

**Was ist FORMATHANE?**

FORMATHANE ist eine qualitativ hochwertige Produktreihe aus Urethanverbindungen, die unter anderem für die metallverarbeitende Industrie entwickelt wurde.

Was kann FORMATHANE mehr als andere Urethane?

Für FORMATHANE werden die besten Rohstoffe verwendet. Diese werden in modernsten Gießanlagen zu Urethanverbindungen weiter verarbeitet, welche gleichbleibend physikalische und dynamische Eigenschaften aufweisen.

Daraus resultiert

FORMATHANE besitzen die besten Zugfestigkeits-, Abriebs-, Tragfähigkeits- und Verdichtungseigenschaften.

What is FORMATHANE?

FORMATHANE is a high-quality line of advanced urethane compounds and products which has been developed, among other things, for the metalforming industry.

What makes FORMATHANE more than just another urethane?

FORMATHANE starts with the finest raw materials. Then processes them using state-of-the-art casting equipment to produce urethane compounds with consistent physical and dynamic properties.

The result

Formathane offer the ultimate in tensile strength, abrasion and tear resistance, load-bearing capabilities and compression-set properties.



Eigenschaft / Property	ASTM Test	Sorte / Compound			
		PO-670	PO-650	CU-290	PO-652
Farbe / Color	D2240	Schwarz / Black	Rot / Red	Gelb / Yellow	Braun / Tan
Härte / Hardness Shore A	D 412	70	85	90	95
max. Zugfestigkeit / High tensile strength (N/mm ²)		34,47	41,37	44,82	39,99
Bruchdehnung / Elongation at break (%)		550	600	475	525
Dehnung / Elongation 100% (N/mm ²)		3,10	5,17	7,58	10,00
Dehnung / Elongation 300% (N/mm ²)		6,21	11,72	15,17	17,24
Weiterreißfestigkeit / Tear strength (kN/m)	D 624	57	88	88	105
relative Dichte / Specific gravity at 24°C (Kg/dm ³)	D 792	1,244	1,248	1,251	1,259
Rückschlagelastizität / Resilience (rebound) (%)	D 2632	26,2	42,6	39,4	45,4
NBS Abriebskennwert / Abrasion index	D 1630	205	250	140	385

FORMATHANE Verbindung / Compounds
PO-670 Black

- Härte 70 Shore A
- Empfohlener Federweg 35%
- Sehr niedrige Federkraft und hohe Zugfestigkeit
- Für Anwendungen mit geringen Anforderungen
- *Hardness 70 Shore A*
- *35% recommended deflection*
- *Very low load-bearing capacity compound with a high tensile strength*
- *For low-impact applications*

CU-290 Yellow

- Härte Shore 90 A
- Empfohlener Federweg 25%
- Hohe Federkraft, mittlere Reiß- und Schnittfestigkeit
- Empfohlen für Normalblechverarbeitung
- *Hardness Shore 90 A*
- *25% recommended deflection*
- *High load-bearing capacity compound with a medium tear strength and cut resistance*
- *Recommended for medium-gauge metal*

PO-650 RED

- Härte 85 Shore A
- Empfohlener Federweg 30%
- Mittlere Federkraft ideal für Dünnblechbearbeitung
- Gute Verschleiß- und Abriebsseigenschaften, ideal für Umformkissen und Verschleißschutz
- *Hardness 85 Shore A*
- *30% recommended deflection*
- *Medium load-bearing capacity compound suitable for light-gauge metals*
- *High abrasion and wear characteristics ideal for forming pads and wear pads*

PO-652 TAN

- Härte 95 Shore A
- Empfohlener Federweg 15%
- Sehr hohe Federkraft, hohe Reiß- und Schnittfestigkeit
- Ideal für Federn, Abstreifer und alle üblichen Metallumformarbeiten
- *Hardness 95 Shore A*
- *15% recommended deflection*
- *Very high load-bearing capacity compound with a medium tear strength and cut resistance*
- *Ideal for springs, stripper and general metalforming*



Mit FORMATHANE Die-Cover Film formen sie Bleche, ohne Bearbeitungspuren auf den Sichtflächen zu hinterlassen. Auch beschichtete Bleche können sie mit ihren bereits hergestellten Werkzeugen umformen.

Somit steigern sie Ihre Produktivität durch die Reduzierung bzw. das Entfallen der Nacharbeit, die erforderlich wäre, um die Bearbeitungspuren zu beseitigen.

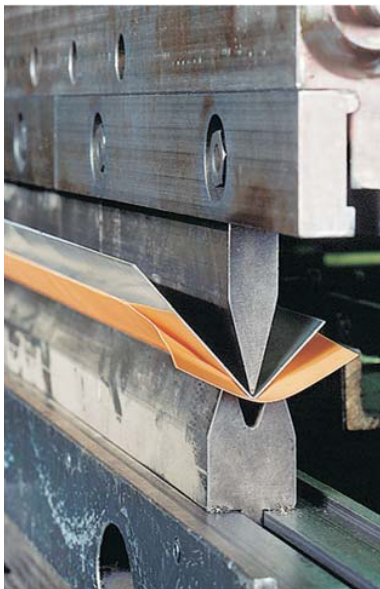
With FORMATHANE Die-Cover Film, you can form decorative and pre-painted without die marks while using your existing dies. So you improve your productivity by reducing or eliminating the refinishing work required to remove die marks.

Anwendung

Die-Cover Film wirkt wie ein Puffer zwischen den scharfen Kanten der Ziehmatrize und den zu formenden Blechteil. Bedecken sie dafür das Werkzeugunterteil mit unserem Die-Cover Film und schützen so das Werkstück vor den Bearbeitungsspuren.

How to use?

Die-Cover Film acts as a buffer between the sharp edges of the die and the metal piece being formed. Simply cover the lower die with our Die-Cover Film and protect the metal piece from die marks.



Abmessung / Size	Bestellnr. / Order No	
	0,5mm	0,8mm
100mm x 15m	DCF04-050652	DCF04-050652031
100mm x 30m	DCF04-100652	DCF04-100652031
150mm x 15m	DCF06-050652	DCF06-050652031
150mm x 30m	DCF06-100652	DCF06-100652031
200mm x 30m	DCF08-100652	DCF08-100652031
300mm x 30m	DCF12-100652	DCF12-100652031
915mm x 3m	DCF36-010652	DCF36-010652031





Vorteile von FORMATHANE-Federn

Formathane...

- ...bilden eine höhere Streifen-Haltekraft. Es können also kleinere Abmessungen der Federn verwendet werden und somit wird ein kleinerer Einbauraum benötigt.
- ...haben einen ruhigeren Bewegungsablauf und bewirken eine Verringerung von Stanzvibrationen.
- ...brechen unter Last nicht. Das bedeutet, dass sowohl Arbeiter als auch das Werkzeug nicht von Bruchstücken gefährdet sind.
- ...sind schnell zu wechseln und können die Rüstzeit reduzieren
- ...sind nicht magnetisch oder gesundheitsschädlich.
- ...sind beständig gegen Korrosion und die meisten in der Metallumformindustrie zum Einsatz kommenden Öle und Chemikalien

Advantages of FORMATHANE springs

Formathane...

- ...generates higher blank-holding pressure and allowing closer center-to-center spacing to overcome die space limitations.
- ...is quieter in operation and helps to dampen punch vibration.
- ...will not fracture under load, so both operators and dies are protected from shrapnel.
- ...can be installed easily, saving set-up time.
- ...is resistant to corrosion and most oils and chemicals used in the metalforming industry.

FORMATHANE-Federn sind für leichte, mittlere und schwere Belastungen erhältlich. Die Auswahl der richtigen Feder für ihre Anwendung hängt von einigen Faktoren ab, wie den verfügbaren Platz und den benötigten Federweg.

Der Innendurchmesser aller FORMATHANE-Federn und -Abstreifer ist etwas kleiner um einen Presssitz auf dem Stempel zu ermöglichen. Somit kann auf eine Stellschraube oder ähnliches verzichtet und die Rüstzeit verringert werden.

Hysterese (interner Wärmestau) ist die häufigste Ursache für einen vorzeitigen Ausfall von Urethan-Federn. Die Hitze ist von der Hubgeschwindigkeit und des Federweges abhängig. Wird der Federweg verringert, verlängert sich die Lebensdauer der Feder. Bitte nutzen sie für die Auswahl die Informationen auf Seite 4.

FORMATHANE springs are available for light, medium and heavy duty service. Selecting of the spring will depend on a number of factors, such as space limitation and the amount of deflection desired.

The I.D. of all FORMATHANE springs and stripper are molded slightly undersize to provide for a "press fit" onto the punch body. This feature eliminates the need for a set screw or something else and help to reduce the set-up time.

Hysteresis (internal heat build-up) is the most common cause of premature urethane spring failure. The heat generated is the result of the stroke speed and the spring deflection, minimizing the deflection will extend the working life of the spring. Please use for selection the information on page 4.





Für Stempel Ø / fits punch Ø mm	Außen Ø / Outside Ø mm	Länge / Length mm	70 A Black			Wölbung / Bulge Ø
			Bestellnr. / Order No	Federweg / Deflection max. mm	Federkraft / Force max. N	
5	17,5	25	ML316-100B	8,8	1035	22,8
		32	ML316-125B	11,2		
		38	ML316-150B	13,3		
		305	ML316-12LB	-		
6	20	25	ML104-100B	8,8	1340	26,0
		32	ML104-125B	11,2		
		38	ML104-150B	13,3		
		44	ML104-175B	15,4		
		305	ML104-12LB	-		
8	21	25	ML516-100B	8,8	1388	27,3
		32	ML516-125B	11,2		
		38	ML516-150B	13,3		
		44	ML516-175B	15,4		
		51	ML516-200B	17,9		
		305	ML516-12LB	-		
10	22	25	ML308-100B	8,8	1413	28,6
		32	ML308-125B	11,2		
		38	ML308-150B	13,3		
		44	ML308-175B	15,4		
		51	ML308-200B	17,9		
		305	ML308-12LB	-		
12	25	25	ML102-100B	8,8	1448	1,63
		32	ML102-125B	11,2		
		38	ML102-150B	13,3		
		44	ML102-175B	15,4		
		51	ML102-200B	17,9		
		305	ML102-12LB	-		
		610	ML102-24LB	-		
16	28	25	ML508-100B	8,8	1943	36,4
		32	ML508-125B	11,2		
		38	ML508-150B	13,3		
		44	ML508-175B	15,4		
		51	ML508-200B	17,9		
		305	ML508-12LB	-		
		610	ML508-24LB	-		
20	35	32	ML304-125B	11,2	3036	45,5
		38	ML304-150B	13,3		
		44	ML304-175B	15,4		
		51	ML304-200B	17,9		
		57	ML304-225B	20,0		
		64	ML304-250B	22,4		
		305	ML304-12LB	-		
		610	ML304-24LB	-		
22	41	32	ML708-125B	11,2	4405	53,3
		38	ML708-150B	13,3		
		44	ML708-175B	15,4		
		51	ML708-200B	17,9		
		57	ML708-225B	20,0		
		64	ML708-250B	22,4		
		70	ML708-275B	24,5		
		76	ML708-300B	26,6		
		305	ML708-12LB	-		
		610	ML708-24LB	-		
25	44	32	ML1000-125B	11,2	4825	57,2
		38	ML1000-150B	13,3		
		44	ML1000-175B	15,4		
		51	ML1000-200B	17,9		
		57	ML1000-225B	20,0		
		64	ML1000-250B	22,4		
		70	ML1000-275B	24,5		
		305	ML1000-12LB	-		
		610	ML1000-24LB	-		

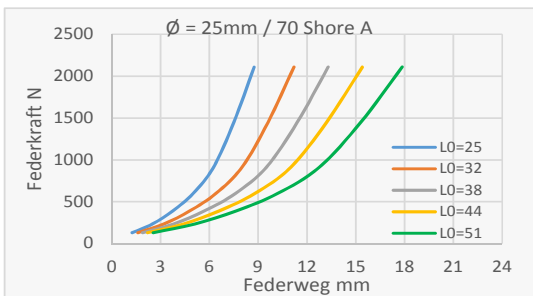
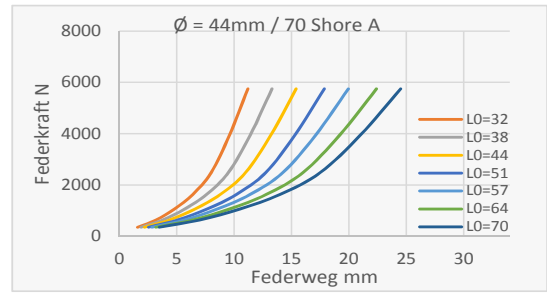
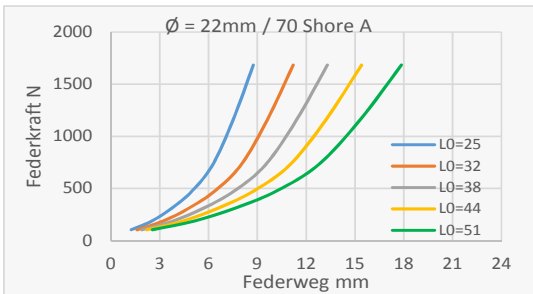
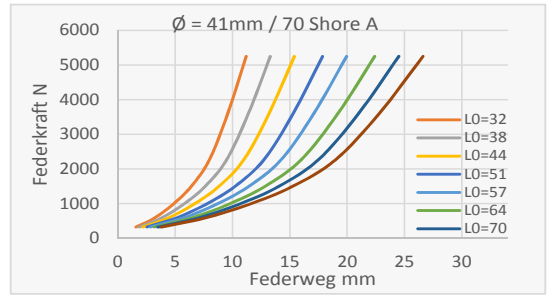
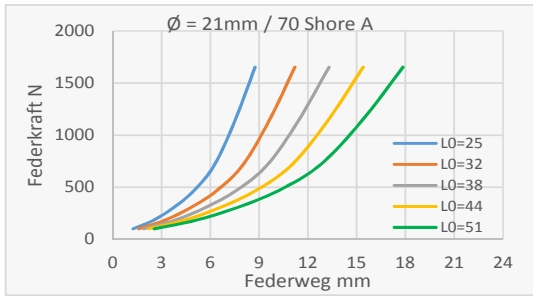
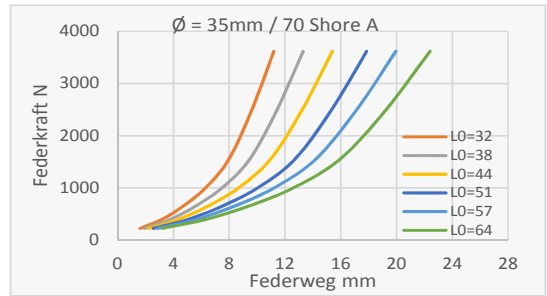
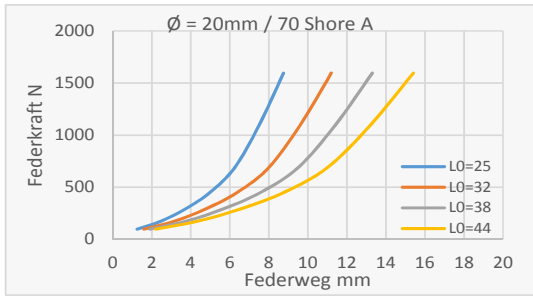
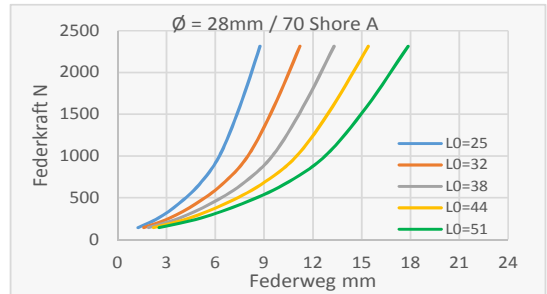
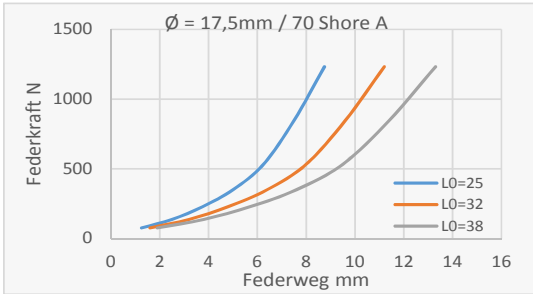
Toleranzen / Tolerances:

Außen Ø / Outside Diam. 17,5mm – 38mm ±0,4mm
 41mm – 70mm ±0,5mm

Innen Ø / Inside Diam. -0,1mm / -0,5mm

Länge / Length +0,4mm / +1,2mm







Für Stempel Ø / fits punch Ø mm	Außen Ø / Outside Ø mm	Länge / Length mm	70 A Black			Wölbung / Bulge Ø
			Bestellnr. / Order No	Federweg / Deflection max. mm	Federkraft / Force max. N	
5	21	25	MM316-100B	8,8	1824	27,3
		32	MM316-125B	11,2		
		38	MM316-150B	13,3		
		305	MM316-12LB	-		
6	22	25	MM104-100B	8,8	1964	28,6
		32	MM104-125B	11,2		
		38	MM104-150B	13,3		
		305	MM104-12LB	-		
10	25	25	MM308-100B	8,8	2302	32,5
		32	MM308-125B	11,2		
		38	MM308-150B	13,3		
		44	MM308-175B	15,4		
		51	MM308-200B	17,9		
		305	MM308-12LB	-		
		610	MM308-24LB	-		
12	28	25	MM102-100B	8,8	2806	36,4
		32	MM102-125B	11,2		
		38	MM102-150B	13,3		
		44	MM102-175B	15,4		
		51	MM102-200B	17,9		
		305	MM102-12LB	-		
		610	MM102-24LB	-		
16	32	25	MM508-100B	8,8	3367	41,6
		32	MM508-125B	11,2		
		38	MM508-150B	13,3		
		44	MM508-175B	15,4		
		51	MM508-200B	17,9		
		305	MM508-12LB	-		
		610	MM508-24LB	-		
20	38	32	MM304-125B	11,2	4577	49,4
		38	MM304-150B	13,3		
		44	MM304-175B	15,4		
		51	MM304-200B	17,9		
		57	MM304-225B	20,0		
		64	MM304-250B	22,4		
		70	MM304-275B	24,5		
		305	MM304-12LB	-		
		610	MM304-24LB	-		
22	44	38	MM708-150B	13,3	6366	57,2
		44	MM708-175B	15,4		
		51	MM708-200B	17,9		
		57	MM708-225B	20,0		
		64	MM708-250B	22,4		
		70	MM708-275B	24,5		
		76	MM708-300B	26,6		
		305	MM708-12LB	-		
		610	MM708-24LB	-		
25	51	32	MM1000-125B	11,2	8663	66,3
		38	MM1000-150B	13,3		
		44	MM1000-175B	15,4		
		51	MM1000-200B	17,9		
		57	MM1000-225B	20,0		
		64	MM1000-250B	22,4		
		70	MM1000-275B	24,5		
		76	MM1000-300B	26,6		
		102	MM1000-400B	35,7		
		305	MM1000-12LB	-		
		610	MM1000-24LB	-		

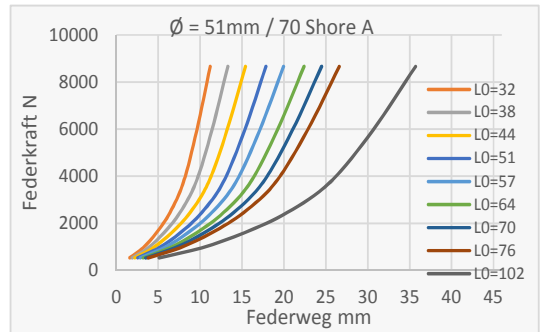
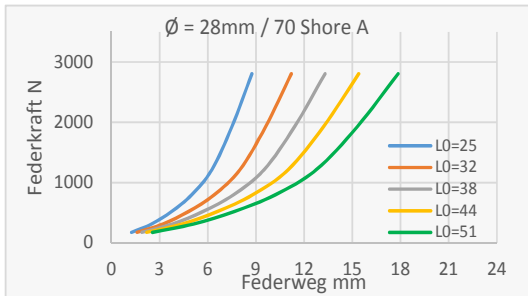
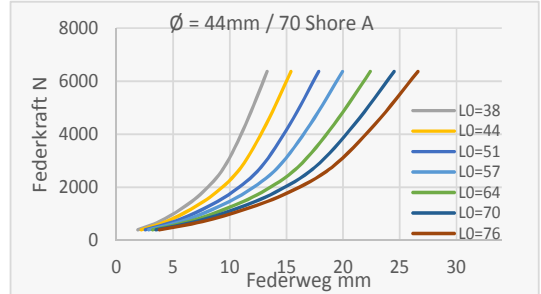
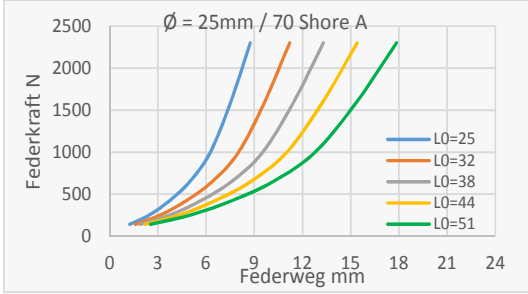
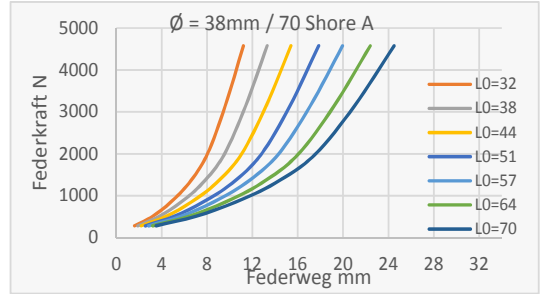
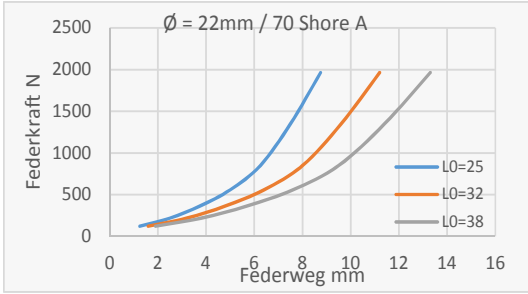
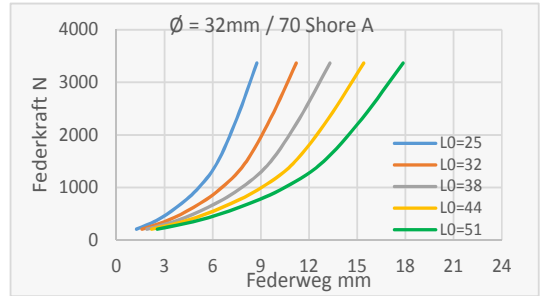
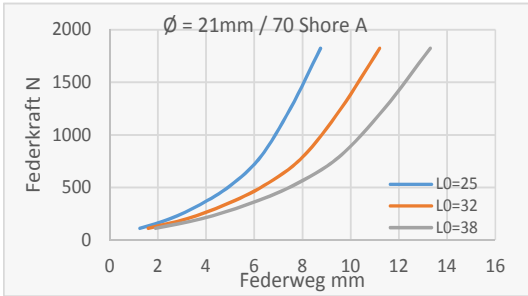
Toleranzen / Tolerances:

Außen Ø / Outside Diam. 17,5mm – 38mm ±0,4mm
41mm – 70mm ±0,5mm

Innen Ø / Inside Diam. -0,1mm / -0,5mm

Länge / Length +0,4mm / +1,2mm







Für Stempel Ø / fits punch Ø mm	Außen Ø / Outside Ø mm	Länge / Length mm	70 A Black		Federkraft / Force max. N	Wölbung / Bulge Ø
			Bestellnr. / Order No	Federweg / Deflection max. mm		
6	25	25	MH104-100B	8,8	2582	32,5
		32	MH104-125B	11,2		
		38	MH104-150B	13,3		
		44	MH104-175B	15,4		
		305	MH104-12LB	-		
10	28	25	MH308-100B	8,8	2999	36,4
		32	MH308-125B	11,2		
		38	MH308-150B	13,3		
		44	MH308-175B	15,4		
		51	MH308-200B	17,9		
		305	MH308-12LB	-		
12	32	25	MH102-100B	8,8	3858	41,6
		32	MH102-125B	11,2		
		38	MH102-150B	13,3		
		44	MH102-175B	15,4		
		51	MH102-200B	17,9		
		305	MH102-12LB	-		
16	35	25	MH508-100B	8,8	4248	45,5
		32	MH508-125B	11,2		
		38	MH508-150B	13,3		
		44	MH508-175B	15,4		
		51	MH508-200B	17,9		
		305	MH508-12LB	-		
		610	MH508-24LB	-		
20	44	32	MH304-125B	11,2	6734	57,2
		38	MH304-150B	13,3		
		44	MH304-175B	15,4		
		51	MH304-200B	17,9		
		57	MH304-225B	20,0		
		64	MH304-250B	22,4		
		70	MH304-275B	24,5		
		305	MH304-12LB	-		
		610	MH304-24LB	-		
		22	51	38		
44	MH708-175B			15,4		
51	MH708-200B			17,9		
57	MH708-225B			20,0		
64	MH708-250B			22,4		
70	MH708-275B			24,5		
76	MH708-300B			26,6		
305	MH708-12LB			-		
610	MH708-24LB			-		
22	57			38	MH1000-150B	13,3
		44	MH1000-175B	15,4		
		51	MH1000-200B	17,9		
		57	MH1000-225B	20,0		
		64	MH1000-250B	22,4		
		70	MH1000-275B	24,5		
		76	MH1000-300B	26,6		
		102	MH1000-400B	35,7		
		305	MH1000-12LB	-		
		610	MH1000-24LB	-		
32	64	51	MH1104-200B	17,9	13468	83,2
		57	MH1104-225B	20,0		
		64	MH1104-250B	22,4		
		70	MH1104-275B	24,5		
		76	MH1104-300B	26,6		
		305	MH1104-12LB	-		
		610	MH1104-24LB	-		
38	70	51	MH1102-200B	17,9	15151	91,0
		57	MH1102-225B	20,0		
		64	MH1102-250B	22,4		
		70	MH1102-275B	24,5		
		76	MH1102-300B	26,6		
		305	MH1102-12LB	-		
610	MH1102-24LB	-				

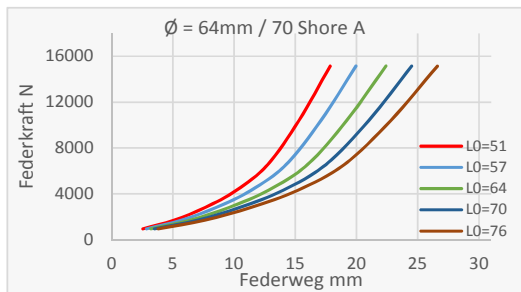
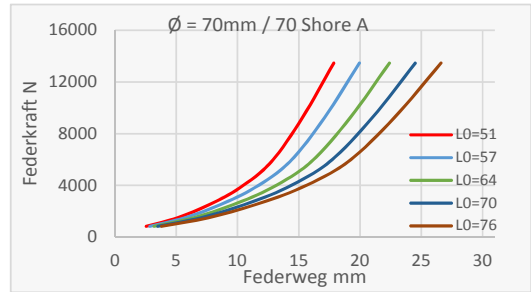
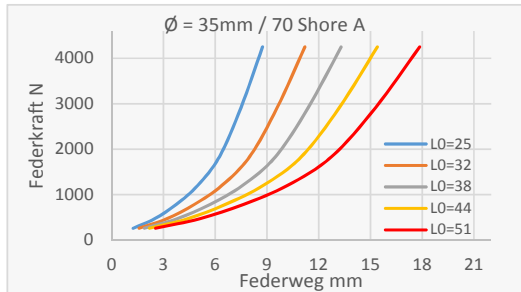
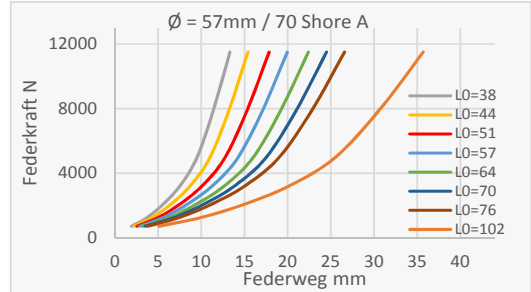
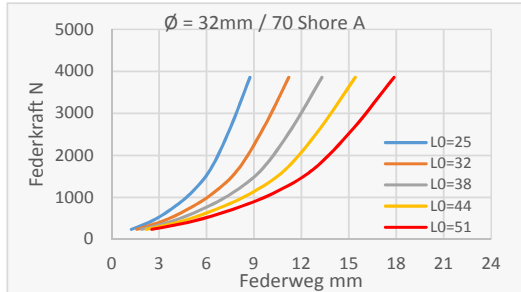
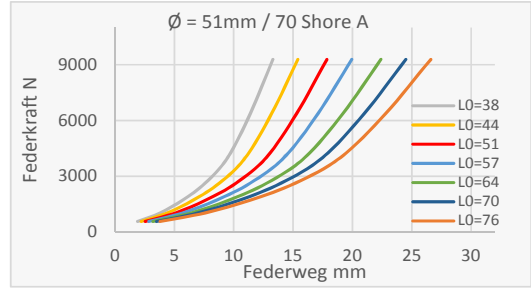
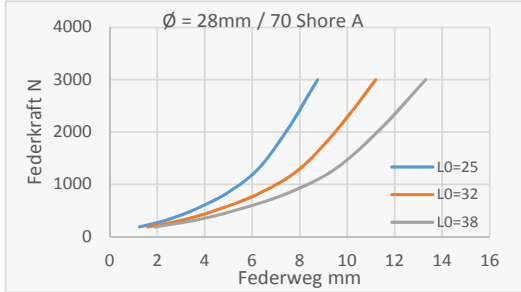
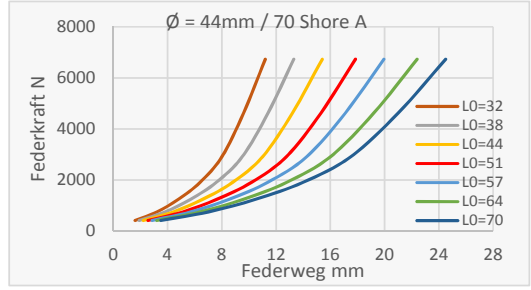
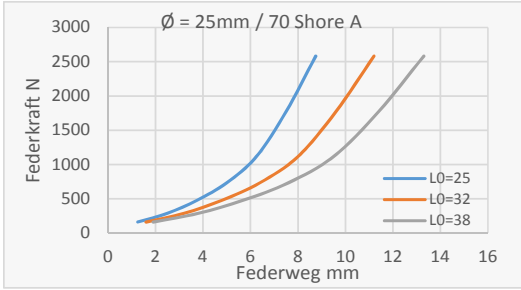
Toleranzen / Tolerances:

