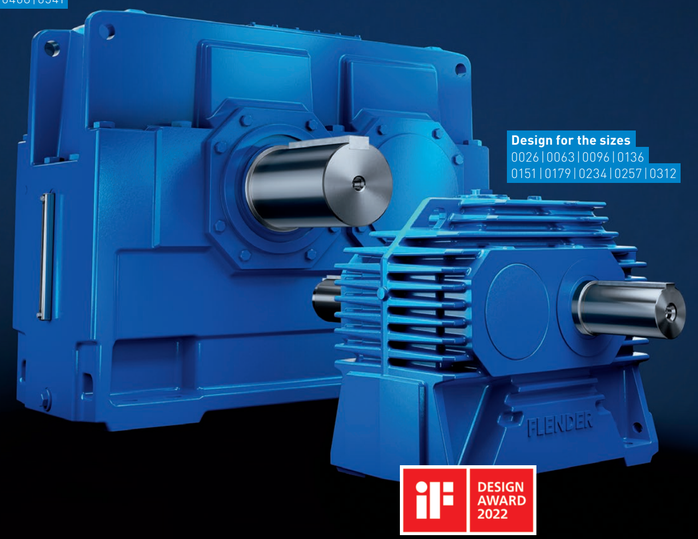
FORM FOLLOWS FUNCTION

Even if the ribbed design of FLENDER ONE is a real eye-catcher: it serves a clearly technical purpose and is not simply an end in itself. For this reason, we did not redesign the two largest housings. Because this would not have made sense from the economic or sustainability perspectives. In the high power there are also cooling systems with greater differences in performance. The effects that could be achieved with an enlarged surface area would hardly be "noticeable" here in comparison with smaller gear units.

Design for the sizes
0408 | 0541



Design for the sizes
0026 | 0063 | 0096 | 0136
0151 | 0179 | 0234 | 0257 | 0312

DESIGN AWARD 2022

CONTACT

For more information and support regarding FLENDER ONE, scan the QR code or visit flender.com/en/one!

Flender GmbH
Alfred-Flender-Straße 77
46395 Bocholt
Germany

Phone: +49 2871 92 0
Website: flender.com

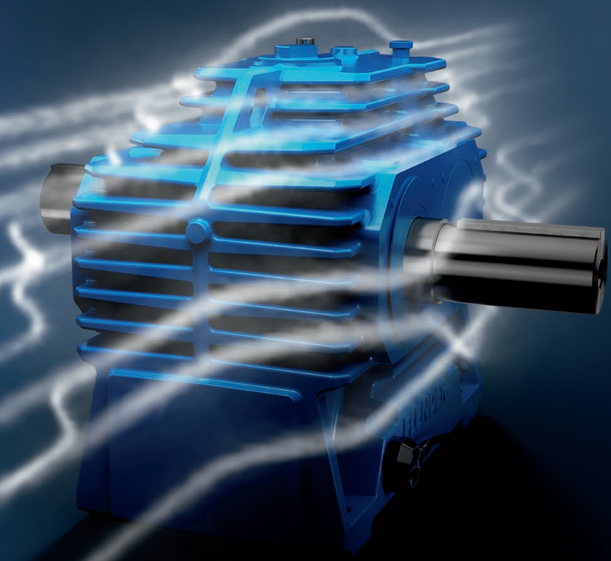
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Subject to changes and errors. The information given in this document only contains general descriptions and/or performance features which may not always specifically reflect those described, or which may undergo modification in the course of further development of the products. The requested performance features are binding only when they are expressly agreed upon in the concluded contract.

FLENDER

STREAMLINE YOUR BUSINESS.

Greater efficiency from the idea all the way to operation – FLENDER ONE® is redefining high-performance gear units.



DESIGN AWARD 2022

FLENDER

POWER GEAR UNITS AT A NEW LEVEL

The single-stage helical gear unit by Flender has long been setting benchmarks in paper production, in centrifugal pumps and in other industrial applications. Now, the time has come to take this industrial classic to the next level. We're pleased to present FLENDER ONE!

Imagine a gear unit that meets your project requirements precisely. That offers quick amortization due to its extraordinary thermal capacity and increased efficiency. With minimum downtime due to its quality and digital intelligence. With simple, quick and smart configuration options. And last but not least, with lower material use compared to the previous model. Don't just imagine it. We have it.

