



COMBIVERT

Plastic machinery

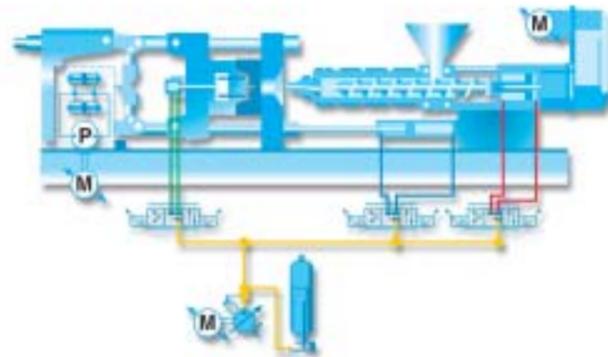


The innovative drive system for plastic machines



Injection moulding machines

- screw / injection unit
- clamping unit
- parts ejector
- hydraulic pump
- handling systems



Extrusion

- screw drive
- adjusting drive
- hopper
- auxillary drives
- additional handling systems



→ Are you looking for a dynamic and energy saving drive for your hydraulic pump?

→ Would you like to exchange the hydraulic motor of your screw / injection unit and replace it with an electric drive without redesigning your controls?

→ Are you searching for clever drive concepts for your brand new „all electric machine“?

→ Would you like to replace the DC-motor technology by modern AC-drives of your extruders?

→ Are you heading for a high dynamic servo drive including positioning / indexing performing your robot and handling systems?



You find the KEB COMBIVERT F5, specified for the plastic machinery market!

Also available with efficient watercooling up to 355 kW!



F5.M - Unified Drive Platform

**Various applications - one inverter!
with or without encoder feedback**



customer specified motor

Whatever motor concept is your choice:

KEB COMBIVERT F5-Multi supports with one hard and software

- asynchronous motors
- synchronous motors
- high torque direct drives



standard motor

Incremental encoder, resolver, Hiperface[®], EnDat[®] or Sin / cos encoder can be connected "Plug and Drive".

Open Loop drives are supported by the F5-Multi functioning as Vector inverter.

Easy entering of the motor and encoder specific data via operator or software download through serial interface - that's it.

Safety first:

Various parameterizing possibilities will allow you a flexible embedding of the F5 inverter system into your safety concept. Immediate monitored brake down of the drive in case of failures or external distortions and / or finishing the process-cycle of your machine within a defined time period (without causing abnormal stops) are good examples.

On top of that the F5 is certified according to the standard EN 954-1/ cat.3: Protection against unintended restart.



compact, liquid cooled motor



gearless high torque motor



synchronous servo



linear motor

Flexibility of mechanical design / advantages:

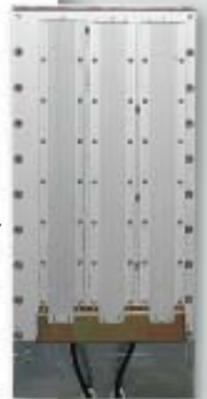
Save costs and cabinet space with clever cooling concepts:

The modular system of the KEB COMBIVERT F5 offers an ideal adjustment to the space and ambient conditions in your machine.

- Surface cooling with ventilation
- Convection and push-through cooling
- Water cooling up to an operating pressure of 6 bar - also available as cabinet and push-through version

Optimized for plastic moulding machines the push-through water cooled version with mounted braking resistors offers:

- **Temperature control for the heatsink** (optional also available for motors) therefore prevention of condensation
- **Control of external valves** via the temperature control means less water consumption.
- **Compact design** with high performance recovery requires only little cabinet base space.
- **Extended lifetime** of the inverter due to operation within predefined temperature ranges.
- **No particular demands to:**
 - Water inlet temperature
 - Ambient temperature
 - Water quality
 due to set-up with alloyed maintenance-free heatsinks.
- **Reduced cabinet heat**, because approx. 70 % of the inverter losses are covered by the water-cooled heatsink.
- **Integrated high performance braking resistors**, space saving, ready wired, directly attached to the heatsink
- **Reduced risk of soiling of the electronic parts** because due to the set-up without fan and push-version in the cabinet a clear separation to the environment strain is possible.



backplate: push through heatsink, liquid cooled with mounted braking resistors up to 160 kW



**Easy to set up... Easy to integrate...
Easy to operate...**



**serial communication available:
Profibus, Interbus, CANBUS,
DIAS-Bus, Device Net, Sercos**



The KEB COMBIVERT F5 is designed for easiest integration into your existing machine controls. Reprogramming is not necessary in most cases, especially when using a bus system for communication.



