



STEADY REST SERIES

kitagawa
EUROPE



STEADY RESTS





**STEADY
REST**

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REST**

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**STEADY
REST**

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**STEADY
REST**

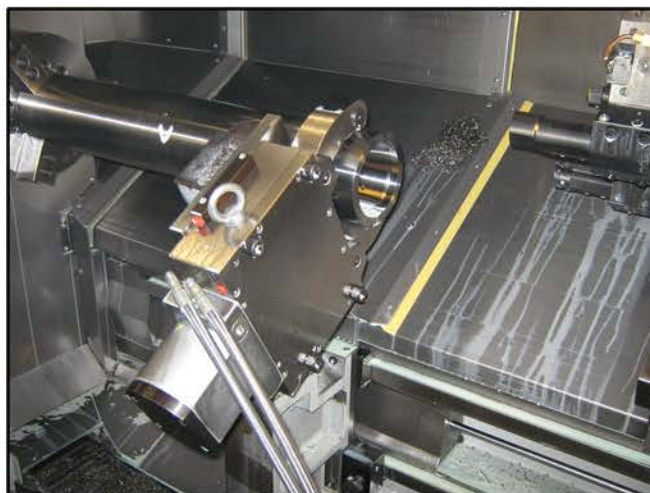
FEATURES OF STEADY REST

Steady rests are normally used for efficient machining of long shafts. Some steady rests have 3 manually adjustable screws 120° apart. However, this type of centering process is not reliable and depends on the operator's skill.

KEL self centering steady rests work on an entirely different principle. Three rollers hold the work piece at points approx 120° apart. These rollers move such that they always inscribe concentric circles between them. This feature along with the internal compensating system prevents the dislocation of work piece centre under changing clamping pressures. This results in high centering accuracy. KEL steadies are made of high grade alloy steel and all parts are fully hardened to 60 HRC, and nitrided to be 100% corrosion free.

These steady rests can be used for many machining processes such as turning outside and inside diameters, facing, drilling, grinding and induction hardening.

Steady rests can be operated either hydraulically or pneumatically with the only difference being the clamping cylindrical bore. In FRU series the clamping cylinder is fixed as an axial extension at the rear end. With FRU –B series the cylinder is fixed to the side of the steady rests to save mounting space.



KEL produce two kinds of steady rests:

- Steady Rests for turning
- Steady rests for grinding

Models of Steady Rests:

FRUN Latest fully sealed standard Steady Rest with with rear mounted cylinder and diameter range from 6mm to 350mm.

FRU Standard Steady Rest with rear mounted cylinder and diameter range from 4mm to 630mm

FRUA Steady Rest with rear mounted cylinder and extra opening for top arm. Diameter range from 8mm to 630mm

FRUB Steady Rest with side mounted cylinder and diameter range from 12mm to 630mm

FRUAB Steady Rest with side mounted cylinder and extra opening for top arm diameter range from 20mm to 630mm

KRHS Steady Rest with rear mounted cylinder for crank shaft machining.

KRSHS Steady Rest with side mounted cylinder for crank shaft machining.

VLHS Steady Rest with vertical arm opening for crank shaft milling.

GHS Steady Rest for grinding.

KRGU Steady Rest for crank shaft grinding.

VGHS Steady Rest for grinding with vertical arm opening.

CS Compress size Steady Rests.

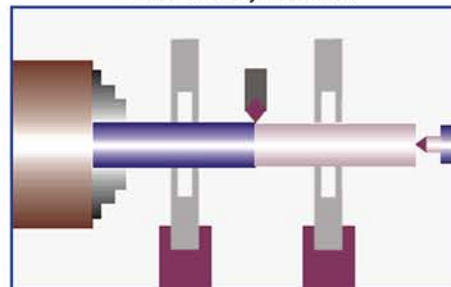
HL Heavy duty Steady Rests – maximum clamping diameter 1050mm and weight carrying capacity 30,000kg.

SPECIAL STEADY RESTS

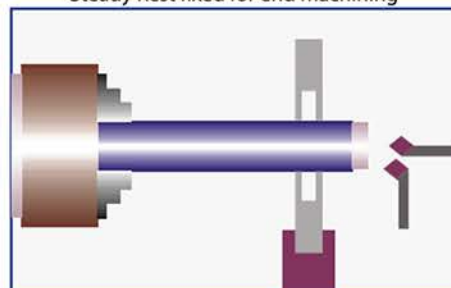
Suitable for shell machining, screw machining, friction welding machine etc.

Steady Application

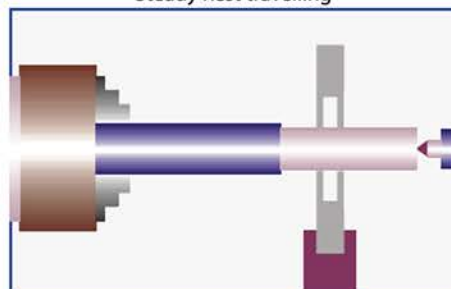
Tandem Steady Rest Fixed



Steady Rest fixed for end machining



Steady Rest travelling





**STEADY
REST**

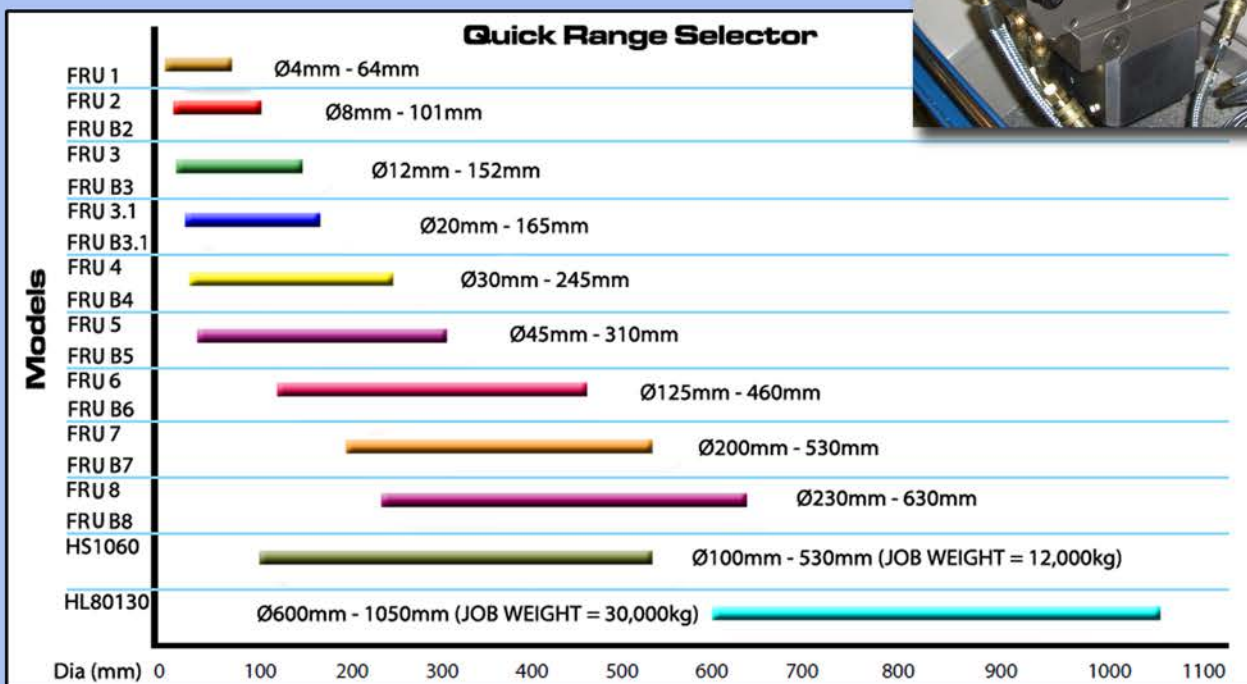
TECHNICAL FEATURES

- Automatic centering to reduce cycle time and increased productivity.
- High centering accuracy.
- Replaceable sealing strips and provision for compressed air connection prevents the entry of coolant and dirt to the body of Steady Rests.
- All standard Steady Rests come fitted with centralized lubrication systems. (Manual lubrication setup optional.)



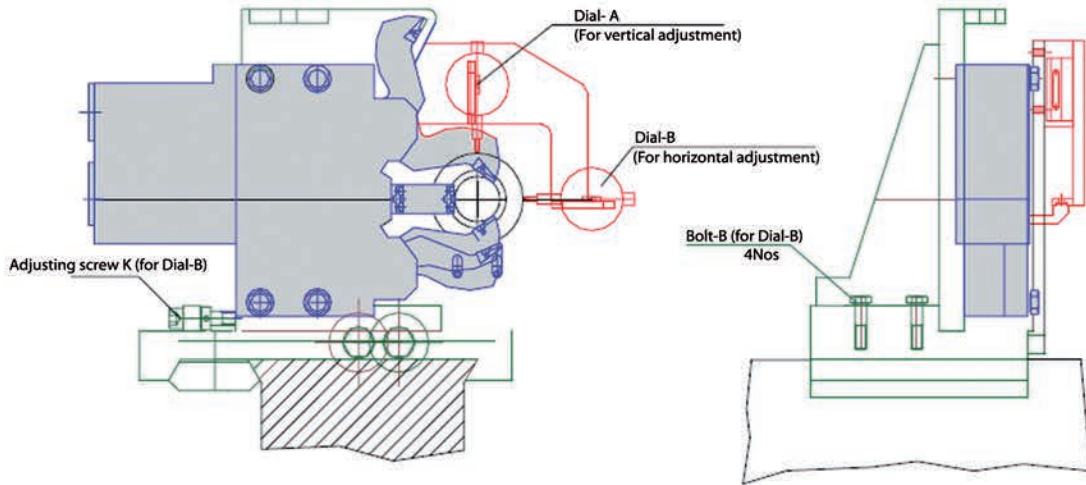
- Actuating cylinder is provided with integral safety valve to ensure support of the work piece should there be a sudden pressure drop.
- The Steady Rest includes a special cam design, which is proven in the field.
- Adjustable 3 piece chip guard for outer rollers with minimum reduction of clamping range.
- Positive opening of the Steady Rest is ensured by precisely engineered operating mechanism.
- Compact and robust designs allow the machine tool to be used under optimum conditions.
- Special rollers, which have multiple sealing disks are used for the Steady Rests.