Außen Ø / Outside Diam. 17,5mm – 38mm ±0,4mm
 41mm – 70mm ±0,5mm

Innen Ø / Inside Diam. -0,1mm / -0,5mm

Länge / Length +0,4mm / +1,2mm







Für Stempel Ø / fits punch Ø mm	Außen Ø / Outside Ø mm	Länge / Length mm	85 A Red			Wölbung / Bulge Ø
			Bestellnr. / Order No	Federweg / Deflection max. mm	Federkraft / Force max. N	
5	17,5	25	ML316-100R	8,8	2359	22,8
		32	ML316-125R	11,2		
		38	ML316-150R	13,3		
		305	ML316-12LR	-		
6	20	25	ML104-100R	8,8	3054	26,0
		32	ML104-125R	11,2		
		38	ML104-150R	13,3		
		44	ML104-175R	15,4		
		305	ML104-12LR	-		
8	21	25	ML516-100R	8,8	3163	27,3
		32	ML516-125R	11,2		
		38	ML516-150R	13,3		
		44	ML516-175R	15,4		
		51	ML516-200R	17,9		
		305	ML516-12LR	-		
10	22	25	ML308-100R	8,8	3221	28,6
		32	ML308-125R	11,2		
		38	ML308-150R	13,3		
		44	ML308-175R	15,4		
		51	ML308-200R	17,9		
		305	ML308-12LR	-		
12	25	25	ML102-100R	8,8	4035	32,5
		32	ML102-125R	11,2		
		38	ML102-150R	13,3		
		44	ML102-175R	15,4		
		51	ML102-200R	17,9		
		305	ML102-12LR	-		
16	28	25	ML508-100R	8,8	4429	36,4
		32	ML508-125R	11,2		
		38	ML508-150R	13,3		
		44	ML508-175R	15,4		
		51	ML508-200R	17,9		
		305	ML508-12LR	-		
20	35	32	ML304-125R	11,2	6921	45,5
		38	ML304-150R	13,3		
		44	ML304-175R	15,4		
		51	ML304-200R	17,9		
		57	ML304-225R	20,0		
		64	ML304-250R	22,4		
305	ML304-12LR	-				
22	41	32	ML708-125R	11,2	10042	53,3
		38	ML708-150R	13,3		
		44	ML708-175R	15,4		
		51	ML708-200R	17,9		
		57	ML708-225R	20,0		
		64	ML708-250R	22,4		
70	ML708-275R	24,5				
76	ML708-300R	26,6				
305	ML708-12LR	-				
25	44	32	ML1000-125R	11,2	10998	57,2
		38	ML1000-150R	13,3		
		44	ML1000-175R	15,4		
		51	ML1000-200R	17,9		
		57	ML1000-225R	20,0		
		64	ML1000-250R	22,4		
70	ML1000-275R	24,5				
305	ML1000-12LR	-				
610	ML1000-24LR	-				

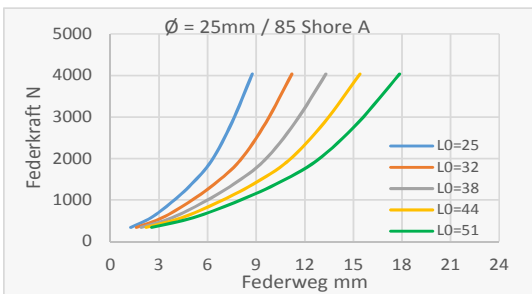
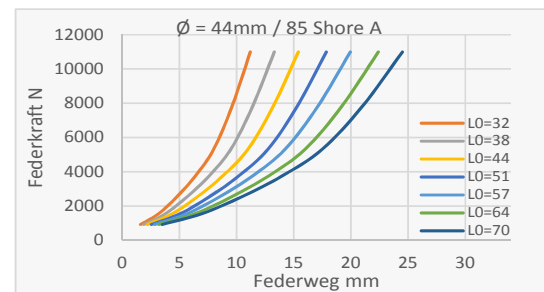
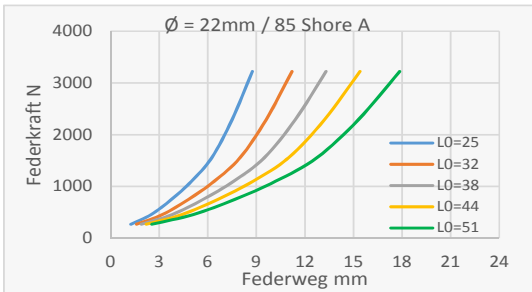
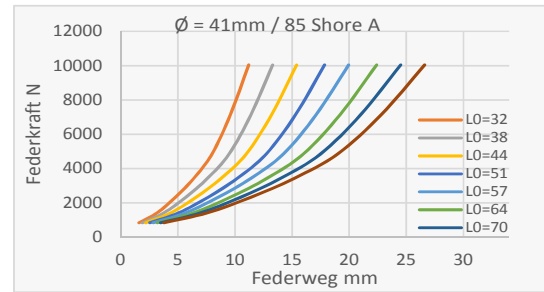
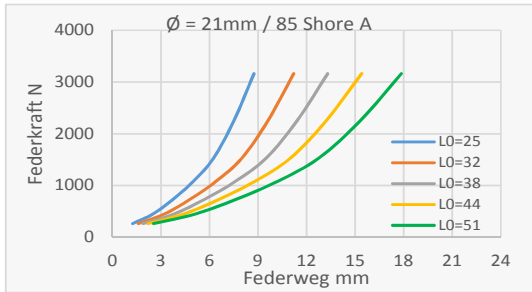
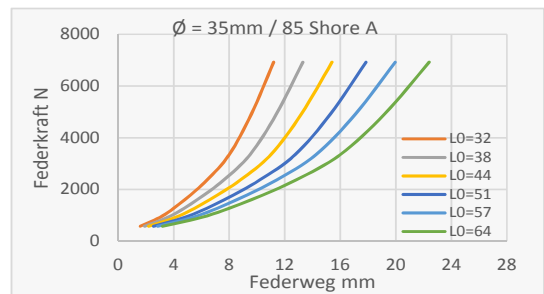
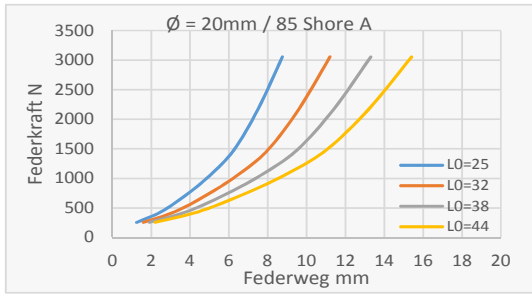
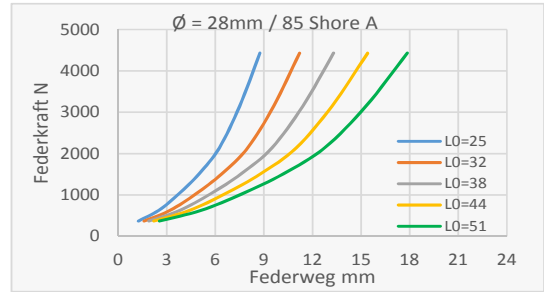
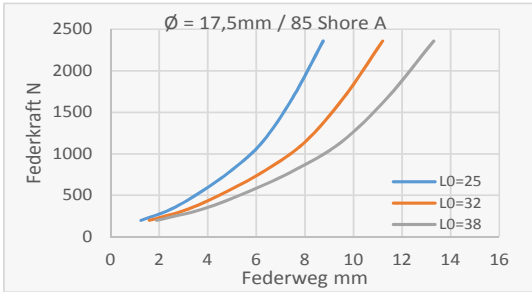
Toleranzen / Tolerances:

Außen Ø / Outside Diam. 17,5mm – 38mm ±0,4mm
 41mm – 70mm ±0,5mm

Innen Ø / Inside Diam. -0,1mm / -0,5mm

Länge / Length +0,4mm / +1,2mm







Für Stempel Ø / fits punch Ø mm	Außen Ø / Outside Ø mm	Länge / Length mm	85 A Red			Wölbung / Bulge Ø
			Bestellnr. / Order No	Federweg / Deflection max. mm	Federkraft / Force max. N	
5	21	25	MM316-100R	8,8	3490	27,3
		32	MM316-125R	11,2		
		38	MM316-150R	13,3		
		305	MM316-12LR	-		
6	22	25	MM104-100R	8,8	3758	28,6
		32	MM104-125R	11,2		
		38	MM104-150R	13,3		
		305	MM104-12LR	-		
10	25	25	MM308-100R	8,8	4404	32,5
		32	MM308-125R	11,2		
		38	MM308-150R	13,3		
		44	MM308-175R	15,4		
		51	MM308-200R	17,9		
		305	MM308-12LR	-		
		610	MM308-24LR	-		
12	28	25	MM102-100R	8,8	5369	36,4
		32	MM102-125R	11,2		
		38	MM102-150R	13,3		
		44	MM102-175R	15,4		
		51	MM102-200R	17,9		
		305	MM102-12LR	-		
		610	MM102-24LR	-		
16	32	25	MM508-100R	8,8	6443	41,6
		32	MM508-125R	11,2		
		38	MM508-150R	13,3		
		44	MM508-175R	15,4		
		51	MM508-200R	17,9		
		305	MM508-12LR	-		
		610	MM508-24LR	-		
20	38	32	MM304-125R	11,2	8758	49,4
		38	MM304-150R	13,3		
		44	MM304-175R	15,4		
		51	MM304-200R	17,9		
		57	MM304-225R	20,0		
		64	MM304-250R	22,4		
		70	MM304-275R	24,5		
		305	MM304-12LR	-		
		610	MM304-24LR	-		
22	44	38	MM708-150R	13,3	12181	57,2
		44	MM708-175R	15,4		
		51	MM708-200R	17,9		
		57	MM708-225R	20,0		
		64	MM708-250R	22,4		
		70	MM708-275R	24,5		
		76	MM708-300R	26,6		
		305	MM708-12LR	-		
		610	MM708-24LR	-		
25	51	32	MM1000-125R	11,2	16577	66,3
		38	MM1000-150R	13,3		
		44	MM1000-175R	15,4		
		51	MM1000-200R	17,9		
		57	MM1000-225R	20,0		
		64	MM1000-250R	22,4		
		70	MM1000-275R	24,5		
		76	MM1000-300R	26,6		
		102	MM1000-400R	35,7		
		305	MM1000-12LR	-		
		610	MM1000-24LR	-		

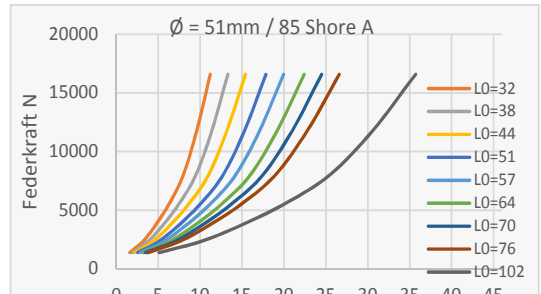
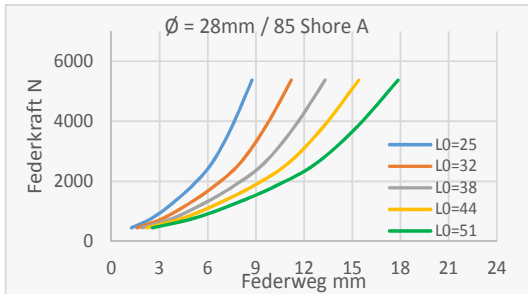
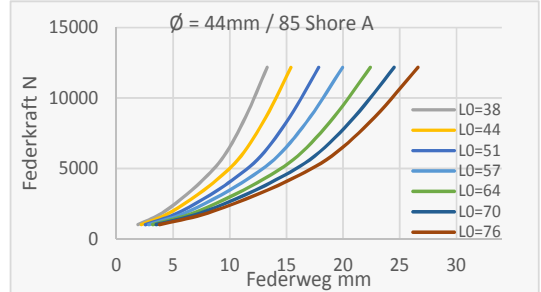
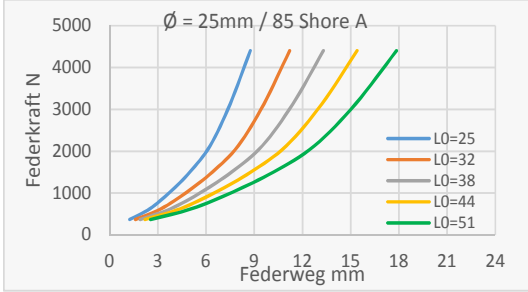
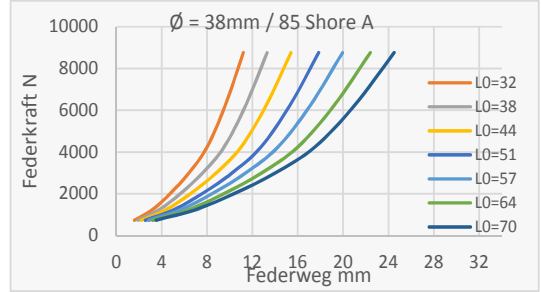
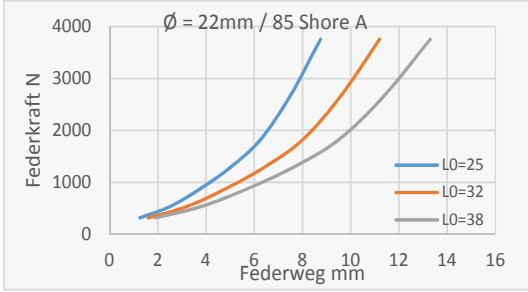
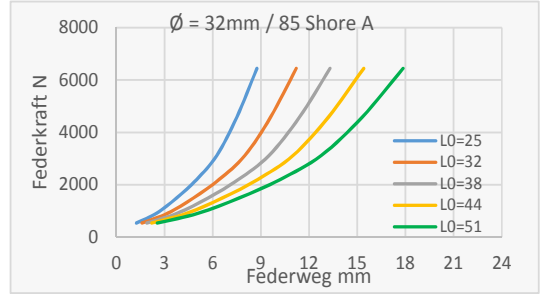
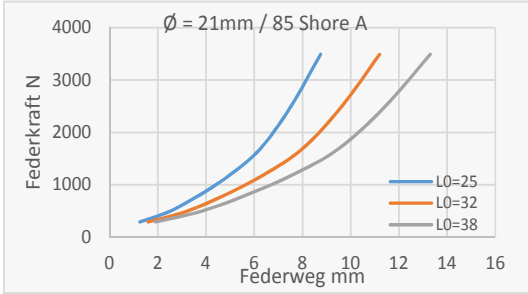
Toleranzen / Tolerances:

Außen Ø / Outside Diam. 17,5mm – 38mm ±0,4mm
 41mm – 70mm ±0,5mm

Innen Ø / Inside Diam. -0,1mm / -0,5mm

Länge / Length +0,4mm / +1,2mm







Für Stempel Ø / fits punch Ø mm	Außen Ø / Outside Ø mm	Länge / Length mm	85 A Red			Wölbung / Bulge Ø
			Bestellnr. / Order No	Federweg / Deflection max. mm	Federkraft / Force max. N	
6	25	25	MH104-100R	8,8	4941	32,5
		32	MH104-125R	11,2		
		38	MH104-150R	13,3		
		44	MH104-175R	15,4		
		305	MH104-12LR	-		
10	28	25	MH308-100R	8,8	5738	36,4
		32	MH308-125R	11,2		
		38	MH308-150R	13,3		
		44	MH308-175R	15,4		
		51	MH308-200R	17,9		
		305	MH308-12LR	-		
12	32	25	MH102-100R	8,8	7382	41,6
		32	MH102-125R	11,2		
		38	MH102-150R	13,3		
		44	MH102-175R	15,4		
		51	MH102-200R	17,9		
		305	MH102-12LR	-		
16	35	25	MH508-100R	8,8	8129	45,5
		32	MH508-125R	11,2		
		38	MH508-150R	13,3		
		44	MH508-175R	15,4		
		51	MH508-200R	17,9		
		305	MH508-12LR	-		
		610	MH508-24LR	-		
20	44	32	MH304-125R	11,2	12886	57,2
		38	MH304-150R	13,3		
		44	MH304-175R	15,4		
		51	MH304-200R	17,9		
		57	MH304-225R	20,0		
		64	MH304-250R	22,4		
		70	MH304-275R	24,5		
		305	MH304-12LR	-		
		610	MH304-24LR	-		
		22	51	38		
44	MH708-175R			15,4		
51	MH708-200R			17,9		
57	MH708-225R			20,0		
64	MH708-250R			22,4		
70	MH708-275R			24,5		
76	MH708-300R			26,6		
305	MH708-12LR			-		
610	MH708-24LR			-		
25	57			38	MH1000-150R	13,3
		44	MH1000-175R	15,4		
		51	MH1000-200R	17,9		
		57	MH1000-225R	20,0		
		64	MH1000-250R	22,4		
		70	MH1000-275R	24,5		
		76	MH1000-300R	26,6		
		102	MH1000-400R	35,7		
		305	MH1000-12LR	-		
		610	MH1000-24LR	-		
32	64	51	MH1104-200R	17,9	25772	83,2
		57	MH1104-225R	20,0		
		64	MH1104-250R	22,4		
		70	MH1104-275R	24,5		
		76	MH1104-300R	26,6		
		305	MH1104-12LR	-		
		610	MH1104-24LR	-		
38	70	51	MH1102-200R	17,9	28993	91,0
		57	MH1102-225R	20,0		
		64	MH1102-250R	22,4		
		70	MH1102-275R	24,5		
		76	MH1102-300R	26,6		
		305	MH1102-12LR	-		
		610	MH1102-24LR	-		

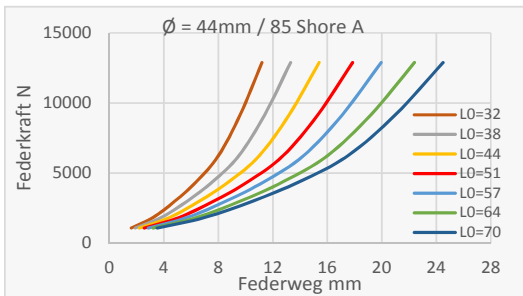
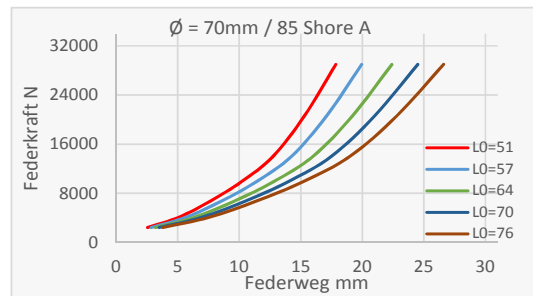
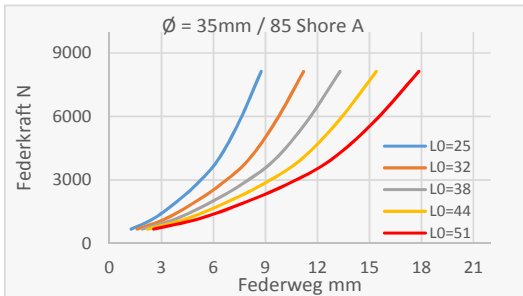
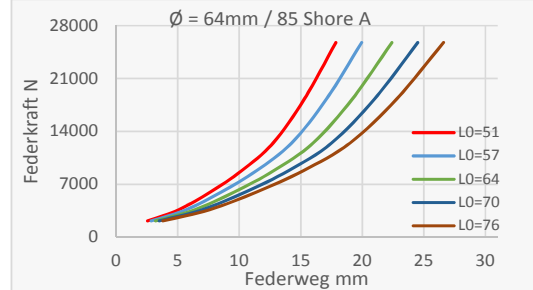
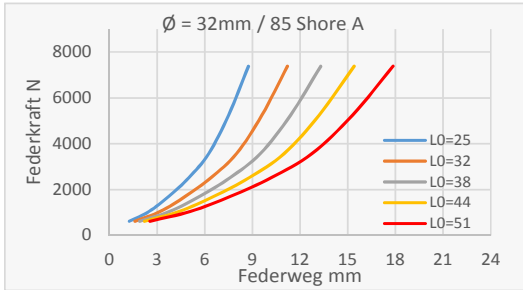
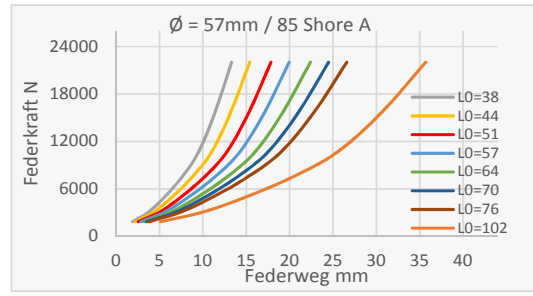
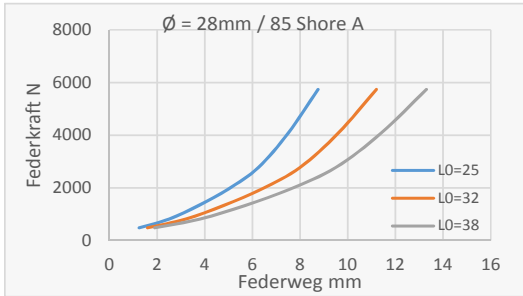
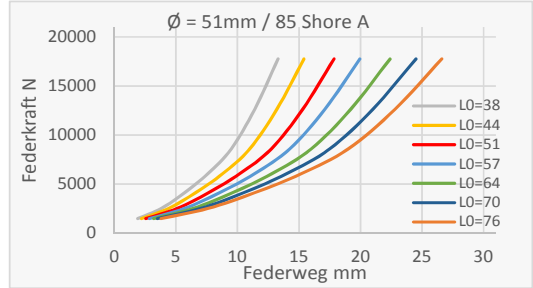
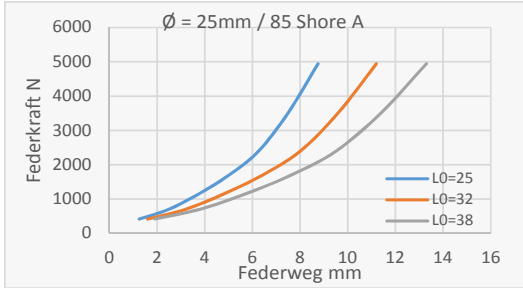
Toleranzen / Tolerances:

Außen Ø / Outside Diam. 17,5mm – 38mm ±0,4mm
 41mm – 70mm ±0,5mm

Innen Ø / Inside Diam. -0,1mm / -0,5mm

Länge / Length +0,4mm / +1,2mm







Für Stempel Ø / fits punch Ø mm	Außen Ø / Outside Ø mm	Länge / Length mm	90 A Yellow			Wölbung / Bulge Ø
			Bestellnr. / Order No	Federweg / Deflection max. mm	Federkraft / Force max. N	
5	17,5	25	ML316-100Y	7,5	2396	22,8
		32	ML316-125Y	9,6		
		38	ML316-150Y	11,4		
		305	ML316-12LY	-		
6	20	25	ML104-100Y	7,5	3101	26,0
		32	ML104-125Y	9,6		
		38	ML104-150Y	11,4		
		44	ML104-175Y	13,2		
		305	ML104-12LY	-		
8	21	25	ML516-100Y	7,5	3212	27,3
		32	ML516-125Y	9,6		
		38	ML516-150Y	11,4		
		44	ML516-175Y	13,2		
		51	ML516-200Y	15,3		
		305	ML516-12LY	-		
10	22	25	ML308-100Y	7,5	3271	28,6
		32	ML308-125Y	9,6		
		38	ML308-150Y	11,4		
		44	ML308-175Y	13,2		
		51	ML308-200Y	15,3		
		305	ML308-12LY	-		
12	25	25	ML102-100Y	7,5	4098	32,5
		32	ML102-125Y	9,6		
		38	ML102-150Y	11,4		
		44	ML102-175Y	13,2		
		51	ML102-200Y	15,3		
		305	ML102-12LY	-		
16	28	25	ML508-100Y	7,5	4498	36,4
		32	ML508-125Y	9,6		
		38	ML508-150Y	11,4		
		44	ML508-175Y	13,2		
		51	ML508-200Y	15,3		
		305	ML508-12LY	-		
20	35	32	ML304-125Y	9,6	7028	45,5
		38	ML304-150Y	11,4		
		44	ML304-175Y	13,2		
		51	ML304-200Y	15,3		
		57	ML304-225Y	17,1		
		64	ML304-250Y	19,2		
305	ML304-12LY	-				
22	41	32	ML708-125Y	9,6	10197	53,3
		38	ML708-150Y	11,4		
		44	ML708-175Y	13,2		
		51	ML708-200Y	15,3		
		57	ML708-225Y	17,1		
		64	ML708-250Y	19,2		
70	ML708-275Y	21,0				
76	ML708-300Y	22,8				
305	ML708-12LY	-				
25	44	32	ML1000-125Y	9,6	11169	57,2
		38	ML1000-150Y	11,4		
		44	ML1000-175Y	13,2		
		51	ML1000-200Y	15,3		
		57	ML1000-225Y	17,1		
		64	ML1000-250Y	19,2		
70	ML1000-275Y	21,0				
305	ML1000-12LY	-				
		610	ML1000-24LY	-		

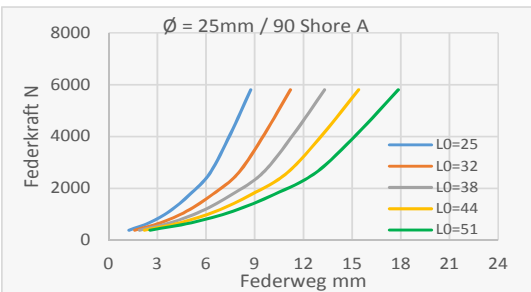
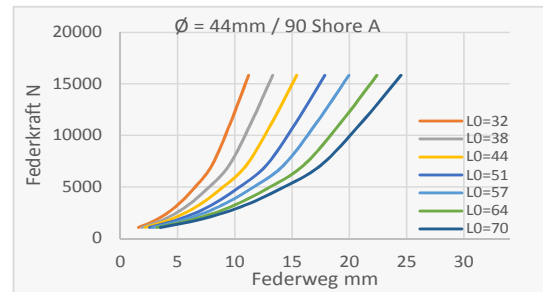
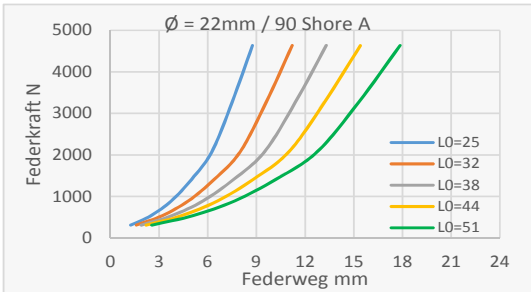
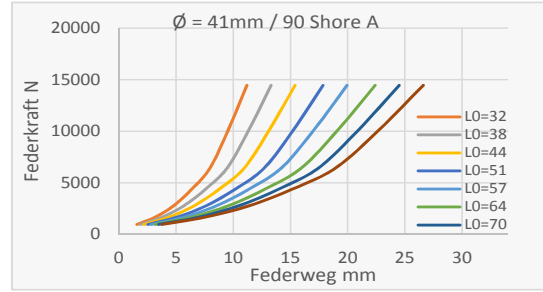
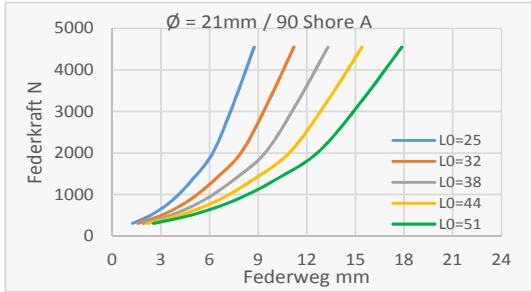
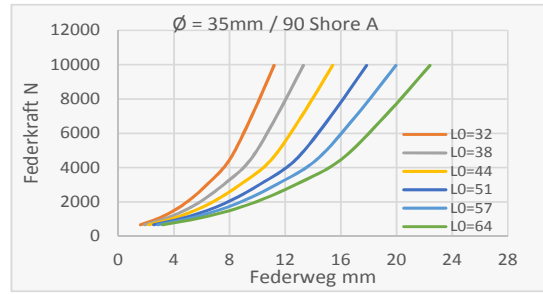
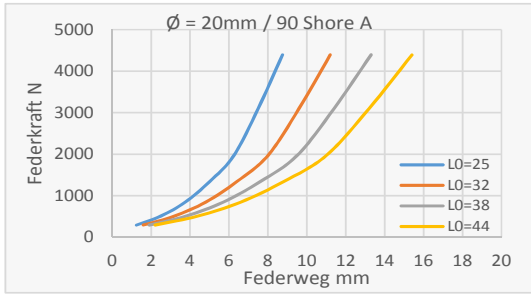
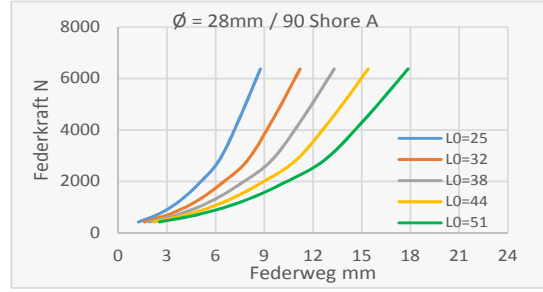
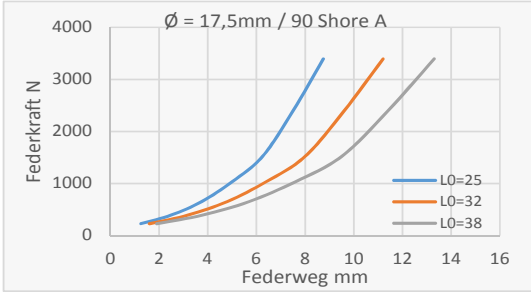
Toleranzen / Tolerances:

Außen Ø / Outside Diam. 17,5mm – 38mm ±0,4mm
 41mm – 70mm ±0,5mm

Innen Ø / Inside Diam. -0,1mm / -0,5mm

Länge / Length +0,4mm / +1,2mm







Für Stempel Ø / fits punch Ø mm	Außen Ø / Outside Ø mm	Länge / Length mm	90 A Yellow			Wölbung / Bulge Ø
			Bestellnr. / Order No	Federweg / Deflection max. mm	Federkraft / Force max. N	
5	21	25	MM316-100Y	7,5	3544	27,3
		32	MM316-125Y	9,6		
		38	MM316-150Y	11,4		
		305	MM316-12LY	-		
6	22	25	MM104-100Y	7,5	3817	28,6
		32	MM104-125Y	9,6		
		38	MM104-150Y	11,4		
		305	MM104-12LY	-		
10	25	25	MM308-100Y	7,5	4473	32,5
		32	MM308-125Y	9,6		
		38	MM308-150Y	11,4		
		44	MM308-175Y	13,2		
		51	MM308-200Y	15,3		
		305	MM308-12LY	-		
		610	MM308-24LY	-		
12	28	25	MM102-100Y	7,5	5452	36,4
		32	MM102-125Y	9,6		
		38	MM102-150Y	11,4		
		44	MM102-175Y	13,2		
		51	MM102-200Y	15,3		
		305	MM102-12LY	-		
		610	MM102-24LY	-		
16	32	25	MM508-100Y	7,5	6543	41,6
		32	MM508-125Y	9,6		
		38	MM508-150Y	11,4		
		44	MM508-175Y	13,2		
		51	MM508-200Y	15,3		
		305	MM508-12LY	-		
		610	MM508-24LY	-		
20	38	32	MM304-125Y	9,6	8894	49,4
		38	MM304-150Y	11,4		
		44	MM304-175Y	13,2		
		51	MM304-200Y	15,3		
		57	MM304-225Y	17,1		
		64	MM304-250Y	19,2		
		70	MM304-275Y	21,0		
		305	MM304-12LY	-		
		610	MM304-24LY	-		
22	44	38	MM708-150Y	11,4	12370	57,2
		44	MM708-175Y	13,2		
		51	MM708-200Y	15,3		
		57	MM708-225Y	17,1		
		64	MM708-250Y	19,2		
		70	MM708-275Y	21,0		
		76	MM708-300Y	22,8		
		305	MM708-12LY	-		
		610	MM708-24LY	-		
25	51	32	MM1000-125Y	9,6	16834	66,3
		38	MM1000-150Y	11,4		
		44	MM1000-175Y	13,2		
		51	MM1000-200Y	15,3		
		57	MM1000-225Y	17,1		
		64	MM1000-250Y	19,2		
		70	MM1000-275Y	21,0		
		76	MM1000-300Y	22,8		
		102	MM1000-400Y	30,6		
		305	MM1000-12LY	-		
		610	MM1000-24LY	-		

