www.esm-ept.de

Power requirements / Hydraulics:

The power requirement for double knife cutter units is approximately 1.5 to 2.5 kW per meter of cutting width. Double knife cutter units should be operated at a maximum mower crankshaft speed of 1,100 rpm. **Consistently exceeding the maximum mower crankshaft speed will have a negative impact on the drive and mower blades in medium term!**

One of the decisive factors in mowing results is the ratio of mower crankshaft speed to driving speed. Driving speeds exceeding 10 kph, at mower crankshaft speeds below 1,100 rpm, are reflected in the mowing results.

An available flow rate of 30 liters/min and an operating pressure of 180 bar, a target mower crankshaft speed of 1,100 rpm can be achieved with a hydraulic motor displacement starting at 22.5 cm³/rev.

Specifications of hydraulic motor:

To specify a hydraulic motor, please proceed as follows:

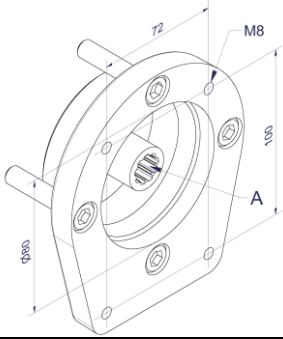
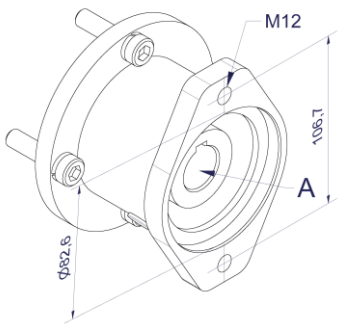
1. Determine the average driving speed, considering the required mower crankshaft speed
2. Determine the available hydraulic drive parameters (pressure, flow rate)
3. Determine the required motor size
4. For hydraulic motors without drain line, it is mandatory to install a pressure less return flow line

List of available ESM hydraulic motors:

ESM No.:	Type of motor:	Flow capacity: cm³/U	Flange:	Shaft:
271.0000	External gear motor	26	DE-standard 4-hole ZD80	DIN 5482 9Z-17x14
271.0020	Planetary drive	49	SAE-A, 2-hole ZD82,5	D25 PF8
271.0060	Planetary drive	32	SAE-A, 2-hole ZD82,5	D25 PF8
271.0200	External gear motor	22,8	DE-standard 4-hole ZD80	DIN 5482 9Z-17x14

Adapter ESM open pivot cutter drive for double knife cutter units:

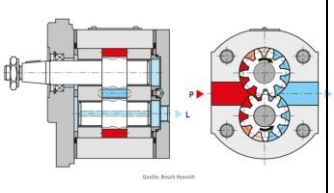
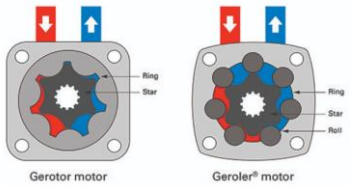
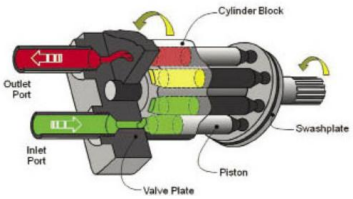
Depending on the technical configuration, the ESM open pivot cutter drive can be powered by various hydraulic motors via the adapter flanges shown:

	Description	Hydraulic motor
	Flange: ESM No. 240.2760 Hydraulic Drive / Gear Motor Assembly 2 Flange type: DE-standard 4-hole (4xM8 / 72x100) Center diameter D80 Motor shaft (A) geared shaft DIN 5482 9Z-17x14	ESM No. 271.0000 External gear motor 26 cm³/rev ESM No. 271.0110 External gear motor 16 cm³/rev ESM No. 271.0200 External gear motor 22,8 cm³/rev ESM No. 271.0210 External gear motor 26,2 cm³/rev
	Flange: ESM No. 240.2750 Hydraulic Drive / Gear Motor Flange type: SAE A2-standard 2-hole (2xM12/106,7) Center diameter D82,5 Motor shaft (A) D25 mm / feather key 8 mm	ESM No. 271.0020 Planetary drive 49 cm³/rev ESM No. 271.0060 Planetary drive 32 cm³/rev

www.esm-ept.de

Übersicht von Hydraulikmotoren / *overview of hydraulic motors*:

Die Tabelle zeigt Hydraulikmotoren, welche sich zum Antrieb von Doppelmesserschneidwerke besonders eignen:
The table lists hydraulic motors that are particularly suitable for driving double knife cutter bars:

	Außenzahnradmotor ***External gear motor***	**Orbitalmotor** ***Planetary drive***	**Axialkolbenmotor** ***Axial piston motor***
			
Bauprinzip: *Design principle:*	Zwei gekämmte Zahnräder, einfaches Verdrängersystem *Two meshing gears, simple displacement system*	Exzenterrotor mit Rollen / Orbitprinzip, zyklische Verdrängung *Eccentric rotor with rollers / orbital principle, cyclic displacement*	Kolben in Zylinderblock, Schrägscheibe oder Axialplatte *Piston in cylinder block, wedge plate, or axial plate*
Besonderheiten: *Features:*	Einfacher Aufbau, robust, kostengünstig *Simple design, durable, cost-effective*	Kompakter Aufbau, sehr robust, Mittelpreisig *Compact design, very sturdy, mid-range price*	komplexer Aufbau, robust, Höherpreisig *Complex design, durable, higher-priced*
Nenndrehmoment: *Rated torque:*	Niedrig bis mittel *Low to medium*	Mittel bis hoch Hohes Drehmoment bei niedriger Drehzahl *Medium to high* *High torque at low RPM*	Mittel bis hoch Hohes Drehmoment bei niedriger Drehzahl *Medium to high* *High torque at low RPM*
Anlaufverhalten: *Start-up behavior:*	mäßiges Anlaufmoment ca. 40-70% von Betriebsdrehmoment *Moderate starting torque* *Approx. 40–70% of operating torque*	hohes Anlaufmoment ca. 80-120% von Betriebsdrehmoment *High starting torque* *Approx. 80–120% of operating torque*	mittleres Anlaufmoment ca. 80-100% von Betriebsdrehmoment *Average starting torque* *approx. 80–100% of operating torque*
Drehzahlbereich: *Speed range:*	Mittel bis Hoch Drehzahlen über 500 U/min *Medium to high* *RPMs above 500*	Niedrig bis mittel Drehzahl bis 1500 U/min ausgelegt für kraftvolle und langsamere Anwendungen *Low to medium* *Speed up to 1,500 rpm* *Designed for high-torque and low-speed applications*	Niedrig bis hoch sehr gut regelbar über Verdrängungsänderung *Low to high* *Highly adjustable via displacement adjustment*
Wirkungsgrad: *Efficiency:*	Moderat *Moderate*	Moderat bis gut *Moderate to good*	Sehr gut *Very good*
Ölqualität: *Oil quality:*	gute Filtration nötig *Good filtration is necessary*	Standardfiltration ausreichend *Standard filtration is sufficient*	sehr gute Filtration nötig *High-quality filtration is required*
Hinweis: *Note:*	Drehzahlbereich 800-1.100 U/min Bei kleineren Anlaufmomenten Standardmotortyp für Schneidwerke Beste Preisleistung *Speed range: 800–1,100 rpm* *For lower starting torques* *Standard motor type for cutting units* *Best value for money*	Drehzahlbereich 400-1.100 U/min Bei größeren Anlaufmomenten oder möglichen Blockaden z.B. Astschnitt / Hanfschnitt *Speed range: 400–1,100 rpm* *For higher starting torques or potential blockages, e.g., branch clippings or hemp clippings*	Drehzahlbereich 400-1.100 U/min Bei größeren Anlaufmomenten oder möglichen Blockaden z.B. Astschnitt / Hanfschnitt Wenn hohe hydraulische Effizienz gefordert ist. *Speed range: 400–1,100 rpm* *For higher starting torques or potential blockages, e.g., cutting branches or hemp* *When high hydraulic efficiency is required.*