- Actuating cylinder can be operated either hydraulically or pneumatically.
- These Steady Rests can be mounted either on slant or flat bed lathes.
- Rigid and precisely made brackets ensure centering accuracy.
- All internal and external parts are case hardened and ground to ensure the highest precision and reliability.
- Middle roller and roller pocket is protected against dirt by a roller stripper.
- These are suitable for fixed as well as travelling applications.



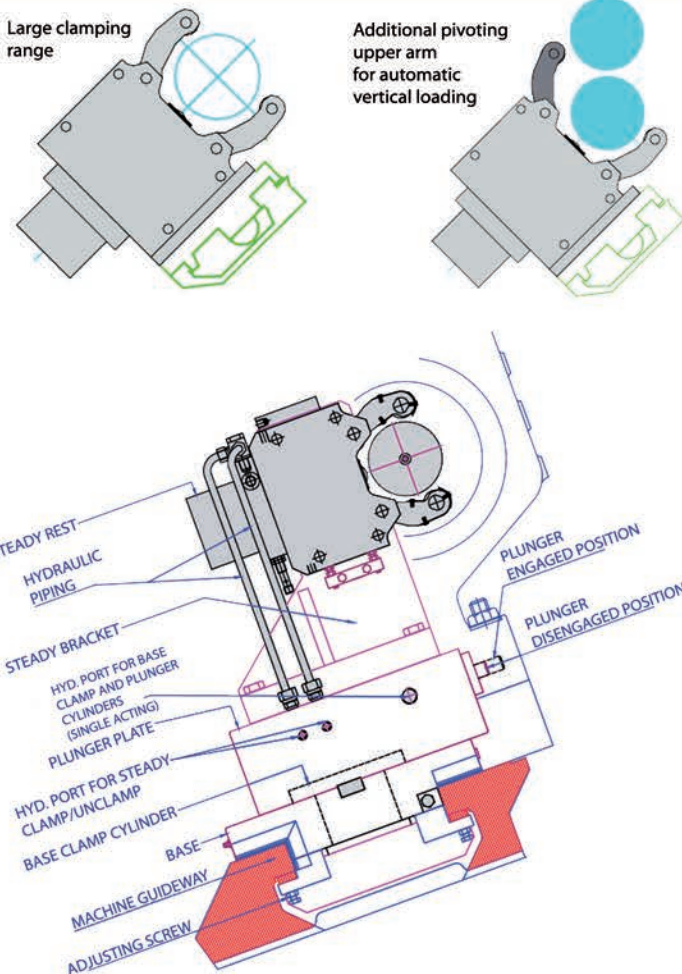
Optional Steady Rest bracket with adjustment device

A suitable adjustable bracket with rigid design ensures the Steady Rest is accurately positioned relative to the machine centre line.

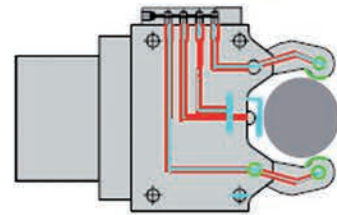


To avoid interference of chips with rollers and workpiece an optional built-in channel on the Steady Rest feeds coolant or air from a central connecting point to the arms of the Steady Rest.

Main Features



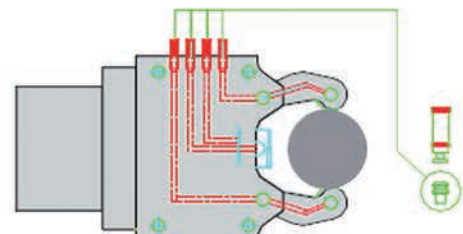
Standard Equipment



Centralized Lubrication

This lubrication system is used in heavy working conditions with a high build up of swarf as well as travelling Steady Rest applications. The Steady Rest is provided with a lubricating connection to supply the oil to the lubricating points and rollers through metering cartridges. The pressure required for the lubricating pump is 10-30 bar.

Optional Equipment



Manual Lubrication

This lubrication system is used for light duty working conditions and low build ups of swarf. The lubrication points and rollers can be greased manually. Steady lubrication schedule depends on the working conditions - normally every 4-8 operating hours.



**STEADY
REST**

Steady Rest for standard turning applications

FRUN_{series}

FRUN Series

Fully sealed series for all standard applications for better protection from coolant and swarf. Available to steady a range of diameters from 6mm to 350mm. These Steadies work on both flat bed as well as slant bed CNC lathes. Compact in size with a front body profile for easy chip flow.

Mounting brackets are available according to the customers requirements.

Standard Features

- Safety valve
- Provision for max. opening feedback
- 1 set swarf guard 3-piece
- Provision for compressed air connection
- Provision for centralized lubrication suitable for Grease or oil



Oil/ Grease Lubrication

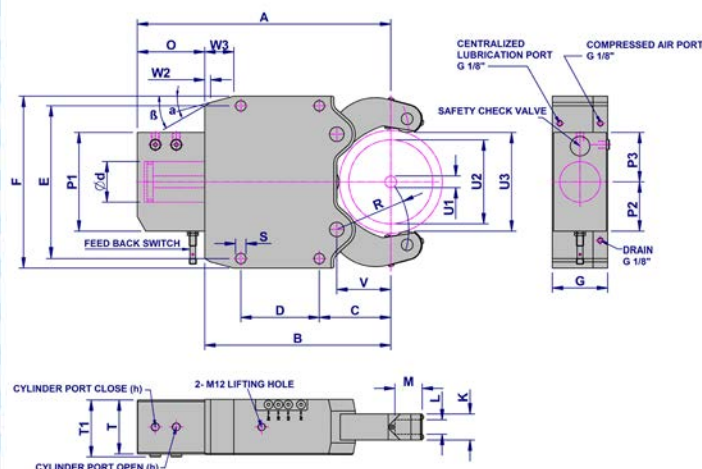


Brass wiper

3 Piece chip guard

Dimensions

	FRUN1	FRUN2	FRUN3	FRUN3.1	FRUN3.2	FRUN4	FRUN5	FRUN5.1
A	214.5	277	428	436	451	603	697	717
B	149	195	312	320	335	448	510	530
C	52	70	115	123	138	146	178	198
D	66	85	135	135	135	240	270	270
E	140	170	262	262	262	365	400	400
F	160	195	295	295	295	405	440	440
G	63	75	95	95	95	110	145	145
K	28	35	45	45	45	60	75	75
L	15	19	25	25	25	25	29	29
M	24	35	47	47	47	52	62	62
O	65.5	82	116	116	116	155	187	187
P1	95.5	122	144	144	144	164	174	174
P2	37.5	61	72	72	72	82	87	87
P3	58	61	72	72	72	82	87	87
R	55	65.5	115.5	124	140	172	209	229
S	11	14	18	18	18	23	23	23
T	57	69	93	93	93	108	140	140
T1	62	74	98	98	98	113	147	147
V	41	51	85	93	108	128	160	180
W2	5	11.2	10	10	10	18.3	19	19
W3	20	30	50	50	50	58	62	62
β	45	30	30	30	30	40	40	40
α	15	15	15	15	15	15	18	18



Specifications

		FRUN1	FRUN2	FRUN3	FRUN3.1	FRUN3.2	FRUN4	FRUN5	FRUN5.1
Centering range	U1	6	8	12	20	50	30	45	85
	U2	70	101	152	165	200	245	310	350
Max.Axial opening	U3	75	106	162	170	202	253	318	352
Cylinder Bore.	d	30	50	70	70	70	90	100	100
Hyd. Connection.	h	1/8" BSP	G 1/4"	G 1/4"	G 1/4"	G 1/4"	G 1/4"	G 1/4"	G 1/4"
Operating pressure. Min/Max	bar	6-50	8-70	8-80	8-80	8-80	8-80	8-80	8-80
Max.clamp force/roller.	daN	100	450	1000	1000	1000	1700	2000	2000
Centering accuracy	mm	0.02	0.02	0.04	0.04	0.04	0.04	0.06	0.06
Repeatability.	mm	0.005	0.005	0.007	0.007	0.007	0.007	0.01	0.01
Max.peripheral Roller speed.	m/min	850	800	725	725	725	725	700	700
Weight Approx.	kg	10	20	48	48	48	104	174	178



**STEADY
REST**

Steady Rest for standard turning applications

FRU series

FRU Series

This series is for all standard applications. Available in a range of diameters from 4mm to 1100mm. These Steadies work on both flat bed as well as slant bed CNC lathes.

Mounting brackets are available according to the customers requirements.