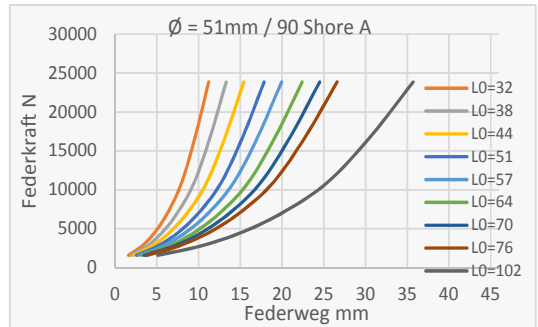
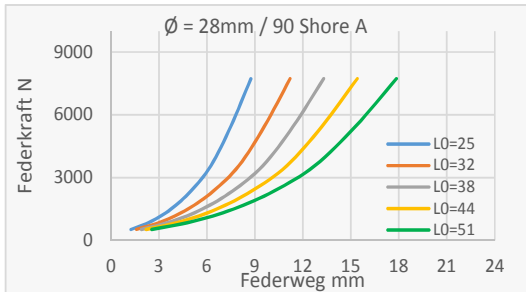
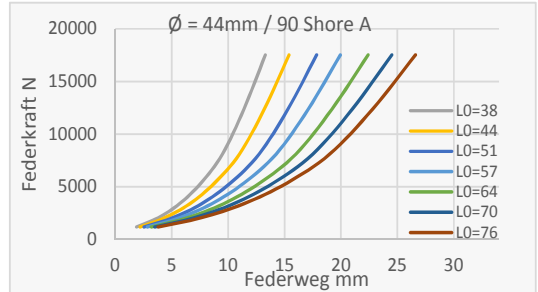
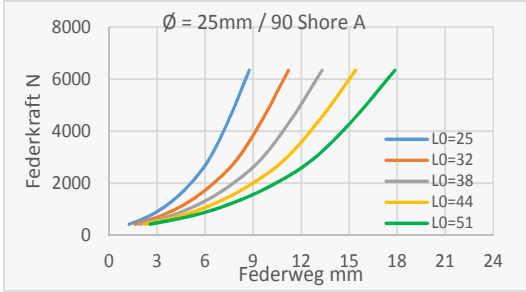
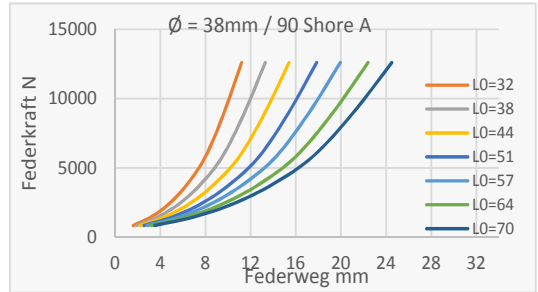
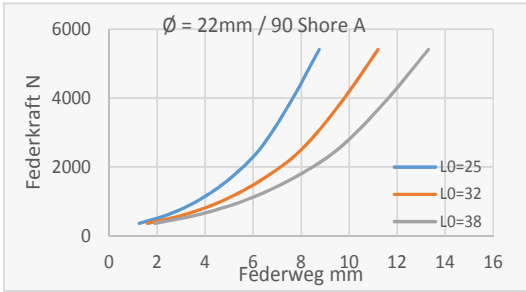
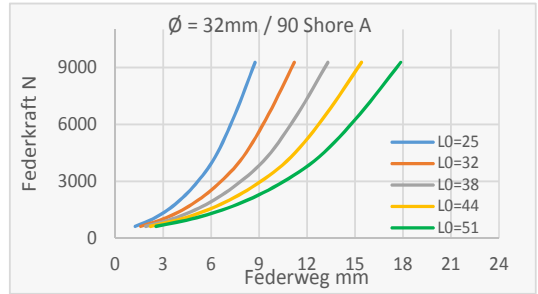
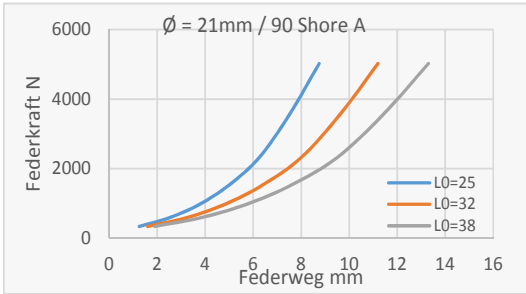
Toleranzen / Tolerances:

Außen Ø / Outside Diam. 17,5mm – 38mm ±0,4mm
 41mm – 70mm ±0,5mm

Innen Ø / Inside Diam. -0,1mm / -0,5mm

Länge / Length +0,4mm / +1,2mm







Für Stempel Ø / fits punch Ø mm	Außen Ø / Outside Ø mm	Länge / Length mm	90 A Yellow			Wölbung / Bulge Ø
			Bestellnr. / Order No	Federweg / Deflection max. mm	Federkraft / Force max. N	
6	25	25	MH104-100Y	7,5	5018	32,5
		32	MH104-125Y	9,6		
		38	MH104-150Y	11,4		
		44	MH104-175Y	13,2		
		305	MH104-12LY	-		
10	28	25	MH308-100Y	7,5	5827	36,4
		32	MH308-125Y	9,6		
		38	MH308-150Y	11,4		
		44	MH308-175Y	13,2		
		51	MH308-200Y	15,3		
		305	MH308-12LY	-		
12	32	25	MH102-100Y	7,5	7497	41,6
		32	MH102-125Y	9,6		
		38	MH102-150Y	11,4		
		44	MH102-175Y	13,2		
		51	MH102-200Y	15,3		
		305	MH102-12LY	-		
		610	MH102-24LY	-		
16	35	25	MH508-100Y	7,5	8255	45,5
		32	MH508-125Y	9,6		
		38	MH508-150Y	11,4		
		44	MH508-175Y	13,2		
		51	MH508-200Y	15,3		
		305	MH508-12LY	-		
		610	MH508-24LY	-		
20	44	32	MH304-125Y	9,6	13085	57,2
		38	MH304-150Y	11,4		
		44	MH304-175Y	13,2		
		51	MH304-200Y	15,3		
		57	MH304-225Y	17,1		
		64	MH304-250Y	19,2		
		70	MH304-275Y	21,0		
		305	MH304-12LY	-		
		610	MH304-24LY	-		
		22	51	38		
44	MH708-175Y			13,2		
51	MH708-200Y			15,3		
57	MH708-225Y			17,1		
64	MH708-250Y			19,2		
70	MH708-275Y			21,0		
76	MH708-300Y			22,8		
305	MH708-12LY			-		
610	MH708-24LY			-		
25	57			38	MH1000-150Y	11,4
		44	MH1000-175Y	13,2		
		51	MH1000-200Y	15,3		
		57	MH1000-225Y	17,1		
		64	MH1000-250Y	19,2		
		70	MH1000-275Y	21,0		
		76	MH1000-300Y	22,8		
		102	MH1000-400Y	30,6		
		305	MH1000-12LY	-		
		610	MH1000-24LY	-		
32	64	51	MH1104-200Y	15,3	26171	83,2
		57	MH1104-225Y	17,1		
		64	MH1104-250Y	19,2		
		70	MH1104-275Y	21,0		
		76	MH1104-300Y	22,8		
		305	MH1104-12LY	-		
		610	MH1104-24LY	-		
38	70	51	MH1102-200Y	15,3	29442	91,0
		57	MH1102-225Y	17,1		
		64	MH1102-250Y	19,2		
		70	MH1102-275Y	21,0		
		76	MH1102-300Y	22,8		
		305	MH1102-12LY	-		
		610	MH1102-24LY	-		

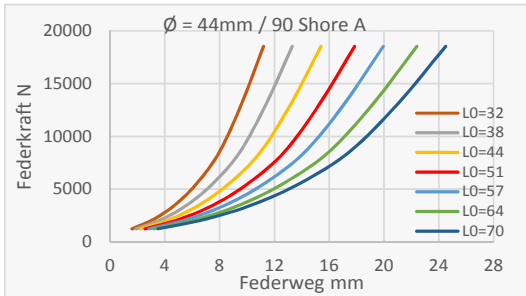
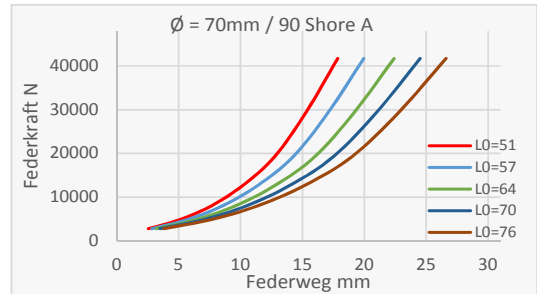
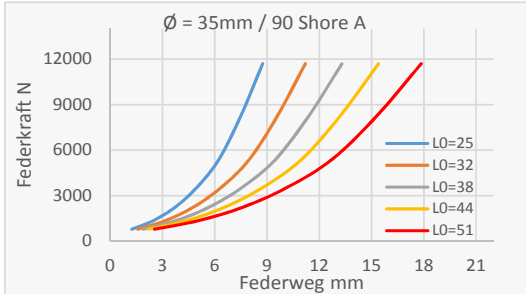
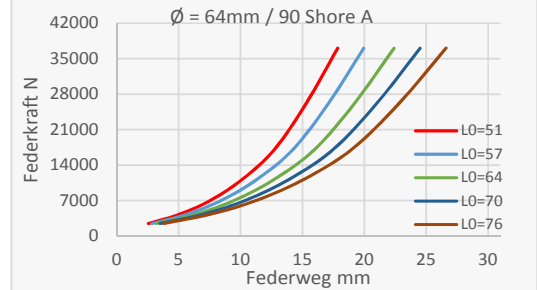
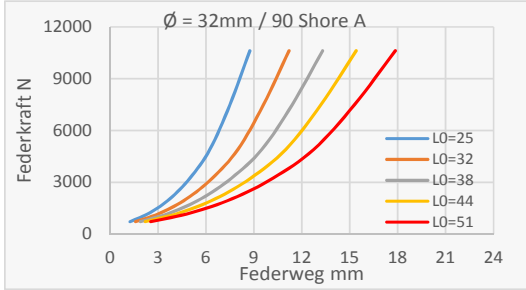
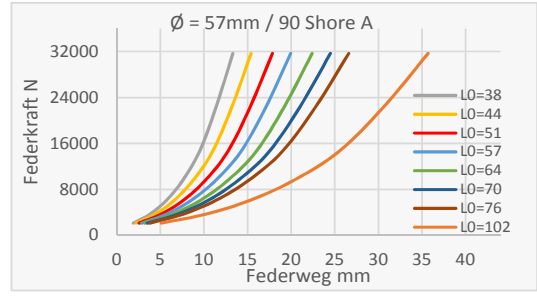
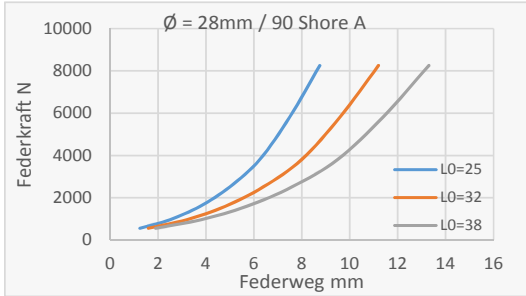
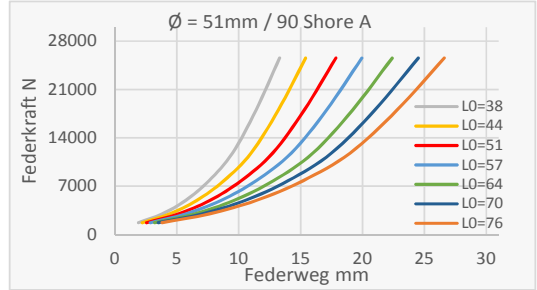
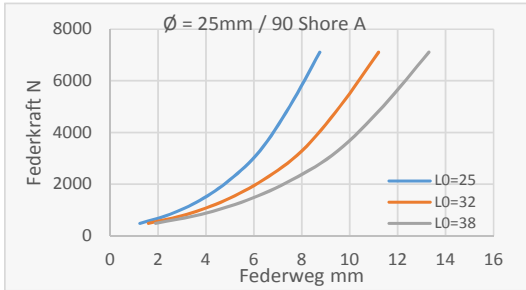
Toleranzen / Tolerances:

Außen Ø / Outside Diam. 17,5mm – 38mm ±0,4mm
 41mm – 70mm ±0,5mm

Innen Ø / Inside Diam. -0,1mm / -0,5mm

Länge / Length +0,4mm / +1,2mm







Für Stempel Ø / fits punch Ø mm	Außen Ø / Outside Ø mm	Länge / Length mm	95 A Tan			Wölbung / Bulge Ø
			Bestellnr. / Order No	Federweg / Deflection max. mm	Federkraft / Force max. N	
5	17,5	25	ML316-100	6,3	2025	22,8
		32	ML316-125	8,0		
		38	ML316-150	9,5		
		305	ML316-12L	-		
6	20	25	ML104-100	6,3	2620	26,0
		32	ML104-125	8,0		
		38	ML104-150	9,5		
		44	ML104-175	11,0		
		305	ML104-12L	-		
8	21	25	ML516-100	6,3	2714	27,3
		32	ML516-125	8,0		
		38	ML516-150	9,5		
		44	ML516-175	11,0		
		51	ML516-200	12,8		
10	22	305	ML516-12L	-	2764	28,6
		25	ML308-100	6,3		
		32	ML308-125	8,0		
		38	ML308-150	9,5		
		44	ML308-175	11,0		
		51	ML308-200	12,8		
12	25	305	ML308-12L	-	3462	32,5
		25	ML102-100	6,3		
		32	ML102-125	8,0		
		38	ML102-150	9,5		
		44	ML102-175	11,0		
		51	ML102-200	12,8		
16	28	305	ML102-12L	-	3801	36,4
		610	ML102-24L	-		
		25	ML508-100	6,3		
		32	ML508-125	8,0		
		38	ML508-150	9,5		
		44	ML508-175	11,0		
20	35	51	ML508-200	12,8	5939	45,5
		305	ML508-12L	-		
		610	ML508-24L	-		
		32	ML304-125	8,0		
		38	ML304-150	9,5		
		44	ML304-175	11,0		
		51	ML304-200	12,8		
		57	ML304-225	14,3		
22	41	64	ML304-250	16,0	8617	53,3
		305	ML304-12L	-		
		610	ML304-24L	-		
		32	ML708-125	8,0		
		38	ML708-150	9,5		
		44	ML708-175	11,0		
		51	ML708-200	12,8		
		57	ML708-225	14,3		
		64	ML708-250	16,0		
		70	ML708-275	17,5		
25	44	76	ML708-300	19,0	9437	57,2
		305	ML708-12L	-		
		610	ML708-24L	-		
		32	ML1000-125	8,0		
		38	ML1000-150	9,5		
		44	ML1000-175	11,0		
		51	ML1000-200	12,8		
		57	ML1000-225	14,3		
		64	ML1000-250	16,0		
		70	ML1000-275	17,5		
25	44	305	ML1000-12L	-	9437	57,2
		610	ML1000-24L	-		

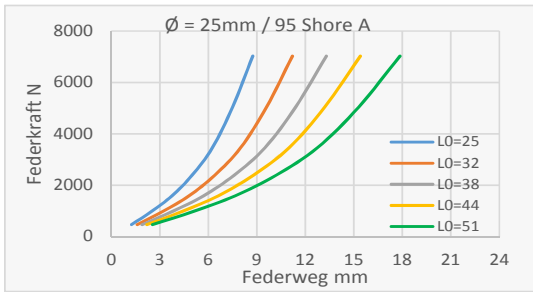
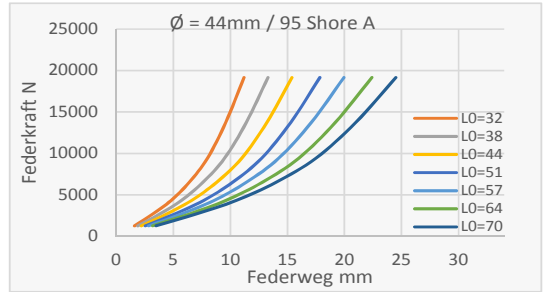
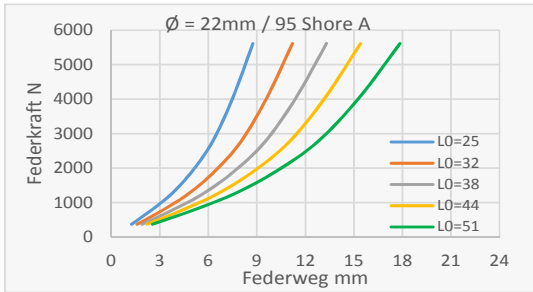
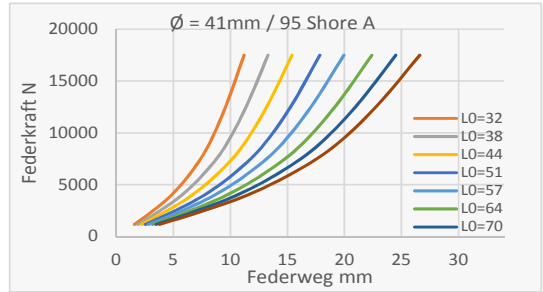
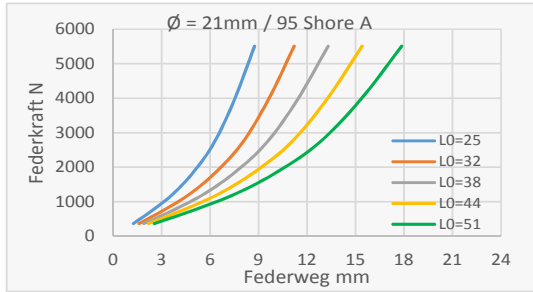
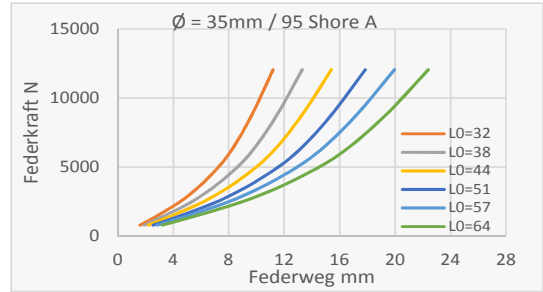
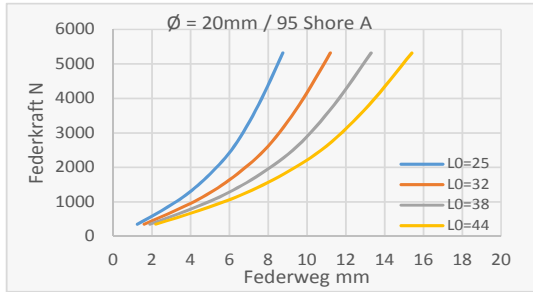
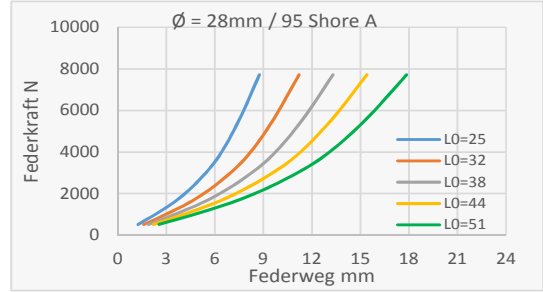
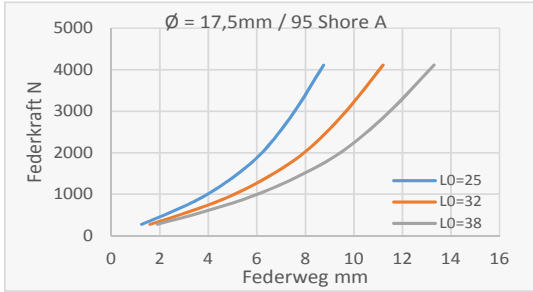
Toleranzen / Tolerances:

Außen Ø / Outside Diam. 17,5mm – 38mm ±0,4mm
 41mm – 70mm ±0,5mm

Innen Ø / Inside Diam. -0,1mm / -0,5mm

Länge / Length +0,4mm / +1,2mm







Für Stempel Ø / fits punch Ø mm	Außen Ø / Outside Ø mm	Länge / Length mm	95 A Tan			Wölbung / Bulge Ø
			Bestellnr. / Order No	Federweg / Deflection max. mm	Federkraft / Force max. N	
5	21	25	MM316-100	6,3	2995	27,3
		32	MM316-125	8,0		
		38	MM316-150	9,5		
		305	MM316-12L	-		
6	22	25	MM104-100	6,3	3225	28,6
		32	MM104-125	8,0		
		38	MM104-150	9,5		
		305	MM104-12L	-		
10	25	25	MM308-100	6,3	3779	32,5
		32	MM308-125	8,0		
		38	MM308-150	9,5		
		44	MM308-175	11,0		
		51	MM308-200	12,8		
		305	MM308-12L	-		
12	28	25	MM102-100	6,3	4607	36,4
		32	MM102-125	8,0		
		38	MM102-150	9,5		
		44	MM102-175	11,0		
		51	MM102-200	12,8		
		305	MM102-12L	-		
16	32	25	MM508-100	6,3	5528	41,6
		32	MM508-125	8,0		
		38	MM508-150	9,5		
		44	MM508-175	11,0		
		51	MM508-200	12,8		
		305	MM508-12L	-		
20	38	32	MM304-125	8,0	7515	49,4
		38	MM304-150	9,5		
		44	MM304-175	11,0		
		51	MM304-200	12,8		
		57	MM304-225	14,3		
		64	MM304-250	16,0		
		70	MM304-275	17,5		
		305	MM304-12L	-		
		610	MM304-24L	-		
22	44	38	MM708-150	9,5	10452	57,2
		44	MM708-175	11,0		
		51	MM708-200	12,8		
		57	MM708-225	14,3		
		64	MM708-250	16,0		
		70	MM708-275	17,5		
		76	MM708-300	19,0		
		305	MM708-12L	-		
		610	MM708-24L	-		
25	51	32	MM1000-125	8,0	14224	66,3
		38	MM1000-150	9,5		
		44	MM1000-175	11,0		
		51	MM1000-200	12,8		
		57	MM1000-225	14,3		
		64	MM1000-250	16,0		
		70	MM1000-275	17,5		
		76	MM1000-300	19,0		
		102	MM1000-400	25,5		
		305	MM1000-12L	-		
		610	MM1000-24L	-		

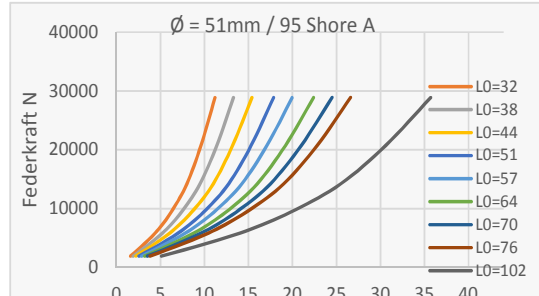
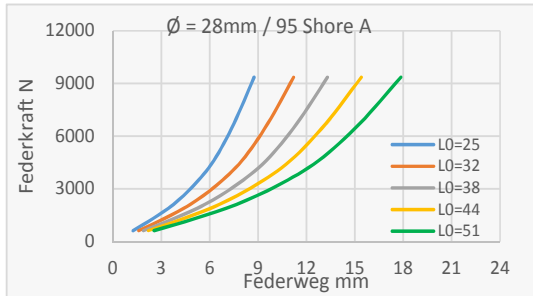
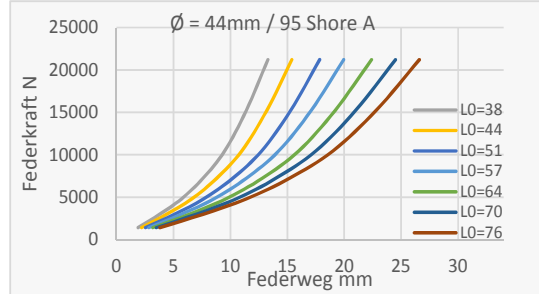
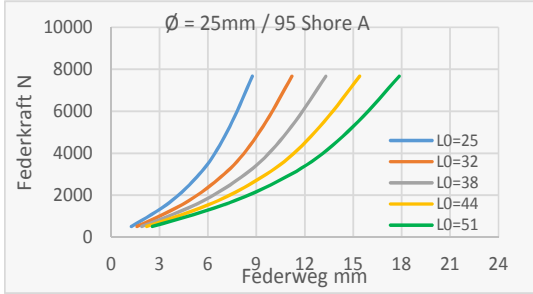
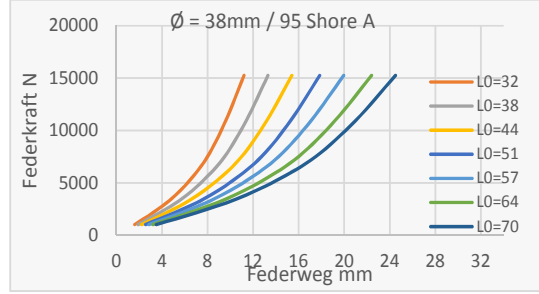
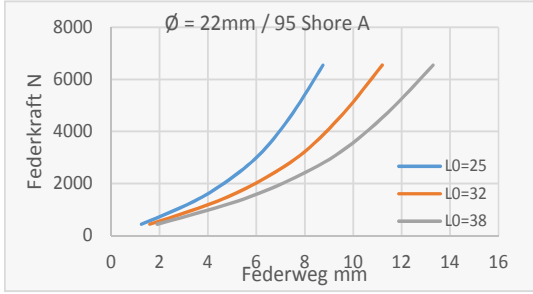
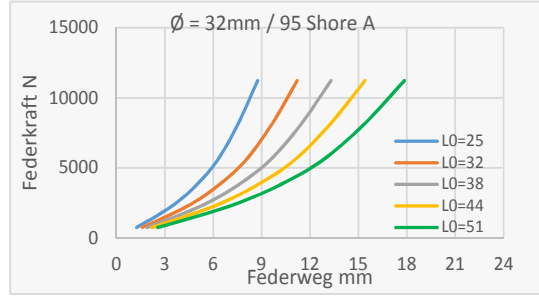
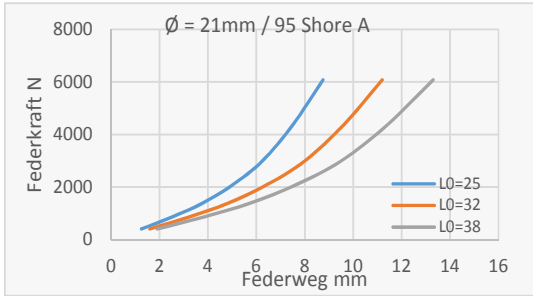
Toleranzen / Tolerances:

Außen Ø / Outside Diam. 17,5mm – 38mm ±0,4mm
 41mm – 70mm ±0,5mm

Innen Ø / Inside Diam. -0,1mm / -0,5mm

Länge / Length +0,4mm / +1,2mm







Für Stempel Ø / fits punch Ø mm	Außen Ø / Outside Ø mm	Länge / Length mm	95 A Tan			Wölbung / Bulge Ø
			Bestellnr. / Order No	Federweg / Deflection max. mm	Federkraft / Force max. N	
6	25	25	MH104-100	6,3	4240	32,5
		32	MH104-125	8,0		
		38	MH104-150	9,5		
		44	MH104-175	11,0		
		305	MH104-12L	-		
10	28	25	MH308-100	6,3	4924	36,4
		32	MH308-125	8,0		
		38	MH308-150	9,5		
		44	MH308-175	11,0		
		51	MH308-200	12,8		
		305	MH308-12L	-		
12	32	25	MH102-100	6,3	6335	41,6
		32	MH102-125	8,0		
		38	MH102-150	9,5		
		44	MH102-175	11,0		
		51	MH102-200	12,8		
		305	MH102-12L	-		
		610	MH102-24L	-		
16	35	25	MH508-100	6,3	6975	45,5
		32	MH508-125	8,0		
		38	MH508-150	9,5		
		44	MH508-175	11,0		
		51	MH508-200	12,8		
		305	MH508-12L	-		
		610	MH508-24L	-		
20	44	32	MH304-125	8,0	11057	57,2
		38	MH304-150	9,5		
		44	MH304-175	11,0		
		51	MH304-200	12,8		
		57	MH304-225	14,3		
		64	MH304-250	16,0		
		70	MH304-275	17,5		
		305	MH304-12L	-		
		610	MH304-24L	-		
		22	51	38		
44	MH708-175			11,0		
51	MH708-200			12,8		
57	MH708-225			14,3		
64	MH708-250			16,0		
70	MH708-275			17,5		
76	MH708-300			19,0		
305	MH708-12L			-		
610	MH708-24L			-		
25	57			38	MH1000-150	9,5
		44	MH1000-175	11,0		
		51	MH1000-200	12,8		
		57	MH1000-225	14,3		
		64	MH1000-250	16,0		
		70	MH1000-275	17,5		
		76	MH1000-300	19,0		
		102	MH1000-400	25,5		
		305	MH1000-12L	-		
		610	MH1000-24L	-		
32	64	51	MH1104-200	12,8	22114	83,2
		57	MH1104-225	14,3		
		64	MH1104-250	16,0		
		70	MH1104-275	17,5		
		76	MH1104-300	19,0		
		305	MH1104-12L	-		
38	70	610	MH1104-24L	-	24878	91,0
		51	MH1102-200	12,8		
		57	MH1102-225	14,3		
		64	MH1102-250	16,0		
		70	MH1102-275	17,5		
		76	MH1102-300	19,0		
		305	MH1102-12L	-		
610	MH1102-24L	-				

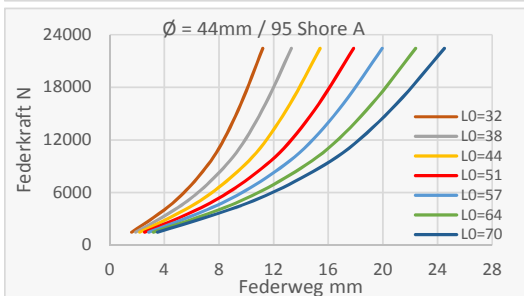
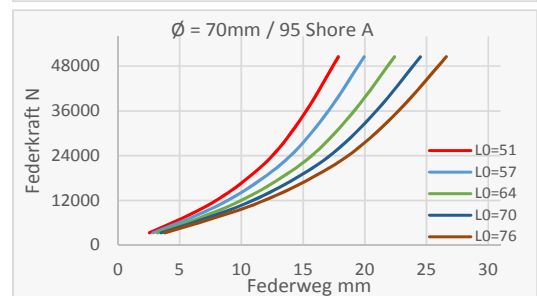
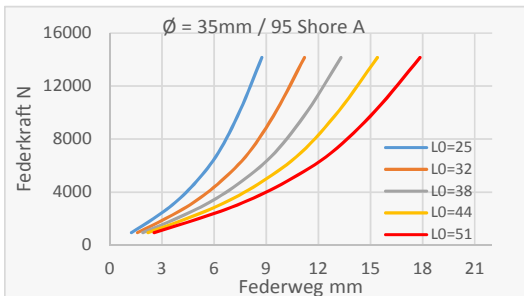
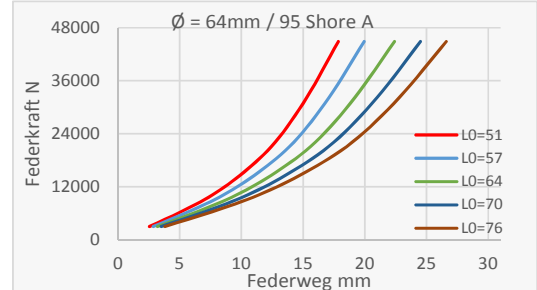
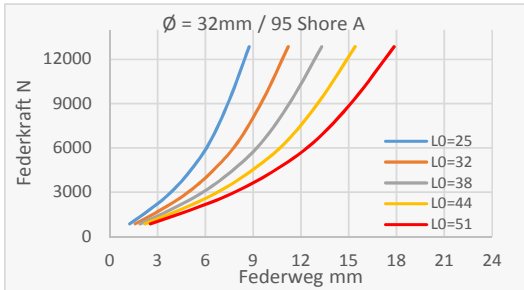
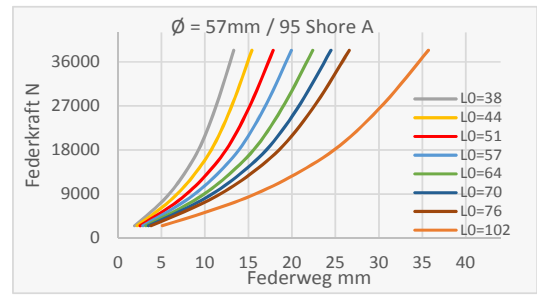
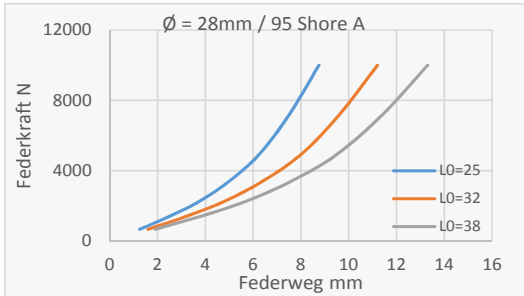
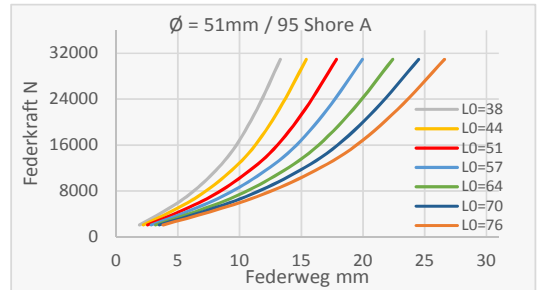
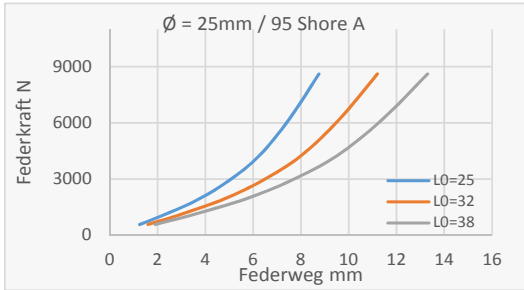
Toleranzen / Tolerances:

Außen Ø / Outside Diam. 17,5mm – 38mm ±0,4mm
 41mm – 70mm ±0,5mm

Innen Ø / Inside Diam. -0,1mm / -0,5mm

Länge / Length +0,4mm / +1,2mm





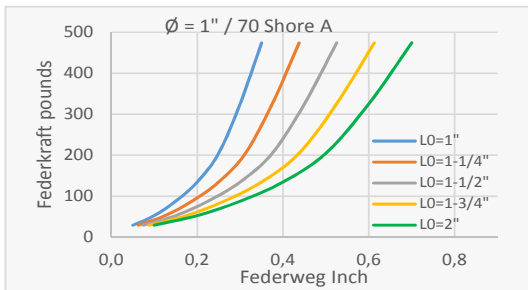
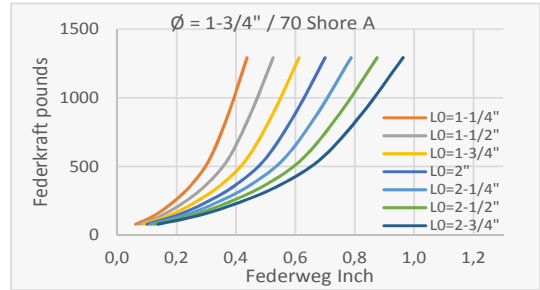
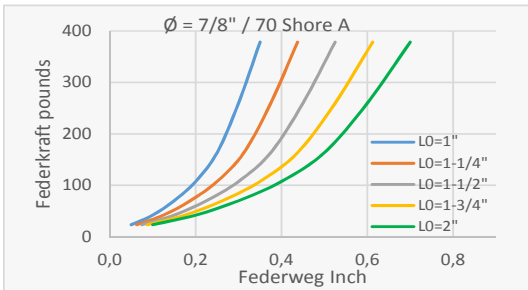
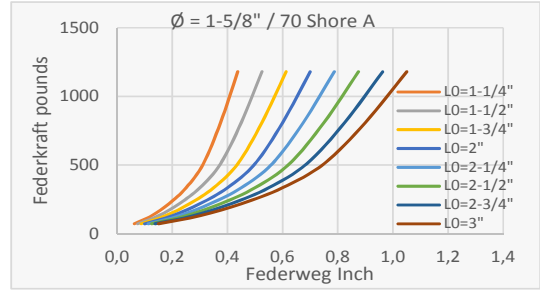
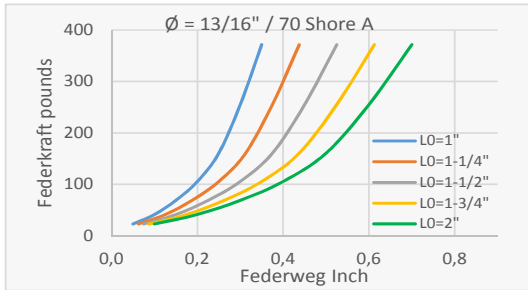
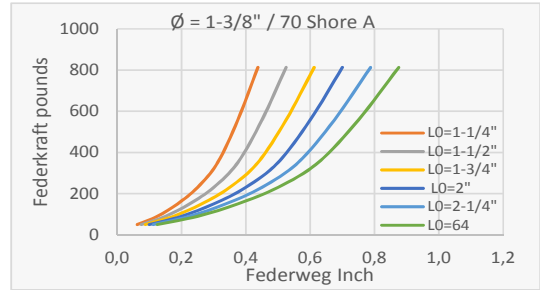
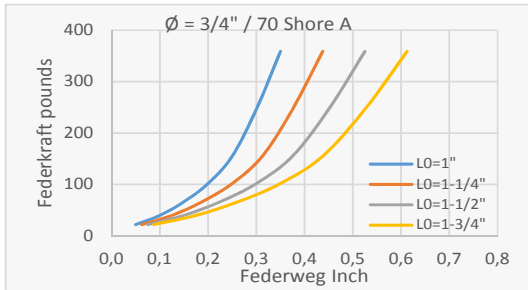
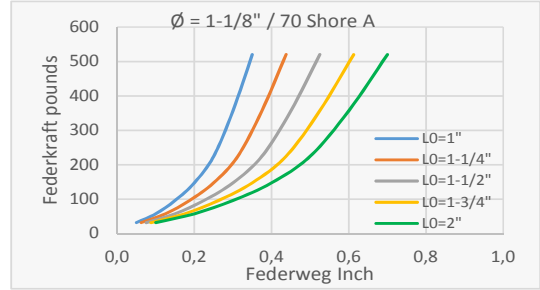
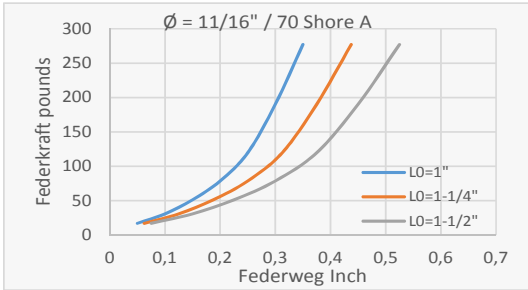


Für Stempel Ø / fits punch Ø mm	Außen Ø / Outside Ø mm	Länge / Length mm	70 A Black			Wölbung / Bulge Ø
			Bestellnr. / Order No	Federweg / Deflection max. mm	Federkraft / Force max. N	
3/16	11/16	1	ML316-100B	0,35	277	0,89
		1-1/4	ML316-125B	0,44		
		1-1/2	ML316-150B	0,53		
		12	ML316-12LB	-		
1/4	3/4	1	ML104-100B	0,35	359	0,98
		1-1/4	ML104-125B	0,44		
		1-1/2	ML104-150B	0,53		
		1-3/4	ML104-175B	0,61		
		12	ML104-12LB	-		
5/16	13/16	1	ML516-100B	0,35	372	1,06
		1-1/4	ML516-125B	0,44		
		1-1/2	ML516-150B	0,53		
		1-3/4	ML516-175B	0,61		
		2	ML516-200B	0,70		
		12	ML516-12LB	-		
3/8	7/8	1	ML308-100B	0,35	378	1,14
		1-1/4	ML308-125B	0,44		
		1-1/2	ML308-150B	0,53		
		1-3/4	ML308-175B	0,61		
		2	ML308-200B	0,70		
		12	ML308-12LB	-		
1/2	1	1-1/4	ML102-125B	0,35	474	1,30
		1-1/2	ML102-150B	0,44		
		1-3/4	ML102-175B	0,53		
		2	ML102-200B	0,61		
		12	ML102-12LB	0,70		
		24	ML102-24LB	-		
5/8	1-1/8	1	ML508-100B	0,35	520	1,46
		1-1/4	ML508-125B	0,44		
		1-1/2	ML508-150B	0,53		
		1-3/4	ML508-175B	0,61		
		2	ML508-200B	0,70		
		12	ML508-12LB	-		
3/4	1-3/8	24	ML508-24LB	-	813	1,79
		1-1/4	ML304-125B	0,44		
		1-1/2	ML304-150B	0,53		
		1-3/4	ML304-175B	0,61		
		2	ML304-200B	0,70		
		2-1/4	ML304-225B	0,79		
		2-1/2	ML304-250B	0,88		
		12	ML304-12LB	-		
		24	ML304-24LB	-		
7/8	1-5/8	1-1/4	ML708-125B	0,44	1180	2,11
		1-1/2	ML708-150B	0,53		
		1-3/4	ML708-175B	0,61		
		2	ML708-200B	0,70		
		2-1/4	ML708-225B	0,79		
		2-1/2	ML708-250B	0,88		
		2-3/4	ML708-275B	0,96		
		3	ML708-300B	1,05		
		12	ML708-12LB	-		
		24	ML708-24LB	-		
		1	1-3/4	1-1/4		
1-1/2	ML1000-150B			0,53		
1-3/4	ML1000-175B			0,61		
2	ML1000-200B			0,70		
2-1/4	ML1000-225B			0,79		
2-1/2	ML1000-250B			0,88		
2-3/4	ML1000-275B			0,96		
12	ML1000-12LB			-		
24	ML1000-24LB			-		

Toleranzen / Tolerances:

Außen Ø / Outside Diam.	11/16" – 1-1/2"	±0,015"
	1-5/8" – 2-3/4"	±0,020"
Innen Ø / Inside Diam.		-0,005" / -0,020"
Länge / Length		+0,015" / +0,046"





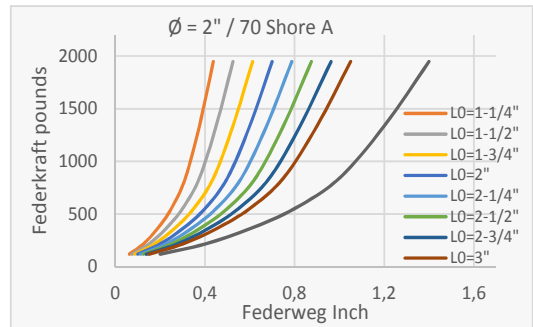
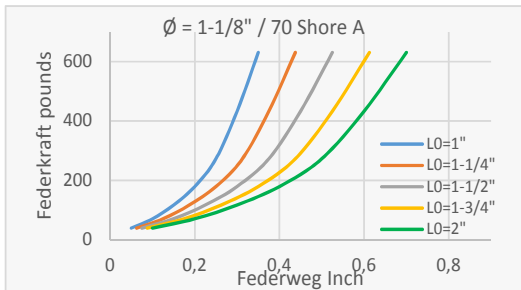
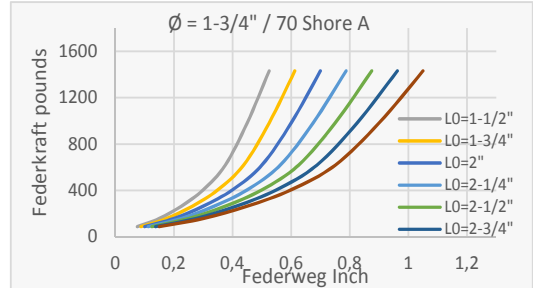
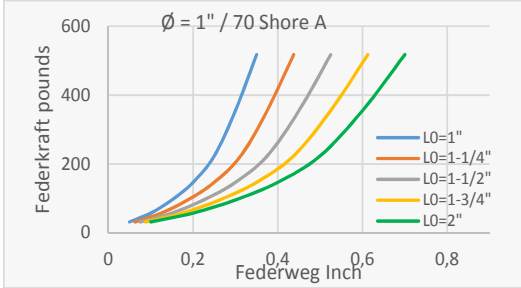
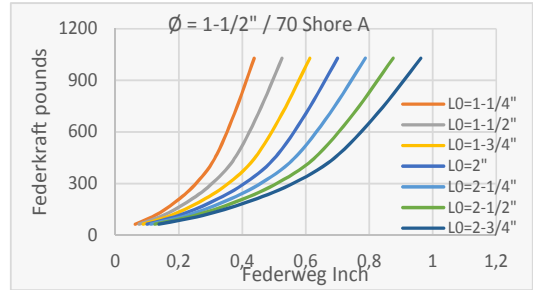
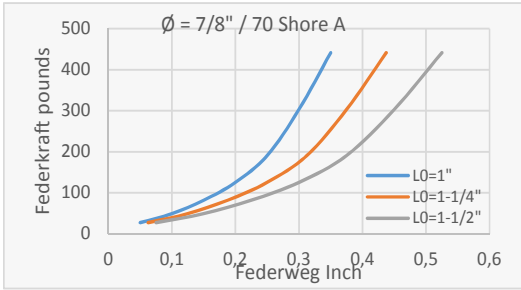
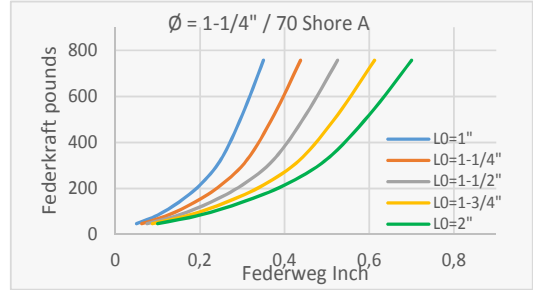
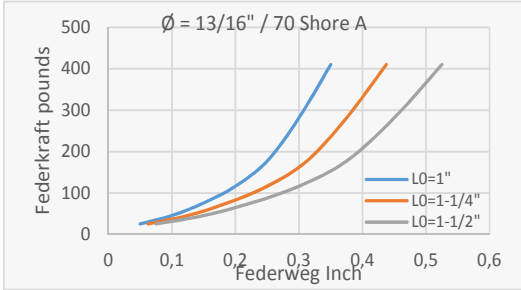


Für Stempel Ø / fits punch Ø mm	Außen Ø / Outside Ø mm	Länge / Length mm	70 A Black			Wölbung / Bulge Ø
			Bestellnr. / Order No	Federweg / Deflection max. mm	Federkraft / Force max. N	
3/16	13/16	1	MM316-100B	0,35	410	1,06
		1-1/4	MM316-125B	0,44		
		1-1/2	MM316-150B	0,53		
		12	MM316-12LB	-		
1/4	7/8	1	MM104-100B	0,35	442	1,14
		1-1/4	MM104-125B	0,44		
		1-1/2	MM104-150B	0,53		
		12	MM104-12LB	-		
3/8	1	1	MM308-100B	0,35	517	1,30
		1-1/4	MM308-125B	0,44		
		1-1/2	MM308-150B	0,53		
		1-3/4	MM308-175B	0,61		
		2	MM308-200B	0,70		
		12	MM308-12LB	-		
		24	MM308-24LB	-		
1/2	1-1/8	1	MM102-100B	0,35	631	1,46
		1-1/4	MM102-125B	0,44		
		1-1/2	MM102-150B	0,53		
		1-3/4	MM102-175B	0,61		
		2	MM102-200B	0,70		
		12	MM102-12LB	-		
		24	MM102-24LB	-		
5/8	1-1/4	1	MM508-100B	0,35	757	1,63
		1-1/4	MM508-125B	0,44		
		1-1/2	MM508-150B	0,53		
		1-3/4	MM508-175B	0,61		
		2	MM508-200B	0,70		
		12	MM508-12LB	-		
		24	MM508-24LB	-		
3/4	1-1/2	1-1/4	MM304-125B	0,44	1029	1,95
		1-1/2	MM304-150B	0,53		
		1-3/4	MM304-175B	0,61		
		2	MM304-200B	0,70		
		2-1/4	MM304-225B	0,79		
		2-1/2	MM304-250B	0,88		
		2-3/4	MM304-275B	0,96		
		12	MM304-12LB	-		
		24	MM304-24LB	-		
		7/8	1-3/4	1-1/2		
1-3/4	MM708-175B			0,61		
2	MM708-200B			0,70		
2-1/4	MM708-225B			0,79		
2-1/2	MM708-250B			0,88		
2-3/4	MM708-275B			0,96		
3	MM708-300B			1,05		
12	MM708-12LB			-		
24	MM708-24LB			-		
1	2			1-1/4	MM1000-125B	0,44
		1-1/2	MM1000-150B	0,53		
		1-3/4	MM1000-175B	0,61		
		2	MM1000-200B	0,70		
		2-1/4	MM1000-225B	0,79		
		2-1/2	MM1000-250B	0,88		
		2-3/4	MM1000-275B	0,96		
		3	MM1000-300B	1,05		
		4	MM1000-400B	1,40		
		12	MM1000-12LB	-		
		24	MM1000-24LB	-		

Toleranzen / Tolerances:

Außen Ø / Outside Diam.	11/16" – 1-1/2"	±0,015"
	1-5/8" – 2-3/4"	±0,020"
Innen Ø / Inside Diam.		0,005" / -0,020"
Länge / Length		+0,015" / +0,046"





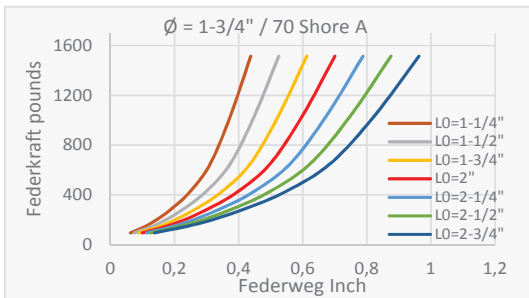
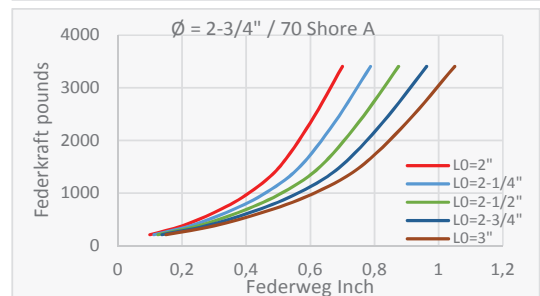
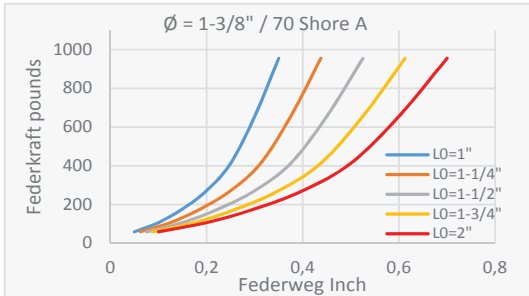
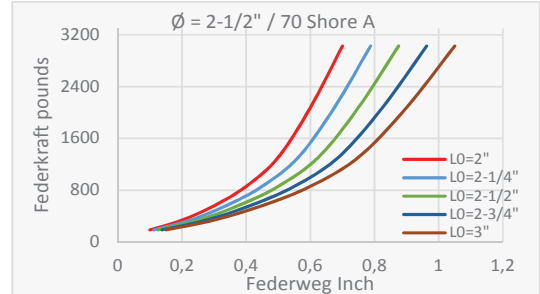
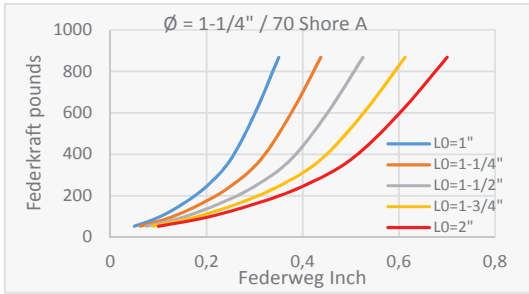
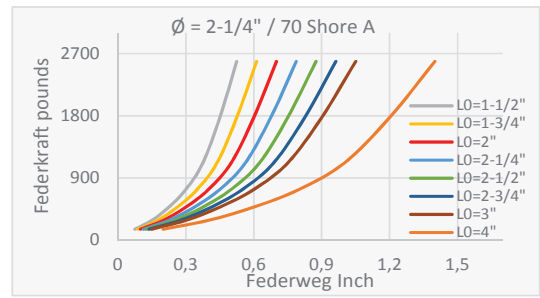
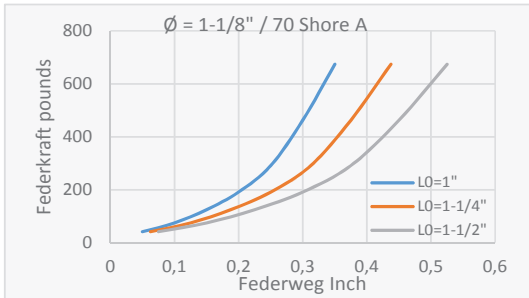
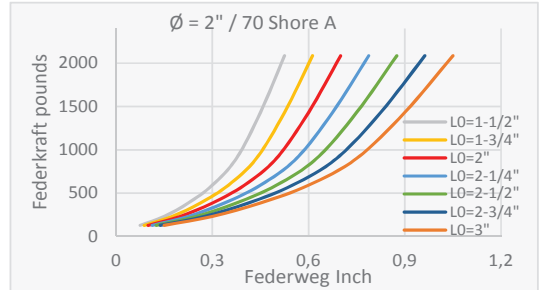
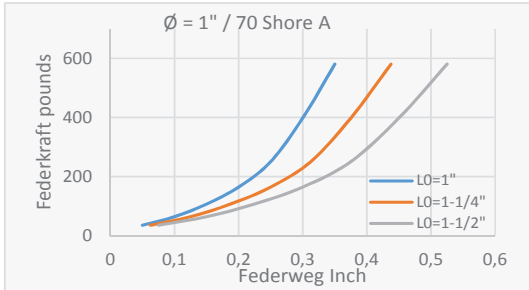


Für Stempel Ø / fits punch Ø mm	Außen Ø / Outside Ø mm	Länge / Length mm	70 A Black			Wölbung / Bulge Ø
			Bestellnr. / Order No	Federweg / Deflection max. mm	Federkraft / Force max. N	
1/4"	1"	1"	MH104-100B	0,35	580	1,30
		1-1/4"	MH104-125B	0,44		
		1-1/2"	MH104-150B	0,53		
		1-3/4"	MH104-175B	0,61		
		12"	MH104-12LB	-		
3/8"	1-1/8"	1"	MH308-100B	0,35	674	1,46
		1-1/4"	MH308-125B	0,44		
		1-1/2"	MH308-150B	0,53		
		1-3/4"	MH308-175B	0,61		
		2"	MH308-200B	0,50		
		12"	MH308-12LB	-		
1/2"	1-1/4"	1"	MH102-100B	0,35	867	1,63
		1-1/4"	MH102-125B	0,44		
		1-1/2"	MH102-150B	0,53		
		1-3/4"	MH102-175B	0,61		
		2"	MH102-200B	0,70		
		12"	MH102-12LB	-		
5/8"	1-3/8"	1"	MH508-100B	0,35	955	1,79
		1-1/4"	MH508-125B	0,44		
		1-1/2"	MH508-150B	0,53		
		1-3/4"	MH508-175B	0,61		
		2"	MH508-200B	0,70		
		12"	MH508-12LB	-		
3/4"	1-3/4"	1-1/4"	MH304-125B	0,44	1514	2,28
		1-1/2"	MH304-150B	0,53		
		1-3/4"	MH304-175B	0,61		
		2"	MH304-200B	0,70		
		2-1/4"	MH304-225B	0,79		
		2-1/2"	MH304-250B	0,88		
		2-3/4"	MH304-275B	0,96		
		12"	MH304-12LB	-		
		24"	MH304-24LB	-		
		7/8"	2"	1-1/2"		
1-3/4"	MH708-175B			0,61		
2"	MH708-200B			0,70		
2-1/4"	MH708-225B			0,79		
2-1/2"	MH708-250B			0,88		
2-3/4"	MH708-275B			0,96		
3"	MH708-300B			1,05		
12"	MH708-12LB			-		
24"	MH708-24LB			-		
1"	2-1/4"			1-1/2"	MH1000-150B	0,53
		1-3/4"	MH1000-175B	0,61		
		2"	MH1000-200B	0,70		
		2-1/4"	MH1000-225B	0,79		
		2-1/2"	MH1000-250B	0,88		
		2-3/4"	MH1000-275B	0,96		
		3"	MH1000-300B	1,05		
		4"	MH1000-400B	1,40		
		12"	MH1000-12LB	-		
		24"	MH1000-24LB	-		
1-1/4"	2-1/2"	2"	MH1104-200B	0,70	3028	3,25
		2-1/4"	MH1104-225B	0,79		
		2-1/2"	MH1104-250B	0,88		
		2-3/4"	MH1104-275B	0,96		
		3"	MH1104-300B	1,05		
		12"	MH1104-12LB	-		
1-1/2"	2-3/4"	2"	MH1102-200B	0,70	3406	3,58
		2-1/4"	MH1102-225B	0,79		
		2-1/2"	MH1102-250B	0,88		
		2-3/4"	MH1102-275B	0,96		
		3"	MH1102-300B	1,05		
		12"	MH1102-12LB	-		
		24"	MH1102-24LB	-		

Toleranzen / Tolerances:

Außen Ø / Outside Diam.	11/16" – 1-1/2"	±0,015"
	1-5/8" – 2-3/4"	±0,020"
Innen Ø / Inside Diam.		-0,005" / -0,020"
Länge / Length		+0,015" / +0,046"





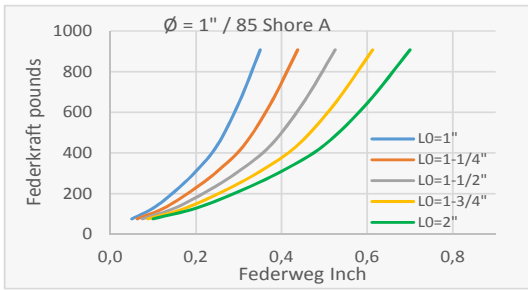
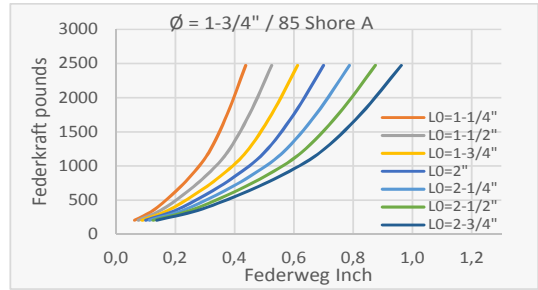
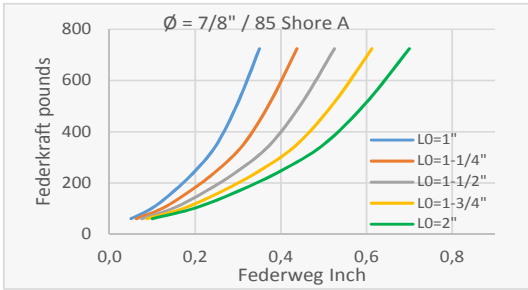
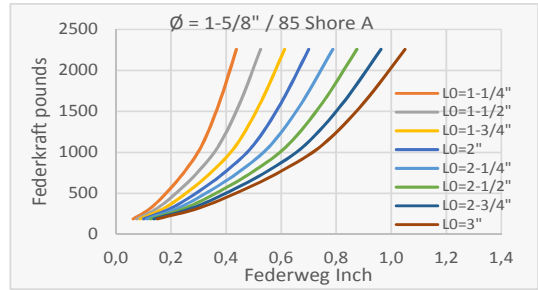
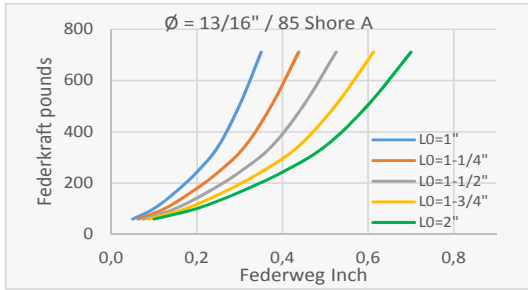
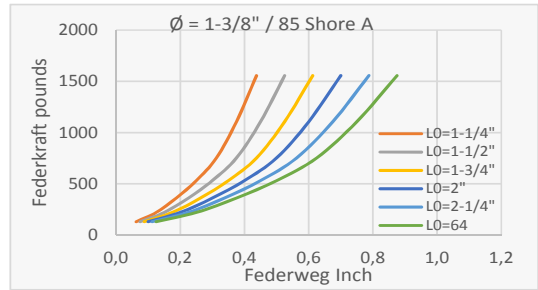
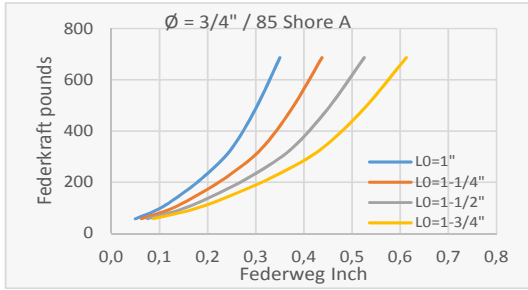
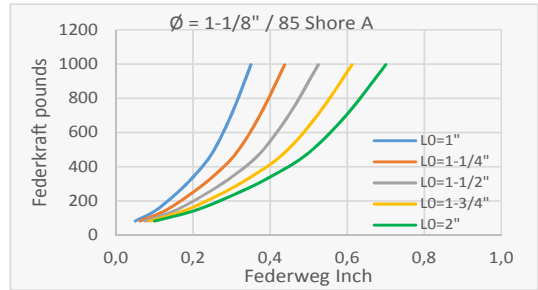
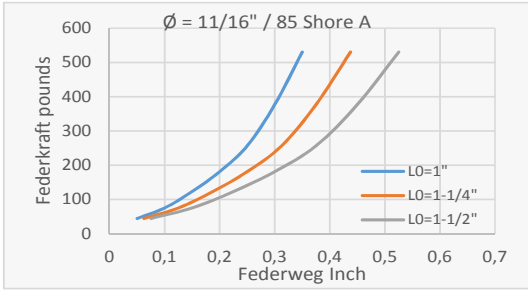