OPEX CAPEX

COOL DOWN YOUR COSTS: 6 GOOD REASONS FOR FLENDER ONE

#1 LOWER COOLING COSTS

#2 BOOST EFFICIENCY

#3 MINIMIZE DOWNTIME

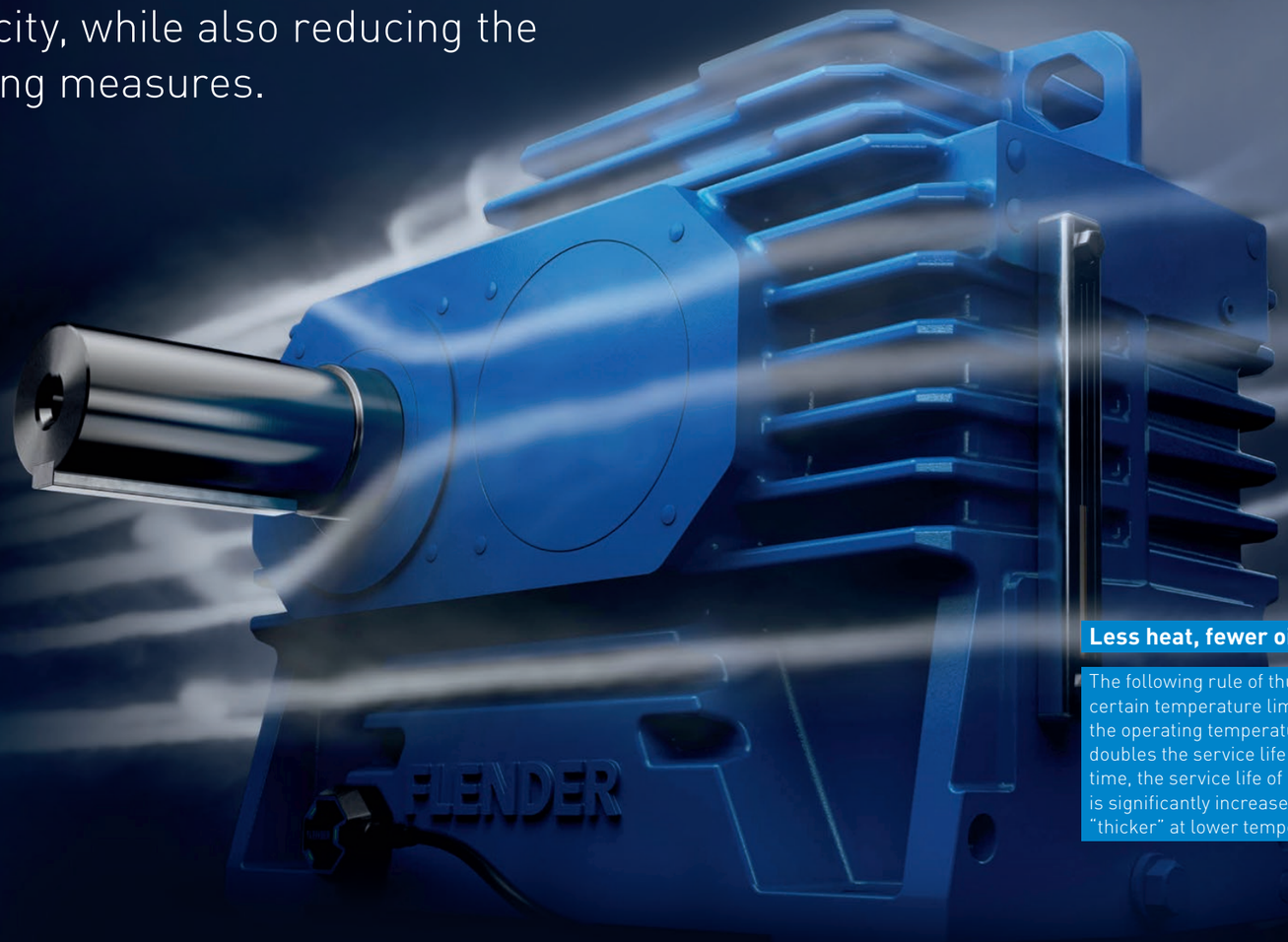
#4 SPEED UP PROJECTS

#5 REDUCE WASTE

#6 SIMPLIFY ASSEMBLY AND MAINTENANCE

#1 REDUCE COOLING COSTS

With the same footprint as the previous series, both the surface area and the thermal capacity of FLENDER ONE have been increased significantly compared to the predecessor product. This eliminates the need for overdimensioning to increase the gear unit's own cooling capacity, while also reducing the need for additional cooling measures.



NO NEED FOR COOLING. OR DO IT LATER.

This is made possible by the groundbreaking ribbed design of the housing, which improves the airflow around it. Of course, even FLENDER ONE gets hot. Just much later. This means that delaying additional cooling measures becomes a significant cost factor. And this is precisely what leads to great savings potential.

Fan: The shaft-mounted fan is installed on the drive side between the motor and the gear unit and is the most reliable of all cooling options. A thermostat-controlled electric motor fan, mounted on the end, only generates costs when it is used, and is therefore more efficient.

Cooling coil: A cooling coil provides reliable and very effective cooling. In this process, cooling water absorbs the heat via pipes in the gear unit's oil sump and leads it away from the gear unit.

Fan and cooling coil: The next possible solution is a fan application together with a cooling coil.

