HANSER

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Auslegung von Maschinenelementen

Formeln, Einsatztipps, Berechnungsprogramme

ISBN: 978-3-446-43005-1

Weitere Informationen oder Bestellungen unter

http://www.hanser.de/978-3-446-43005-1

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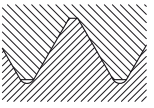
2.1	Gewindetabellen und -normen		7
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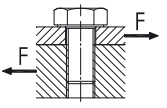
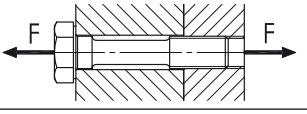
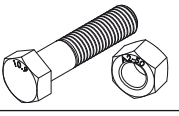
2.3	Querbelastete Schrauben		13
2.4	Nachgiebigkeit der Schrauben und Bauteile		14
2.5	Bezeichnungssysteme der Schrauben und Muttern		15

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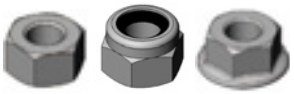
2.7	Muttern		26
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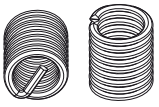
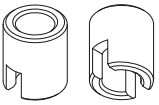
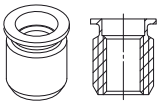
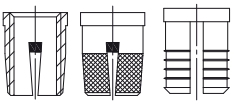
3.1	Drahtgewindeeinsatz Helicoil®		38
3.2	Gewindeeinsatzbuchse Ensat® S / SB		41
3.3	Gewindeeinsatzbuchse Kobsert®		42
3.4	Gewindeeinsatzbuchse Expansionsert® / Spredsert®		43

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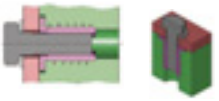
3.5	Funktion und Wirkung von Gewindeeinsätzen		45
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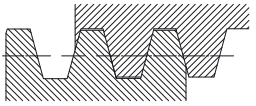
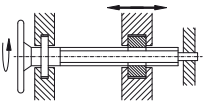
4.1	Gewindetabellen und –normen (Trapezgewinde, Sägengewinde)		50
4.2	Gewindeauslegung		52
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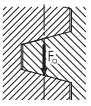
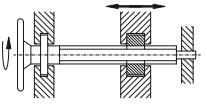
4.4	Flächenpressung der Gewindeflanken		54
4.5	Prüfung auf Knicksicherheit		55

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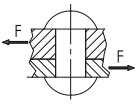
5.1	Scherspannung im Nietquerschnitt		56
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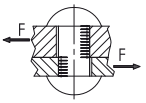
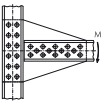
5.3	Lochleibungsdruck im Nietschaft		56
5.4	Momentenanschluss		58
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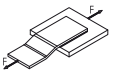
6.1	Festigkeitsnachweis		64
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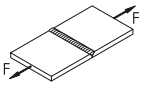
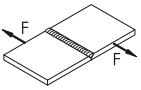
7.1	Zug-/Druckbeanspruchung		71
7.2	Scherung		71
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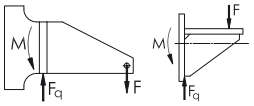
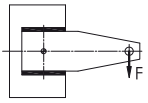
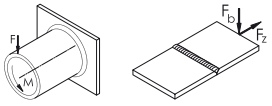
7.4	Biegung		72
7.5	Schubbeanspruchung durch Drehmoment		74
7.6	Überlagerte Beanspruchungen		75
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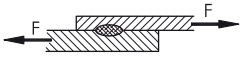
7.8	Punktschweißverbindungen		76

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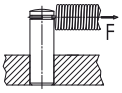
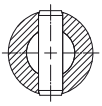
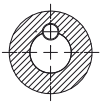
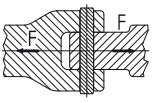
8.1	Steckstiftverbindung		78
8.2	Querstiftverbindung		79
8.3	Längsstiftverbindung		80
8.4	Bolzen (Gelenkbolzen)		81

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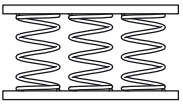
10.1	Grundlagen		87
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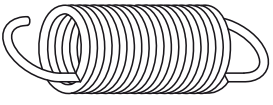
10.3	Zylindrische Zugfedern		90

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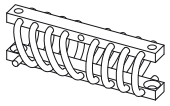
10.8	Drahtseilfedern		97