Für Stempel Ø / fits punch Ø Inch	Außen Ø / Outside Ø Inch	Länge / Length Inch	85 A Red			Wölbung / Bulge Ø Inch
			Bestellnr. / Order No	Federweg / Deflection max. Inch	Federkraft / Force max. pound	
3/16	11/16	1	ML316-100R	0,35	530	0,89
		1-1/4	ML316-125R	0,44		
		1-1/2	ML316-150R	0,53		
		12	ML316-12LR	-		
1/4	3/4	1	ML104-100R	0,35	686	0,98
		1-1/4	ML104-125R	0,44		
		1-1/2	ML104-150R	0,53		
		1-3/4	ML104-175R	0,61		
		12	ML104-12LR	-		
5/16	13/16	1	ML516-100R	0,35	711	1,06
		1-1/4	ML516-125R	0,44		
		1-1/2	ML516-150R	0,53		
		1-3/4	ML516-175R	0,61		
		2	ML516-200R	0,70		
		12	ML516-12LR	-		
3/8	7/8	1	ML308-100R	0,35	724	1,14
		1-1/4	ML308-125R	0,44		
		1-1/2	ML308-150R	0,53		
		1-3/4	ML308-175R	0,61		
		2	ML308-200R	0,70		
		12	ML308-12LR	-		
1/2	1	1	ML102-100R	0,35	907	1,30
		1-1/4	ML102-125R	0,44		
		1-1/2	ML102-150R	0,53		
		1-3/4	ML102-175R	0,61		
		2	ML102-200R	0,70		
		12	ML102-12LR	-		
5/8	1-1/8	1	ML508-100R	0,35	996	1,46
		1-1/4	ML508-125R	0,44		
		1-1/2	ML508-150R	0,53		
		1-3/4	ML508-175R	0,61		
		2	ML508-200R	0,70		
		12	ML508-12LR	-		
2/4	1-3/8	1-1/4	ML304-125R	0,44	1556	1,79
		1-1/2	ML304-150R	0,53		
		1-3/4	ML304-175R	0,61		
		2	ML304-200R	0,70		
		2-1/4	ML304-225R	0,79		
		2-1/2	ML304-250R	0,88		
		12	ML304-12LR	-		
		24	ML304-24LR	-		
7/8	1-5/8	1-1/4	ML708-125R	0,44	2258	2,11
		1-1/2	ML708-150R	0,53		
		1-3/4	ML708-175R	0,61		
		2	ML708-200R	0,70		
		2-1/4	ML708-225R	0,79		
		2-1/2	ML708-250R	0,88		
		2-3/4	ML708-275R	0,96		
		3	ML708-300R	1,05		
		12	ML708-12LR	-		
		24	ML708-24LR	-		
		1	1-3/4	1-1/4		
1-1/2	ML1000-150R			0,53		
1-3/4	ML1000-175R			0,61		
2	ML1000-200R			0,70		
2-1/4	ML1000-225R			0,79		
2-1/2	ML1000-250R			0,88		
2-3/4	ML1000-275R			0,96		
12	ML1000-12LR			-		
24	ML1000-24LR			-		

Toleranzen / Tolerances:

Außen Ø / Outside Diam.	11/16" – 1-1/2"	±0,015"
	1-5/8" – 2-3/4"	±0,020"
Innen Ø / Inside Diam.		-0,005" / -0,020"
Länge / Length		+0,015" / +0,046"





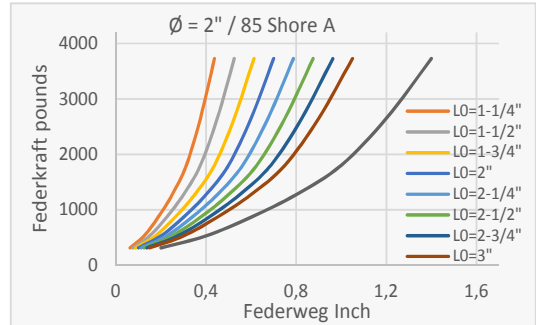
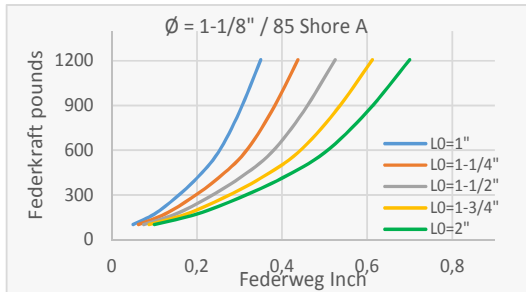
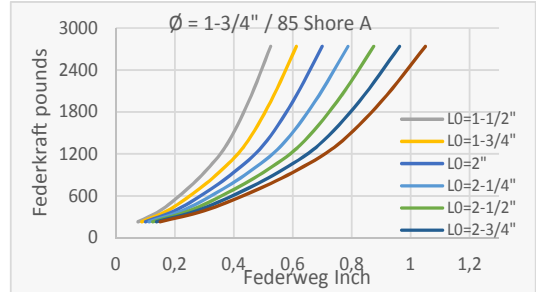
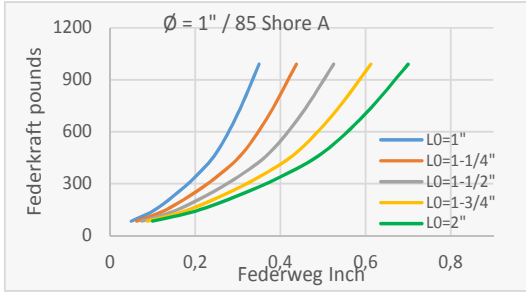
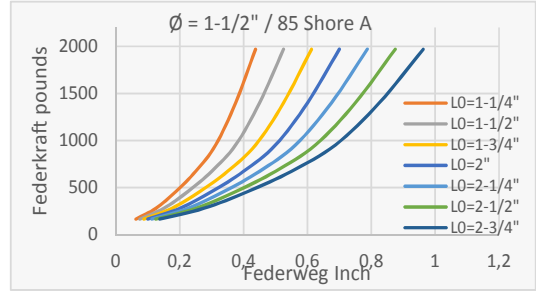
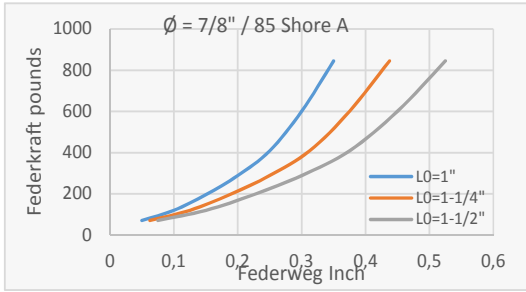
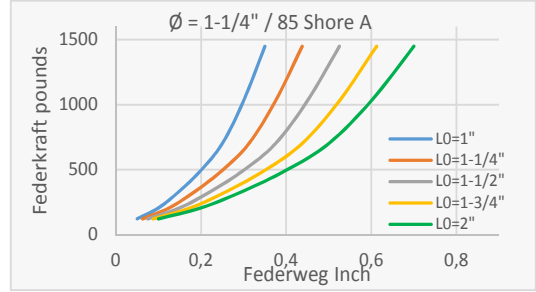
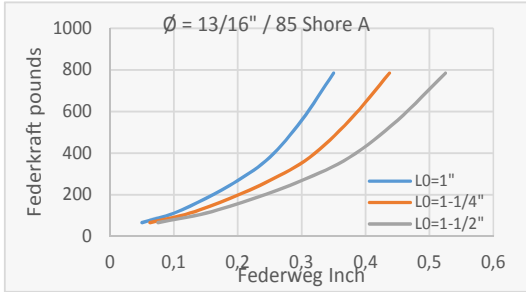


Für Stempel Ø / fits punch Ø Inch	Außen Ø / Outside Ø Inch	Länge / Length Inch	85 A Red			Wölbung / Bulge Ø Inch
			Bestellnr. / Order No	Federweg / Deflection max. Inch	Federkraft / Force max. pound	
3/16	13/16	1	MM316-100R	0,35	785	1,06
		1-1/4	MM316-125R	0,44		
		1-1/2	MM316-150R	0,53		
		12	MM316-12LR	-		
1/4	7/8	1	MM104-100R	0,35	845	1,14
		1-1/4	MM104-125R	0,44		
		1-1/2	MM104-150R	0,53		
		12	MM104-12LR	-		
3/8	1	1	MM308-100R	0,35	990	1,30
		1-1/4	MM308-125R	0,44		
		1-1/2	MM308-150R	0,53		
		1-3/4	MM308-175R	0,61		
		2	MM308-200R	0,70		
		12	MM308-12LR	-		
		24	MM308-24LR	-		
1/2	1-1/8	1	MM102-100R	0,35	1207	1,46
		1-1/4	MM102-125R	0,44		
		1-1/2	MM102-150R	0,53		
		1-3/4	MM102-175R	0,61		
		2	MM102-200R	0,70		
		12	MM102-12LR	-		
5/8	1-1/4	1	MM508-100R	0,35	1448	1,63
		1-1/4	MM508-125R	0,44		
		1-1/2	MM508-150R	0,53		
		1-3/4	MM508-175R	0,61		
		2	MM508-200R	0,70		
		12	MM508-12LR	-		
		24	MM508-24LR	-		
3/4	1-1/2	1-1/4	MM304-125R	0,44	1969	1,95
		1-1/2	MM304-150R	0,53		
		1-3/4	MM304-175R	0,61		
		2	MM304-200R	0,70		
		2-1/4	MM304-225R	0,79		
		2-1/2	MM304-250R	0,88		
		2-3/4	MM304-275R	0,96		
		12	MM304-12LR	-		
		24	MM304-24LR	-		
		7/8	1-3/4	1-1/2		
1-3/4	MM708-175R			0,61		
2	MM708-200R			0,70		
2-1/4	MM708-225R			0,79		
2-1/2	MM708-250R			0,88		
2-3/4	MM708-275R			0,96		
3	MM708-300R			1,05		
12	MM708-12LR			-		
24	MM708-24LR			-		
1	2	1-1/4	MM1000-125R	0,44	3727	2,60
		1-1/2	MM1000-150R	0,53		
		1-3/4	MM1000-175R	0,61		
		2	MM1000-200R	0,70		
		2-1/4	MM1000-225R	0,79		
		2-1/2	MM1000-250R	0,88		
		2-3/4	MM1000-275R	0,96		
		3	MM1000-300R	1,05		
		4	MM1000-400R	1,40		
		12	MM1000-12LR	-		
		24	MM1000-24LR	-		

Toleranzen / Tolerances:

Außen Ø / Outside Diam.	11/16" – 1-1/2"	±0,015"
	1-5/8" – 2-3/4"	±0,020"
Innen Ø / Inside Diam.		-0,005" / -0,020"
Länge / Length		+0,015" / +0,046"





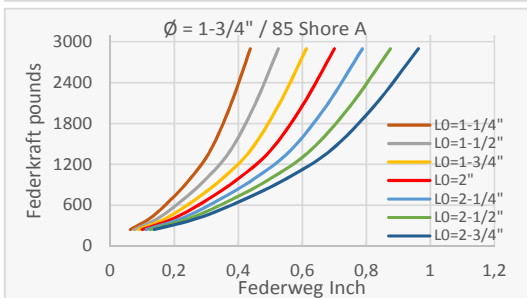
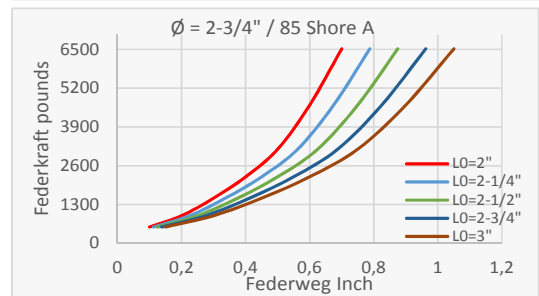
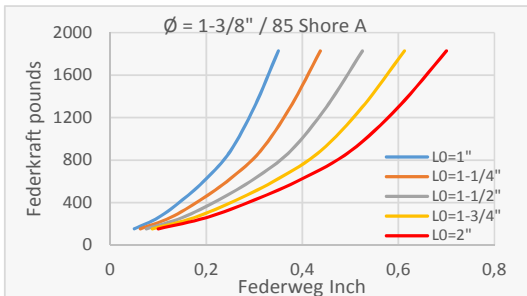
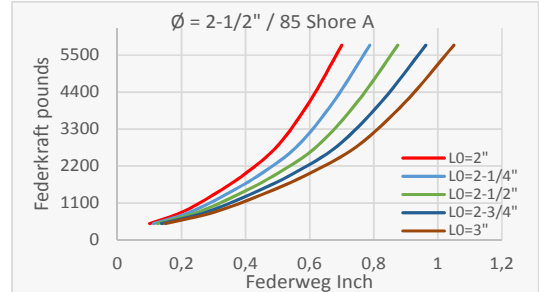
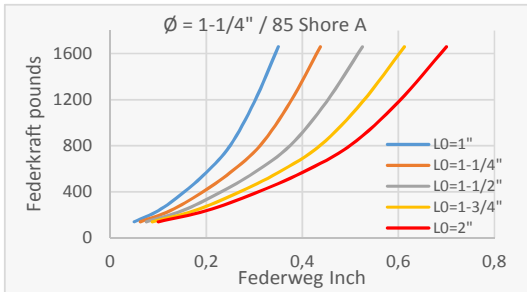
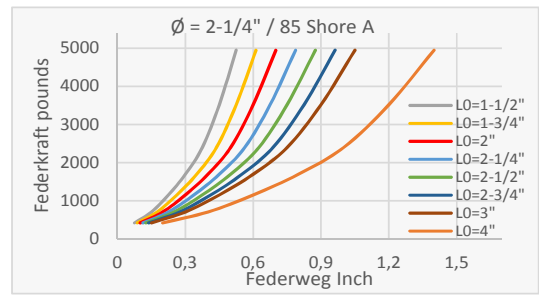
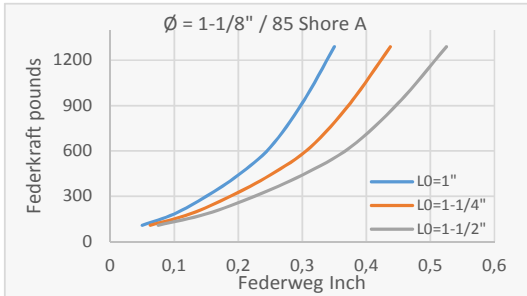
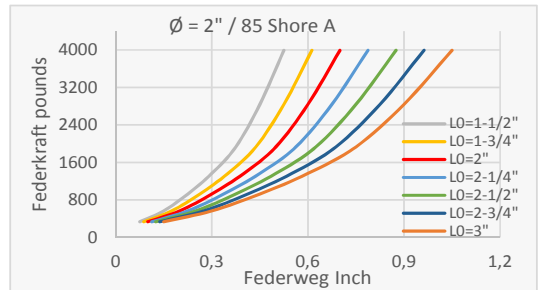
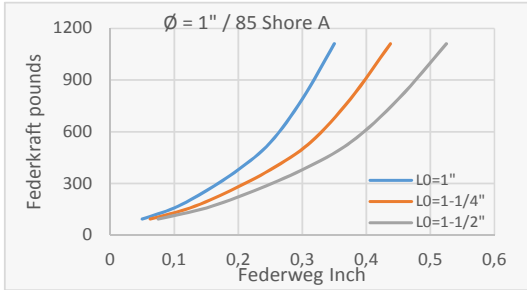


Für Stempel Ø / fits punch Ø Inch	Außen Ø / Outside Ø Inch	Länge / Length Inch	85 A Red			Wölbung / Bulge Ø Inch
			Bestellnr. / Order No	Federweg / Deflection max. Inch	Federkraft / Force max. pound	
1/4"	1"	1"	MH104-100R	0,35	1111	1,30
		1-1/4"	MH104-125R	0,44		
		1-1/2"	MH104-150R	0,53		
		1-3/4"	MH104-175R	0,61		
		12"	MH104-12LR	-		
3/8"	1-1/8"	1"	MH308-100R	0,35	1290	1,46
		1-1/4"	MH308-125R	0,44		
		1-1/2"	MH308-150R	0,53		
		1-3/4"	MH308-175R	0,61		
		2"	MH308-200R	0,50		
		12"	MH308-12LR	-		
1/2"	1-1/4"	1"	MH102-100R	0,35	1660	1,63
		1-1/4"	MH102-125R	0,44		
		1-1/2"	MH102-150R	0,53		
		1-3/4"	MH102-175R	0,61		
		2"	MH102-200R	0,70		
		12"	MH102-12LR	-		
5/8"	1-3/8"	1"	MH508-100R	0,35	1827	1,79
		1-1/4"	MH508-125R	0,44		
		1-1/2"	MH508-150R	0,53		
		1-3/4"	MH508-175R	0,61		
		2"	MH508-200R	0,70		
		12"	MH508-12LR	-		
3/4"	1-3/4"	1-1/4"	MH304-125R	0,44	2897	2,28
		1-1/2"	MH304-150R	0,53		
		1-3/4"	MH304-175R	0,61		
		2"	MH304-200R	0,70		
		2-1/4"	MH304-225R	0,79		
		2-1/2"	MH304-250R	0,88		
		2-3/4"	MH304-275R	0,96		
		12"	MH304-12LR	-		
		24"	MH304-24LR	-		
		7/8"	2"	1-1/2"		
1-3/4"	MH708-175R			0,61		
2"	MH708-200R			0,70		
2-1/4"	MH708-225R			0,79		
2-1/2"	MH708-250R			0,88		
2-3/4"	MH708-275R			0,96		
3"	MH708-300R			1,05		
12"	MH708-12LR			-		
24"	MH708-24LR			-		
1"	2-1/4"			1-1/2"	MH1000-150R	0,53
		1-3/4"	MH1000-175R	0,61		
		2"	MH1000-200R	0,70		
		2-1/4"	MH1000-225R	0,79		
		2-1/2"	MH1000-250R	0,88		
		2-3/4"	MH1000-275R	0,96		
		3"	MH1000-300R	1,05		
		4"	MH1000-400R	1,40		
		12"	MH1000-12LR	-		
		24"	MH1000-24LR	-		
1-1/4"	2-1/2"	2"	MH1104-200R	0,70	5794	3,25
		2-1/4"	MH1104-225R	0,79		
		2-1/2"	MH1104-250R	0,88		
		2-3/4"	MH1104-275R	0,96		
		3"	MH1104-300R	1,05		
		12"	MH1104-12LR	-		
1-1/2"	2-3/4"	2"	MH1102-200R	0,70	6518	3,58
		2-1/4"	MH1102-225R	0,79		
		2-1/2"	MH1102-250R	0,88		
		2-3/4"	MH1102-275R	0,96		
		3"	MH1102-300R	1,05		
		12"	MH1102-12LR	-		
		24"	MH1102-24LR	-		

Toleranzen / Tolerances:

Außen Ø / Outside Diam.	11/16" – 1-1/2"	±0,015"
	1-5/8" – 2-3/4"	±0,020"
Innen Ø / Inside Diam.		-0,005" / -0,020"
Länge / Length		+0,015" / +0,046"





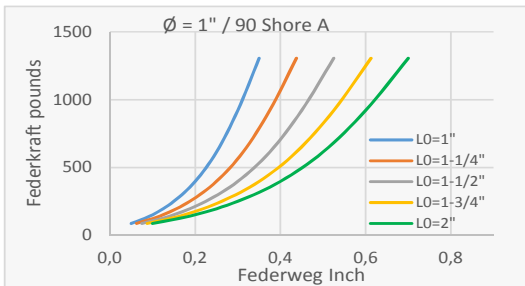
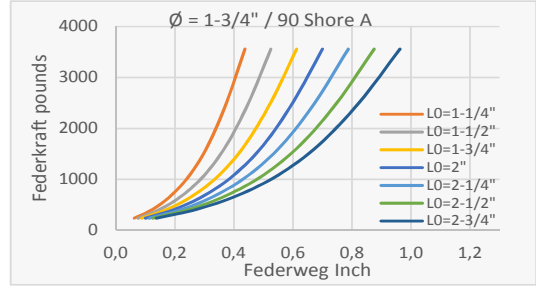
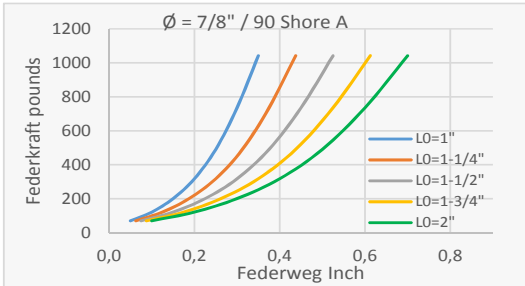
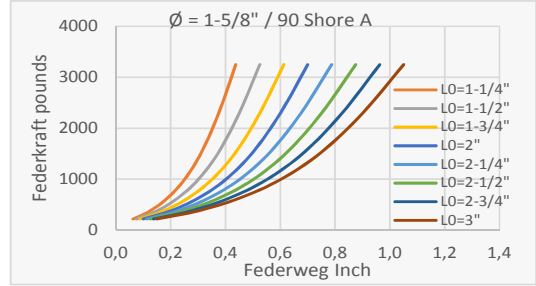
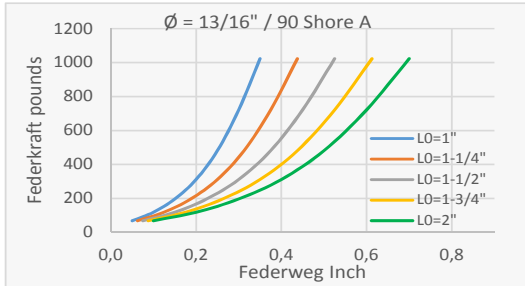
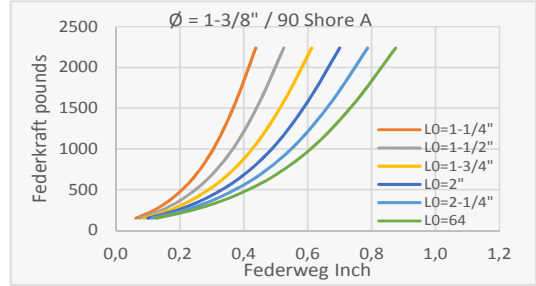
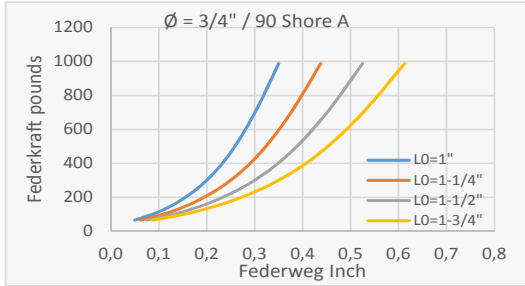
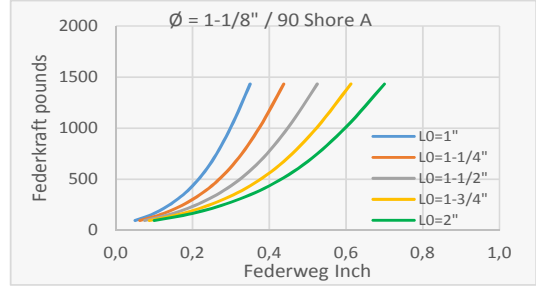
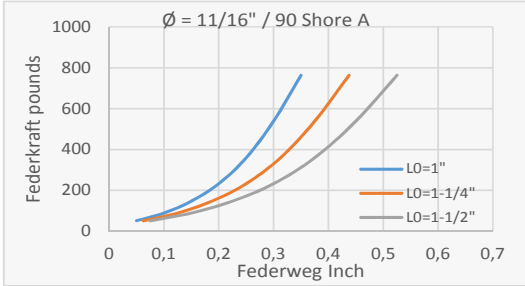


Für Stempel Ø / fits punch Ø Inch	Außen Ø / Outside Ø Inch	Länge / Length Inch	90 A Yellow		Wölbung / Bulge Ø Inch	
			Bestellnr. / Order No	Federweg / Deflection max. Inch		
3/16	11/16	1	ML316-100Y	0,30	539	0,89
		1-1/4	ML316-125Y	0,38		
		1-1/2	ML316-150Y	0,45		
		12	ML316-12LY	-		
1/4	3/4	1	ML104-100Y	0,30	697	0,98
		1-1/4	ML104-125Y	0,38		
		1-1/2	ML104-150Y	0,45		
		1-3/4	ML104-175Y	0,53		
		12	ML104-12LY	-		
5/16	13/16	1	ML516-100Y	0,30	722	1,06
		1-1/4	ML516-125Y	0,38		
		1-1/2	ML516-150Y	0,45		
		1-3/4	ML516-175Y	0,53		
		2	ML516-200Y	0,60		
		12	ML516-12LY	-		
3/8	7/8	1	ML308-100Y	0,30	735	1,14
		1-1/4	ML308-125Y	0,38		
		1-1/2	ML308-150Y	0,45		
		1-3/4	ML308-175Y	0,53		
		2	ML308-200Y	0,60		
		12	ML308-12LY	-		
1/2	1	1	ML102-100Y	0,30	921	1,30
		1-1/4	ML102-125Y	0,38		
		1-1/2	ML102-150Y	0,45		
		1-3/4	ML102-175Y	0,53		
		2	ML102-200Y	0,60		
		12	ML102-12LY	-		
5/8	1-1/8	1	ML508-100Y	0,30	1011	1,46
		1-1/4	ML508-125Y	0,38		
		1-1/2	ML508-150Y	0,45		
		1-3/4	ML508-175Y	0,53		
		2	ML508-200Y	0,60		
		12	ML508-12LY	-		
3/4	1-3/8	1-1/4	ML304-125Y	0,38	1580	1,79
		1-1/2	ML304-150Y	0,45		
		1-3/4	ML304-175Y	0,53		
		2	ML304-200Y	0,60		
		2-1/4	ML304-225Y	0,68		
		2-1/2	ML304-250Y	0,75		
		12	ML304-12LY	-		
		24	ML304-24LY	-		
7/8	1-5/8	1-1/4	ML708-125Y	0,38	2292	2,11
		1-1/2	ML708-150Y	0,45		
		1-3/4	ML708-175Y	0,53		
		2	ML708-200Y	0,60		
		2-1/4	ML708-225Y	0,68		
		2-1/2	ML708-250Y	0,75		
		2-3/4	ML708-275Y	0,83		
		3	ML708-300Y	0,90		
		12	ML708-12LY	-		
		24	ML708-24LY	-		
1	1-3/4	1-1/4	ML1000-125Y	0,38	2511	2,28
		1-1/2	ML1000-150Y	0,45		
		1-3/4	ML1000-175Y	0,53		
		2	ML1000-200Y	0,60		
		2-1/4	ML1000-225Y	0,68		
		2-1/2	ML1000-250Y	0,75		
		2-3/4	ML1000-275Y	0,83		
		12	ML1000-12LY	-		
		24	ML1000-24LY	-		

Toleranzen / Tolerances:

Außen Ø / Outside Diam.	11/16" – 1-1/2"	±0,015"
	1-5/8" – 2-3/4"	±0,020"
Innen Ø / Inside Diam.		-0,005" / -0,020"
Länge / Length		+0,015" / +0,046"





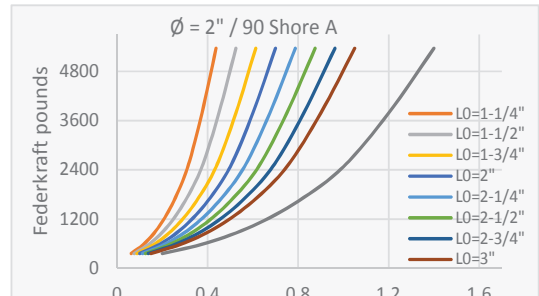
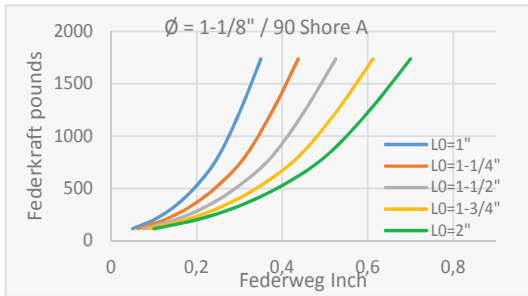
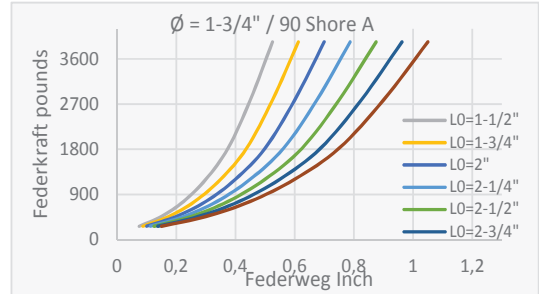
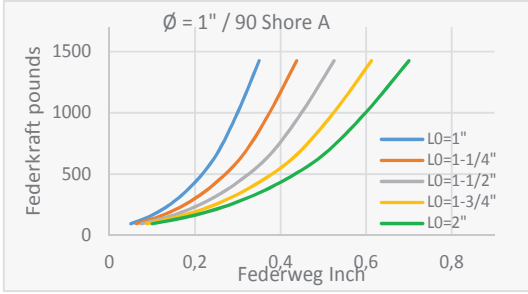
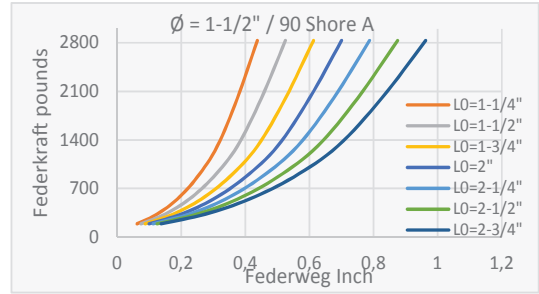
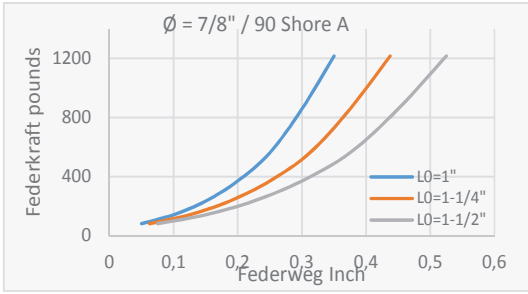
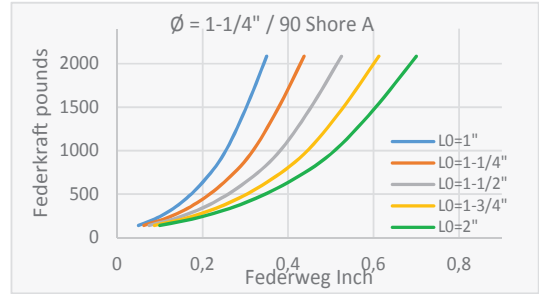
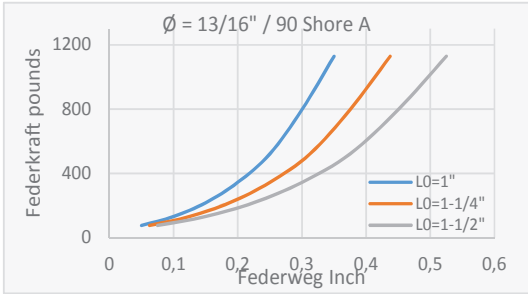


Für Stempel Ø / fits punch Ø Inch	Außen Ø / Outside Ø Inch	Länge / Length Inch	90 A Yellow			Wölbung / Bulge Ø Inch
			Bestellnr. / Order No	Federweg / Deflection max. Inch	Federkraft / Force max. pound	
3/16	13/16	1	MM316-100Y	0,30	797	1,06
		1-1/4	MM316-125Y	0,38		
		1-1/2	MM316-150Y	0,45		
		12	MM316-12LY	-		
1/4	7/8	1	MM104-100Y	0,30	858	1,14
		1-1/4	MM104-125Y	0,38		
		1-1/2	MM104-150Y	0,45		
		12	MM104-12LY	-		
3/8	1	1	MM308-100Y	0,30	1005	1,30
		1-1/4	MM308-125Y	0,38		
		1-1/2	MM308-150Y	0,45		
		1-3/4	MM308-175Y	0,53		
		2	MM308-200Y	0,60		
		12	MM308-12LY	-		
		24	MM308-24LY	-		
1/2	1-1/8	1	MM102-100Y	0,30	1226	1,46
		1-1/4	MM102-125Y	0,38		
		1-1/2	MM102-150Y	0,45		
		1-3/4	MM102-175Y	0,53		
		2	MM102-200Y	0,60		
		12	MM102-12LY	-		
5/8	1-1/4	1	MM508-100Y	0,30	1471	1,63
		1-1/4	MM508-125Y	0,38		
		1-1/2	MM508-150Y	0,45		
		1-3/4	MM508-175Y	0,53		
		2	MM508-200Y	0,60		
		12	MM508-12LY	-		
		24	MM508-24LY	-		
3/4	1-1/2	1-1/4	MM304-125Y	0,38	1999	1,95
		1-1/2	MM304-150Y	0,45		
		1-3/4	MM304-175Y	0,53		
		2	MM304-200Y	0,60		
		2-1/4	MM304-225Y	0,68		
		2-1/2	MM304-250Y	0,75		
		2-3/4	MM304-275Y	0,83		
		12	MM304-12LY	-		
		24	MM304-24LY	-		
		7/8	1-3/4	1-1/2		
1-3/4	MM708-175Y			0,53		
2	MM708-200Y			0,60		
2-1/4	MM708-225Y			0,68		
2-1/2	MM708-250Y			0,75		
2-3/4	MM708-275Y			0,83		
3	MM708-300Y			0,90		
12	MM708-12LY			-		
24	MM708-24LY			-		
1	2			1-1/4	MM1000-125Y	0,38
		1-1/2	MM1000-150Y	0,45		
		1-3/4	MM1000-175Y	0,53		
		2	MM1000-200Y	0,60		
		2-1/4	MM1000-225Y	0,68		
		2-1/2	MM1000-250Y	0,75		
		2-3/4	MM1000-275Y	0,83		
		3	MM1000-300Y	0,90		
		4	MM1000-400Y	1,20		
		12	MM1000-12LY	-		
		24	MM1000-24LY	-		