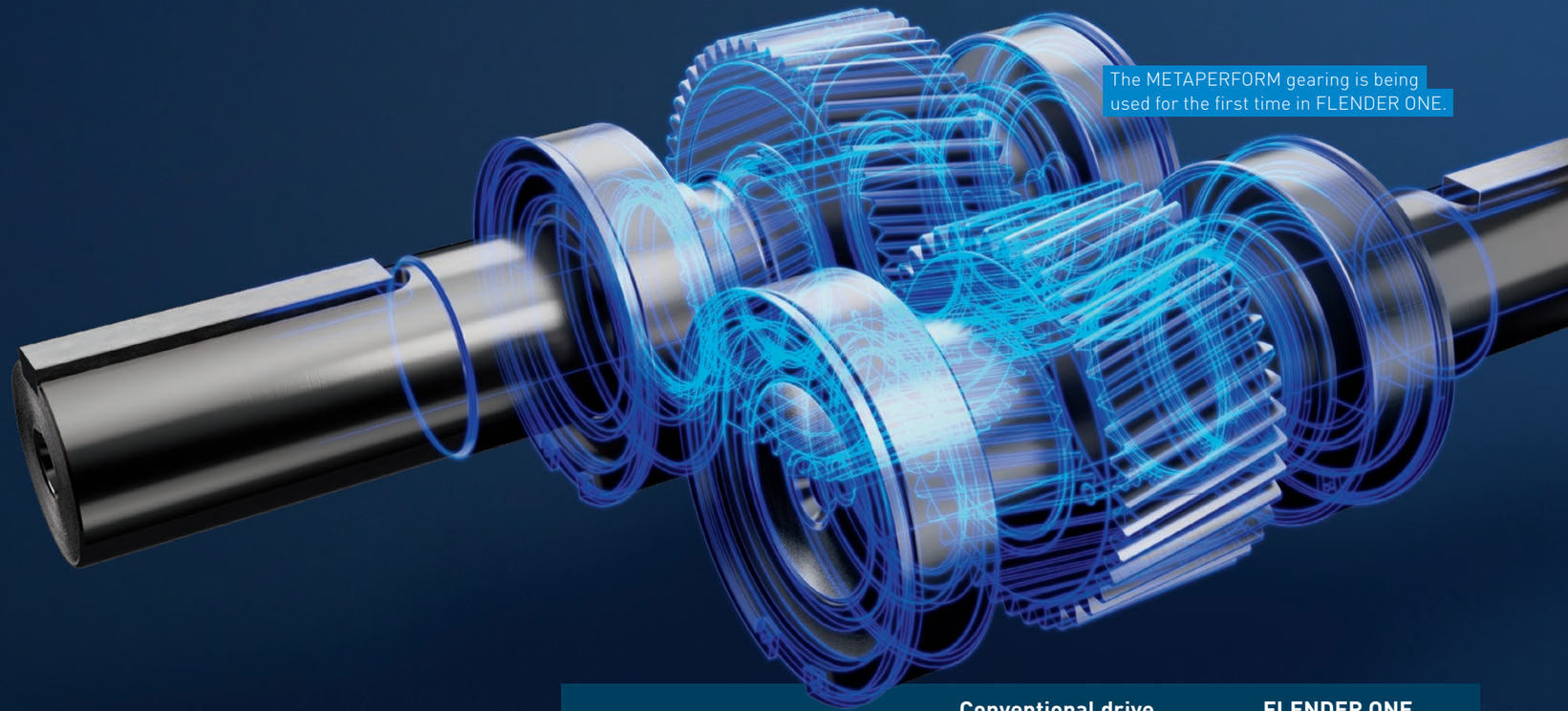
External additional cooling: If this still doesn't provide enough cooling, additional cooling equipment is needed – such as an external coolant lubricant system or a central lubrication system. For those who have had to include a cooling unit in their planning before, now a water pipeline might be enough.

Less heat, fewer oil changes

The following rule of thumb applies for certain temperature limits: Decreasing the operating temperature by about 10 °C doubles the service life of oil. At the same time, the service life of moving parts is significantly increased because oil is "thicker" at lower temperatures.

#2 BOOST EFFICIENCY

The METAPERFORM® gearing with optimized performance was calculated according to state-of-the-art methods and represents an important step in the development of industrial gear units. Thanks to its improved roll-off characteristics and even more uniform path of contact, the power dissipation of the gear unit has been reduced by 50 percent in comparison with the previous model. Moreover, you benefit from AIQ®: our new gear unit intelligence with integrated sensor technology straight from the factory optimizes your specific process and increases the efficiency of your plant.



The METAPERFORM gearing is being used for the first time in FLENDER ONE.

	Conventional drive	FLENDER ONE
System data Power "P2": 1.000 kW | Operating time: 24 hours a day / 7 days a week		
Power dissipation		
Per day	250.22 kWh	81.97 kWh
Per week	1,751.57 kWh	573.76 kWh
Per year	91,081.54 kWh	29,835.54 kWh
Energy costs		
Electricity price (example)	0.10 €/kWh	
Energy costs per year	€9,108.15	€2,983.55
Annual savings (financial)		**€6,124.60**

Gear unit costs of approx. €10,000 are amortized in less than 2 years.

This is how fast FLENDER ONE pays for itself:
our example calculation gives you an initial impression of the savings potential that FLENDER ONE offers you. Would you like to know the specific time frame in which this installation pays off in your project? Then use the example calculator on our website!

Bearings that are made to last

Rolling bearings that supply more than 100,000 hours of operation provide you with significant process reliability.

Integrated sensor technology

The AIQ gear unit intelligence optimizes your processes and ensures minimum downtime for your plant.

#3 MINIMIZE DOWNTIME

An idle plant results in high opportunity costs that exceed process costs by far. Downtime can never be completely avoided – but it can be reduced to a minimum. FLENDER ONE achieves this with the highest quality standards in development, production and service. The AIQ gear unit intelligence plays an especially important role here with its integrated sensor technology and innovative analysis functionality.

PLANT AVAILABILITY WITH AIQ

FLENDER ONE offers you gear unit intelligence straight from the factory. With AIQ you benefit from reliability, predictability and ease at the highest level. Reduce gear unit wear without sacrificing plant performance. Keep an eye on your gear unit and the process. Prevent damage and increase your plant availability with AIQ.

Smart gear unit
Access all gear unit and fleet information digitally anywhere in the world with the AIQ Portal.

Procedure documentation
Save and track operating hours and downtime.

Maximum support
Get notifications when limit values are exceeded to provide support during maintenance.

Condition monitoring
Get notifications when limit values are exceeded to provide support during maintenance.

Complete transparency
Raw data provided for PLC integration enables local process control.

Oil service as necessary
Reduce service-related downtime with dynamic oil service intervals.