Standard Features

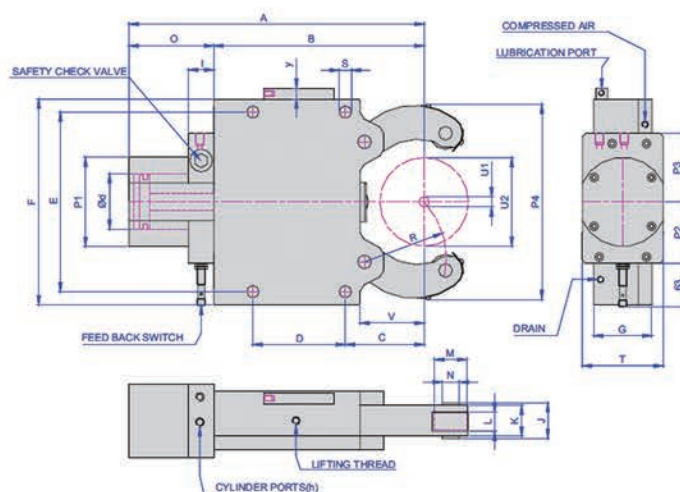
- Safety valve
- Provision for max. opening feedback
- 1 set swarf guard 3-piece
- Provision for compressed air connection
- Provision for centralized lubrication



Steady Rest

Dimensions

	FRU1	FRU2	FRU3	FRU3.1	FRU3.2	FRU4	FRU5	FRU5.1	FRU6	FRU7	FRU8
A	208.5	299	457	465	486	624	710	746.5	980	1240	1430
B	137	195	308	316	332	437	500	530	709	900	1020
C	51	70	115	123	138	146	178	198	215	320	375
D	64	85	135	135	135	240	270	270	330	440	500
E	118	170	262	262	262	365	400	400	610/640	650	855
F	132	205	290	290	290	400	450	450	705	710	930
G	55	70	85	85	85	110	145	145	145	162	190
I	15	33	37	37	37	37	37	37	37	60	60
J	33	42	52	52	52	67	83	83	83	94	110
K	25	35	45	45	45	60	75	75	75	82	100
L	12	19	25	25	25	25	29	29	29	32	32
M	19	35	47	47	47	52	62	62	80	100	100
N	10	21	25	25	25	32	36	36	42	55	55
O	71.5	104	149	149	154	187	210	216.5	271	340	410
P1	82.5	102	137	137	137	165	165	165	200	238	238
P2	27.5	72	90	90	90	102	102	102	120	143	143
P3	55	75	94	94	94	110	110	110	135	158	158
P4	118.5	190	285	280	323	425	478	512	680	820	990
R	51.5	75	119	124	139	172	209	229	290	398	402
S	11	14	18	18	18	23	23	23	27	27	35
T	49	70	102	102	102	126	144	144	158	190	230
V	42.5	60	92	99	103	128	160	180	175	283	290
Y	-	19	19	19	19	19	19	19	19	19	19



Specifications

		FRU1	FRU2	FRU3	FRU3.1	FRU3.2	FRU4	FRU5	FRU5.1	FRU6	FRU7	FRU8
Centering range without chip guard.	U1	4	8	12	20	50	30	45	85	125	200	230
	U2	64	101	152	165	200	245	310	350	460	530	630
Centering range with 3 piece chip guard.	U1	11	16	16	20	50	30	45	85	125	200	230
	U2	64	101	152	165	200	245	310	350	460	530	630
Cylinder Bore.	d	30	50	80	80	80	100	100	100	130	150	150
Hyd. Connection. (BSP)	h	1/4"	1/4"	1/4"	1/4"	1/4"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"
Operating pressure. Min/Max	bar	6/50	8/60	8/60	8/60	8/60	8/60	8/80	8/80	8/70	6/70	6/70
Max. clamp force/roller	daN	100	350	1000	1000	1000	1500	2000	2000	3000	4000	4000
Clamping press/roller at 15 bar	daN	35	100	250	250	500	500	500	500	670	900	900
Centering accuracy over the whole clamping range	mm	0.02	0.02	0.04	0.04	0.04	0.05	0.06	0.06	0.06	0.08	0.08
Repeatability.	mm	0.005	0.005	0.007	0.007	0.007	0.007	0.01	0.01	0.01	0.02	0.02
Max. peripheral speed.	m/min	850	950	800	800	725	725	670	670	525	570	570
Weight Approx.	kg	7	18.5	48	48	50	104	155	155	430	1000	1300



**STEADY
REST**

With rear mounted actuating cylinder

FRUA series

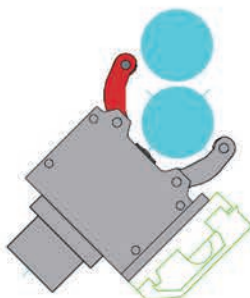
FRUA Series

Steady Rest with rear mounted actuating cylinder and top arm extra opening.

This series of Steadies are made for applications where vertical loading is required e.g. using a gantry loader.

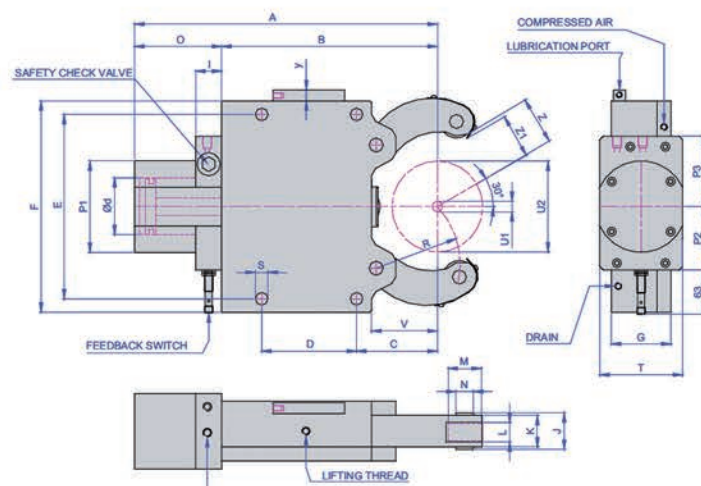
Standard Features

- Safety valve
- Provision for max. opening feedback
- 1 set swarf guard 3-piece
- Provision for compressed air connection
- Provision for centralized lubrication



Dimensions

	FRUA 1	FRUA 2	FRUA 3	FRUA 3.1	FRUA 4	FRUA 5	FRUA 6
A	208.5	299	457	465	624	686	980
B	137	195	308	316	437	500	709
C	51	70	115	123	146	178	215
D	64	85	135	135	240	270	330
E	118	170	262	262	365	400	610/640
F	132	205	290	290	400	450	705
G	55	70	85	85	110	145	145
I	15	33	37	37	37	37	37
J	33	42	52	52	67	83	83
K	25	35	45	45	60	75	75
L	12	19	25	25	25	29	29
M	19	35	47	47	52	62	80
N	10	21	25	25	32	40	42
O	71.5	104	149	149	187	186	271
P1	82.5	102	137	137	165	168	200
P2	27.5	72	90	90	102	94	120
P3	55	75	94	94	110	118	135
R	51.5	75	119	124	172	209	290
S	11	14	18	18	23	23	27
T	49	70	102	102	126	144	158
V	42.5	60	92	99	128	160	175
Y	-	19	19	19	19	20	19



Specifications

		FRUA 1	FRUA 2	FRUA 3	FRUA 3.1	FRUA 4	FRUA 5	FRUA 6
Centering range without chip guard.	U1	4	8	12	20	30	48	160
	U2	52	80	130	150	220	268	460**
Centering range with 3 piece chip guard.	U1	11	16	20	20	30	48	160
	U2	52	80	130	150	220	268	460**
	Z	26.5	41	66	76	111	135	230**
	Z1	24	34	62	72	106	130	225**
Cylinder Bore.	d	30	50	80	80	100	100	130
Hyd. Connection. (BSP)	h	1/4"	1/4"	1/4"	1/4"	3/8"	3/8"	3/8"
Operating pressure. Min./Max.	bar	6/50	8/60	8/60	8/60	8/60	8/60	8/70
Max. clamp force/roller.	daN	100	350	1000	1000	1500	2000	3000
Clamping press./roller at 15 bar	daN	35	100	250	250	500	500	670
Centering accuracy over the whole clamping range.	mm	0.02	0.02	0.04	0.04	0.05	0.06	0.06
Repeatability.	mm	0.005	0.005	0.007	0.007	0.007	0.01	0.01
Max. Peripheral speed.	m/min	850	950	800	800	725	670	525
Weight Approx.	Kg	7	18.5	48	48	104	160	430

** Angle of inclination is 19 degree instead of 30 degree



**STEADY
REST**

Standard Steady with side mounted cylinder **FRUB** series

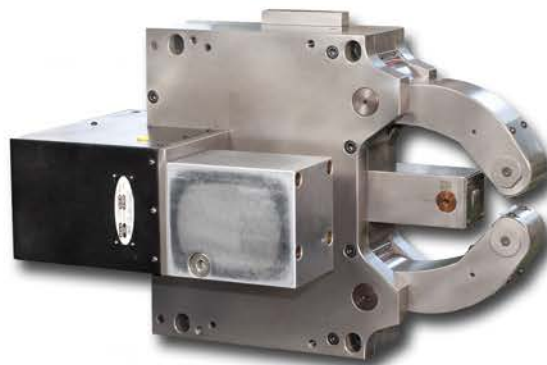
FRUB Series

Steady Rest with side mounted cylinder.

This series is made for machines where the rear mounted cylinder may interfere with the sheet metal enclosures or other machine enclosures. To achieve this the actuating cylinder of the Steady Rest is mounted on the side of the Steady Rest.

Standard Features

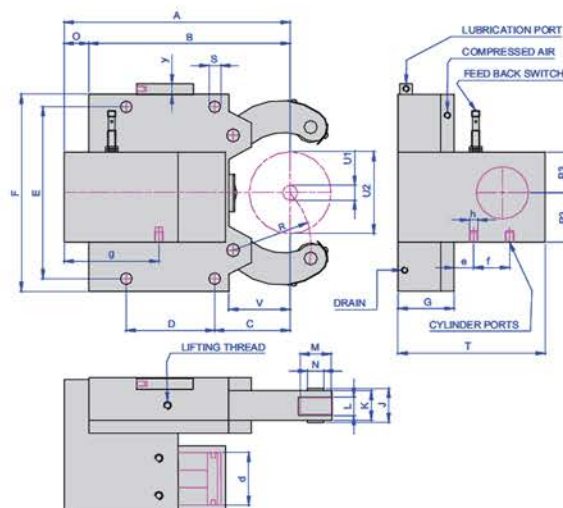
- Safety valve
- Provision for max. opening feedback
- 1 set swarf guard 3-piece
- Provision for compressed air connection
- Provision for centralized lubrication



Steady Rest

Dimensions

	FRU-B 3	FRU-B 3.1	FRU-B 4	FRU-B 5	FRU-B 6	FRU-B 7	FRU-B 8
A	346	356	480	624	810	1001	1130
B	308	316	437	500	709	897.5	1020
C	115	123	146	178	215	320	375
D	135	135	240	270	330	440	500
E	262	262	365	400	610/640	650	855
F	290	290	400	450	705	710	930
G	85	85	110	145	145	180	190
J	52	52	67	83	83	112	110
K	45	45	60	75	75	100	100
L	25	25	25	29	29	32	32
M	47	47	52	62	80	100	100
N	25	25	32	36	42	55	60
O	40	40	43	124	101	103.5	110
P2	75	75	85	85	135	130	130
P3	58	58	68	85	115	130	130
R	119	124	172	209	290	398	402
S	18	18	23	23	27	27	35
T	198	198	244	325	350	405	487
V	92	99	128	160	175	283	290
Y	19	19	19	19	19	19	27