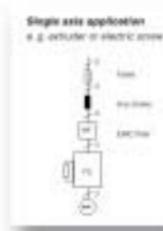
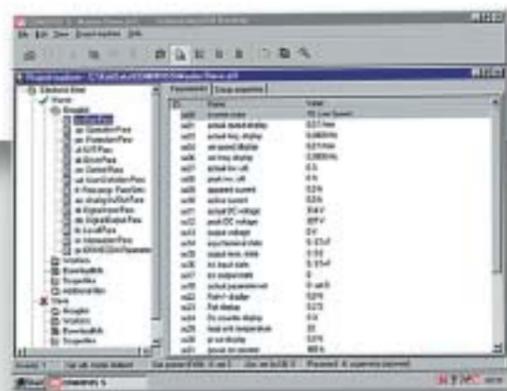
Analogue or digital set-value setting and serial operation are generally possible. All common bus system are supported (Profibus DP, Interbus, CAN, Dias-Bus, Sercos, Devicenet). The bus connections are integrated into the operator, the hardware platform of the inverter itself remains unchanged.

The windows based software COMBIVIS allows easy setup and parameter setting with mobile PC's.

With integrated 4-channel scope module you can easily optimize your drive.



<http://www.keb.de>



The KEB COMBIVERT F5 is based on the modular principle: If more than one drive / axis need to be connected this can be realized via

- master / slave operation or
 - multi axis operation (i.e. all-electric machines)
- Simply by sequentially linking the inverters.

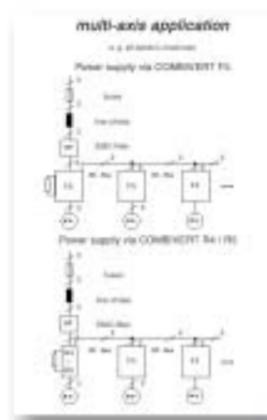
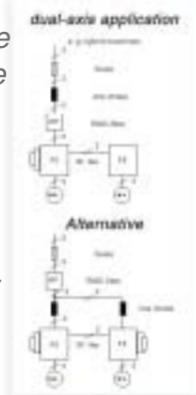
An energy exchange of the drives among each other makes the intermediate circuit interlinking of KEB COMBIVERT possible and with this increases the potential of additional energy savings.

The regenerative energy of a drive is simply used at the second axis instead of being abolished in the braking resistor. Another advantage is the saving of additional wiring and action of interference suppression because the inverter can serve as an additional feed of more axis.

Lay out:

The "Plastic-Machinery-Team" of KEB gathered experience in the lay out of drives for the plastic machinery branch. Wherever you're considering to install drives in your machines and whatever you want your own customer specified solution to look like. Please contact us. We'll help you starting with your first idea, not ending with the delivery of a sample unit.

We are your partner from the first idea
the sample setup
up to series production.



**complete power range
0.37 ... 355 kW**

Overview F5 power units starting with housing size G

	aircooled					liquid cooled (braking resistor as an option)																							
Housing	G					H					R					U					W								
Dimensions [mm] (WxHxD)	170 x 340 x 255					297 x 340 x 255					340 x 520 x 355					340 x 800 x 355					670 x 940 x 355								
Size	13	14	15	16	17	15	16	17	18	19	18	19	20	21	22	23	23	24	25	26	27	28	29	30	31	32	33	34	35
nominal current output [A]	12	16.5	24	33	42	24	33	42	50	60	50	60	75	90	115	150	150	180	210	250	300	370	460	570	630	713	855	945	
max. hardware current limit [A]	18	24.8	36	49.5	63	36	49.5	63	75	90	75	90	112	135	172	225	225	270	263	313	375	463	575	713	855	945	1080	1215	
E.O.C trip level [A]	21.6	29.7	43.2	59.4	75.6	43.2	59.4	75.6	90	108	90	108	135	162	207	270	270	324	315	375	450	555	690	855	945	1080	1215	1350	
main voltage [V]	3 x 305...500+0 / AC					3 x 305...500+0 / AC					3 x 305...500+0 / AC					3 x 305...500+0 / AC					3 x 305...500+0 / AC								
	420...720+0 / DC					420...720+0 / DC					420...720+0 / DC					420...720+0 / DC					420...720+0 / DC								
frequency [Hz]	50 / 60 +/- 2					50 / 60 +/- 2					50 / 60 +/- 2					50 / 60 +/- 2					50 / 60 +/- 2								
nominal switching frequency [kHz]	16	16	8	8	4	16	16	16	8	4	16	8	8	4	8	2	8	4	4	4	2	4	2	2	2	2	2	2	
max. switching frequency [kHz]	16	16	16	16	16	16	16	16	16	16	16	16	16	16	12	4	16	16	16	16	12	4	4	2	2	2	2	2	2
nominal motor power * [kW]	5.5	7.5	11	15	18.5	11	15	18.5	22	30	22	30	37	45	55	75	75	90	110	132	160	200	250	315	355	400	450	500	

people in motion



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