Up to

50%

less power dissipation compared to predecessor

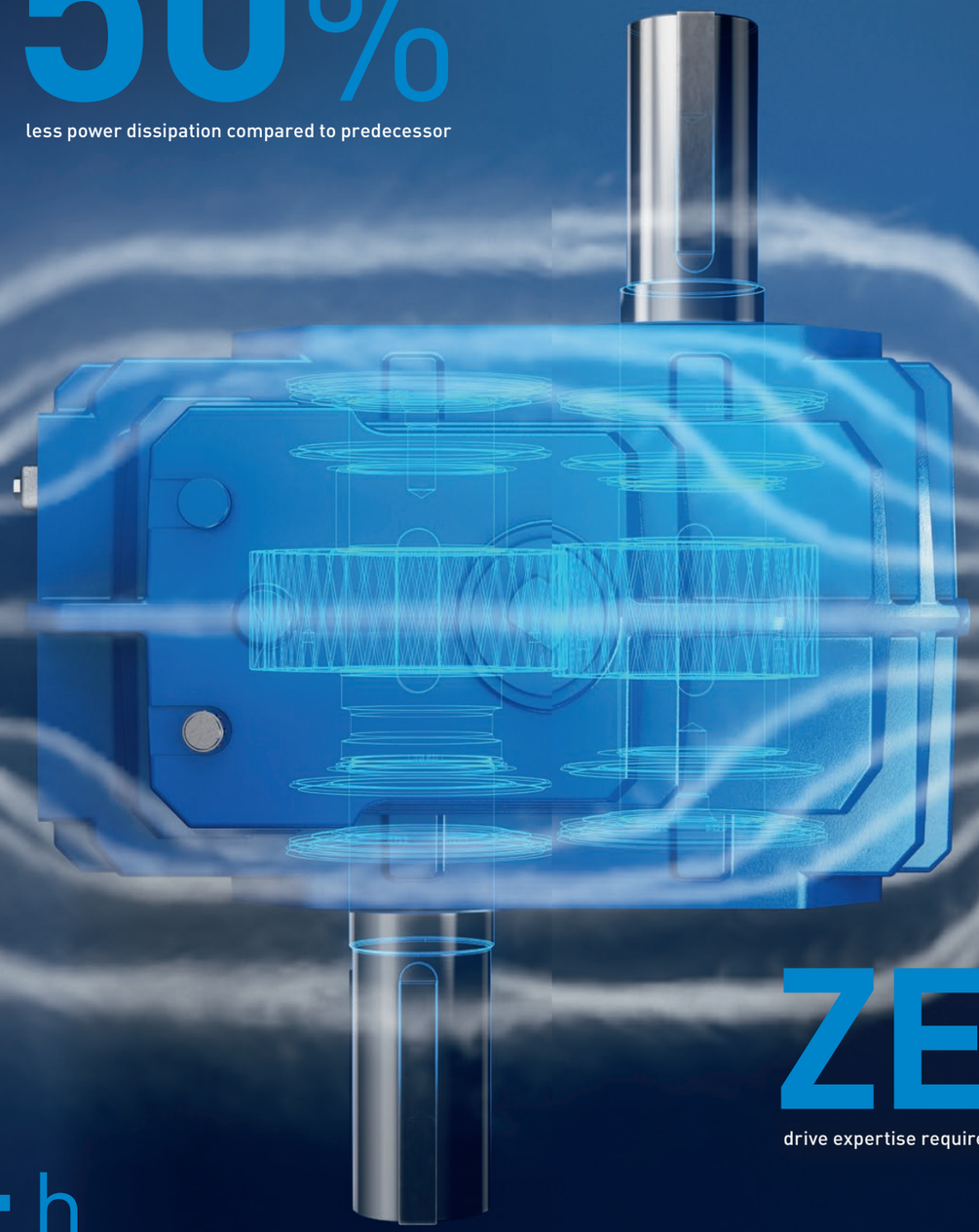
< 35%

larger housing surface

Optimized to reduce oil consumption by up to

20%

compared to predecessor



ZERO

drive expertise required

100,000+ h

bearing life

> 98.5%

rotation speed precision

WE THOUGHT OF EVERYTHING – TO MEET YOUR SPECIFIC REQUIREMENTS.



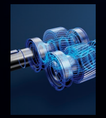
AS EFFICIENT AS POSSIBLE, AS MUCH POWER AS NECESSARY.

Our new motor fan, mounted on the end, only runs when it is needed. That saves energy costs and makes this cooling option extremely efficient. This results in very effective airflow around the new housing.



THE LARGEST POSSIBLE SURFACE AREA.

FLENDER ONE is not just lighter. Its surface area has been enlarged by up to 35 percent. This enables its higher thermal performance.



KEEN TO BARE ITS TEETH AND TAKE ON ELECTRICITY CONSUMPTION.

The new METAPERFORM gearing makes FLENDER ONE an extremely energy-efficient gear unit in comparison with its predecessor. As a result, this gear unit pays for itself in just a few years.

Reliable ventilation

Air exchange with a universal standard breather filter or, as an option, with an ever finer air filter and filling sieve

Dependable temperature control

Many ways to install the Pt100 sensor in the gear unit

Easy oil service

Easier draining and filling when changing the oil

Reliable lubrication

Six mounting options for the pressureless oil return for the oil circulation lubrication

The right seal

Contact and non-contact as well as encapsulated and non-encapsulated seals to meet your requirements

Well-organized electrical components

Various terminal boxes form a central connection point for sensors and other electrical components

Simple oil level monitoring

Service is easy due to quick and reliable oil level reading with an optional integrated scale thermometer

Regulated thermal management

Always the right operating temperature with the appropriate heating and cooling solutions

POWER GEAR UNITS PROMISE PRECISE SPEED.



FLENDER ONE offers you the densest range of transmission stages in the world. No rotation speed requirement falls through the cracks here. The exact speed fit is especially advantageous in pump applications.

LONG OIL AND BEARING SERVICE LIFE.



FLENDER ONE enables a bearing life of 100,000 hours and up. At the same time, the extraordinary thermal capacity increases the oil service life.

GEAR UNIT INTELLIGENCE STRAIGHT FROM THE FACTORY IS WORTH IT.



AIQ, a new sensor technology, is fully integrated into the gear unit. For you, this primarily means three things: gear unit transparency, maintenance predictability and process efficiency.

RELIABLE FANS FOR PERMANENT COOLING.