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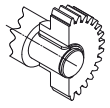
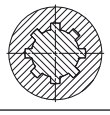
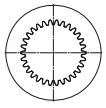
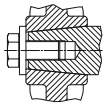
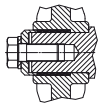
11.1	Passfeder (formschlüssig)		101
11.2	Keilwelle (formschlüssig)		102
11.3	Zahnwelle (formschlüssig)		102
11.4	Kegelpressverband (kraftschlüssig)		103
11.5	Kegelspannring (kraftschlüssig)		104
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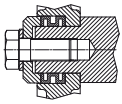
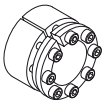
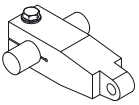
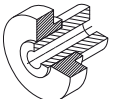
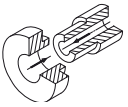
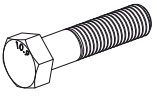
11.7	Druckhülse (kraftschlüssig)		107
11.8	Kegelspannring (kraftschlüssig)		108
11.9	Klemmverbindung (kraftschlüssig)		110
11.10	Zylindrischer Pressverband, Berechnung rein elastischer Beanspruchung		112
11.11	Fügetemperatur		114
11.12	Vorspannkräfte für kraftschlüssige Spannelemente		116
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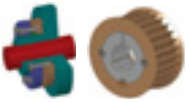
11.14	Spannelemente		120
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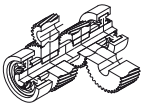
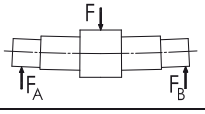
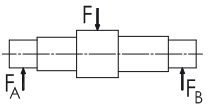
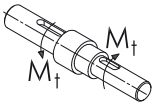
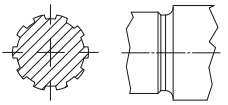
12.1	Biegemomenten- und Querkraftverlauf		127
12.2	Durchbiegung		129

12.3	Biegekritische Drehzahl		130
12.4	Verdrehwinkel		131
12.5	Berechnung gefährdeter Wellenquerschnitte		132
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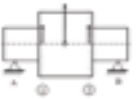
13.4	Zuordnung der Ausgleichsebenen		143
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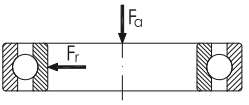
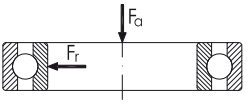
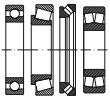
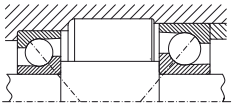
14.1	Dynamische äquivalente Belastung		149
14.2	Statische äquivalente Belastung		149

14.3	Berechnungsfaktoren X, Y, X_0, Y_0		150
14.4	Schrägkugel- bzw. Kegelrollenlager		153
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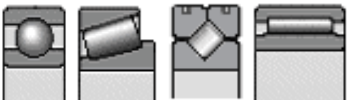
14.6	Auswahl der Wälzlager		156
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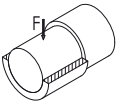
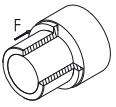
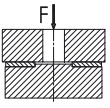
15.1	Radialgleitlager		163
15.2	Bundbuchse		163
15.3	Axialgleitlager		164
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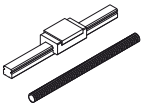
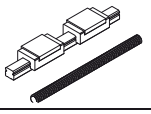
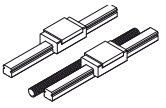
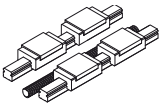
16.1	Auslegung: Ein Wagen auf einer Schiene		173
16.2	Auslegung: Zwei Wagen auf einer Schiene		174
16.3	Auslegung: Zwei Wagen auf zwei Schienen		175
16.4	Auslegung: Vier Wagen auf zwei Schienen		176
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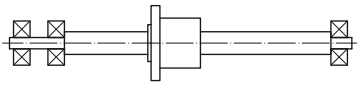
16.7	Knicksicherheit der Antriebsspindel		181
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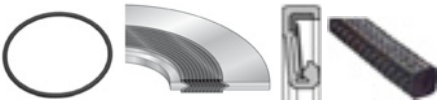
17.1	Übersicht		185
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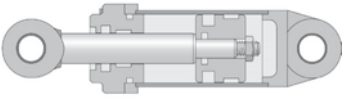
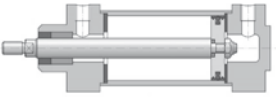
17.3	Dichtungselemente für Hydraulikzylinder		196
17.4	Dichtungselemente für Pneumatikzylinder		201

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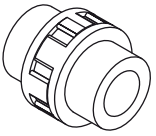
18.1	Kupplungsdrehmoment ohne genaue Betriebsdaten		207
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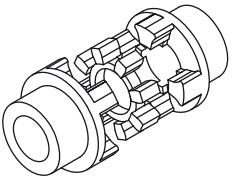
18.3	Verdrehwinkel einer elastischen Kupplung		210
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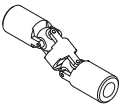
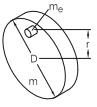
18.5	Wellengelenke		212
18.6	Trägheitsmomente		213

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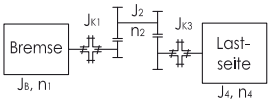
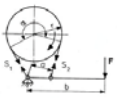
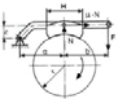
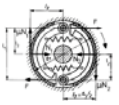
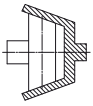
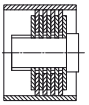
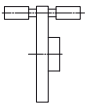
19.1	Allgemeine Berechnungen		230
19.2	Bandbremsen		231
19.3	Außenbackenbremsen		235
19.4	Innenbackenbremsen		237
19.5	Kegelbremsen		238
19.6	Lamellenbremse		240
19.7	Teilscheibenbremsen		240