Specifications

		FRU-B 3	FRU-B 3.1	FRU-B 4	FRU-B 5	FRU-B 6	FRU-B 7	FRU-B 8
Centering range without chip guard.	U1	12	20	30	45	125	200	230
	U2	152	165	245	310	460	530	630
Centering range with 3 piece chip guard.	U1	16	20	30	45	125	200	230
	U2	152	165	245	310	460	530	630
Cylinder Bore.	d	80	80	100	100	130	150	150
	e	58	58	68	85	55	191	191
	f	27	27	39	40	50	50	50
	g	180	180	220	270	430	450	450
Hyd. Connection. (BSP)	h	1/4"	1/4"	3/8"	3/8"	3/8"	3/8"	3/8"
Operating pressure. Min/Max	bar	8/60	8/60	8/60	8/80	8/70	8/70	8/70
Max. clamp force/roller.	daN	1000	1000	1500	2000	3000	4000	4000
Clamping press./roller at 15 bar	daN	250	250	400	400	600	880	880
Centering accuracy over the whole clamping range	mm	0.04	0.04	0.05	0.06	0.06	0.08	0.08
Repeatability	mm	0.007	0.007	0.007	0.01	0.01	0.02	0.02
Max. peripheral speed.	m/min	800	800	720	650	525	570	570
Weight Approx.	kg	53	53	115	190	500	1000	1300



**STEADY
REST**

With side mounted actuating cylinder

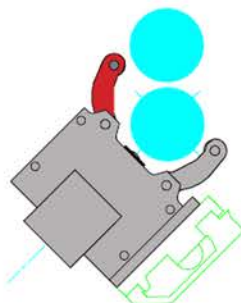
FRUAB series

FRUAB Series

Steady Rest with side mounted actuating cylinder and extra opening for the top arm.

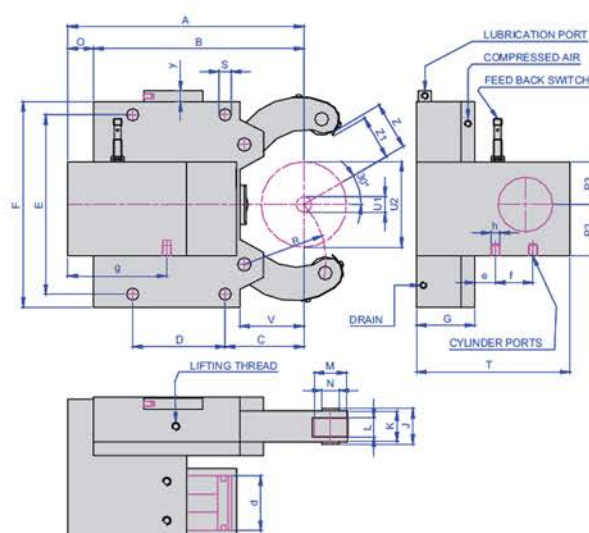
Standard Features

- Safety valve
- Provision for max. opening feedback
- 1 set swarf guard 3-piece
- Provision for compressed air connection
- Provision for centralized lubrication



Dimensions

	FRUA-B 3	FRUA-B 3.1	FRUA-B 4	FRUA-B 5	FRUA-B 6
A	346	356	480	624	810
B	308	316	437	500	709
C	115	123	146	178	215
D	135	135	240	270	330
E	262	262	365	400	610/640
F	290	290	400	450	705
G	85	85	110	145	145
J	52	52	67	83	83
K	45	45	60	75	75
L	25	25	25	29	29
M	47	47	52	62	80
N	25	25	32	36	42
O	40	40	43	124	101
P2	75	75	85	85	135
P3	58	58	68	85	115
R	119	124	172	209	290
S	18	18	23	23	27
T	198	198	244	325	350
V	92	99	128	160	175
Y	19	19	19	19	19
U1	12	20	30	50	160



Specifications

		FRUA-B 3	FRUA-B 3.1	FRUA-B 4	FRUA-B 5	FRUA-B 6
Centering range without chip guard.	U1	12	20	30	50	160
	U2	130	150	220	268	460**
Centering range with 3 piece chip guard.	U1	20	20	30	50	160
	U2	130	150	220	268	460**
	Z	66	76	111	135	230**
	Z1	62	72	106.5	130	225**
Cylinder Bore.	d	80	80	100	100	130
	e	58	58	68	85	55
	f	27	27	39	40	50
	g	180	180	220	270	430
Hyd. Connection. (BSP)	h	1/4"	1/4"	3/8"	3/8"	3/8"
Operating Press. Min/max	bar	8/60	8/60	8/60	8/80	8/70
Max. clamp pressure/roller.	daN	1000	1000	1500	2000	3000
Clamping press./roller at 15 bar	daN	250	250	400	400	660
Centering accuracy over the whole clamping range.	mm	0.04	0.04	0.05	0.06	0.06
Repeatability.	mm	0.007	0.007	0.007	0.01	0.01
Max. Peripheral speed	m/min	800	800	720	650	525
Approx. weight	kg	55	55	115	190	500



**STEADY
REST**

Steady Rest for crank shaft turning

KRHS series

KRHS Series

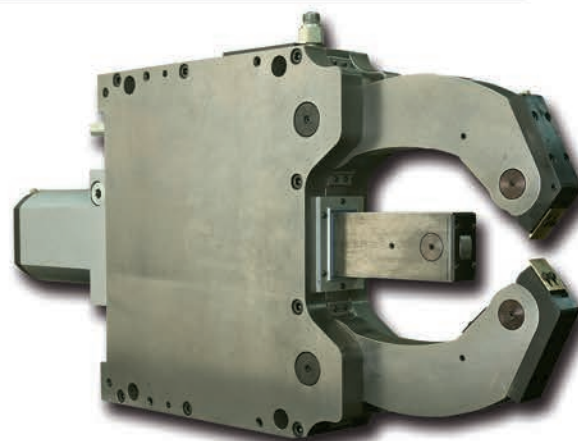
Steady Rest for crank shaft machining is a very important variant of Steady Rests. KEL has developed and supplied the entire range of Steady Rests required for crank shaft machining applications such as motor car to heavy railway and marine crank shafts.

Standard Features

- Safety valve
- Provision for max. opening feedback
- 1 set swarf guard 3-piece
- Provision for compressed air connection
- Provision for centralized lubrication

Optional Features

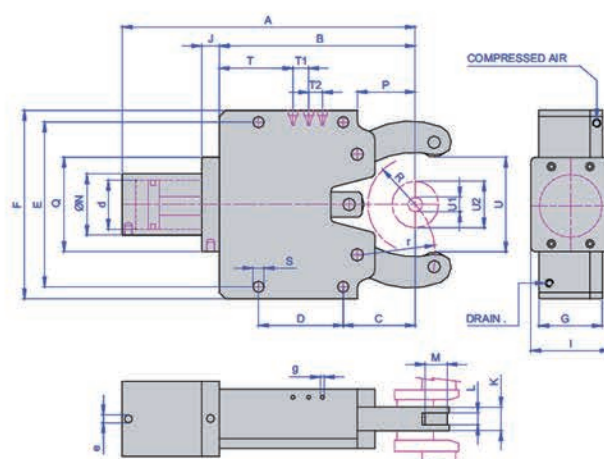
- Provision for coolant flush



Steady Rest

Dimensions

	KRHS315P	KRHS 520D	KRHS 528C	KRHS 930	KRHS 839
A	503	621	731	710	861
B	331	442	515	500	619
C	138	180	178	178	233
D	135	210	270	270	270
E	266	330	400	400	400
F	300	370	450	450	450
G	80	67	102	145	145
I	100	118	102	144	145
J	31	40	40	40	40
K	22	26	32	40	38
L	14	16	20	20	20
M	35	40	62	62	62
N (dia)	137	132	147	147	147
P	108	160	160	160	215
Q	161	196	186	186	186
r	139	187.5	209	209	250
S	18	20	23	23	23
T	113	170	183	163	227
T1	25	27	32	32	23
T2	25	27	32	32	23



Specifications

		KRHS315P	KRHS 520D	KRHS 528C	KRHS 930	KRHS 839
Clamping Ranges without chip guard	U1	40	45	70	90	80
	U2	85	100	150	300	190
Max. axial Opening	U	220	236	322	303	402
Clamping range with Chip guard	U1	40	45	70	90	80
	U2	85	100	150	300	190
	U	220	236	322	303	380
Eccentric throw (R value)	R	110	120	155	150	195
Cylinder bore.	d	80	80	80	80	80
Hyd. Connection. (BSP)	e	1/4"	1/4"	1/4"	3/8"	3/8"
Lubrication ports	g	M8X1	M8X1	M 10X1	M 10X1	M 10X1
Standard Operating Pressure	bar	5-30	5-40	5-55	5-55	5-55
Max. Operating pressure	bar	35	45	60	60	60
Clamping press./roller at 6 bar	daN	100	100	100	100	100
Max. clamping pressure/roller.	daN	500	1000	1400	1400	1400
Centering accuracy over the whole clamping range.	mm	0.04	0.05	0.05	0.05	0.05
Repeatability	mm	0.01	0.01	0.01	0.01	0.01
Max. Peripheral speed.	m/mi	500	525	350	350	350
Max. Peripheral speed at half max. clamping press.	m/mi	850	865	850	850	850
Weight Approx.	kg.	50	70	150	185	190



**STEADY
REST**

With side mounted actuating cylinder

KRSHS series

KRSHS Series

Specially designed for crank shaft machining with side mounted actuating cylinder.