Our shaft-mounted fan supplies particularly reliable cooling and the new cover concept ensures very even and therefore effective airflow around the components.

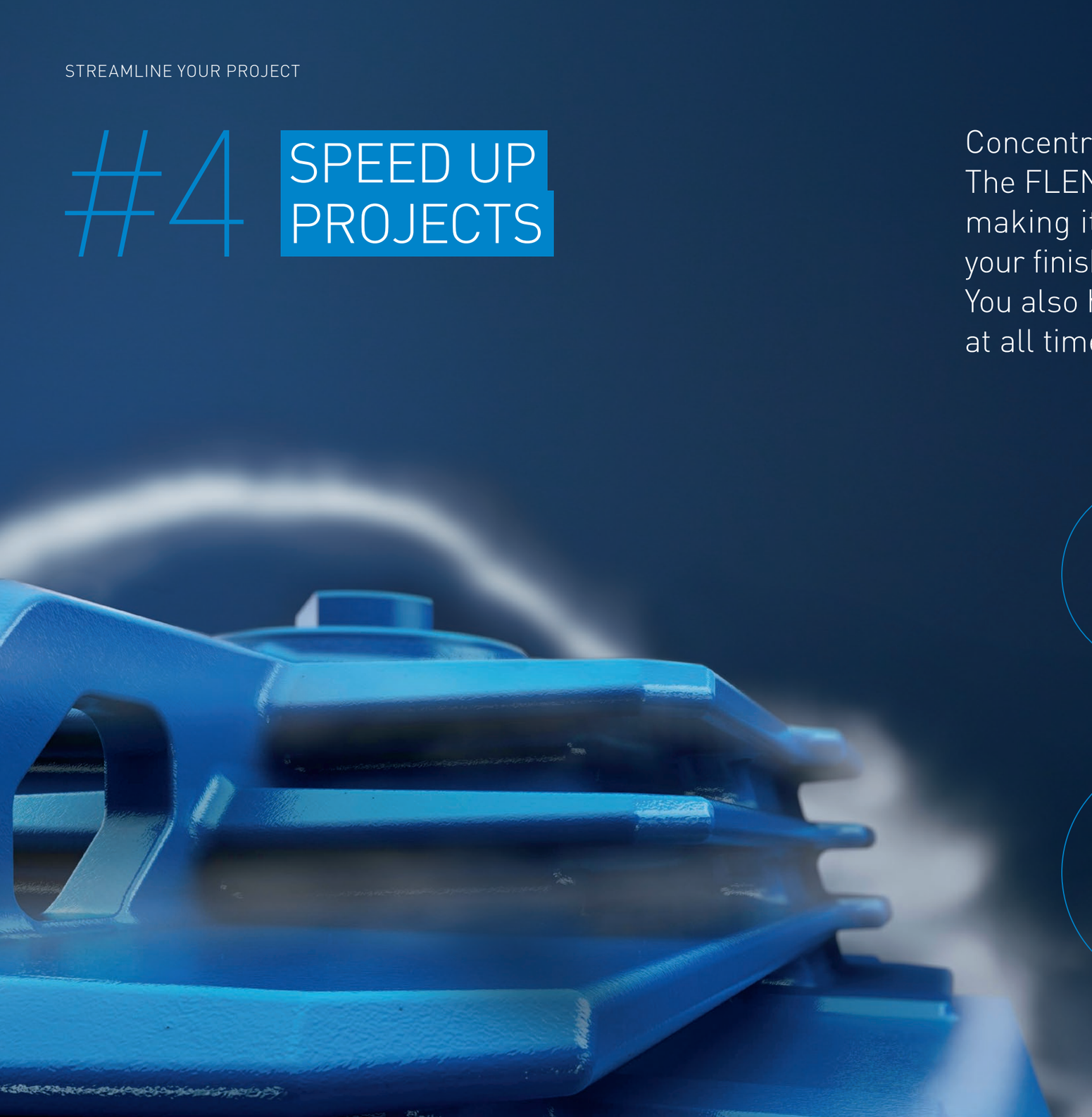
THE BEST CASTING QUALITY SAVES WEIGHT.



FLENDER ONE provides guaranteed quality and reliability. For example, during casting: the new, lighter design with its larger surface area is only possible due to its high quality.

#4 SPEED UP PROJECTS

Concentrate only on your design and save valuable time. The FLENDER ONE configurator speaks your language, making it easy for you to satisfy your requirements for your finished product – even without gear unit expertise. You also have all the information – including 3-D data – at all times.





3 STEPS TO A FINISHED GEAR UNIT

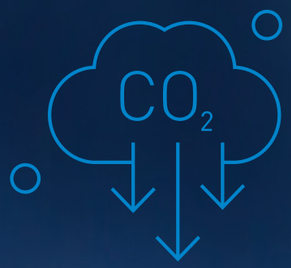
Application, power, rotation speed: in principle, with just these three specifications, you can preconfigure your own, specific FLENDER ONE. But even more detailed requirements can be entered in the configuration tool by using additional parameters – for example, if your gear unit is supposed to be protected from water. We speak your language, we are familiar with your application and we support you with a smart configuration that results in just the right gear unit solution for you.

A gear unit configuration with FLENDER ONE does not depend on any certain point in time, on regional conditions or on differences in how individual operators use it. If the same information is entered, the same result is returned – any time and anywhere in the world. That means precise reproducibility. This way, you always get the same, correct product response to your request.