Toleranzen / Tolerances:

Außen Ø / Outside Diam.	11/16" – 1-1/2"	±0,015"
	1-5/8" – 2-3/4"	±0,020"
Innen Ø / Inside Diam.		-0,005" / -0,020"
Länge / Length		+0,015" / +0,046"







Für Stempel Ø / fits punch Ø Inch	Außen Ø / Outside Ø Inch	Länge / Length Inch	90 A Yellow			Wölbung / Bulge Ø Inch
			Bestellnr. / Order No	Federweg / Deflection max. Inch	Federkraft / Force max. pound	
1/4"	1"	1"	MH104-100Y	0,30	1128	1,30
		3/8"	MH104-125Y	0,38		
		1-1/2"	MH104-150Y	0,45		
		1-3/4"	MH104-175Y	0,53		
		12"	MH104-12LY	-		
3/8"	1-1/8"	1"	MH308-100Y	0,30	1310	1,46
		1-1/4"	MH308-125Y	0,38		
		1-1/2"	MH308-150Y	0,45		
		1-3/4"	MH308-175Y	0,53		
		2"	MH308-200Y	0,60		
		12"	MH308-12LY	-		
1/2"	1-1/4"	1"	MH102-100Y	0,30	1685	1,63
		1-1/4"	MH102-125Y	0,38		
		1-1/2"	MH102-150Y	0,45		
		1-3/4"	MH102-175Y	0,53		
		2"	MH102-200Y	0,60		
		12"	MH102-12LY	-		
		24"	MH102-24LY	-		
5/8"	1-3/8"	1"	MH508-100Y	0,30	1856	1,79
		1-1/4"	MH508-125Y	0,38		
		1-1/2"	MH508-150Y	0,45		
		1-3/4"	MH508-175Y	0,53		
		2"	MH508-200Y	0,60		
		12"	MH508-12LY	-		
		24"	MH508-24LY	-		
3/4"	1-3/4"	1-1/4"	MH304-125Y	0,38	2942	2,28
		1-1/2"	MH304-150Y	0,45		
		1-3/4"	MH304-175Y	0,53		
		2"	MH304-200Y	0,60		
		2-1/4"	MH304-225Y	0,68		
		2-1/2"	MH304-250Y	0,75		
		2-3/4"	MH304-275Y	0,83		
		12"	MH304-12LY	-		
		24"	MH304-24LY	-		
		7/8"	2"	1-1/2"		
1-3/4"	MH708-175Y			0,53		
2"	MH708-200Y			0,60		
2-1/4"	MH708-225Y			0,68		
2-1/2"	MH708-250Y			0,75		
2-3/4"	MH708-275Y			0,83		
3"	MH708-300Y			0,90		
12"	MH708-12LY			-		
24"	MH708-24LY			-		
1"	2-1/4"			1-1/2"	MH1000-150Y	0,45
		1-3/4"	MH1000-175Y	0,53		
		2"	MH1000-200Y	0,60		
		2-1/4"	MH1000-225Y	0,68		
		2-1/2"	MH1000-250Y	0,75		
		2-3/4"	MH1000-275Y	0,83		
		3"	MH1000-300Y	0,90		
		4"	MH1000-400Y	1,20		
		12"	MH1000-12LY	-		
		24"	MH1000-24LY	-		
1-1/4"	2-1/2"	2"	MH1104-200Y	0,60	5883	3,25
		2-1/4"	MH1104-225Y	0,68		
		2-1/2"	MH1104-250Y	0,75		
		2-3/4"	MH1104-275Y	0,83		
		3"	MH1104-300Y	0,90		
		12"	MH1104-12LY	-		
		24"	MH1104-24LY	-		
1-1/2"	2-3/4"	2"	MH1102-200Y	0,60	6619	3,58
		2-1/4"	MH1102-225Y	0,68		
		2-1/2"	MH1102-250Y	0,75		
		2-3/4"	MH1102-275Y	0,83		
		3"	MH1102-300Y	0,90		
		12"	MH1102-12LY	-		
		24"	MH1102-24LY	-		

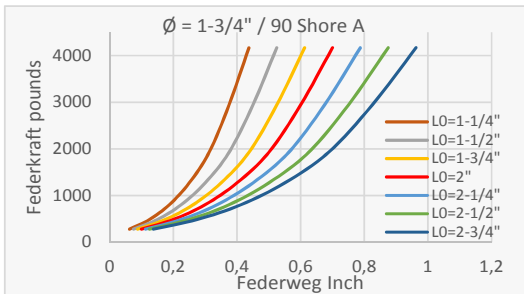
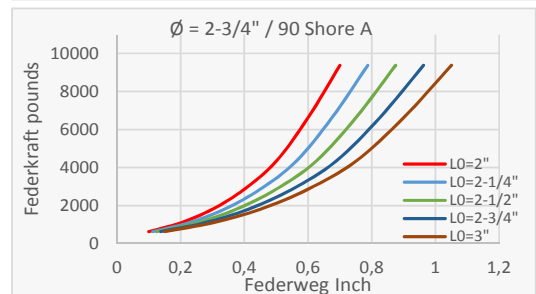
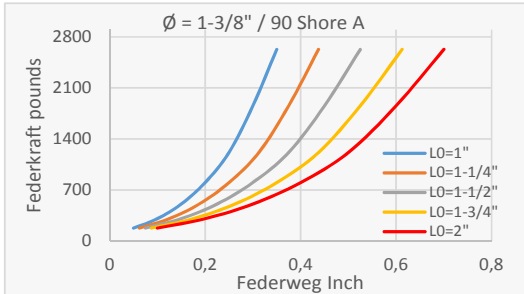
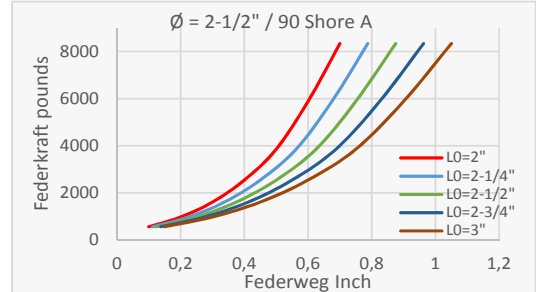
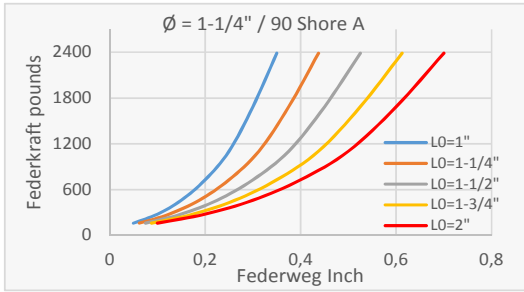
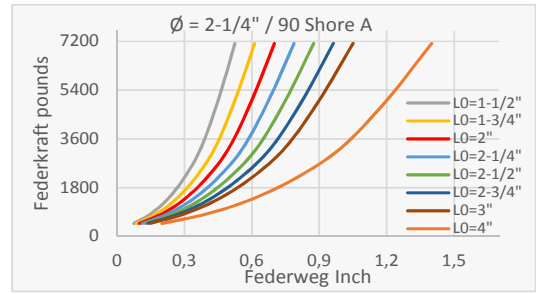
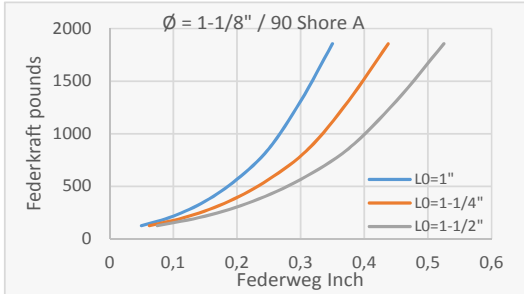
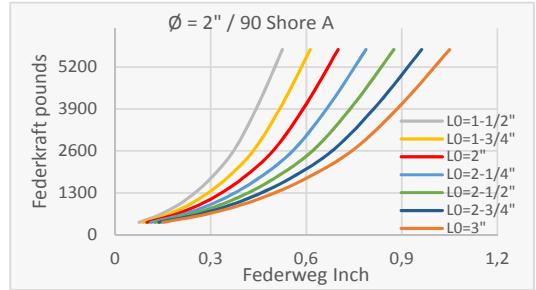
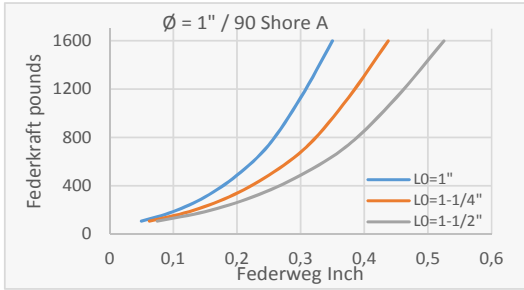
Toleranzen / Tolerances:

Außen Ø / Outside Diam. 11/16" – 1-1/2" ±0,015"
 1-5/8" – 2-3/4" ±0,020"

Innen Ø / Inside Diam. -0,005" / -0,020"

Länge / Length +0,015" / +0,046"





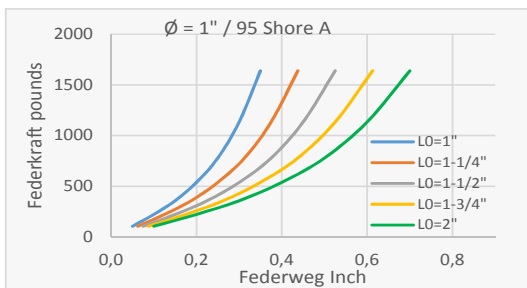
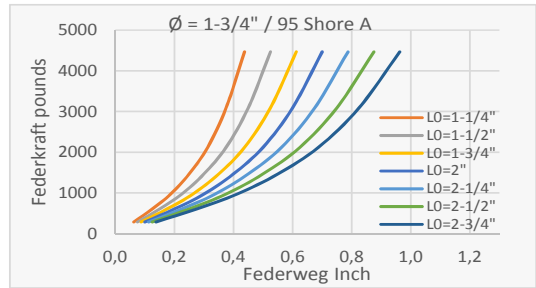
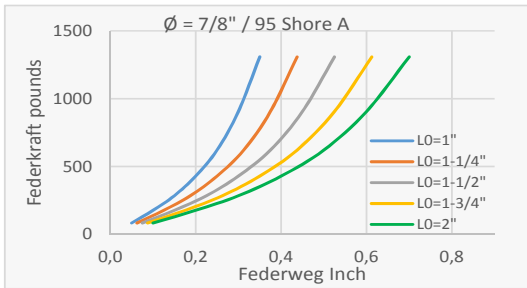
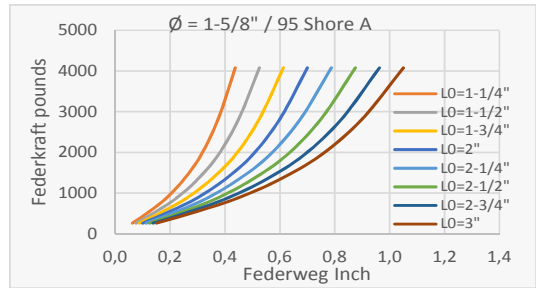
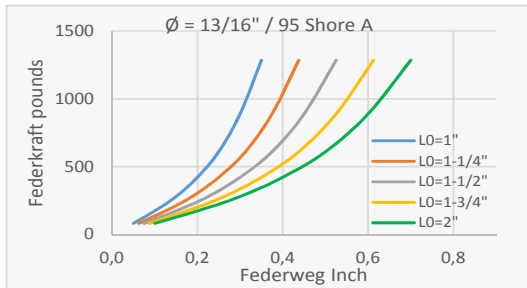
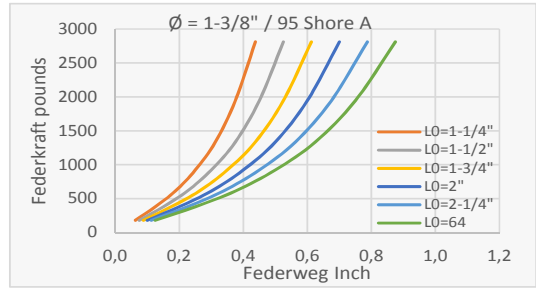
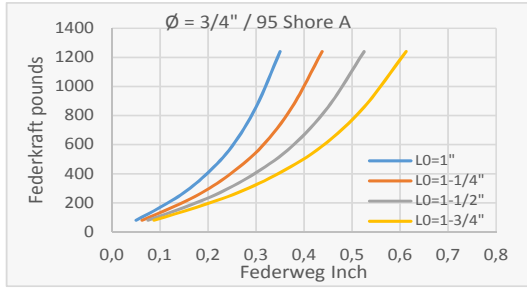
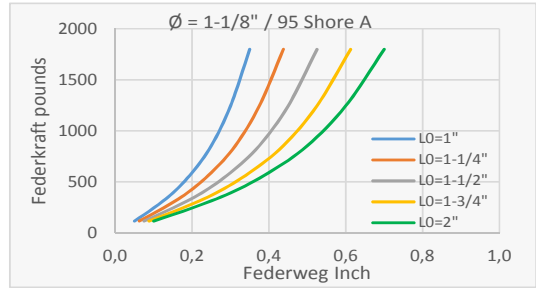
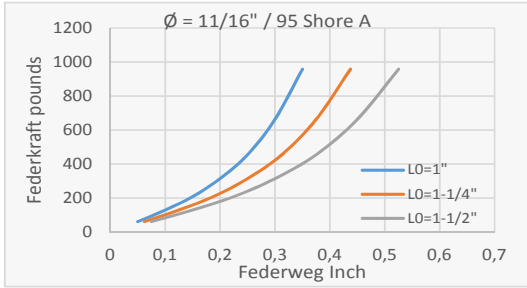


Für Stempel Ø / fits punch Ø Inch	Außen Ø / Outside Ø Inch	Länge / Length Inch	95 A Tan			Wölbung / Bulge Ø Inch
			Bestellnr. / Order No	Federweg / Deflection max. Inch	Federkraft / Force max. pound	
3/16	11/16	1	ML316-100	0,25	455	0,89
		1-1/4	ML316-125	0,31		
		1-1/2	ML316-150	0,38		
		12	ML316-12L	-		
1/4	3/4	1	ML104-100	0,25	589	0,98
		1-1/4	ML104-125	0,31		
		1-1/2	ML104-150	0,38		
		1-3/4	ML104-175	0,44		
		12	ML104-12L	-		
5/16	13/16	1	ML516-100	0,25	610	1,06
		1-1/4	ML516-125	0,31		
		1-1/2	ML516-150	0,38		
		1-3/4	ML516-175	0,44		
		2	ML516-200	0,50		
		12	ML516-12L	-		
3/8	7/8	1	ML308-100	0,25	621	1,14
		1-1/4	ML308-125	0,31		
		1-1/2	ML308-150	0,38		
		1-3/4	ML308-175	0,44		
		2	ML308-200	0,50		
		12	ML308-12L	-		
1/2	1	1	ML102-100	0,25	778	1,30
		1-1/4	ML102-125	0,31		
		1-1/2	ML102-150	0,38		
		1-3/4	ML102-175	0,44		
		2	ML102-200	0,50		
		12	ML102-12L	-		
5/8	1-1/8	1	ML508-100	0,25	854	1,46
		1-1/4	ML508-125	0,31		
		1-1/2	ML508-150	0,38		
		1-3/4	ML508-175	0,44		
		2	ML508-200	0,50		
		12	ML508-12L	-		
3/4	1-3/8	1-1/4	ML304-125	0,31	1335	1,79
		1-1/2	ML304-150	0,38		
		1-3/4	ML304-175	0,44		
		2	ML304-200	0,50		
		2-1/4	ML304-225	0,56		
		2-1/2	ML304-250	0,63		
		12	ML304-12L	-		
		24	ML304-24L	-		
7/8	1-5/8	1-1/4	ML708-125	0,31	1937	2,11
		1-1/2	ML708-150	0,38		
		1-3/4	ML708-175	0,44		
		2	ML708-200	0,50		
		2-1/4	ML708-225	0,56		
		2-1/2	ML708-250	0,63		
		2-3/4	ML708-275	0,69		
		3	ML708-300	0,75		
		12	ML708-12L	-		
		24	ML708-24L	-		
		1	1-3/4	1-1/4		
1-1/2	ML1000-150			0,38		
1-3/4	ML1000-175			0,44		
2	ML1000-200			0,50		
2-1/4	ML1000-225			0,56		
2-1/2	ML1000-250			0,63		
2-3/4	ML1000-275			0,69		
12	ML1000-12L			-		
24	ML1000-24L			-		

Toleranzen / Tolerances:

Außen Ø / Outside Diam.	11/16" – 1-1/2"	±0,015"
	1-5/8" – 2-3/4"	±0,020"
Innen Ø / Inside Diam.		-0,005" / -0,020"
Länge / Length		+0,015" / +0,046"





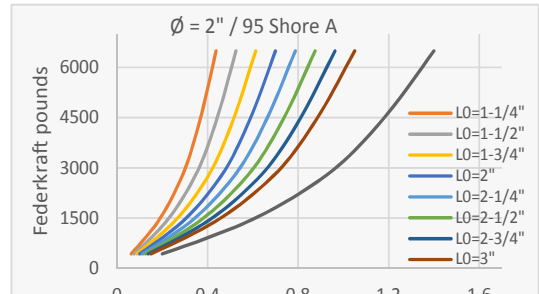
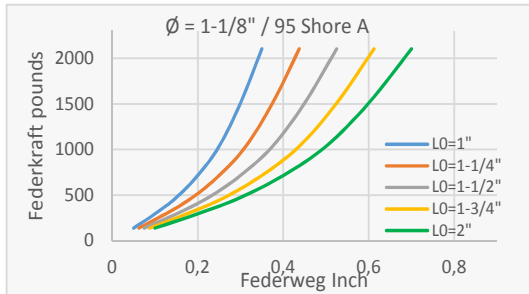
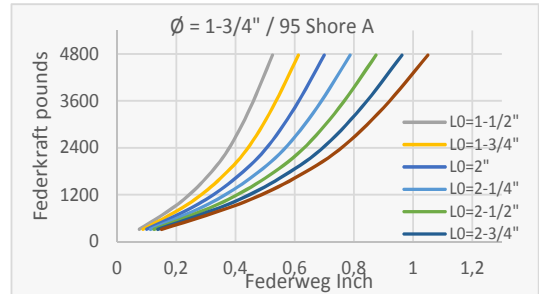
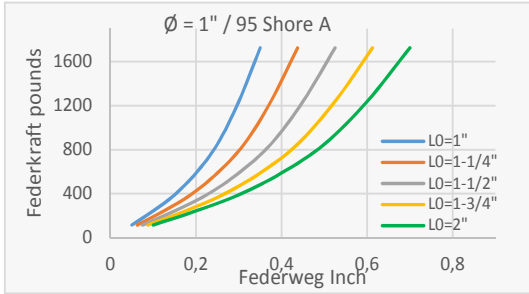
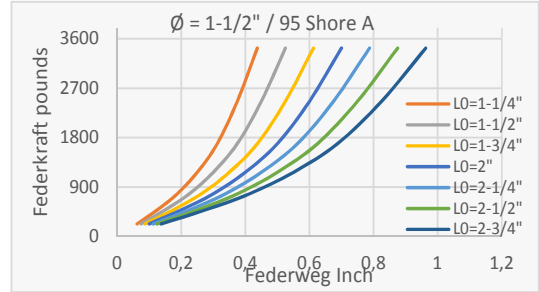
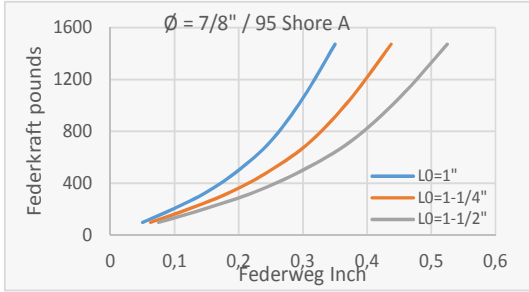
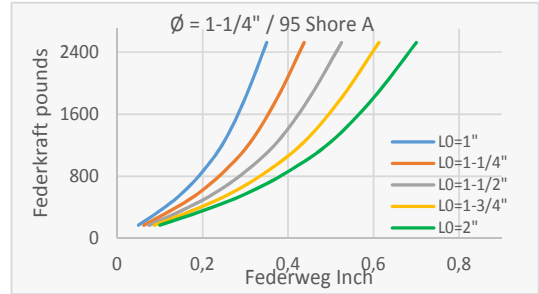
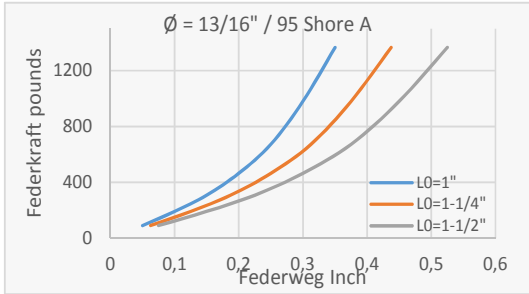


Für Stempel Ø / fits punch Ø Inch	Außen Ø / Outside Ø Inch	Länge / Length Inch	95 A Tan			Wölbung / Bulge Ø Inch
			Bestellnr. / Order No	Federweg / Deflection max. Inch	Federkraft / Force max. pound	
3/16	13/16	1	MM316-100	0,25	673	1,06
		1-1/4	MM316-125	0,31		
		1-1/2	MM316-150	0,38		
		12	MM316-12L	-		
1/4	7/8	1	MM104-100	0,25	725	1,14
		1-1/4	MM104-125	0,31		
		1-1/2	MM104-150	0,38		
		12	MM104-12L	-		
3/8	1	1	MM308-100	0,25	850	1,30
		1-1/4	MM308-125	0,31		
		1-1/2	MM308-150	0,38		
		1-3/4	MM308-175	0,44		
		2	MM308-200	0,50		
		12	MM308-12L	-		
		24	MM308-24L	-		
1/2	1-1/8	1	MM102-100	0,25	1036	1,46
		1-1/4	MM102-125	0,31		
		1-1/2	MM102-150	0,38		
		1-3/4	MM102-175	0,44		
		2	MM102-200	0,50		
		12	MM102-12L	-		
		24	MM102-24L	-		
5/8	1-1/4	1	MM508-100	0,25	1243	1,63
		1-1/4	MM508-125	0,31		
		1-1/2	MM508-150	0,38		
		1-3/4	MM508-175	0,44		
		2	MM508-200	0,50		
		12	MM508-12L	-		
		24	MM508-24L	-		
3/4	1-1/2	1-1/4	MM304-125	0,31	1689	1,95
		1-1/2	MM304-150	0,38		
		1-3/4	MM304-175	0,44		
		2	MM304-200	0,50		
		2-1/4	MM304-225	0,56		
		2-1/2	MM304-250	0,63		
		2-3/4	MM304-275	0,69		
		12	MM304-12L	-		
		24	MM304-24L	-		
		7/8	1-3/4	1-1/2		
1-3/4	MM708-175			0,44		
2	MM708-200			0,50		
2-1/4	MM708-225			0,56		
2-1/2	MM708-250			0,63		
2-3/4	MM708-275			0,69		
3	MM708-300			0,75		
12	MM708-12L			-		
24	MM708-24L			-		
1	2			1-1/4	MM1000-125	0,31
		1-1/2	MM1000-150	0,38		
		1-3/4	MM1000-175	0,44		
		2	MM1000-200	0,50		
		2-1/4	MM1000-225	0,56		
		2-1/2	MM1000-250	0,63		
		2-3/4	MM1000-275	0,69		
		3	MM1000-300	0,75		
		4	MM1000-400	1,00		
		12	MM1000-12L	-		
		24	MM1000-24L	-		

Toleranzen / Tolerances:

Außen Ø / Outside Diam.	11/16" – 1-1/2"	±0,015"
	1-5/8" – 2-3/4"	±0,020"
Innen Ø / Inside Diam.		-0,005" / -0,020"
Länge / Length		+0,015" / +0,046"





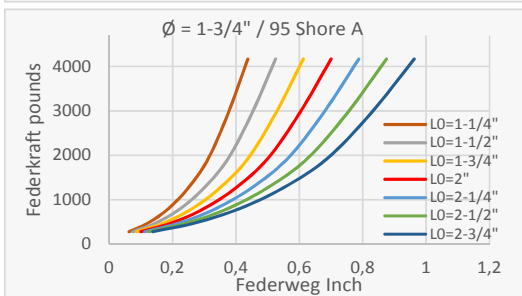
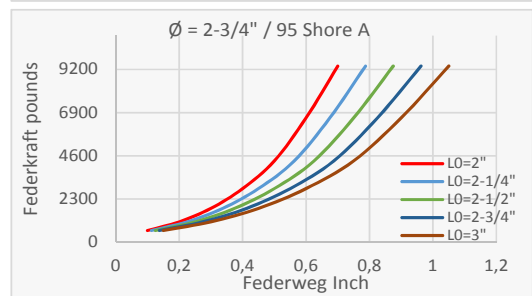
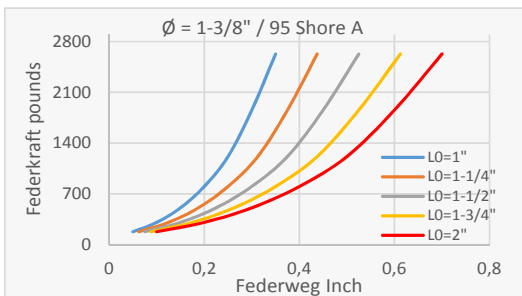
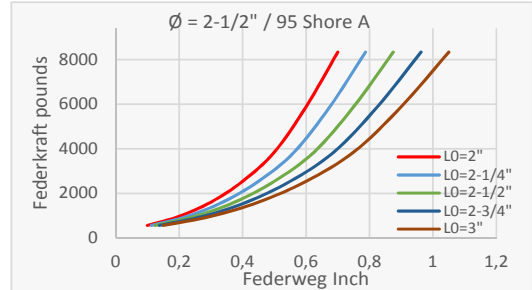
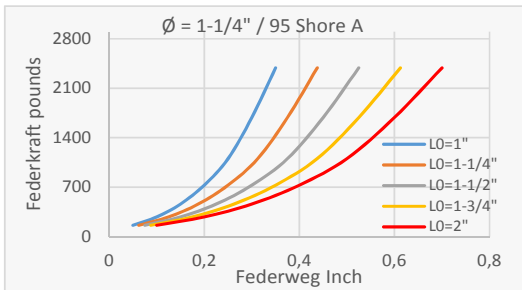
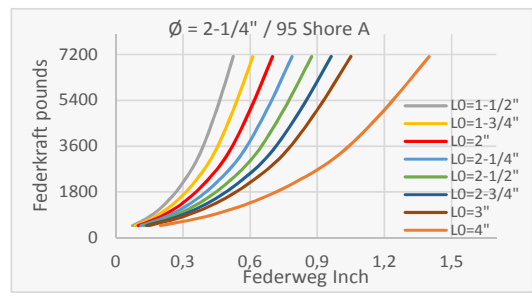
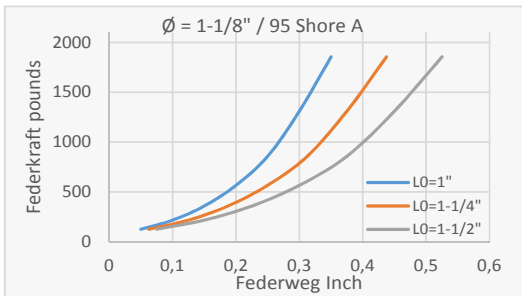
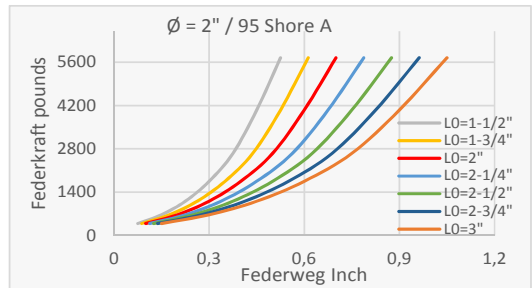
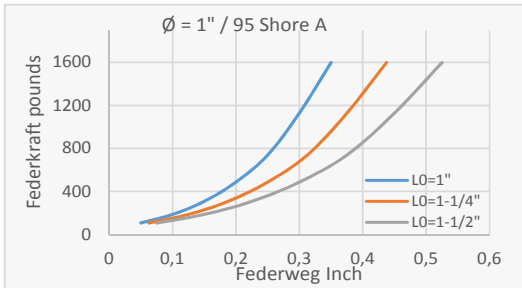


