** **End mills, drills, taps, band and circular saws, punches, rolls, dies.**
- **Cobalt steel:** **End mills, drills, taps, band saws, punches**
- **Carbide:** **carbide tipped drills, solid carbide drills, carbide tipped saws, carbide saws, punches, end mills**
- **Coated tooling :** titanium-nitrite, titanium-carbide, aluminium-oxide
- **Abrasives:** aluminium-oxide, diamond, CBN

For drilling and milling with solid carbide end mill cutters we recommend coolant fed tools and the use of our ACCU-LUBE MINIBOOSTER-1 or MINIBOOSTER-2.

For turning and cutting operations our MINIBOOSTER can be used in connection with coolant fed tools .

Suited for almost every application

Useful tips for the use of ACCU-LUBE:

Always apply ACCU-LUBE to the cutting edge before the tool is operated.
The closer the nozzle is to the tool, the better the results (optimum distance 25-38 mm).
Air consumption is approximately 0,61-0,9 l m^3/min per nozzle.

Feed rate and cutting speed information:

In case of a heat build-up at the tool reduce the cutting speed. In case of a heat build-up at the work piece increase the feed rate. We recommend operating at a higher feed rate to achieve maximum chip load on the tools at the minimum recommended cutting speed.

Lubricating is better than cooling

ACCU-LUBE was developed in the American Aerospace industry for extremely difficult working operations requiring a superior surface quality.

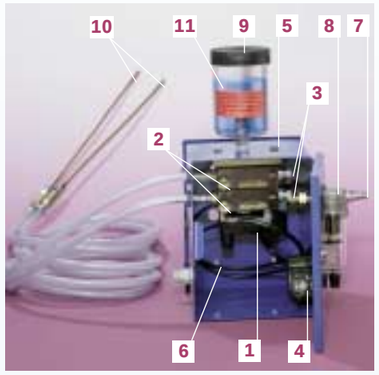
ACCU-LUBE **is already used in the following industries:**

- **Aerospace industry**
- **Automotive industry, Machine manufacturing industry,**
- **Tool and die industry**
- **Precision mechanics and optical industry**
- **Aluminium industry**
- **Sub-contracting industry**
- **Smelting plant industry**
- **Piston manufacturing**
- **Textile machine manufacturing**
- **Commercial vehicle manufacturing**

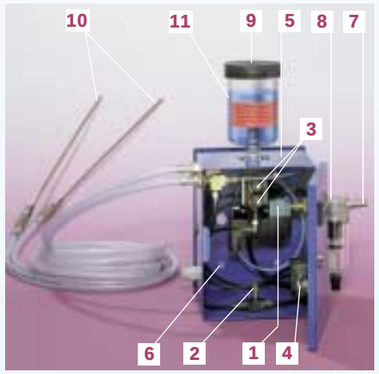
ACCU-LUBE®

The environmentally safe Micro-lubricating System waste disposal

Applicator for external lubrication with aluminium pumps



Applicator for external lubrication with brass pumps



MINIBOOSTER for lubrication with coolant fed tools

1 Actuator (on / off switch)
shown: solenoid valve
also available: toggle switch, roller valve slide valve, foot pedal, air-actuated

2 Air flow valve
Regulates the amount of air coming out of the nozzle. Each aluminium pump has its own air flow adjustment valve that can be operated independently

3 Liquid flow adjustment
Accurate control of the amount of lubricant that is supplied with each stroke of the pump.

4 Frequency generator
This valve controls the frequency at which the pumps cycle.
shown: pneumatic frequency generator (5-200 strokes/min)
also available: digital frequency generator (1-120 strokes /min)

5 Metal box

6 Mounting holes
Pre-drilled holes for permanently mounting applicators to machine tools or for installation of magnetic mounts.

7 Air supply
Minimum 4 bar (80 psi) maximum 10 bar (150psi)

8 Air filter

9 Reservoir
shown: 0,3 L
also available: 1,0 ; 2,0 ; 3,0 L (also with level indicator)

10 Nozzles
shown: copper nozzles
also available: steel nozzles, loc-line nozzles, universal nozzles, wide angle nozzles, tippoints, nozzles for divided supply of **ACCU-LUBE** and air, special nozzles

11 ACCU-LUBE lubricant