

## Optimised Special Steel Corrugated Ring Seal – for High Sealing Requirements with Extreme Operating Conditions and Low Surface Pressure

### ► IDT-Profile WD 10, WD 20

#### Design/Function

Corrugated special steel carrier with graphite (SIGRAFLEX) rest (WD 10) on both sides. The carrier profile and the thickness and density of the rests match each other in such a way that when subjected to the normal pressure whilst in a tensioned state, a corrugated crest overlapping of 0.1 – 0.2 mm is guaranteed, this therefore leading to only an extremely low diffusion cross section. In addition, the soft material in this is extremely high compressed.

In addition to these tasks, the optimised corrugated ring ensures an increase of the blow-out certainty, an improvement in the stability and handling of the seal.

A waviness in the seal strips is perfectly compensated for.

The seal is characterised by an excellent tightness even when subjected to low surface pressures ( $\sigma_{vu, 0.01} = 16 \text{ Mpa}$ )

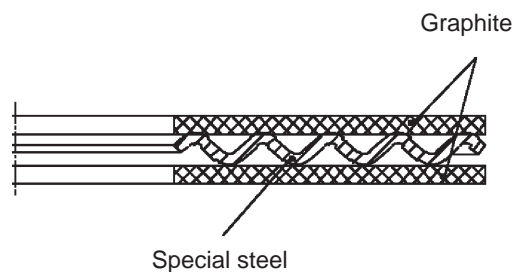
The seal can be manufactured in the forms ring, oval, long stretched-out oval and frame. The max. dimensions are restricted by the transport and handling (ca. 5000 mm).

Fins (min. 8 mm wide), holding straps and screwholes can be provided.

A special welding process guarantees a high welding seam quality by large seals and prevents the increase of the susceptibility to corrosion in special steel carriers. Smaller seal carriers are in a single piece.

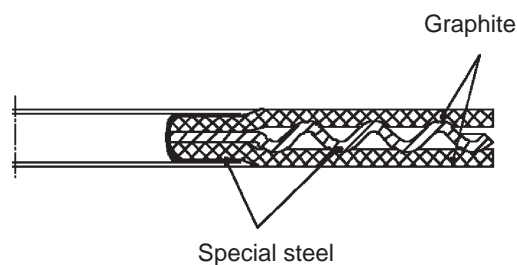
The corrugated carriers can be coated with graphite, either on one side or on both of them. (WD 12)

The WD 20 design excludes an influencing of the operational medium by the graphite rest. During their development, the corrugated carrier had to be of a design in which no corrugation was in the flanged area, this being necessary in order to retain the excellent tightness characteristic of the WD 10. Otherwise, the flanged area required an unusually high proportion of the tensioning force which would then be lost in the remaining surface area which actually resulted in the micro-sealing.



*Cross section WD 10*

III. 1



*Cross section WD 20*

III. 2



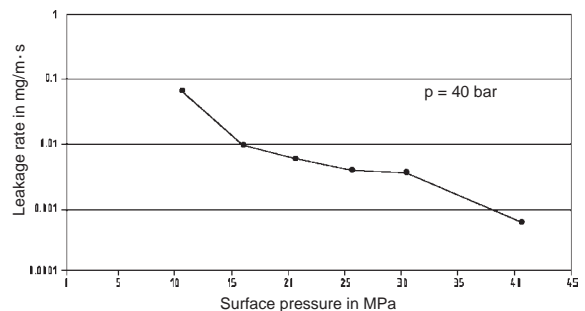
As the leakage curve in Ill. 3 shows, the required minimum surface pressure remains very low irrespective of the interior flange.

### Characteristics:

- high-quality sealing within the meaning of the German "TA-Luft" (limits for emissions) excellent gas and liquid tightness even at low surface pressures
- high temperature (550 °C) and pressure application threshold (160 bar)
- very good adaptation and resilience capacity
- no influencing of the operational medium by the seal (WD 20)
- blow-out certainty
- flange form C is sufficient
- can be tightened
- the media resistance can be extended by the selection of other flange materials

### Areas of Use:

- soft-bending or warped flange seal strips which must securely seal with low surface pressure
- dynamic temperature and pressure load
- vacuum
- WD 20 is a real alternative to the use of spiral seals with the following advantages:
  - much lower surface pressure required
  - no special demands placed on the surface of the seal strips; form C is sufficient
  - no influencing of the medium



III. 3

### Technical Parameters: WD 20

$\sigma_{VU0,1}$ :	10 N/mm <sup>2</sup>
$\sigma_{VU0,01}$ :	15 N/mm <sup>2</sup>
$\sigma_{VU0,001}$ :	37 N/mm <sup>2</sup>
$\sigma_{VO}$ :	180 N/mm <sup>2</sup>
$\sigma_{BO (300\text{ °C})}$ :	150 N/mm <sup>2</sup>

Gas permeability (DIN 28090 T.1: < 0.01 mg/s · m

$\epsilon_{KSW}$ :	40 %
$\epsilon_{KRW}$ :	4 %
$\epsilon_{WSW}$ :	2,6 %
$\epsilon_{WRW}$ :	4,7 %

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