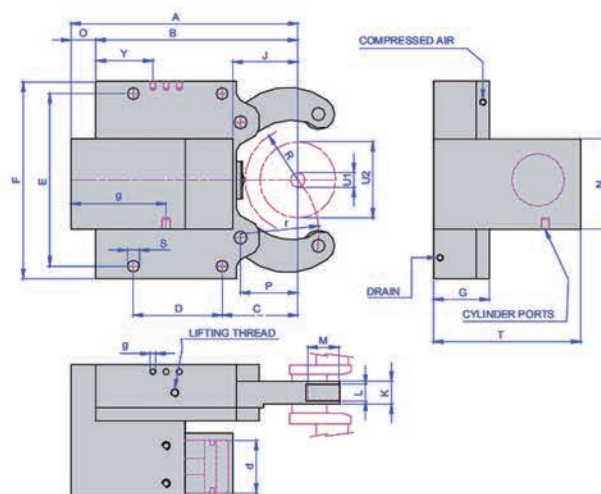
Standard Features

- Safety valve
- Provision for max. opening feedback
- 1 set swarf guard 3-piece
- Provision for compressed air connection
- Provision for centralized lubrication



Dimensions

	KRSHS 315D	KRSHS 315H	KRSHS 510	KRSHS521
A	355	367	334	340
B	332	363	296	340
C	138	170	103	133
D	135	135	135	135
E	266	266	266	288
F	300	300	300	315
G	80	85	82	89
J	108	135	83	110
K	22	45	22	28
L	14	18	14	18
M	35	47	35	47
N	130	130	130	139
O	24	4	38	0
P	108	140	73	110
r	139.5	174	115	144
S	M20x2.5 P	18	M20x2.5 P	M20x2.5 P
T	220	211	206	224
Y	113	113	113	133



Specifications

		KRSHS 315D	KRSHS 315H	KRSHS 510	KRSHS521
Clamping Ranges without chip guard	U1	40	70	45	50
	U2	70	150	110	100
Max. axial Opening	U	216	170	160	211
Clamping range with Chip guard	U1	40	70	45	50
	U2	70	150	110	100
	U	216	170	160	211
Eccentric throw (R value)	R	108	85	75	105
Cylinder bore.	d	50	80	50	80
Hyd. Connection. (BSP)	e	1/4"	1/4"	1/4"	1/4"
Lubrication ports	g	M8X1	M 8X1	M 8X1	M8X1
Standard Operating Pressure	bar	5-30	5-30	5-30	5-30
Max. Operating pressure	bar	35	35	35	35
Clamping press./roller at 6 bar	daN	39	100	39	100
Max. clamping pressure/roller.	daN	500	520	240	520
Centering accuracy over the whole clamping range.	mm	0.04	0.04	0.04	0.04
Repeatability	mm	0.01	0.01	0.01	0.01
Max. Peripheral speed.	m/mi	500	450	500	450
Max. Peripheral speed at half max. clamping press.	m/mi	850	825	950	825
Weight Approx.	kg.	50	50	40	55



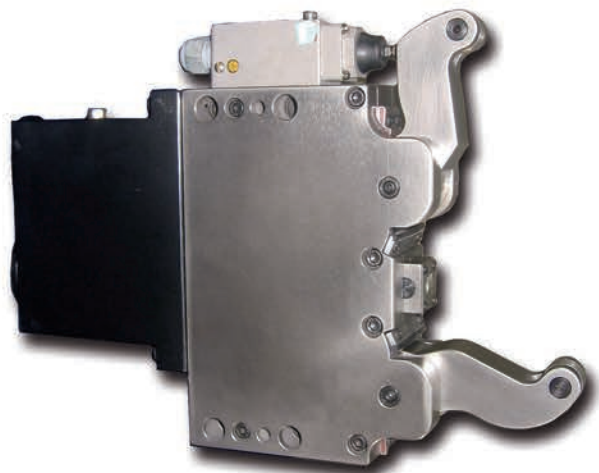
**STEADY
REST**

With top arm opening for vertical loading

VLHS series

VLHS Series

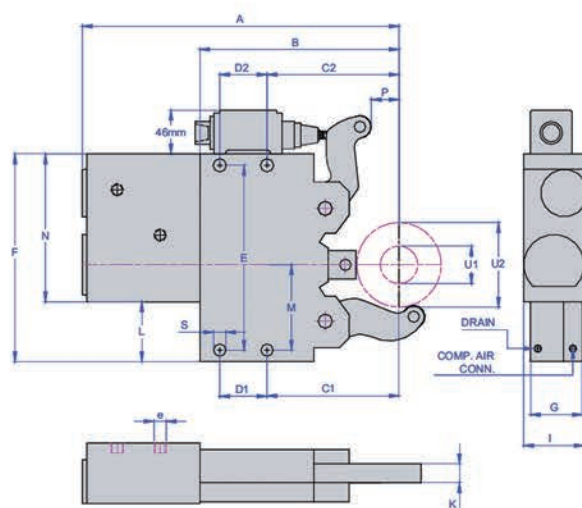
Steady Rest with top arm opening for vertical loading



Steady Rest

Dimensions

	VLHS 480	VLHS 480A	VLHS7513
A	335	335	420
B	207	207	291
C1	139.5	139.5	155
C2	139.5	139.5	200
D1	50	50	105
D2	50	50	60
E	195	195	305
F	219	219	340
G	65	65	90
I	74	74	90
K	30	30	45
L	102	102	152.5
M	90	90	135
N	140	140	209
P	29	22	70
S	Ø13	Ø13	18



Specifications

		VLHS 480	VLHS 480A	VLHS7513
Centering Ranges	U1	40	15	75
	U2	80	67	130
Cylinder bore.	d	50	50	50
Hyd. Connection. (BSP)	e	¼"	¼"	¼"
Standard Operating Pressure	bar	8-20	8-20	8-30
Max. Operating pressure	bar	25	25	35
Clamp. Press./Roller at 6 bar	daN	40	40	40
Max. clamp pressure/Roller	daN	150	150	200
Centering accuracy over the whole clamping range.	mm	0.020	0.020	0.020
Repeatability	mm	0.005	0.005	0.005
Weight Approx.	kg	17	17	42



**STEADY
REST**

Compact sized Steady Rest

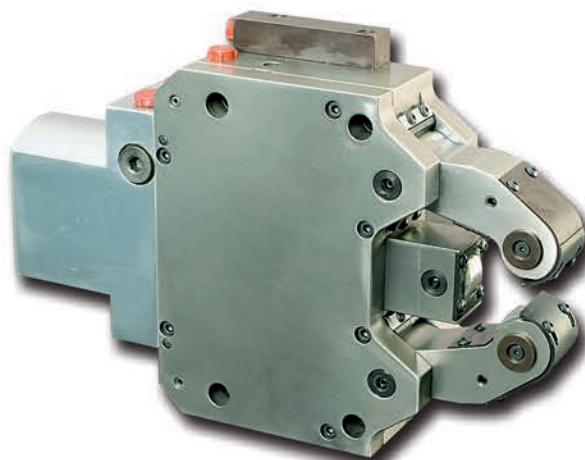
CS series

CS Series

Compact sized Steady Rest

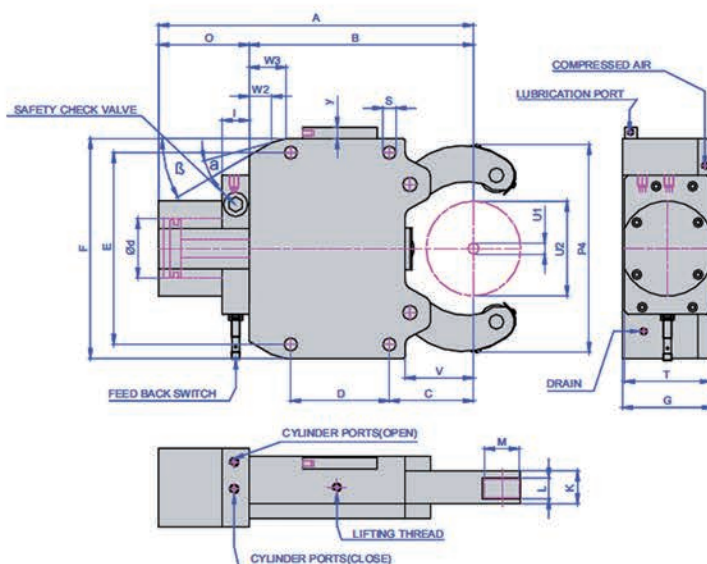
Standard Features

- Safety valve
- Provision for max. opening feedback
- 1 set swarf guard 3-piece
- Provision for compressed air connection
- Provision for centralized lubrication



Dimensions

	CS4	CS5.1
A	609	812
B	450	622
C	168	240
D	180	240
E	360	445
F	400	485
G	125	150
I	45	40
K	60	75
L	25	29
M	52	62
O	159	190
P4	468	632.5
R	200	283.5
S	23	23
T	111	121
V	146	215
Y	20	20
W1	100	135
W2	62	56
B	30	30
a	15	15



Specifications

		CS4	CS5.1
Centering range with chip guard	U1	60	100
	U2	280	410
Cylinder bore.	d	90	100
Hyd. Connection.(BSP)	h	3/8"	3/8"
Operating pressure.(Min/Max)	bar	08/70.	08/80.
Max. Clamp force /roller.	daN.	1500	2000
Centering accuracy over the whole clamping range.	mm	0.05	0.06
Repeatability	mm	0.007	0.01
Max.peripheral roller speed.	m/min	700	700
Weight Approx.	kg	90	180



**STEADY
REST**

Heavy Duty Steady Rests

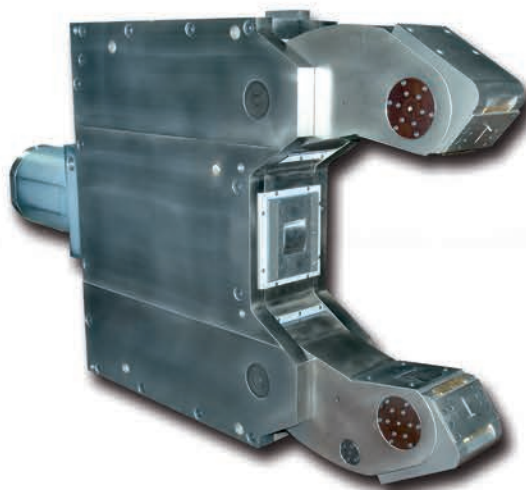
HL series

HL Series

Heavy duty Steady Rests for components weighing 10 - 40 tonnes.