#5 REDUCE WASTE

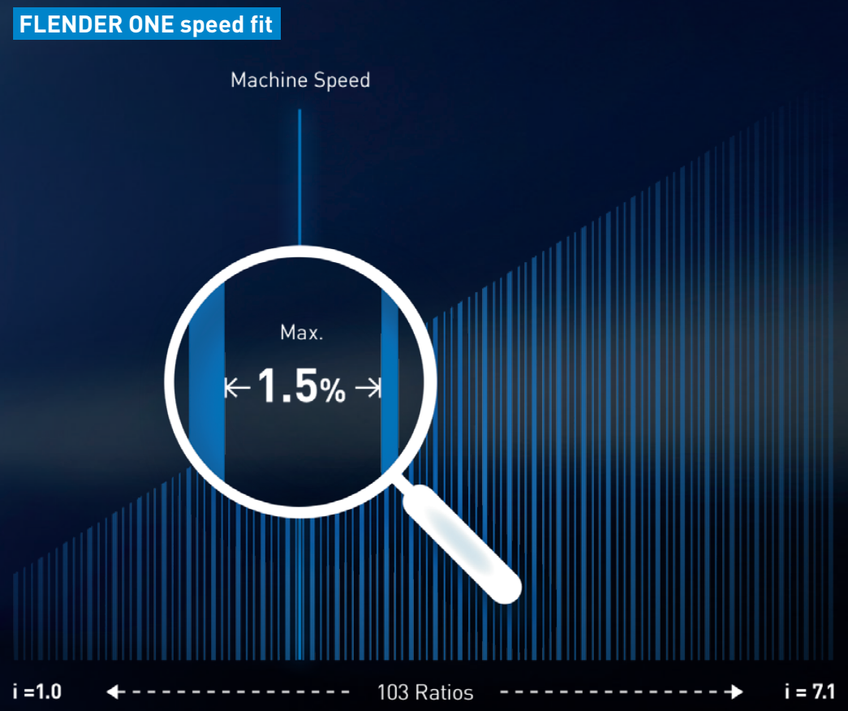
SAVE COSTS OVER THE LONG RUN

Advanced industrial applications must be both economical and sustainable. That applies to the actual production process along with everything that precedes it in the value chain. With FLENDER ONE you score points twice: Practically all of the increases in efficiency with regard to application fit and resource conservation benefit not only your energy balance, but also our environment.





Adapting the solutions perfectly to meet your requirements eliminates all unnecessary costs while lessening stress on our environment. There is no need for any complicated development process. There are no big gaps in our consistent torque range, and because you can choose from the densest range of transmission stages in the world, with 103 transmission ratios between i = 1.0 and 7.1 per size, you can match the rotation speed that your machine requires for maximum efficiency with nearly perfect precision. This means you achieve a speed fit greater than 98.5 percent.



#6 SIMPLIFY ASSEMBLY AND MAINTENANCE

Shorter processes. Lower weight with the same footprint. Less oil. Simplified assembly due to particularly large base mounts. Optimized covers. And much more: a broad range of optimizations ensures that your time and costs for assembly and maintenance remain especially low for FLENDER ONE.

Oil: Because less oil is used under better conditions you save costs for purchasing and disposing of it.

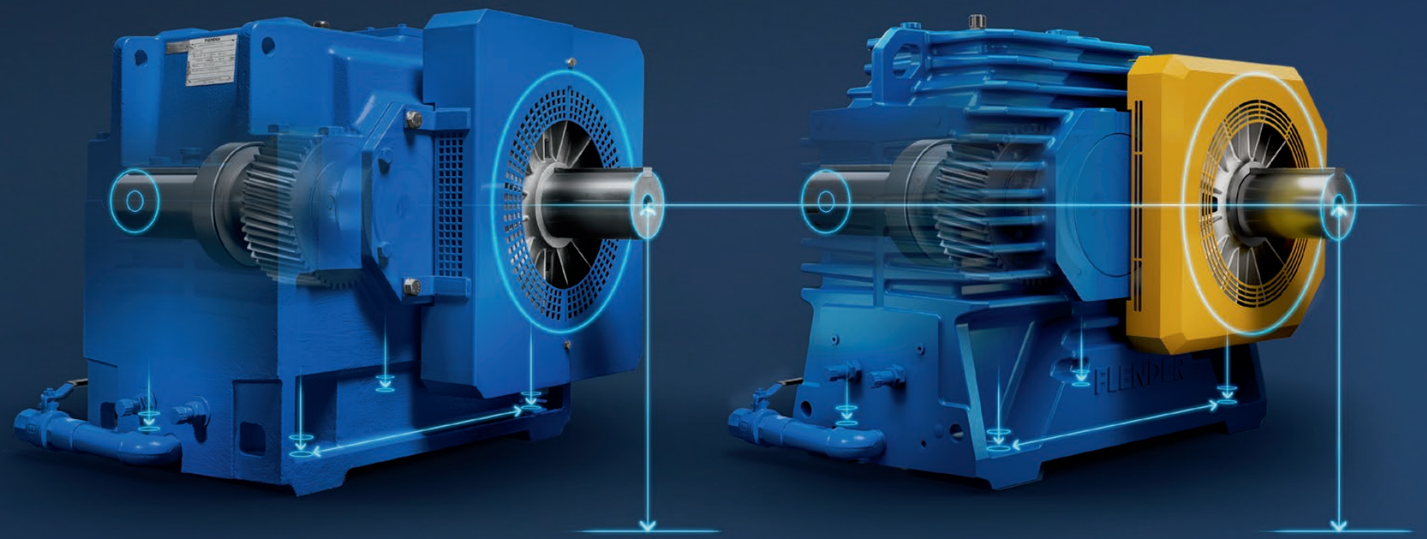
Time: Due to the gear unit intelligence and structural improvements, you save installation and maintenance time.

Installation space: The gear unit takes up relatively little space; additional cooling that requires extra space may not be necessary.

Weight: Though it has greater capacity and the same footprint, FLENDER ONE is lighter than its predecessor.