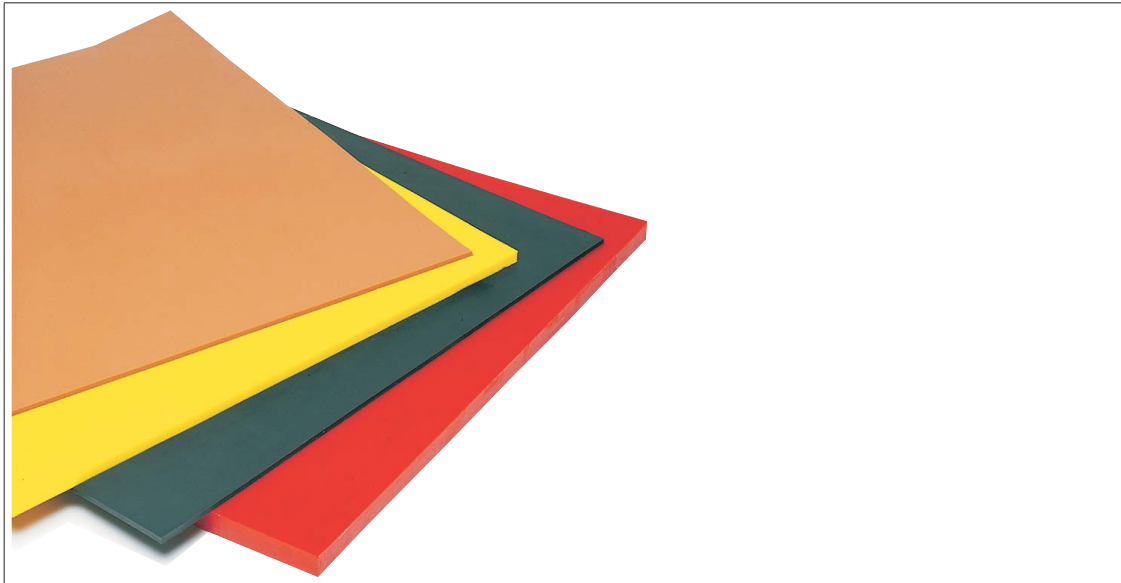
Für Stempel Ø / fits punch Ø Inch	Außen Ø / Outside Ø Inch	Länge / Length Inch	95 A Tan		Wölbung / Bulge Ø Inch	
			Bestellnr. / Order No	Federweg / Deflection max. Inch		
1/4"	1"	1"	MH104-100	0,25	738	1,30
		7/8"	MH104-125	0,31		
		1"	MH104-150	0,38		
		1-1/4"	MH104-175	0,44		
		1-1/2"	MH104-12L	-		
3/8"	1-1/8"	1"	MH308-100	0,25	857	1,46
		3/8"	MH308-125	0,31		
		1/2"	MH308-150	0,38		
		5/8"	MH308-175	0,44		
		2"	MH308-200	0,50		
		12"	MH308-12L	-		
1/2"	1-1/4"	1"	MH102-100	0,30	1103	1,63
		1-1/4"	MH102-125	0,38		
		1-1/2"	MH102-150	0,45		
		1-3/4"	MH102-175	0,53		
		2"	MH102-200	0,60		
		12"	MH102-12L	-		
5/8"	1-3/8"	1"	MH508-100	0,25	1214	1,79
		1-1/4"	MH508-125	0,31		
		1-1/2"	MH508-150	0,38		
		1-3/4"	MH508-175	0,44		
		2"	MH508-200	0,50		
		12"	MH508-12L	-		
3/4"	1-3/4"	1-1/4"	MH304-125	0,31	1925	2,28
		1-1/2"	MH304-150	0,38		
		1-3/4"	MH304-175	0,44		
		2"	MH304-200	0,50		
		2-1/4"	MH304-225	0,56		
		2-1/2"	MH304-250	0,63		
		2-3/4"	MH304-275	0,69		
		12"	MH304-12L	-		
		24"	MH304-24L	-		
		7/8"	2"	1-1/2"		
1-3/4"	MH708-175			0,44		
2"	MH708-200			0,50		
2-1/4"	MH708-225			0,56		
2-1/2"	MH708-250			0,63		
2-3/4"	MH708-275			0,69		
3"	MH708-300			0,75		
12"	MH708-12L			-		
24"	MH708-24L			-		
1"	2-1/4"			1-1/2"	MH1000-150	0,38
		1-3/4"	MH1000-175	0,44		
		2"	MH1000-200	0,50		
		2-1/4"	MH1000-225	0,56		
		2-1/2"	MH1000-250	0,63		
		2-3/4"	MH1000-275	0,69		
		3"	MH1000-300	0,75		
		4"	MH1000-400	1,00		
		12"	MH1000-12L	-		
		24"	MH1000-24L	-		
1-1/4"	2-1/2"	2"	MH1104-200	0,50	3850	3,25
		2-1/4"	MH1104-225	0,56		
		2-1/2"	MH1104-250	0,63		
		2-3/4"	MH1104-275	0,69		
		3"	MH1104-300	0,75		
		12"	MH1104-12L	-		
1-1/2"	2-3/4"	2"	MH1102-200	0,50	4331	3,58
		2-1/4"	MH1102-225	0,56		
		2-1/2"	MH1102-250	0,63		
		2-3/4"	MH1102-275	0,69		
		3"	MH1102-300	0,75		
		12"	MH1102-12L	-		
	24"	MH1102-24L	-			

Toleranzen / Tolerances:

Außen Ø / Outside Diam.	11/16" – 1-1/2"	±0,015"
	1-5/8" – 2-3/4"	±0,020"
Innen Ø / Inside Diam.		-0,005" / -0,020"
Länge / Length		+0,015" / +0,046"






FORMATHANE Scheiben / Disks

Bestellnr. / Order No.	Toleranz / Tolerance Ø (Inch)	Toleranz / Tolerance Ø (mm)	Size (Inch)	Size (mm)
MD-09-025R	± 1/8"	±3	Ø 9 x 0.25	Ø 229 x 6
MD-12-025R	± 1/8"	±3	Ø 12 x 0.25	Ø 305 x 6
MD-15-025R	± 1/8"	±3	Ø 15 x 0.25	Ø 380 x 6
MD-20-025R	± 3/16"	±5	Ø 20 x 0.25	Ø 508 x 6
MD-25-025R	± 3/16"	±5	Ø 25 x 0.25	Ø 635 x 6
MD-26-025R	± 3/16"	±5	Ø 26 x 0.25	Ø 660 x 6
MD-27-025R	± 1/4"	±6	Ø 27 x 0.25	Ø 686 x 6
MD-32-025R	± 1/4"	±6	Ø 32 x 0.25	Ø 813 x 6

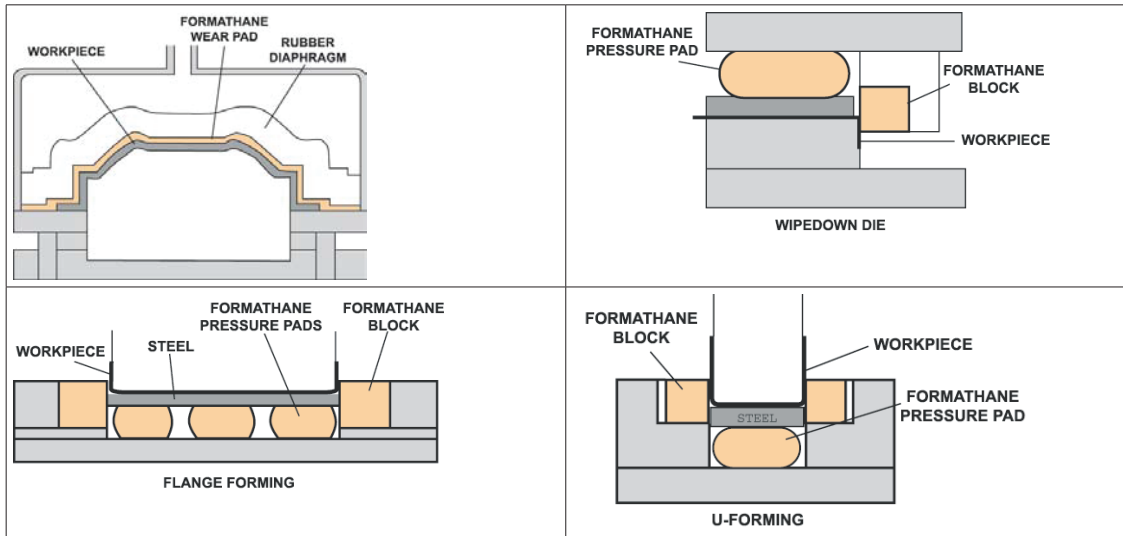
Nur in 85 Shore A und 90 Shore A erhältlich.
Only in 85 Shore A and 90 Shore A available.

W x L	95 Shore A TAN Bestellnr. Stärke / Order No thickness							
	1/16" (1,5mm) ±0,005" (0,125mm)	1/8" (3mm) ±0,010" (0,25mm)	3/16" (5mm) ±0,015" (0,4mm)	1/4" (6mm) ±0,015" (0,4mm)	3/8" (10mm) ±0,015" (0,4mm)	1/2" (12mm) ±0,015" (0,4mm)	5/8" (16mm) ±0,020" (0,5mm)	3/4" (20mm) ±0,020" (0,5mm)
1" x 48" (25 x 1220)	MS-0148-006	MS-0148-013	MS-0148-019	MS-0148-025	MS-0148-038	MS-0148-050	MS-0148-063	MS-0148-075
2" x 48" (51 x 1220)	MS-0248-006	MS-0248-013	MS-0248-019	MS-0248-025	MS-0248-038	MS-0248-050	MS-0248-063	MS-0248-075
3" x 48" (76 x 1220)	MS-0348-006	MS-0348-013	MS-0348-019	MS-0348-025	MS-0348-038	MS-0348-050	MS-0348-063	MS-0348-075
4" x 48" (102 x 1220)	MS-0448-006	MS-0448-013	MS-0448-019	MS-0448-025	MS-0448-038	MS-0448-050	MS-0448-063	MS-0448-075
6" x 6" (153 x 153)	MS-0606-006	MS-0606-013	MS-0606-019	MS-0606-025	MS-0606-038	MS-0606-050	MS-0606-063	MS-0606-075
6" x 12" (153 x 305)	MS-0612-006	MS-0612-013	MS-0612-019	MS-0612-025	MS-0612-038	MS-0612-050	MS-0612-063	MS-0612-075
6" x 18" (153 x 457)	MS-0618-006	MS-0618-013	MS-0618-019	MS-0618-025	MS-0618-038	MS-0618-050	MS-0618-063	MS-0618-075
6" x 24" (153 x 610)	MS-0624-006	MS-0624-013	MS-0624-019	MS-0624-025	MS-0624-038	MS-0624-050	MS-0624-063	MS-0624-075
6" x 36" (153 x 915)	MS-0636-006	MS-0636-013	MS-0636-019	MS-0636-025	MS-0636-038	MS-0636-050	MS-0636-063	MS-0636-075
6" x 48" (153 x 1220)	MS-0648-006	MS-0648-013	MS-0648-019	MS-0648-025	MS-0648-038	MS-0648-050	MS-0648-063	MS-0648-075
12" x 12" (305 x 305)	MS-1212-006	MS-1212-013	MS-1212-019	MS-1212-025	MS-1212-038	MS-1212-050	MS-1212-063	MS-1212-075
12" x 18" (305 x 457)	MS-1218-006	MS-1218-013	MS-1218-019	MS-1218-025	MS-1218-038	MS-1218-050	MS-1218-063	MS-1218-075
12" x 24" (305 x 610)	MS-1224-006	MS-1224-013	MS-1224-019	MS-1224-025	MS-1224-038	MS-1224-050	MS-1224-063	MS-1224-075
12" x 36" (305 x 915)	MS-1236-006	MS-1236-013	MS-1236-019	MS-1236-025	MS-1236-038	MS-1236-050	MS-1236-063	MS-1236-075
12" x 48" (305 x 1220)	MS-1248-006	MS-1248-013	MS-1248-019	MS-1248-025	MS-1248-038	MS-1248-050	MS-1248-063	MS-1248-075
18" x 18" (457 x 457)	MS-1818-006	MS-1818-013	MS-1818-019	MS-1818-025	MS-1818-038	MS-1818-050	MS-1818-063	MS-1818-075
18" x 24" (457 x 610)	MS-1824-006	MS-1824-013	MS-1824-019	MS-1824-025	MS-1824-038	MS-1824-050	MS-1824-063	MS-1824-075
18" x 36" (457 x 915)	MS-1836-006	MS-1836-013	MS-1836-019	MS-1836-025	MS-1836-038	MS-1836-050	MS-1836-063	MS-1836-075
18" x 48" (457 x 1220)	MS-1848-006	MS-1848-013	MS-1848-019	MS-1848-025	MS-1848-038	MS-1848-050	MS-1848-063	MS-1848-075
24" x 24" (610 x 610)	MS-2424-006	MS-2424-013	MS-2424-019	MS-2424-025	MS-2424-038	MS-2424-050	MS-2424-063	MS-2424-075
24" x 36" (610 x 915)	MS-2436-006	MS-2436-013	MS-2436-019	MS-2436-025	MS-2436-038	MS-2436-050	MS-2436-063	MS-2436-075
24" x 48" (610 x 1220)	MS-2448-006	MS-2448-013	MS-2448-019	MS-2448-025	MS-2448-038	MS-2448-050	MS-2448-063	MS-2448-075
36" x 36" (915 x 915)	MS-3636-006	MS-3636-013	MS-3636-019	MS-3636-025	MS-3636-038	MS-3636-050	MS-3636-063	MS-3636-075

Für andere Shore-Härte Bestellzusatz B (Black Shore70A),
R (Red Shore 85A) oder Y (Yellow Shore 90A) angeben.

For another Shore Hardness order with addition B (Black
Shore70A), R (Red Shore 85A) or Y (Yellow Shore 90A).





Mit unseren FORMATHAN Platten unterstützen sie den Umformprozess und können komplizierte Formen ohne weitere Nacharbeit herstellen.

Dank der chemischen Zusammensetzung brechen FORMATHANE nicht aus und es gelangen keine kleinen Partikel in des Werkzeug oder auf die Werkstücke.

With our FORMATHAN sheets you will assist the metalforming process by allowing intricate shapes to be produced without additional secondary finishing operations.

Because of the chemical compounds FORMATHANE will not break down, leaving particulate debris on your parts or equipment.

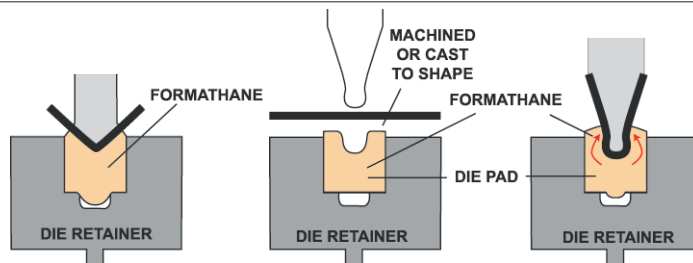
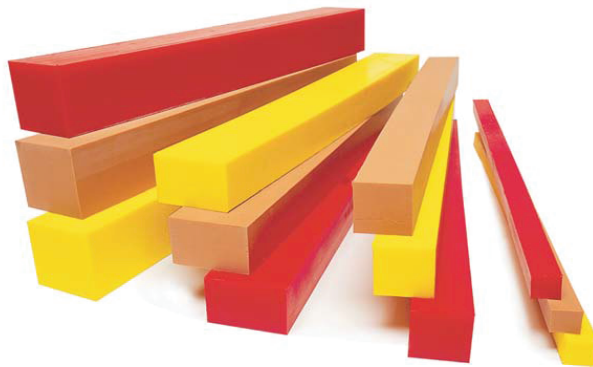
W x L	95 Shore A TAN Bestellnr. Stärke / Order No thickness							
	1" (25mm) ±.020" (0,5mm)	1-1/4" (32mm) ±.025" (0,6mm)	1-1/2" (40mm) +.015" (0,4mm) -.030" (0,7mm)	2" (50mm) +.015" (0,4mm) -.030" (0,7mm)	2-1/2" (63mm) +.015" (0,4mm) -.035" (0,9mm)	3" (75mm) +.015" (0,4mm) -.060" (1,5mm)	3-1/2" (88mm) +.015" (0,4mm) -.060" (1,5mm)	4" (100mm) +.015" (0,4mm) -.070" (1,7mm)
1" x 48" (25 x 1220)	MS-0148-100	MS-0148-125	MS-0148-150	MS-0148-200	MS-0148-250	MS-0148-300	MS-0148-350	MS-0148-400
2" x 48" (51 x 1220)	MS-0248-100	MS-0248-125	MS-0248-150	MS-0248-200	MS-0248-250	MS-0248-300	MS-0248-350	MS-0248-400
3" x 48" (76 x 1220)	MS-0348-100	MS-0348-125	MS-0348-150	MS-0348-200	MS-0348-250	MS-0348-300	MS-0348-350	MS-0348-400
4" x 48" (102 x 1220)	MS-0448-100	MS-0448-125	MS-0448-150	MS-0448-200	MS-0448-250	MS-0448-300	MS-0448-350	MS-0448-400
6" x 6" (153 x 153)	MS-0606-100	MS-0606-125	MS-0606-150	MS-0606-200	MS-0606-250	MS-0606-300	MS-0606-350	MS-0606-400
6" x 12" (153 x 305)	MS-0612-100	MS-0612-125	MS-0612-150	MS-0612-200	MS-0612-250	MS-0612-300	MS-0612-350	MS-0612-400
6" x 18" (153 x 457)	MS-0618-100	MS-0618-125	MS-0618-150	MS-0618-200	MS-0618-250	MS-0618-300	MS-0618-350	MS-0618-400
6" x 24" (153 x 610)	MS-0624-100	MS-0624-125	MS-0624-150	MS-0624-200	MS-0624-250	MS-0624-300	MS-0624-350	MS-0624-400
6" x 36" (153 x 915)	MS-0636-100	MS-0636-125	MS-0636-150	MS-0636-200	MS-0636-250	MS-0636-300	MS-0636-350	MS-0636-400
6" x 48" (153 x 1220)	MS-0648-100	MS-0648-125	MS-0648-150	MS-0648-200	MS-0648-250	MS-0648-300	MS-0648-350	MS-0648-400
12" x 12" (305 x 305)	MS-1212-100	MS-1212-125	MS-1212-150	MS-1212-200	MS-1212-250	MS-1212-300	MS-1212-350	MS-1212-400
12" x 18" (305 x 457)	MS-1218-100	MS-1218-125	MS-1218-150	MS-1218-200	MS-1218-250	MS-1218-300	MS-1218-350	MS-1218-400
12" x 24" (305 x 610)	MS-1224-100	MS-1224-125	MS-1224-150	MS-1224-200	MS-1224-250	MS-1224-300	MS-1224-350	MS-1224-400
12" x 36" (305 x 915)	MS-1236-100	MS-1236-125	MS-1236-150	MS-1236-200	MS-1236-250	MS-1236-300	MS-1236-350	MS-1236-400
12" x 48" (305 x 1220)	MS-1248-100	MS-1248-125	MS-1248-150	MS-1248-200	MS-1248-250	MS-1248-300	MS-1248-350	MS-1248-400
18" x 18" (457 x 457)	MS-1818-100	MS-1818-125	MS-1818-150	MS-1818-200	MS-1818-250	MS-1818-300	MS-1818-350	MS-1818-400
18" x 24" (457 x 610)	MS-1824-100	MS-1824-125	MS-1824-150	MS-1824-200	MS-1824-250	MS-1824-300	MS-1824-350	MS-1824-400
18" x 36" (457 x 915)	MS-1836-100	MS-1836-125	MS-1836-150	MS-1836-200	MS-1836-250	MS-1836-300	MS-1836-350	MS-1836-400
18" x 48" (457 x 1220)	MS-1848-100	MS-1848-125	MS-1848-150	MS-1848-200	MS-1848-250	MS-1848-300	MS-1848-350	MS-1848-400
24" x 24" (610 x 610)	MS-2424-100	MS-2424-125	MS-2424-150	MS-2424-200	MS-2424-250	MS-2424-300	MS-2424-350	MS-2424-400
24" x 36" (610 x 915)	MS-2436-100	MS-2436-125	MS-2436-150	MS-2436-200	MS-2436-250	MS-2436-300	MS-2436-350	MS-2436-400
24" x 48" (610 x 1220)	MS-2448-100	MS-2448-125	MS-2448-150	MS-2448-200	MS-2448-250	MS-2448-300	MS-2448-350	MS-2448-400
36" x 36" (915 x 915)	MS-3636-100	MS-3636-125	MS-3636-150	MS-3636-200	MS-3636-250	MS-3636-300	MS-3636-350	MS-3636-400

Für andere Shore-Härte Bestellzusatz B (Black Shore70A),

R (Red Shore 85A) oder Y (Yellow Shore 90A) angeben.

For another Shore Hardness order with addition B (Black Shore70A), R (Red Shore 85A) or Y (Yellow Shore 90A).




FORMATHANE-Leisten...

- ...als Ziehmatrize, um so auf teure, harte Werkzeuge zu verzichten
- ...als Ersatz für eine Vielzahl von mechanischen Werkzeugfedern oder Abstreifern zur Reduzierung von Herstellkosten und -zeit
- ...als Zwischenstück zur Reduzierung von Geräuschen und Vibration
- ...zur Herstellung komplizierter Formen für spezielle Umformanwendungen

FORMATHANE bars...

- ...as "universal" forming die section to eliminate the need for expensive hard tooling
- ...to eliminate series of mechanical die springs and stripper for reduce tooling expense and build time
- ...as spacer to reduce noise and vibration
- ...for manufacture of custom shapes for special metalforming applications

W x L	Toleranz / Tolerance	95 Shore A TAN Bestellnr. Länge / Order No length				
		2" (50mm)	12" (305mm)	24" (610mm)	36" (915mm)	48" (1220mm)
1/2" x 1/2" (12,5 x 12,5)	±.015" (0,4mm)	MB-005005-2	MB-005005-12	MB-005005-24	MB-005005-36	MB-005005-48
3/4" x 3/4" (20 x 20)		MB-075075-2	MB-075075-12	MB-075075-24	MB-075075-36	MB-075075-48
1" x 1" (25 x 25)		MB-100100-2	MB-100100-12	MB-100100-24	MB-100100-36	MB-100100-48
1-1/4" x 1-1/4" (32 x 32)		MB-125125-2	MB-125125-12	MB-125125-24	MB-125125-36	MB-125125-48
1-1/2" x 1-1/2" (40 x 40)		MB-150150-2	MB-150150-12	MB-150150-24	MB-150150-36	MB-150150-48
2" x 2" (50 x 50)	±.030" (0,7mm)	MB-200200-2	MB-200200-12	MB-200200-24	MB-200200-36	MB-200200-48
2" x 3" (50 x 75)		MB-200300-2	MB-200300-12	MB-200300-24	MB-200300-36	MB-200300-48
3" x 3" (75 x 75)		MB-300300-2	MB-300300-12	MB-300300-24	MB-300300-36	MB-300300-48
4" x 4" (100 x 100)	±.040" (1mm)	MB-400400-2	MB-400400-12	MB-400400-24	MB-400400-36	MB-400400-48
5" x 5" (125 x 125)	±.060" (1,5mm)	MB-500500-2	MB-500500-12	MB-500500-24	MB-500500-36	MB-500500-48
6" x 6" (150 x 150)		MB-600600-2	MB-600600-12	MB-600600-24	MB-600600-36	MB-600600-48

Für andere Shore-Härte Bestellzusatz B (Black Shore70A), R (Red Shore 85A) oder Y (Yellow Shore 90A) angeben.

For another Shore Hardness order with addition B (Black Shore70A), R (Red Shore 85A) or Y (Yellow Shore 90A).



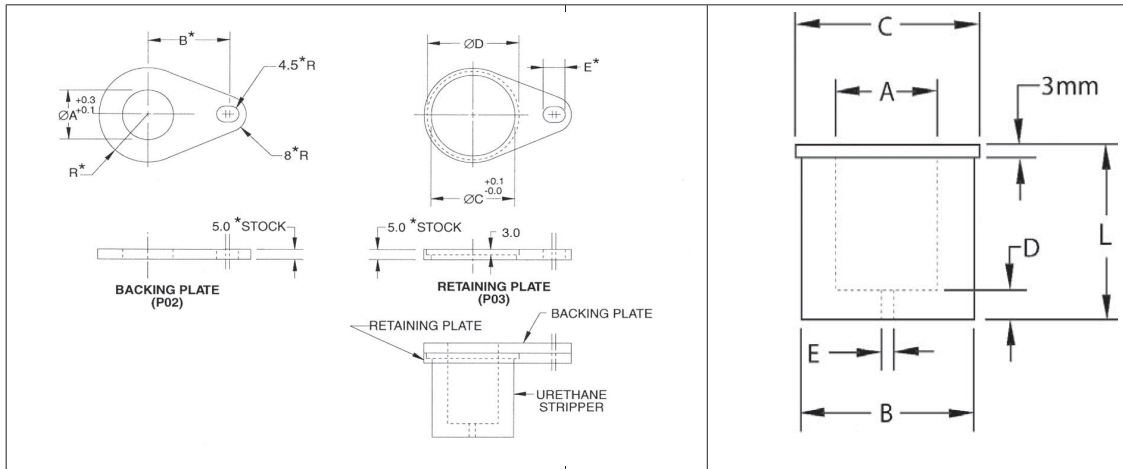

FORMATHANE-Stäbe / Rods

Durchmesser / Diameter	Toleranz / Tolerance	95 Shore A TAN Bestellnr. Länge / Order No length					
		3" (75mm)	4" (100mm)	12" (305mm)	24" (610mm)	36" (915mm)	48" (1220mm)
1/4" (6mm)	± 0.10" (0,25mm)	MR-025-03	MR-025-06	MR-025-12	MR-025-24	-	-
3/8" (10mm)		MR-038-03	MR-038-06	MR-038-12	-		
1/2" (12mm)		MR-050-03	MR-050-06	MR-050-12	MR-050-24		
5/8" (16mm)	± 0.15" (0,4mm)	MR-063-03	MR-063-06	MR-063-12	MR-063-24	MR-063-36	MR-063-48
3/4" (20mm)		MR-075-03	MR-075-06	MR-075-12	MR-075-24	MR-075-36	MR-075-48
7/8" (22mm)		MR-087-03	MR-087-06	MR-087-12	MR-087-24	MR-087-36	MR-087-48
1" (25mm)		MR-100-03	MR-100-06	MR-100-12	MR-100-24	MR-100-36	MR-100-48
1-1/4" (32mm)	± 0.20" (0,5mm)	MR-125-03	MR-125-06	MR-125-12	MR-125-24	MR-125-36	MR-125-48
1-1/2" (40mm)		MR-150-03	MR-150-06	MR-150-12	MR-150-24	MR-150-36	MR-150-48
1-3/4" (45mm)		MR-175-03	MR-175-06	MR-175-12	MR-175-24	MR-175-36	MR-175-48
2" (50mm)		MR-200-03	MR-200-06	MR-200-12	MR-200-24	MR-200-36	MR-200-48
2-1/4" (57mm)	± 0.30" (0,7mm)	MR-225-03	MR-225-06	MR-225-12	MR-225-24	MR-225-36	MR-225-48
2-1/2" (64mm)		MR-250-03	MR-250-06	MR-250-12	MR-250-24	MR-250-36	MR-250-48
2-3/4" (70mm)		MR-275-03	MR-275-06	MR-275-12	MR-275-24	MR-275-36	MR-275-48
3" (75mm)		MR-300-03	MR-300-06	MR-300-12	MR-300-24	MR-300-36	MR-300-48
3-1/4" (82mm)	± 0.40" (1mm)	MR-325-03	MR-325-06	MR-325-12	MR-325-24	MR-325-36	MR-325-48
3-1/2" (87mm)		MR-350-03	MR-350-06	MR-350-12	MR-350-24	MR-350-36	MR-350-48
3-3/4" (70mm)		MR-375-03	MR-375-06	MR-375-12	MR-375-24	MR-375-36	MR-375-48
4" (100mm)	± 0.60" (1,5mm)	MR-400-03	MR-400-06	MR-400-12	MR-400-24	MR-400-36	MR-400-48
4-1/2" (112mm)		MR-450-03	MR-450-06	MR-450-12	MR-450-24	MR-450-36	MR-450-48
5" (125mm)		MR-500-03	MR-500-06	MR-500-12	MR-500-24	-	-
6" (150mm)		MR-600-03	MR-600-06	MR-600-12	MR-600-24		
7" (175mm)	-	MR-700-03	MR-700-06	MR-700-12	MR-700-24	-	-
8" (200mm)		MR-800-03	MR-800-06	MR-800-12	MR-800-24		

Für andere Shore-Härte Bestellzusatz B (Black Shore70A),
R (Red Shore 85A) oder Y (Yellow Shore 90A) angeben.

For another Shore Hardness order with addition B (Black
Shore70A), R (Red Shore 85A) or Y (Yellow Shore 90A).





Abmessungen NAAMS-Abstreifer / Dimensions NAAMS stripper

Für Stempel Ø / Fits punch diam.	Passung / Press fit A (mm)	C (mm)	D (mm)	Entlüftung / Vent hole E (mm)
10	9,75	21,3	6	1,6
13	12,75	26,3		
16	15,75	31,3		
20	19,75	36,3	7	3
25	24,75	43,3		
32	31,7	55,3		
40	39,7	65,3		

Halterungs-Set / Retaining set

Bestellnr. / Order No.	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	R (mm)
BRP0010	10	29	19	22	11	13
BRP0013	13	32	24	27	11	15,5
BRP0016	16	34	29	32	11	18
BRP0020	20	36	34	37	11,5	20,5
BRP0025	25	40,6	41	44	10,5	24
BRP0032	32	42	51	56	10,5	31
BRP0040	40	46	61	66	11	36

*Abmessung entspricht sowohl Stützplatte als auch Halteplatte

*Dimension common to both backing and retaining plate

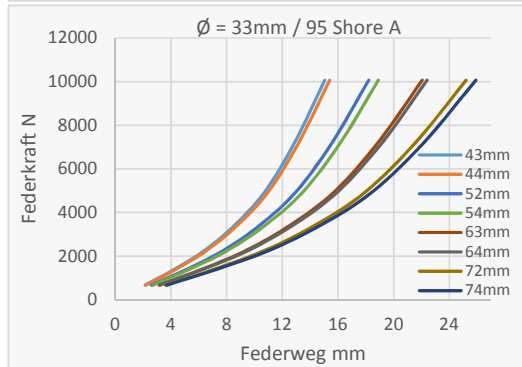
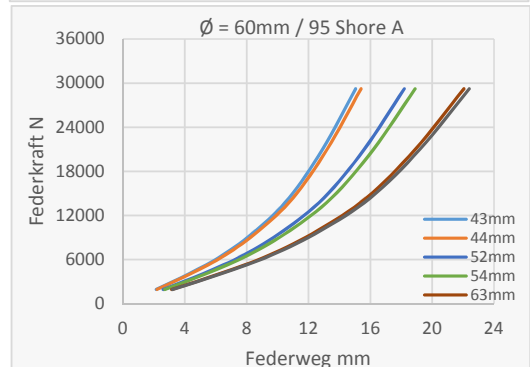
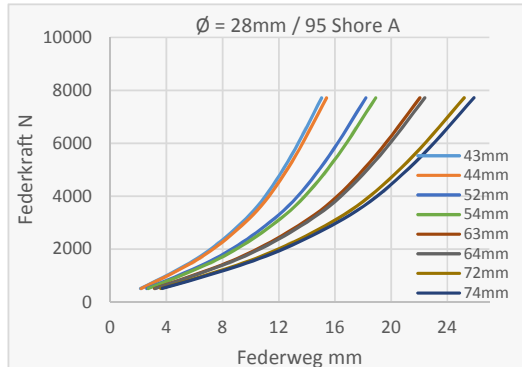
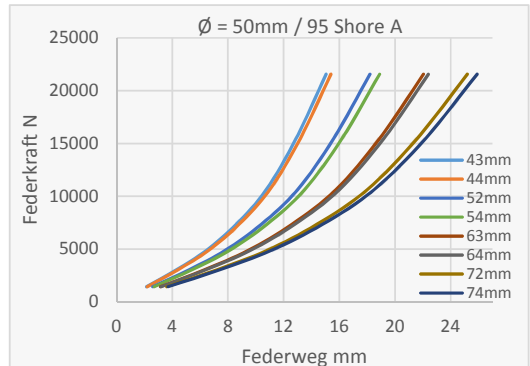
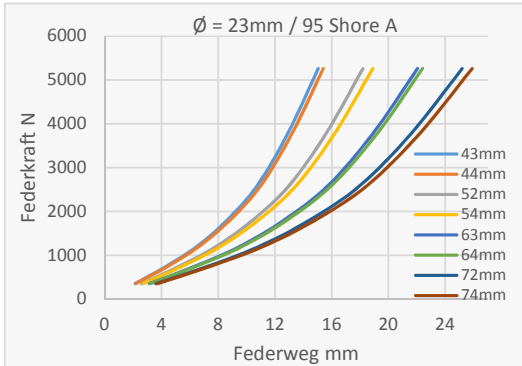
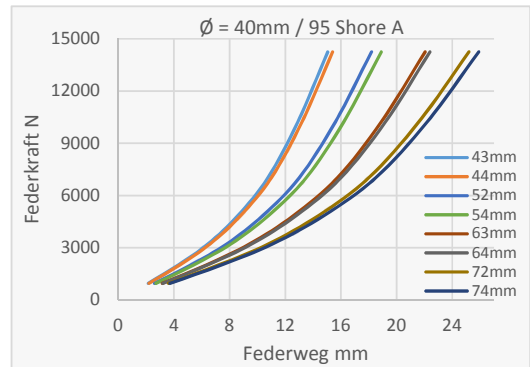
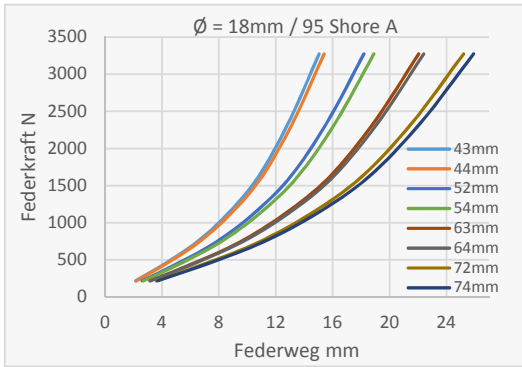