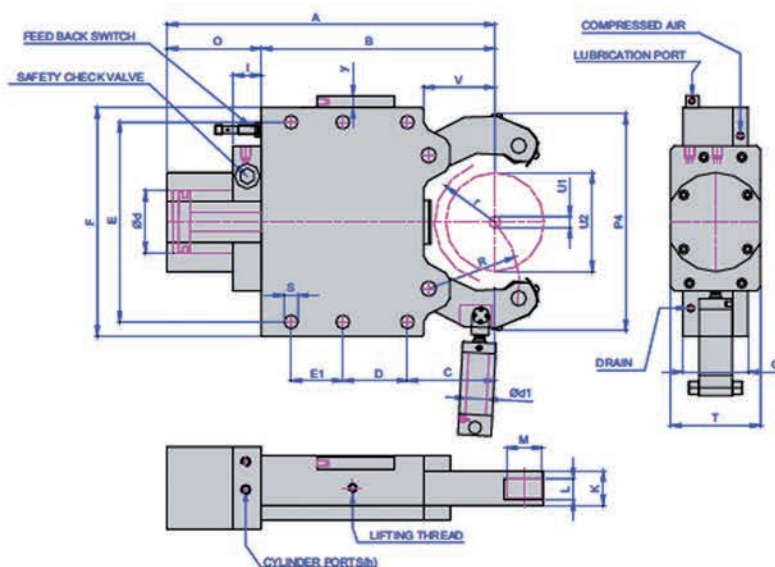
Features

- Very heavy duty construction of Steady Rest
- Large rollers to handle very heavy loads (10 - 40 tonnes)
- Hydraulic support to bottom arm for using on large flat bed lathes
- For turbine shaft, windmill shaft, marine crank shafts



Dimensions

	HL80130	HS1060SAL	KRHS1540
STANDARD TURNING			CRANK SHAFT TURNING
A	2266	1600	1505
B	1760	1105	1176.5
C	680	358	462.5
D	310	525	365
E	1440	970	760
E1	310		
F	1500	1110	840
G	306	296	150
I	80	80	40
K	186	186	75
L	116	96	32
M	186	200	110
O	506	495	328.5
P3	1700	1070	1122
R	805	420	498
r			400
s	39	34	39
T	276	276	132
V	620	288	425.5
Y	30	27	27

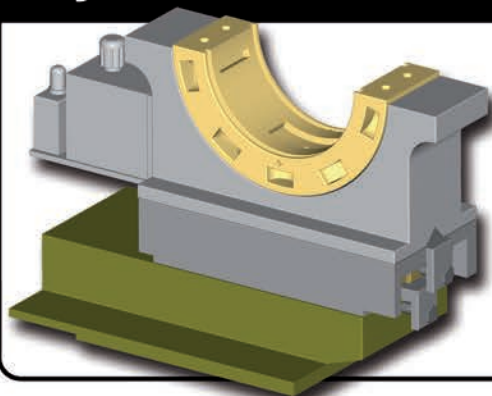


Specifications

		HL80130	HS1060SAL	KRHS1540
Centering range with chip guard	U1	600	100	150
	U2	1050	520	400
Cylinder bore.	d	200	200	100
	d1	200	80	80
Max.Load caring capacity	daN	30,000	12,000	4000
Cylinder support of bottom arm	daN	20,000	7,000	1500
Min/Max.Pressure for bottom arm cylinder	daN	25/80	20/75	15/40
Hyd. Connection.(BSP)	h	1/2"	1/2"	3/8"
Operating pressure.(Min/Max)	bar	15/80	10/60.	08/115
Max. Clamp force /roller.	daN	8300	6500	8300
Clamp.Press./Roller at 15 bar	daN	1200	1200	500
Centering accuracy over the whole clamping range.	mm	0.08	0.06	0.04
Repeatability	mm	0.01	0.01	0.01
Max.peripheral roller speed.	m/min	200	200	550
Weight Approx.	kg	3000	2200	750

SPECIALS

Hydrostatic Steady Rest



Hydrostatic Steady Rests used on very large machines to support very heavy components during turning, milling, drilling etc.

- **Diameter range:** 150mm - 600mm
- **Component weight:** 10 tonnes - 90 tonnes
- Complete package available including Steady Rest and hydraulic power pack.

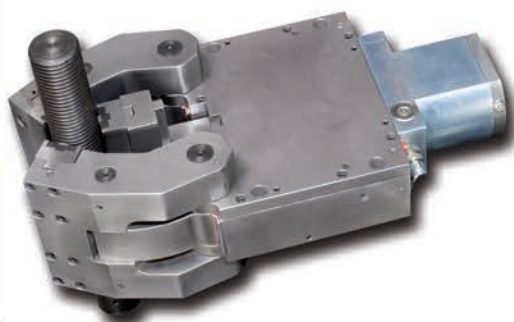
Ring Steady Rest



Used for machining cone shaped components where standard Steady Rests are not sufficient. These types of Steady Rests are used mainly in defence sectors and ordnance factories

- **Clamping diameter range:** 85mm - 90mm
- Other clamping diameters available on request.
- Complete package available including Steady Rest, power pack, electrics etc..

THM Series Steady Rests



These Steady Rests are mainly used in screw cutting machines. Can be used in milling and turning centres.

- **Clamping range:** 40mm - 160mm
- Other clamping diameters available on request.
- Complete package available including Steady Rest, mounting bracket, electrics etc..

Other Special Models

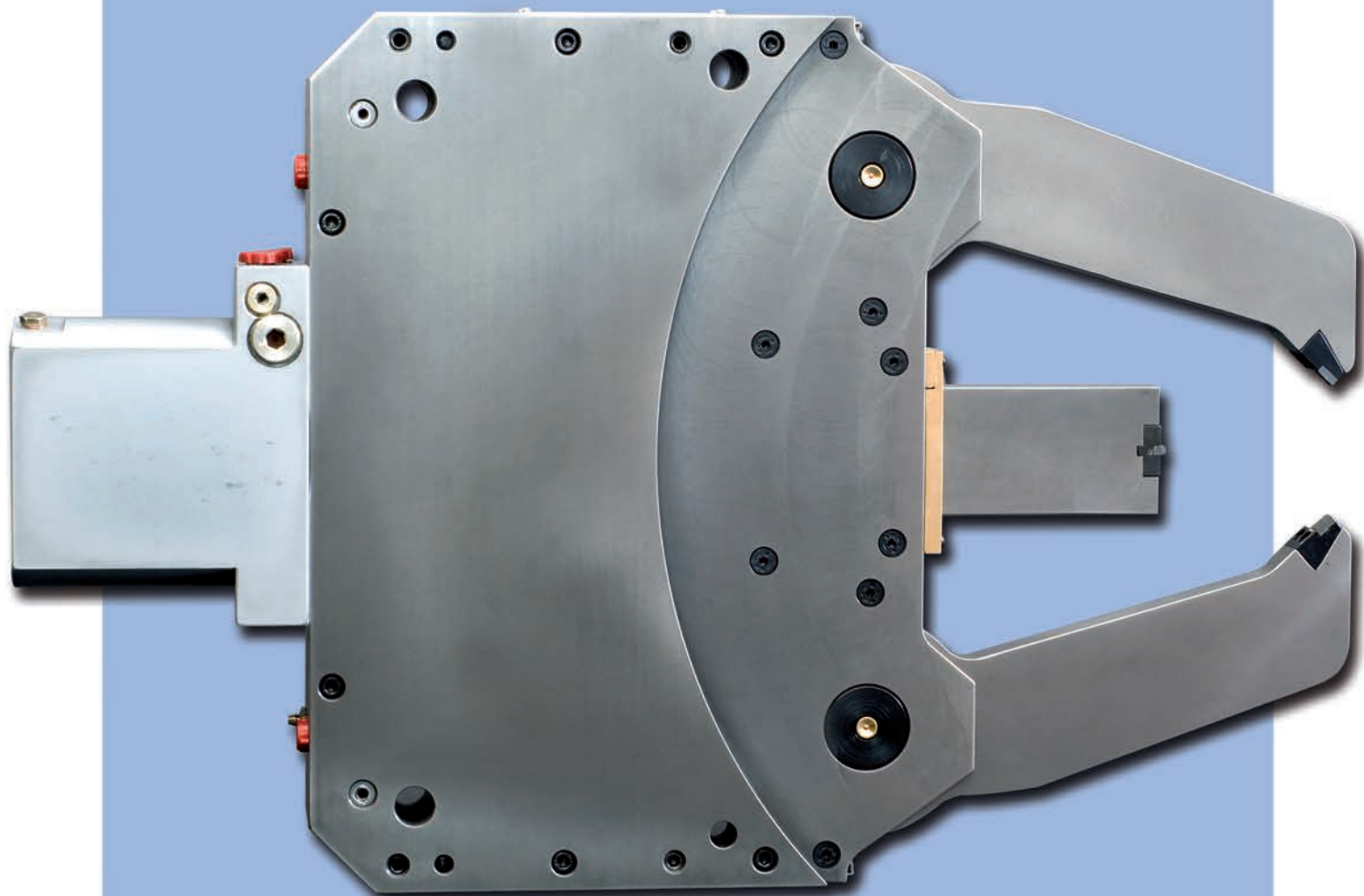


- Engine valve stem welding by friction welding
- Induction hardening of shaft, gears etc
- Cam shaft groove machining