The same footprint

The connection and assembly dimensions of FLENDER ONE are the same as those of the previous model – that makes exchanging the gear unit especially easy.



Predecessor product **FLENDER ONE**

TECHNICAL INFORMATION

Nominal torque (Mtn; kNm) Main ratio line (5 intermediate ratios available between 2 main ratios)

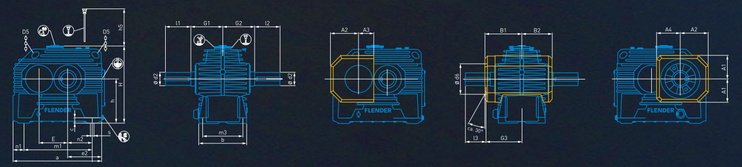
Ratio (i)		1.0	1.12	1.25	1.4	1.6	1.8	2.0	2.24	2.5	2.8	3.15	3.55	4.0	4.5	5.0	5.6	6.3	7.1
Size	0026	2.6	2.8	2.9	3.1	3.3	3.3	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.0	2.8	2.5	2.2	1.9
	0063	7.3	7.8	8.3	8.8	9.3	9.4	9.6	9.6	9.6	9.6	9.6	9.6	9.6	8.5	7.9	7.0	6.1	5.2
	0096	13.7	14.6	15.5	16.4	17.5	17.6	18.0	18.0	18.0	18.0	18.0	18.0	18.0	15.9	14.7	13.1	11.5	9.8
	0136	21.8	23.2	24.7	26.2	27.9	28.0	28.7	28.7	28.7	28.7	28.7	28.7	28.7	25.3	23.5	20.9	18.3	15.7
	0151	31.5	33.6	35.7	37.8	40.3	40.5	41.5	41.5	41.5	41.5	41.5	41.5	41.5	36.6	34.0	30.2	26.4	22.7
	0179	43.2	46.1	49.1	52.0	55.3	55.6	57.0	57.0	57.0	57.0	57.0	57.0	57.0	50.3	46.7	41.5	36.3	31.1
	0234	58.4	62.3	66.3	70.2	74.7	75.2	77.0	77.0	77.0	77.0	77.0	77.0	77.0	67.9	63.0	56.1	49.1	42.1
	0257	78.9	84.2	89.5	94.8	100.9	101.5	104.0	104.0	104.0	104.0	104.0	104.0	104.0	91.7	85.2	75.7	66.3	56.8
	0312	105.4	112.5	119.6	126.7	134.9	135.7	139.0	139.0	139.0	139.0	139.0	139.0	139.0	122.6	113.8	101.2	88.6	75.9
	0408	140.3	149.8	159.2	168.7	179.6	180.6	185.0	185.0	185.0	185.0	185.0	185.0	185.0	163.2	151.5	134.7	117.9	101.1
	0541	185.8	198.3	210.9	223.4	237.8	239.1	245.0	245.0	245.0	245.0	245.0	245.0	245.0	216.1	200.6	178.4	156.1	133.9

Exact ratio (i_exact) Main ratio line (5 intermediate ratios available between 2 main ratios)

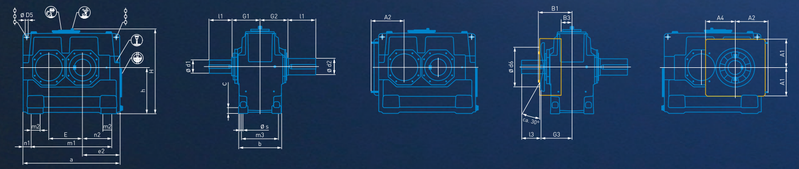
Ratio (i)		1.0	1.12	1.25	1.4	1.6	1.8	2.0	2.24	2.5	2.8	3.15	3.55	4.0	4.5	5.0	5.6	6.3	7.1
Size	0026	1.000	1.128	1.250	1.400	1.594	1.793	2.000	2.240	2.500	2.792	3.167	3.545	4.000	4.500	5.000	5.591	6.294	7.095
	0063	1.000	1.122	1.256	1.405	1.588	1.806	2.000	2.241	2.481	2.808	3.167	3.545	4.000	4.522	5.048	5.583	6.273	7.100
	0096	1.000	1.125	1.262	1.400	1.595	1.800	2.000	2.241	2.481	2.800	3.143	3.524	4.000	4.476	5.000	5.600	6.273	7.111
	0136	1.000	1.116	1.244	1.395	1.600	1.800	2.000	2.229	2.500	2.800	3.148	3.545	4.000	4.478	5.000	5.591	6.300	7.095
	0151	1.000	1.116	1.244	1.395	1.606	1.800	2.000	2.235	2.500	2.793	3.167	3.542	4.000	4.500	5.000	5.583	6.273	7.100
	0179	1.000	1.114	1.239	1.395	1.606	1.794	2.000	2.241	2.483	2.815	3.160	3.545	4.000	4.500	5.000	5.571	6.286	7.105
	0234	1.000	1.114	1.250	1.400	1.595	1.810	2.000	2.242	2.500	2.806	3.154	3.538	4.000	4.500	5.000	5.583	6.273	7.063
	0257	1.000	1.119	1.244	1.405	1.595	1.806	2.000	2.243	2.500	2.806	3.154	3.538	4.000	4.478	5.000	5.615	6.333	7.095
	0312	1.000	1.119	1.256	1.405	1.585	1.805	2.000	2.229	2.500	2.813	3.138	3.556	4.000	4.500	5.000	5.577	6.286	7.095
	0408	1.000	1.119	1.250	1.400	1.594	1.810	2.000	2.235	2.500	2.788	3.167	3.533	4.000	4.481	5.000	5.577	6.273	7.095
	0541	1.000	1.125	1.245	1.400	1.595	1.794	2.000	2.250	2.512	2.789	3.135	3.548	4.000	4.500	5.000	5.600	6.304	7.105