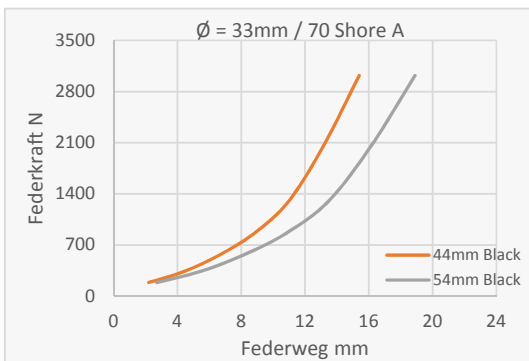
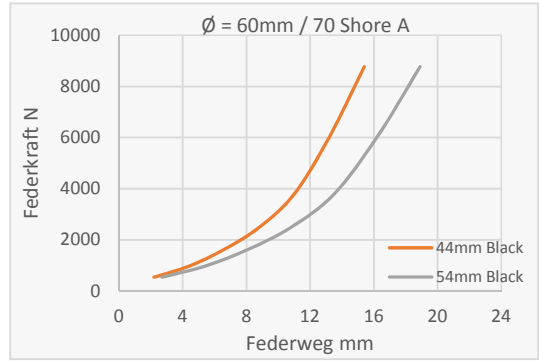
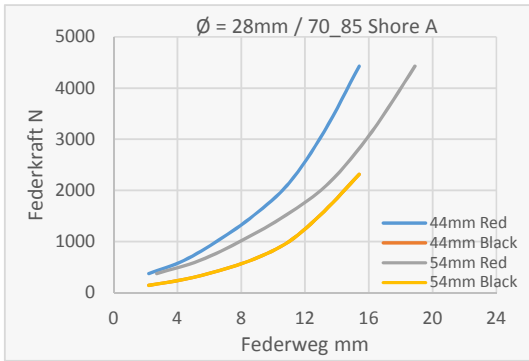
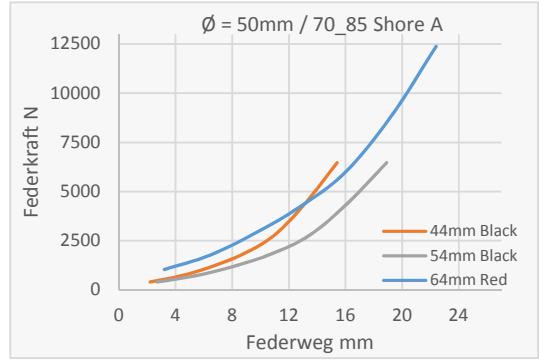
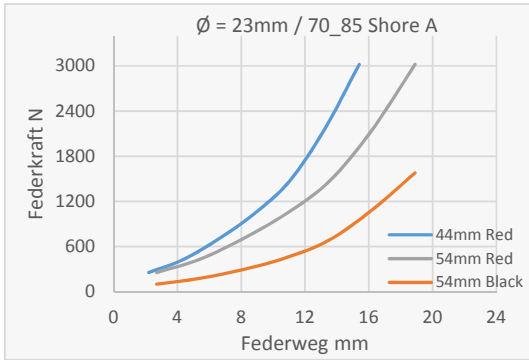
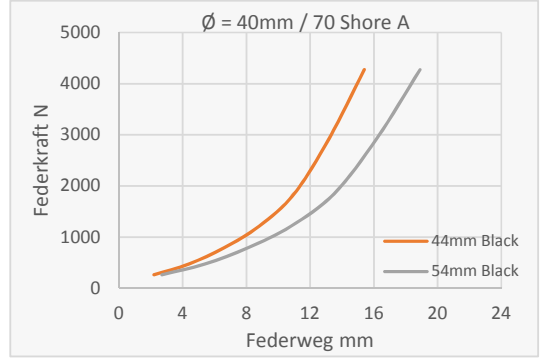
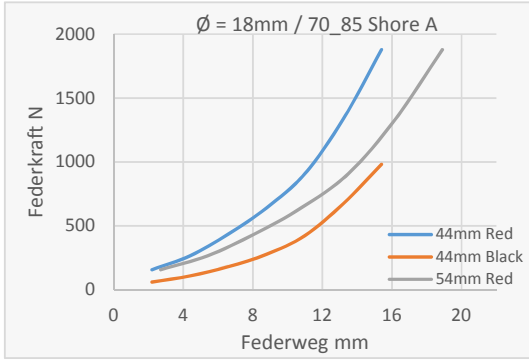
Für Stempel Ø / fits punch Diam.	Außen Ø / Outside Diam.	Länge / Length	Bestellnummer / Order number			Federweg / Deflection max.	Federkraft / Force max.	NAAMS Code		
			95 A Tan	85 A Red	70 A Black					
10	18	43	MTH-10-43			11	1612	P051044		
		44	MTH-10-44							
		44		MTH-10-44R			15		1879	
		44				MTH-10-44B		982		
		52	MTH-10-52				13		P051054	
		54	MTH-10-54				14	1612		
		54		MTH-10-54R			19	1879		
		63	MTH-10-63				16		P051064	
		64	MTH-10-64					1612		
		72	MTH-10-72				18			
		74	MTH-10-74				19		P051074	
		13	23	43	MTH-13-43			11	2591	P051344
44	MTH-13-44									
44				MTH-13-44R			15	3020		
52	MTH-13-52						13		P051354	
54	MTH-13-54						14	2591		
54				MTH-13-54R			19	3020		
54						MTH-13-54B		1578		
63	MTH-13-63						16		P051364	
64	MTH-13-64							2591		
72	MTH-13-72						18			
74	MTH-13-74						19		P051374	
16	28			43	MTH-16-43			11	3801	P051644
		44	MTH-16-44							
		44		MTH-16-44R			15	4429		
		44				MTH-16-44B		2315		
		52	MTH-16-52				13		P051654	
		54	MTH-16-54				14	3801		
		54		MTH-16-54R			19	4429		
		54				MTH-16-54B		2315		
		63	MTH-16-63				16		P051664	
		64	MTH-16-64					3801		
		72	MTH-16-72				18			
		74	MTH-16-74				19		P051674	
20	33	43	MTH-20-43			11	4960	P052044		
		44	MTH-20-44							
		44				MTH-20-44B	15		3021	
		52	MTH-20-52				13		P052054	
		54	MTH-20-54				14	4960		
		54				MTH-20-54B	19	3021		
		63	MTH-20-63				16		P052064	
		64	MTH-20-64					4960		
		72	MTH-20-72				18			
		74	MTH-20-74				19		P052074	
		25	40	43	MTH-25-43			11	7019	P052544
				44	MTH-25-44					
44						MTH-25-44B	15	4274		
52	MTH-25-52						13		P052554	
54	MTH-25-54						14	7019		
54						MTH-25-54B	19	4274		
63	MTH-25-63						16		P052564	
64	MTH-25-64							7019		
72	MTH-25-72						18			
74	MTH-25-74						19		P052574	
32	50			43	MTH-32-43			11	10625	P053244
				44	MTH-32-44					
		44				MTH-32-44B	15	6471		
		52	MTH-32-52				13		P053254	
		54	MTH-32-54				14	10625		
		54				MTH-32-54B	19	6471		
		63	MTH-32-63				16		P053264	
		64	MTH-32-64					10625		
		64		MTH-32-64R			22	12382		
		72	MTH-32-72				18		P053274	
		74	MTH-32-74				19	10625		
		74								
40	60	43	MTH-40-43			11	14397	P054054		
		44	MTH-40-44							
		44				MTH-40-44B	15		8768	
		52	MTH-40-52				13		P054064	
		54	MTH-40-54				14	14397		
		54				MTH-40-54B	19	8768		
63	MTH-40-63				16		P054074			
64	MTH-40-64					14397				

FORMATHANE-Abstreifer m. Bund Entsprechen vollständig dem NAAMSSstandard. Das geschlossene Design ermöglicht es, dass sich der Abstreifer perfekt der Form des Stempels anpasst. Dank des Bundes sind die Abstreifer vor Lösen gesichert und können nicht in das Werkzeug fallen.

FORMATHANE headed strippers fully meet the NAAMS standard. The closedend design allows for custom matching of the stripper face to the shape of your punch. The shoulder prevents the stripper from falling off the punch and into the die.







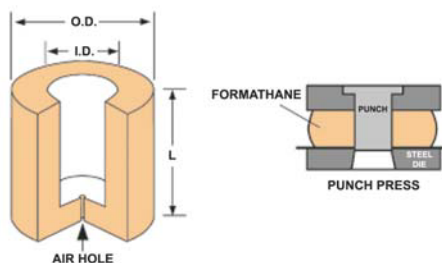
Das geschlossene Design ermöglicht es, dass sich der Abstreifer perfekt der Form des Stempels anpasst. Pressen sie den Abstreifer auf den Stempelschaft und stanzen mit dem ersten Hub (ohne Blech) das erforderliche Loch.

Closed-end design allow for custommatching of the stripper face to the shape of the punch. Simply press-fit the stripper onto the punch body and complete one stroke without the metal stock.

Für Stempel Ø / fits punch Ø mm	Außen Ø / Outside Ø mm	Länge / Length mm	70 A Black			Wölbung / Bulge Ø
			Bestellnr. / Order No	Federweg / Deflection max. mm	Federkraft / Force max. N	
6	20	32	MT104-125B	11,2	1596	26
		44	MT104-175B	15,4		
8	21	32	MT516-125B	11,2	1653	27
		32	MT308-125B	11,2		
10	22	38	MT308-150B	13,3	1683	29
		44	MT308-175B	15,4		
		44	MT102-125B	11,2		
12	25	38	MT102-150B	13,3	2109	33
		51	MT102-200B	17,9		
		51	MT508-200B	17,9		
16	28	51	MT508-200B	17,9	2315	36
20	38	44	MT304-175B	15,4	4577	49
		57	MT304-225B	20,0		
22	44	44	MT708-175B	15,4	6366	57
		44	MT1000-175B	15,4		
25	51	51	MT1000-200B	17,9	8663	66
		51	MT1104-200B	17,9		
32	64	51	MT1104-200B	17,9	13468	83

Für Stempel Ø / fits punch Ø mm	Außen Ø / Outside Ø mm	Länge / Length mm	85 A Red			Wölbung / Bulge Ø
			Bestellnr. / Order No	Federweg / Deflection max. mm	Federkraft / Force max. N	
6	20	44	MT104-175R	15,4	3054	26
		32	MT516-125R	11,2		
8	21	38	MT516-150R	13,3	3163	27
		44	MT516-175R	15,4		
		51	MT516-200R	17,9		
		32	MT308-125R	11,2		
10	22	38	MT308-150R	13,3	3221	29
		44	MT308-175R	15,4		
		51	MT308-200R	17,9		
		32	MT102-125R	11,2		
12	25	38	MT102-150R	13,3	4035	33
		44	MT102-175R	15,4		
		57	MT102-225R	20,0		
		44	MT508-175R	15,4		
16	28	51	MT508-200R	17,9	4429	36
		44	MT304-175R	15,4		
		51	MT304-200R	17,9		
20	38	57	MT304-225R	20,0	8758	49
		70	MT304-275R	24,5		
		44	MT708-175R	15,4		
		57	MT708-225R	20,0		
22	44	44	MT1000-175R	15,4	12181	57
		57	MT1000-225R	20,0		
		70	MT1000-275R	24,5		
		57	MT1104-225R	20,0		
25	51	70	MT1000-275R	24,5	16577	66
		57	MT1104-275R	24,5		
		70	MT1104-275R	24,5		
32	64	57	MT1104-225R	20,0	25772	83
		70	MT1104-275R	24,5		
38	70	51	MT1102-200R	17,9	28993	91

Für Stempel Ø / fits punch Ø mm	Außen Ø / Outside Ø mm	Länge / Length mm	90 A Yellow			Wölbung / Bulge Ø
			Bestellnr. / Order No	Federweg / Deflection max. mm	Federkraft / Force max. N	
6	20	32	MT104-125Y	9,6	3101	26
8	21	32	MT516-125Y	9,6	3212	27
10	22	51	MT308-200Y	15,3	3271	29
12	25	32	MT102-125Y	9,6	4098	33
		57	MT102-225Y	17,1		
20	38	44	MT304-175Y	13,2	8894	49
		51	MT304-200Y	15,3		
25	51	44	MT1000-175Y	13,2	16834	66
		51	MT1000-200Y	15,3		


Toleranzen / Tolerances:

Außen Ø / Outside Diam. $1 \pm 0,4 \text{ mm}$

Innen Ø / Inside Diam. $-0,1 \text{ mm} / -0,5 \text{ mm}$

Länge / Length $+0,4 \text{ mm} / +1,2 \text{ mm}$

Aufgrund der Setzneigung liegen alle Längen 0,8mm über den Nennwert.
All length cut to 0,8mm over nominal to allow for set.





Für Stempel Ø / fits punch Ø mm	Außen Ø / Outside Ø mm	Länge / Length mm	95 A Tan			Wölbung / Bulge Ø
			Bestellnr. / Order No	Federweg / Deflection max. mm	Federkraft / Force max. N	
5	17,5	32	MT316-125	8,0	2025	23
		38	MT316-150	9,5		
6	20	32	MT104-125	8,0	2620	26
		38	MT104-150	9,5		
		44	MT104-175	11,0		
		32	MT516-125	8,0		
8	21	38	MT516-150	9,5	2714	27
		44	MT516-175	11,0		
		51	MT516-200	12,8		
		32	MT308-125	8,0		
10	22	38	MT308-150	9,5	2764	29
		44	MT308-175	11,0		
		51	MT308-200	12,8		
		32	MT102-125	8,0		
12	25	38	MT102-150	9,5	3462	33
		44	MT102-175	11,0		
		51	MT102-200	12,8		
		57	MT102-225	14,3		
16	28	32	MT508-125	8,0	3801	36
		38	MT508-150	9,5		
		44	MT508-175	11,0		
		51	MT508-200	12,8		
20	38	44	MT304-175	11,0	7515	49
		51	MT304-200	12,8		
		57	MT304-225	14,3		
		64	MT304-250	16,0		
22	44	70	MT304-275	17,5	10452	57
		44	MT708-175	11,0		
		51	MT708-200	12,8		
		57	MT708-225	14,3		
25	51	64	MT708-250	16,0	14224	66
		70	MT708-275	17,5		
		44	MT1000-175	11,0		
		51	MT1000-200	12,8		
32	64	57	MT1000-225	14,3	22114	83
		64	MT1000-250	16,0		
		70	MT1000-275	17,5		
		51	MT1104-200	12,8		
38	70	57	MT1104-225	14,3	24878	91
		64	MT1104-250	16,0		
		70	MT1104-275	17,5		
		76	MT1104-300	19,0		

Toleranzen / Tolerances:

Außen Ø / Outside Diam. ±0,4mm

Innen Ø / Inside Diam. -0,1mm / -0,5mm

Länge / Length +0,4mm / +1,2mm

 Aufgrund der Setzneigung liegen alle Längen 0,8mm
 über den Nennwert.

All length cut to 0,8mm over nominal to allow for set.



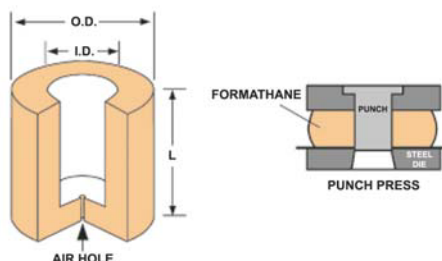
Das geschlossene Design ermöglicht es, dass sich der Abstreifer perfekt der Form des Stempels anpasst. Pressen sie den Abstreifer auf den Stempelschaft und stanzen mit dem ersten Hub (ohne Blech) das erforderliche Loch.

Closed-end design allow for custommaching of the stripper face to the shape of the punch. Simply press-fit the stripper onto the punch body and complete one stroke without the metal stock.

Für Stempel Ø / fits punch Ø mm	Außen Ø / Outside Ø mm	Länge / Length mm	70 A Black			Wölbung / Bulge Ø
			Bestellnr. / Order No	Federweg / Deflection max. mm	Federkraft / Force max. N	
1/4	3/4	1-1/4	MT104-125B	0,44	359	0,98
		1-3/4	MT104-175B	0,61		
5/16	13/16	1-1/4	MT516-125B	0,44	372	1,06
		1-1/4	MT308-125B	0,44		
3/8	7/8	1-1/2	MT308-150B	0,53	378	1,14
		1-3/4	MT308-175B	0,61		
		1-1/4	MT102-125B	0,44		
1/2	1	1-1/2	MT102-150B	0,53	474	1,30
		2	MT102-200B	0,70		
5/8	1-1/8	2	MT508-200B	0,70	520	
3/4	1-1/2	1-3/4	MT304-175B	0,61	1029	1,95
		2-1/4	MT304-225B	0,79		
7/8	1-3/4	1-3/4	MT708-175B	0,61	1431	2,28
		1-3/4	MT1000-175B	0,61		
1	2	2	MT1000-200B	0,70	1947	2,60
		2	MT1104-200B	0,70		

Für Stempel Ø / fits punch Ø mm	Außen Ø / Outside Ø mm	Länge / Length mm	85 A Red			Wölbung / Bulge Ø
			Bestellnr. / Order No	Federweg / Deflection max. mm	Federkraft / Force max. N	
1/4	3/4	1-3/4	MT104-175R	0,61	686	0,98
		1-1/4	MT516-125R	0,44		
5/16	13/16	1-1/2	MT516-150R	0,53	711	1,06
		1-3/4	MT516-175R	0,61		
		2	MT516-200R	0,70		
3/8	7/8	1-1/4	MT308-125R	0,44	724	1,14
		1-1/2	MT308-150R	0,53		
		1-3/4	MT308-175R	0,61		
1/2	1	2	MT308-200R	0,70	907	1,30
		1-1/4	MT102-125R	0,44		
		1-1/2	MT102-150R	0,53		
5/8	1-1/8	1-3/4	MT102-175R	0,61	996	1,46
		2-1/4	MT102-225R	4,20		
		1-3/4	MT508-175R	0,61		
3/4	1-1/2	2	MT508-200R	0,70	1969	1,95
		1-3/4	MT304-175R	0,61		
		2	MT304-200R	0,70		
7/8	1-3/4	2-1/4	MT304-225R	0,79	2738	2,28
		2-3/4	MT304-275R	0,96		
		1-3/4	MT708-175R	0,61		
1	2	2-1/4	MT708-225R	0,79	3727	2,60
		1-3/4	MT1000-175R	0,61		
		2-1/4	MT1000-225R	0,79		
1-1/4	2-1/2	2-3/4	MT1000-275R	0,96	5794	3,25
		2-1/4	MT1104-225R	0,79		
1-1/2	2-3/4	2	MT1104-275R	0,96	6518	3,58

Für Stempel Ø / fits punch Ø mm	Außen Ø / Outside Ø mm	Länge / Length mm	90 A Yellow			Wölbung / Bulge Ø
			Bestellnr. / Order No	Federweg / Deflection max. mm	Federkraft / Force max. N	
1/4	3/4	1-1/4	MT104-125Y	0,38	697	0,98
5/16	13/16	1-1/4	MT516-125Y	0,38	722	1,06
3/8	7/8	2	MT308-200Y	0,60	735	1,14
1/2	1	1-1/4	MT102-125Y	0,38	921	1,30
		2-1/4	MT102-225Y	3,60		
3/4	1-1/2	1-3/4	MT304-175Y	0,53	1999	1,95
		2	MT304-200Y	0,60		
1	2	1-3/4	MT1000-175Y	0,53	3784	2,60
		2	MT1000-200Y	0,60		


Toleranzen / Tolerances:

Außen Ø / Outside Diam. ±0,4mm

Innen Ø / Inside Diam. -0,1mm / -0,5mm

Länge / Length +0,4mm / +1,2mm

Aufgrund der Setzneigung liegen alle Längen 0,8mm über den Nennwert.

All length cut to 0,8mm over nominal to allow for set.





Für Stempel Ø / fits punch Ø mm	Außen Ø / Outside Ø mm	Länge / Length mm	95 A Tan			Wölbung / Bulge Ø
			Bestellnr. / Order No	Federweg / Deflection max. mm	Federkraft / Force max. N	
3/16	11/16	1-1/4	MT316-125	0,31	455	0,89
		1-1/2	MT316-150	0,38		
1/4	3/4	1-1/4	MT104-125	0,31	589	0,98
		1-1/2	MT104-150	0,38		
		1-3/4	MT104-175	0,44		
5/16	13/16	1-1/4	MT516-125	0,31	610	1,06
		1-1/2	MT516-150	0,38		
		1-3/4	MT516-175	0,44		
		2	MT516-200	0,50		
3/8	7/8	1-1/4	MT308-125	0,31	621	1,14
		1-1/2	MT308-150	0,38		
		1-3/4	MT308-175	0,44		
		2	MT308-200	0,50		
1/2	1	1-1/4	MT102-125	0,31	778	1,30
		1-1/2	MT102-150	0,38		
		1-3/4	MT102-175	0,44		
		2	MT102-200	0,50		
		2-1/4	MT102-225	3,00		
5/8	1-1/8	1-1/4	MT508-125	0,31	854	1,46
		1-1/2	MT508-150	0,38		
		1-3/4	MT508-175	0,44		
		2	MT508-200	0,50		
3/4	1-1/2	1-3/4	MT304-175	0,44	1689	1,95
		2	MT304-200	0,50		
		2-1/4	MT304-225	0,56		
		2-1/2	MT304-250	0,63		
		2-3/4	MT304-275	0,69		
7/8	1-3/4	1-3/4	MT708-175	0,44	2350	2,28
		2	MT708-200	0,50		
		2-1/4	MT708-225	0,56		
		2-1/2	MT708-250	0,63		
		2-3/4	MT708-275	0,69		
1	2	1-3/4	MT1000-175	0,44	3198	2,60
		2	MT1000-200	0,50		
		2-1/4	MT1000-225	0,56		
		2-1/2	MT1000-250	0,63		
		2-3/4	MT1000-275	0,69		
1-1/4	2-1/2	2	MT1104-200	0,50	4971	3,25
		2-1/4	MT1104-225	0,56		
		2-1/2	MT1104-250	0,63		
		2-3/4	MT1104-275	0,69		
		3	MT1104-300	0,75		
1-1/2	2-3/4	2	MT1102-200	0,50	5593	3,58
		2-1/4	MT1102-225	0,56		
		2-1/2	MT1102-250	0,63		
		2-3/4	MT1102-275	0,69		
		3	MT1102-300	0,75		

Toleranzen / Tolerances:

Außen Ø / Outside Diam. ±0,4mm

Innen Ø / Inside Diam. -0,1mm / -0,5mm

Länge / Length +0,4mm / +1,2mm

 Aufgrund der Setzneigung liegen alle Längen 0,8mm über
 den Nennwert.

All length cut to 0,8mm over nominal to allow for set.





**Stäbe /
Rods**

Durchm. / Dia. mm	Bestellnr. / Order No Tan 500mm	Bestellnr. / Order No Tan 1000mm
8	MRM-8500	
10	MRM-10500	
15	MRM-15500	
20	MRM-20500	
25	MRM-25500	MRM-251000
30	MRM-30500	MRM-301000
40	MRM-40500	MRM-401000
50	MRM-50500	MRM-501000
60	MRM-60500	MRM-601000
70	MRM-70500	MRM-701000
80	MRM-80500	MRM-801000
100	MRM-100500	MRM-1001000

**Geschlossene Abstreifer /
Closed-end strippers**

InnenØ / I.D. mm	AußenØ / O.D. mm	Länge / Length mm	Entlüftungsloch / Air Hole	Bestellnr. / Order No Tan
25	25	100		MTM-061945
		415		MTM-061953
		500		MTM-061971
		835		MTM-082145
		1000		MTM-082153
30	25	100		MTM-082171
		415		MTM-102345
		500		MTM-102353
		835		MTM-102356
		1000		MTM-102371
50	50	100		MTM-132645
		415		MTM-132653
		500		MTM-132656
		835		MTM-132671
		1000		MTM-163045
80	30	100		MTM-163053
		415		MTM-163056
		500		MTM-163071
		835		MTM-203845
		1000		MTM-203853
75	50	100		MTM-203871
		415		MTM-255045
		500		MTM-255053
		835		MTM-255071
		1000		MTM-326045

**Leisten /
Bars**

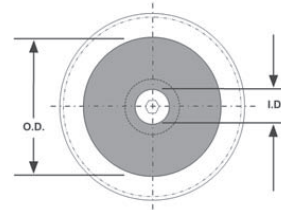
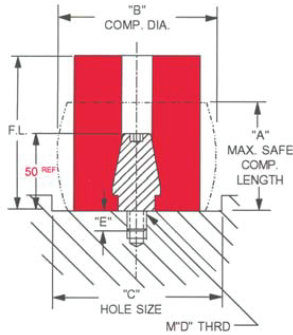
Breite / Width mm	Höhe / Heigh mm	Länge / Length mm	Bestellnr. / Order No Tan
25	25	100	MBM-2525100
		415	MBM-2525415
		500	MBM-2525500
		835	MBM-2525835
		1000	MBM-25251000
30	25	100	MBM-3025100
		415	MBM-3025415
		500	MBM-3025500
		835	MBM-3025835
		1000	MBM-30251000
50	50	100	MBM-5050100
		415	MBM-5050415
		500	MBM-5050500
		835	MBM-5050835
		1000	MBM-50501000
80	30	100	MBM-8030100
		415	MBM-8030415
		500	MBM-8030500
		835	MBM-8030835
		1000	MBM-80301000
75	50	100	MBM-7550100
		415	MBM-7550415
		500	MBM-7550500
		835	MBM-7550835
		1000	MBM-75501000
110	45	100	MBM-11045100
		415	MBM-11045415
		500	MBM-11045500
		835	MBM-11045835
		1000	MBM-110451000

**Federn /
Springs**

Breite / Width mm	Höhe / Heigh mm	Länge / Length mm	Bestellnr. / Order No Tan
7	15	25	MMM-71525
		30	MMM-71530
		35	MMM-71535
		40	MMM-71540
		330	MMM-715330
8.5	20.0	25	MMM-82025
		30	MMM-82030
		35	MMM-82035
		40	MMM-82040
		330	MMM-820330
11	25	25	MMM-112525
		30	MMM-112530
		35	MMM-112535
		40	MMM-112540
		45	MMM-112545
14	30	330	MMM-1125330
		25	MMM-143025
		30	MMM-143030
		35	MMM-143035
		40	MMM-143040
14	50	45	MMM-143045
		330	MMM-1125330
		25	MMM-143025
		30	MMM-143030
		35	MMM-143035
14	50	40	MMM-143040
		50	MMM-143050
		60	MMM-144060
		500	MMM-1440500
		50	MMM-144050
14	50	60	MMM-144060
		80	MMM-145080
		500	MMM-1450500
		50	MMM-146050
		60	MMM-146060
14	60	80	MMM-146080
		500	MMM-1460500
		60	MMM-228060
		80	MMM-228080
		100	MMM-2280100
22	80	500	MMM-2280500
		80	MMM-2210080
		100	MMM-22100100
		120	MMM-22100120
		500	MMM-22100500

Für andere Shore-Härte Bestellzusatz B (Black Shore70A),
R (Red Shore 85A) oder Y (Yellow Shore 90A) angeben.
For another Shore Hardness order with addition B (Black
Shore70A), R (Red Shore 85A) or Y (Yellow Shore 90A).





Bestellnr. / No	Order Red	Außen Ø / O.D. mm	InneØ / I.D. mm	Länge / Length mm	Federweg / Deflection max. mm	B Wölbung / Bulge mm	Gewinde / Thread mm
MMM-145032R		50	14	32	10	62	M12 x 14
MMM-145050R				50	15		
MMM-145060R				60	18		
MMM-145080R				80	24		
MMM-145080R-T				80	24		
MMM-1450100R				100	30		
MMM-1450100R-T				100	30		
MMM-1450500R				500	-		
MMM-146050R				60	14		
MMM-146060R		60	18				
MMM-146060R-T		60	18				
MMM-146080R		80	24				
MMM-146080R-T		80	24				
MMM-1460100R		100	30				
MMM-1460100R-T		100	30				
MMM-1460125R		125	37				
MMM-1460125R-T		125	37				
MMM-1460500R		500	-				
MMM-228050R		80	22	50	15	98	M16 x 18
MMM-228060R				60	18		
MMM-228080R				80	24		
MMM-228080R-T				80	24		
MMM-2280100R				100	30		
MMM-2280100R-T				100	30		
MMM-2280125R				125	37		
MMM-2280125R-T				125	37		
MMM-2280500R				500	-		
MMM-2210050R		100	22	50	15	-	-
MMM-2210080R				80	24		
MMM-2210080R-T				80	24		
MMM-22100100R				100	30		
MMM-22100100R-T				100	30		
MMM-22100125R				125	37		
MMM-22100125R-T				125	37		
MMM-22100500R				500	-		
MMM-2512750R				127	25		
MMM-2512780R		80	24				
MMM-2512780R-T		80	24				
MMM-25127100R		100	30				
MMM-25127100R-T		100	30				
MMM-25127125R		125	37				
MMM-25127125R-T		125	37				
MMM-25127160R		160	40				
MMM-25127160R-T		160	40				
MMM-25127915R		915	-				

Toleranzen / Tolerances:

Außen Ø / Outside Diam.

- 15mm – 40mm ±0,4mm
- 50mm – 60mm ±0,6mm
- 80mm – 127mm ±0,8mm

Innen Ø / Inside Diam.

-0,1mm / -0,5mm

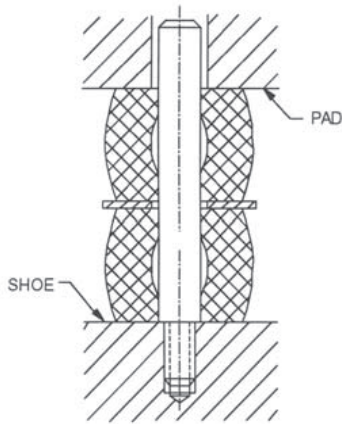
Länge / Length

+3mm

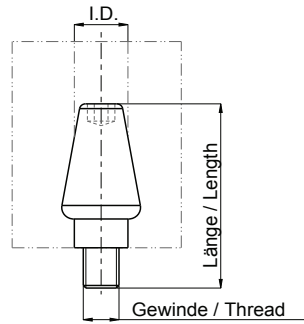
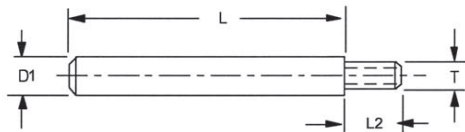
Ab Ø 80mm mit Bestellzusatz „-T“ möglich. Beinhaltet einen Aufnahmebolzen.

Für andere Shore-Härten fragen sie unseren Kundenservice.
As of diameter 80mm with „-T“ designation possible. Includes a locating stud.
For another Shore hardness, ask our customer service.




**Aufnahmebolzen /
Locating studs**

Bestellnr. / Order No	Gewinde / Thread	InnenØ Feder / I.D. spring	Länge / Length
M12-LOCATING	M12	14	64
M16-LOCATING	M16	22	68
M20-LOCATING	M20	25	72


**Führungsstifte /
Guide pins**

Bestellnr. / Order No	D1 mm	T	L2 mm	L mm
M12-032	13	M12	18	32
M12-040				40
M12-050				50
M12-063				63
M12-080				80
M12-095				95
M12-118				118
M12-140				140
M12-180				180
M16-050				21
M16-063	63			
M16-080	80			
M16-095	95			
M16-118	118			
M16-140	140			
M16-180	180			
M20-050	24	M20	30	50
M20-063				63
M20-080				80
M20-095				95
M20-118				118
M20-140				140
M20-180				180

**Scheiben /
Washers**

Bestellnr. / Order No	D2 mm	D3 mm	T1 mm
WASHER050	60	16,5	6
WASHER060	80	16,5	6
WASHER080	100	20,5	8
WASHER100	120	20,5	8
WASHER125	150	26	8