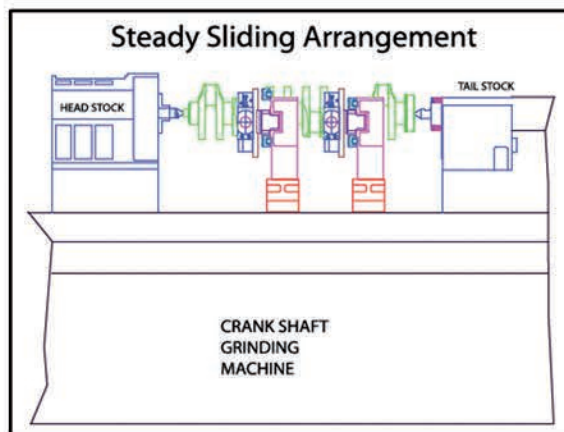
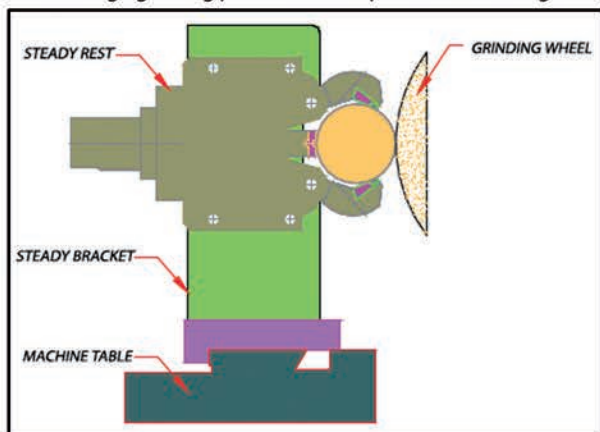


**STEADY
REST**

GRINDING STEADY RESTS

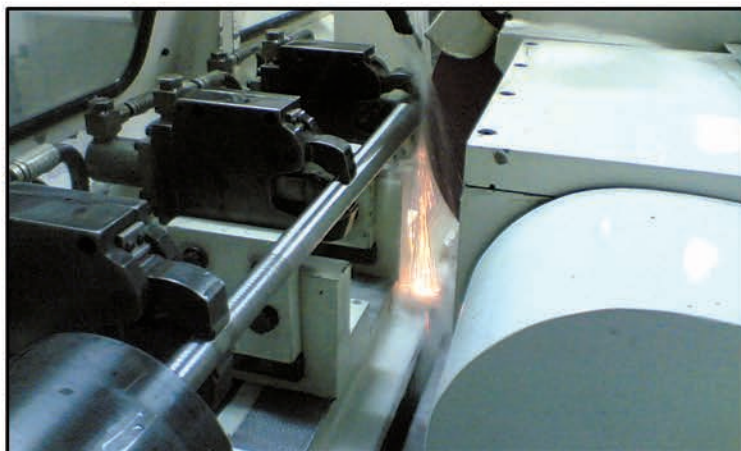


Pass through grinding possible on complete diameter range



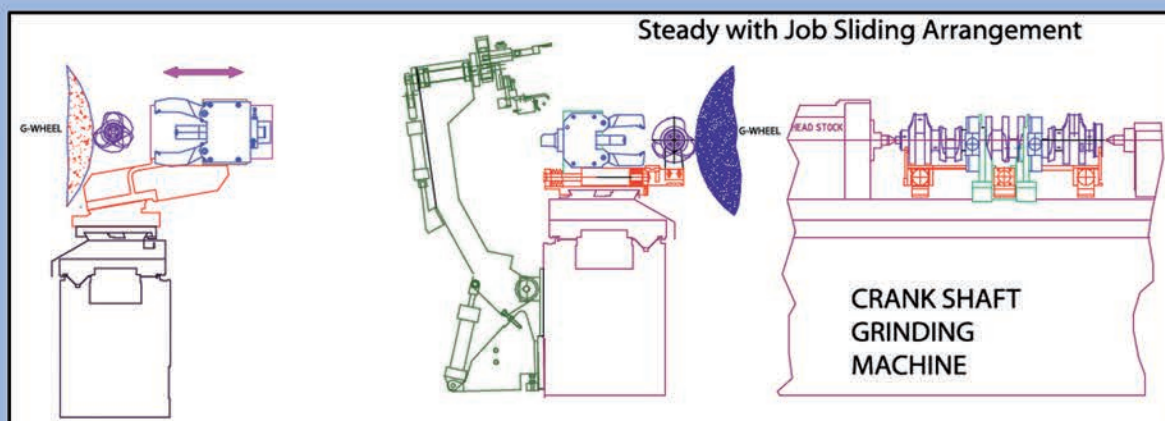
Steady Rests for Cylindrical Grinding

KEL has developed an entire range of pad type self centering Steady Rests for cylindrical and grinding machines. KEL has also provided several custom made solutions to suit customers in process gauging components and machines.



Main Features

- 3 point Steady Rest with carbide pad support.
- Greater accuracy for today's tolerance limit.
- Models for crank shaft and cam shaft.
- Less down time for Steady Rest adjustment.
- The follow down operation allows all supporting pads to move towards the centre as the part size diminishes. This feature provides continuous support while the part is being ground.
- Pass through grinding.
- Easy retro fitting in ordinary cylindrical grinders.
- Actuation from simple hydraulic power pack of machine using manual / PLC solenoid operated DC valve.
- More parts per hour.
- Increase grinding wheel life.
- Custom models to meet your exact application.
- Vertical loading by gantry for special models.





**STEADY
REST**

Steady Rest for standard grinding application

GHS series

GHS Series

Steady Rest for standard grinding application

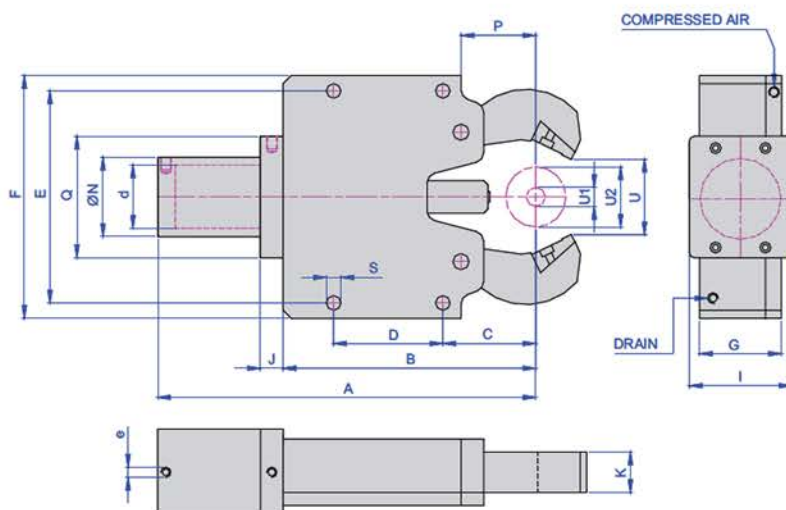
This series is for all standard grinding applications such as cylindrical grinding, camshaft grinding, camlobe grinding etc. We also manufacture custom designs to accommodate in-process gauge.



Steady Rest

Dimensions

	GHS 260E	GHS260H	GHS 1012A
A	246	241.6	463
B	147	146.5	312
C	56	38	115
D	65	65	135
E	128	128	262
F	146	146	300
G	44	44	85
I	44	44	85
J	23	23	25
K	20	20	45
N	44	42	65
P	38	56	87
Q	96	96	110
S	M12x1.75P	12	18



Specifications

		GHS 260E	GHS260H	GHS 1012A
Clamping Ranges	U1	20	14	10
	U2	60	50	120
Max. axial Opening	U	62	48	122
Cylinder bore.	d	30	30	80
Hyd. Connection. (BSP)	e	1/4"	1/4"	1/4"
Standard Operating Pressure	bar	1-10	2-10	2-15
Max. Operating pressure	bar	15	15	20
Clamp. Press./Pad at 6 bar	daN	25	25	100
Max. clamp pressure/Pad.	daN	100	100	1000
Centering accuracy over the whole clamping range.	mm	0.008	0.005	0.01
Repeatability	mm	0.003	0.002	0.003
Weight Approx.	kg	7	7	42



**STEADY
REST**

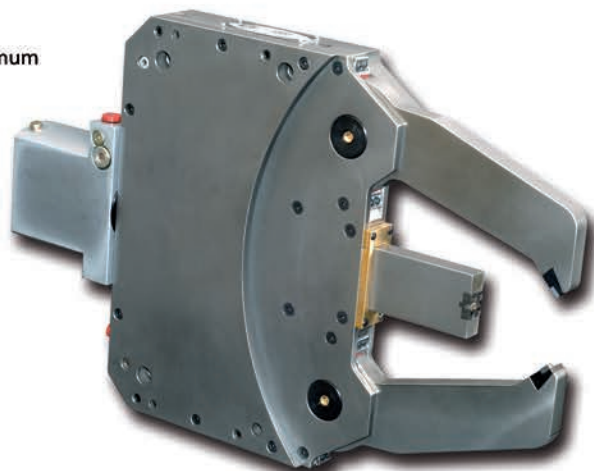
For crank shaft grinding application

KRGU series

KRGU Series

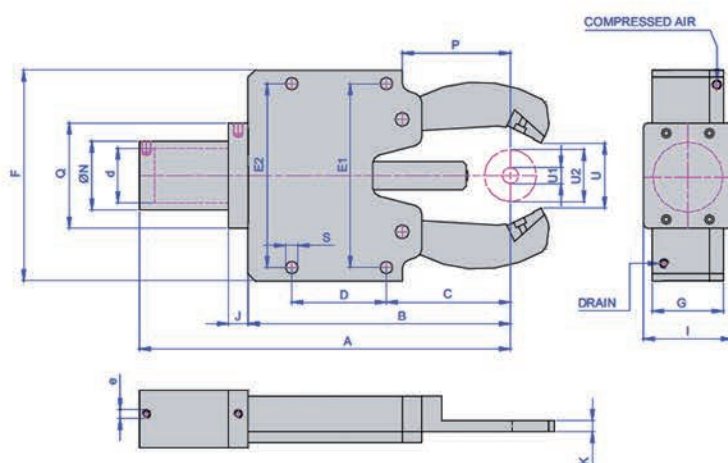
Steady Rest for crank shaft grinding application

This series is specially designed for crank shaft grinding to accommodate the maximum eccentric throw and journal diameter of crank shafts. Custom made designs are available to accommodate in-process gauge and vertical loading.