Size		0026	0063	0096	0136	0151	0179	0234	0257	0312	0408	0541
Weight (kg; w/o oil)		110	265	470	740	1,000	1,285	1,895	2,440	2,795	3,765	5,310
Oil quantity (l/max)	Laby	5.4	18	35	56	79	96	152	149	147	234	333
	WDR/RSS	6	20	40	62	86	108	169	163	162	265	382

Size (0026 | 0063 | 0096 | 0136 | 0151 | 0179 | 0234 | 0257 | 0312)



Size (0408 | 0541)



Dimensions (in mm)

[1] ≤ 25 mm tolerance k6 | > 25 ... 100 mm tolerance m6 | > 100 mm tolerance n6 [2] Tolerance –0,5 mm

Shaft ends with parallel keys and keyways acc. to DIN 6885/1 | Shaft ends with central bores form DS acc. to DIN 332/1 (exception > ø130 mm)

		High speed shaft			Low-speed shaft				Main dimension							Footprint									Outside dimension for shaft-driven fan								Transportation	
		Without fan		Shaft-driven fan									Foot area	Shaft level	Shaft center	Shaft center	Dip stick (max)																2x shackle DIN 82101	
Size	Ratio range	Diameter d1[1]	Length l1	G1	Length l3	G3	Diameter d2[1]	Length l2	G2	Height H	Length a	Width b	Width b'	Distance E	Height h[2]	Height h5	e2	m1	m2	m3	n1	n2	ØS	c	A1	A2	A3	A4	B1	B2	B3	d6	"C"	D5 (4x)
0026	1.0 – 2.8	60	125	170	105	190	60	125	170	360	430	200	240	130	200	264	165	310	–	160	65	110	19	28	107	145	85	110	205	160	–	110	C 1.6	–
	> 2.8 – 4.0	45	100		80																													
	> 4.0 – 5.6	32	80		60																													
	> 5.6 – 7.1	25	65		45																													
0063	1.0 – 2.8	85	160	210	130	240	85	160	210	510	590	285	330	185	290	374	230	440	–	240	80	160	24	35	180	195	90	185	255	215	–	190	C 1.6	–
	> 2.8 – 4.0	60	135		105																													
	> 4.0 – 5.6	50	110		80																													
	> 5.6 – 7.1	40	100		70																													
0096	1.0 – 2.8	100	200	250	165	285	105	200	250	610	705	375	420	225	350	434	270	540	–	315	90	195	28	45	210	225	120	215	310	260	–	245	C 1.6	–
	> 2.8 – 4.0	75	140		105																													
	> 4.0 – 5.6	60	140		105																													
	> 5.6 – 7.1	50	110		75																													
0136	1.0 – 2.8	110	200	280	165	315	125	210	270	725	820	425	470	265	420	484	315	625	–	350	105	225	35	50	245	255	150	245	325	275	–	280	C 2.5	–
	> 2.8 – 4.0	90	165		130																													
	> 4.0 – 5.6	75	140		105																													
	> 5.6 – 7.1	60	140		105																													
0151	1.0 – 2.8	130	240	300	205	335	140	250	300	790	895	480	520	290	460	524	345	690	–	390	110	250	35	55	290	285	160	280	345	300	–	350	C 3	–
	> 2.8 – 4.0	110	200		165																													
	> 4.0 – 5.6	90	165		130																													
	> 5.6 – 7.1	70	140		105																													
0179	1.0 – 2.8	130	240	325	205	360	150	240	320	850	975	515	560	320	500	564	375	770	–	440	110	280	35	60	325	320	165	315	370	315	–	350	C 4	–
	> 2.8 – 4.0	110	205		170																													
	> 4.0 – 5.6	90	170		135																													
	> 5.6 – 7.1	80	170		135																													
0234	1.0 – 2.8	150	245	365	200	410	180	310	360	1.000	1.115	580	640	370	580	674	430	870	–	490	130	315	42	70	345	335	220	366	425	360	–	350	C 4	–
	> 2.8 – 4.0	130	245		200																													
	> 4.0 – 5.6	100	210		165																													
	> 5.6 – 7.1	90	170		125																													
0257	1.0 – 2.8	180	290	360	240	410	200	350	360	1.045	1.295	530	600	400	590	744	500	1.025	–	450	140	370	48	80	345	415	217	340	425	340	–	450	C 5	–
	> 2.8 – 4.0	140	250		200																													
	> 4.0 – 5.6	125	250		200																													
	> 5.6 – 7.1	100	210		160																													
0312	1.0 – 2.8	180	290	360	240	410	220	350	360	1.090	1.310	545	640	442	600	774	505	1.025	–	450	150	370	48	80	345	380	257	330	420	355	–	450	C 5	–
	> 2.8 – 4.0	150	250		200																													
	> 4.0 – 5.6	125	250		200																													
	> 5.6 – 7.1	110	200		150																													
0408	1.0 – 2.8	200	330	400	280	450	240	400	400	1.235	1.410	615	–	490	670	–	545	1.170	130	530	120	425	42	80	415	475	–	430	505	–	160	445	–	48
	> 2.8 – 4.0	170	290		240																													
	> 4.0 – 5.6	140	250		200																													
	> 5.6 – 7.1	120	210		160																													
0541	1.0 – 2.8	220	340	440	290	490	270	450	440	1.395	1.590	690	–	555	760	–	615	1.290	150	590	150	465	48	90	475	520	–	475	540	–	195	445	–	55
	> 2.8 – 4.0	190	340		290																													
	> 4.0 – 5.6	160	300		250																													
	> 5.6 – 7.1	140	250		200																													