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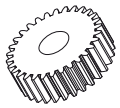
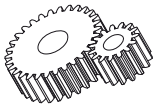
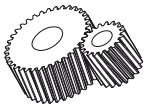
20.1	Allgemeine Berechnungen		241
20.2	Geradverzahntes Stirnradpaar		242
20.3	Schrägverzahntes Stirnradpaar		243
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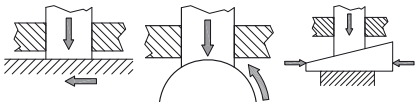
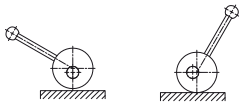
23.1	Reibung		269
23.2	Exzenterspanner		271
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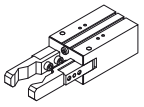
23.4	Greifer		277
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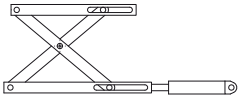
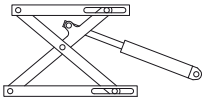
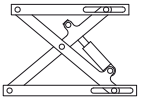
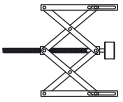
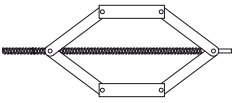
25.1	Scherenhubtisch, Typ 1		292
25.2	Scherenhubtisch, Typ 2		294
25.3	Scherenhubtisch, Typ 3		297
25.4	Scherenhubtisch, Typ 4		300
25.5	Scherenwagenheber		303
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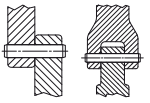
25.7	Gelenkbolzenauslegung		306

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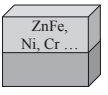
26.2	Korrosionsschutz		311
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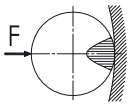
27.1	Hertzsche Pressung		313
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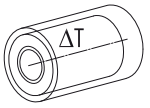
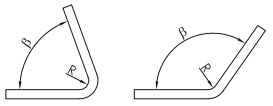
27.3	Thermische Ausdehnung		318
27.4	Blechabwicklung		320
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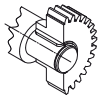
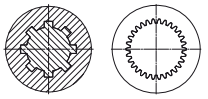
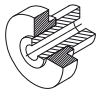
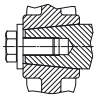
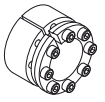
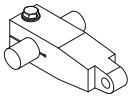
1	Passfederverbindung		326
2	Keil- und Zahnwellenverbindung		327
3	Zylindrischer Pressverband		328
4	Kegelpressverband		330
5	Spannsatz		331
6	Klemmverbindungen		332

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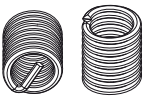
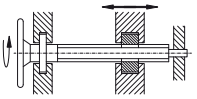
8	Drahtgewindeeinsatz		334
9	Bewegungsschraube		335
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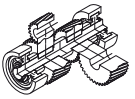
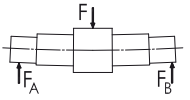
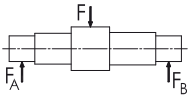
11	Wellenauslegung		338
12	Durchbiegung von Wellen und Achsen		341
13	Biegekritische Drehzahl		342
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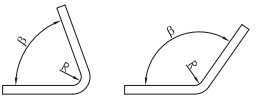
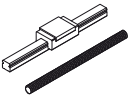
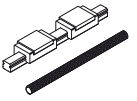
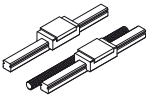
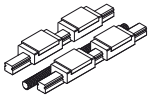
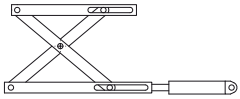
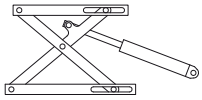
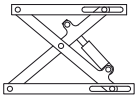
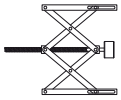
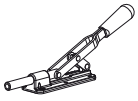
16	Blechabwicklung		346
17	Lineareinheiten (1 Wagen, 1 Schiene)		348
18	Lineareinheiten (2 Wagen, 1 Schiene)		349
19	Lineareinheiten (2 Wagen, 2 Schienen)		350

20	Lineareinheiten (2 Wagen, 2 Schienen)		351
21	Scherenhubtisch Typ 1		352
22	Scherenhubtisch Typ 2		353
23	Scherenhubtisch Typ 3		354
24	Scherenhubtisch Typ 4		355
25	Schubstangenspanner Typ 1		356
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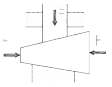
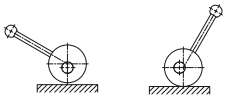
27	Keilreibung		358
28	Exzenterspanner		359
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