Dimensions

	KRGHS 790.	KRGU1517	KRGHS 9580	KRGU4510	KRGHS9585
A	420	518.5	565	516.5	591
B	323	423	444	408	444
C	190	230	254	215	254
D	90	135	142	135	142
E1	202	262	350	262	350
E2	202	262	320	262	350
F	234	290	400	290	400
G	55	64	64	62	64
I	62	68	73	68	72
J	25	33	26	33	25
K	10	16	17/35*	24	21
N	53	105	107	119	95
P	150	206.4	186	185	186
Q	95	141	107	148	130
S	M12X1.75	14	18	14	18



Specifications

		KRGHS 790.	KRGU1517	KRGHS 9580	KRGU4510	KRGHS9585
Clamping Ranges	U1	70	150	95	45	95
	U2	90	170	185	105	185
Max. axial Opening	U	98	181	195	125	210
Eccentric throw (R value)	R	120	175	170/285*	125	285
Cylinder bore.	d	40	50	60	50	60
Hyd. Connection. (BSP)	e	¼"	¼"	¼"	¼"	¼"
Standard Operating Pressure	bar	1-10	6-30	5-18	6-30	12-45
Max. Operating pressure	bar	15	35	20	35	60
Clamp. Press./Pad at 6 bar	daN	25	180	56	180	56
Max. clamp pressure/Pad.	daN	60	196	180	196	425
Centering accuracy over the whole clamping range.	mm	0.004	0.01	0.010	0.01	0.01
Repeatability	mm	0.005	0.004	0.005	0.004	0.004
Weight Approx.	kg	20	55	60	50	65



**STEADY
REST**

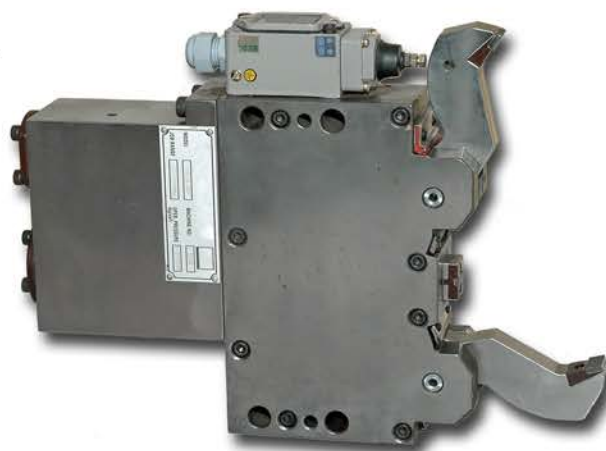
For grinding application with vertical loading

VGHS series

VGHS Series

Steady Rest for grinding application with vertical loading

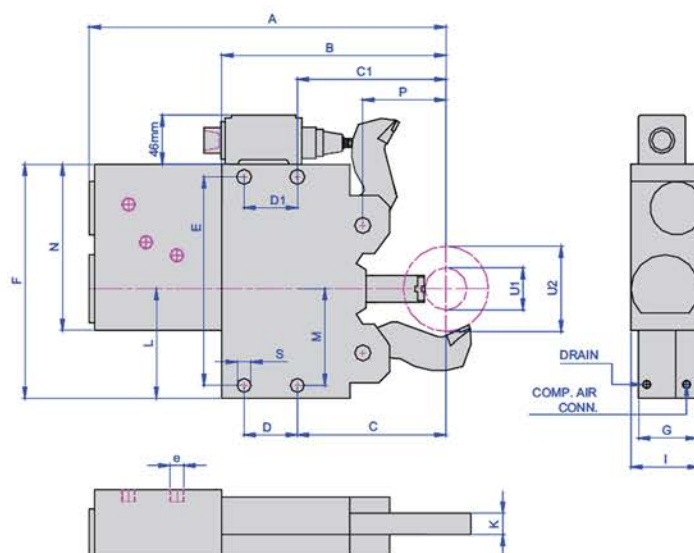
These Steadies are for cylindrical and camshaft grinding. This series is designed to be used on machines where GHS series Steadies cannot be used. It comes with a top arm which is fully openable so as to load components to the machine centre. The opening action can be identified through a sensor integrated to the Steady itself.



Steady Rest

Dimensions

	VGHS 260.	VGHS 480
A	335	335
B	210	210
C	139.5	139.5
D	50	50
E	195	195
F	214	214
G	55	55
I	60	60
K	20	20
L	102	102
M	90	90
N	156	156
P	78	78
S	Ø13	Ø13
U1	20	40



Specifications

		VGHS 260.	VGHS 480
Centering Ranges	U1	20	40
	U2	60	80
Cylinder bore.	d	40	40
Hyd. Connection. (BSP)	e	¼"	¼"
Standard Operating Pressure	bar	3-15	3-15
Max. Operating pressure	bar	20	20
Clamp. Press./Pad. at 6 bar	daN	25	25
Max. clamp pressure/Pad.	daN	100	100
Centering accuracy over the whole clamping range.	mm	0.005	0.005
Repeatability	mm	0.002	0.002
Weight Approx.	kg	17	17



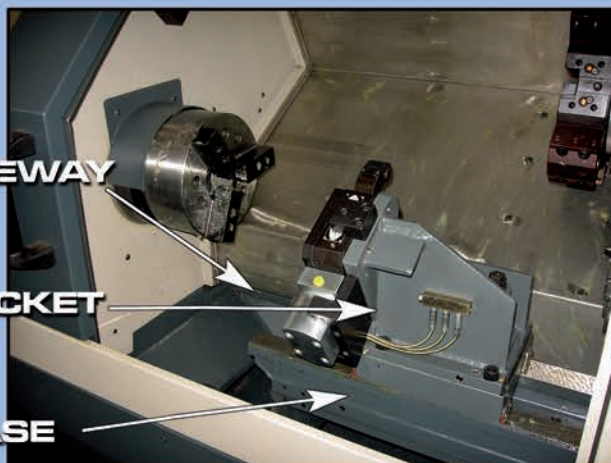
**STEADY
REST**

APPLICATIONS

Steady Rests on Slant Bed Machines

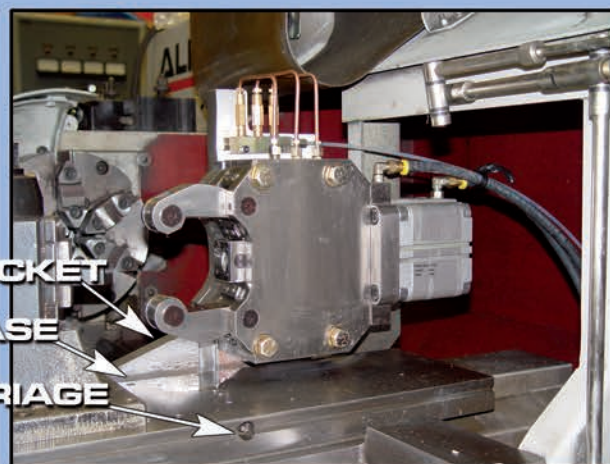
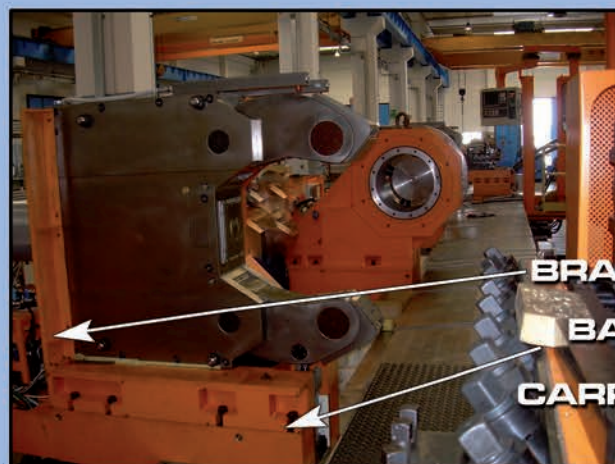
Machine with slant tailstock guideway

Machine with flat tailstock guideway



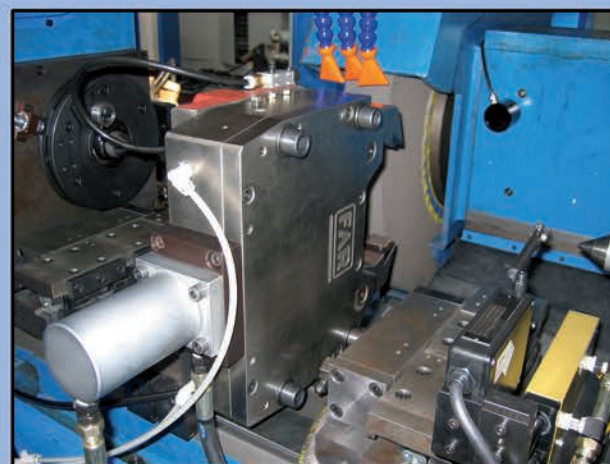
Steady Rests on Flat Bed Machines

Travelling Application



Steady Rest on Milling Machines

Steady Rest on Grinding Machines





**STEADY
REST**

STEADY ORDER CHECKLIST

Steady Rest Options

Steady Rest Clamping Range (mm)	4-64	8-101	12-152	20-165	50-200	30-245	45-310	85-350	125-460	200-530	230-630

Model	FRU (rear mounted cylinder)	FRUB (side mounted cylinder)	FRUA (rear mounted cylinder with extra opening for top arm)	FRUAB (side mounted cylinder with extra opening for top arm)

Special Steady	Required clamping range	Applicable arm thickness	Special application	Component weight	Any other request

Steady Rest Operated by	Hydraulic	Compressed Air

Steady Rest Mode of Operation	Fixed	Travelling

Steady Rest Lubrication	Manual	Automatic

Bracket Options

Bracket Mounting Details	Adaptor plate for	Bracket for TS guide	Bracket for TS guide	Bracket for flat bed

Steady Mounting Side	Left (chuck side)	Right (tailstock side)	Both

Bracket Base Lubrication	Manual Grease	Automatic Central Lubrication

Additional Requirements

Hydraulic Unit	Hoses and Fittings	Entire elements including hose, solenoid valve etc	Hydraulic powerpack unit	Lubrication unit with elements

Global Network



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