

# Maximum Rating Tables

Size 860 • GR & EL Series



Single Reduction  
Worm Gear Reducers

Double Reduction  
Worm - Worm Gear Reducers

Double Reduction  
Helical - Worm Gear Reducers

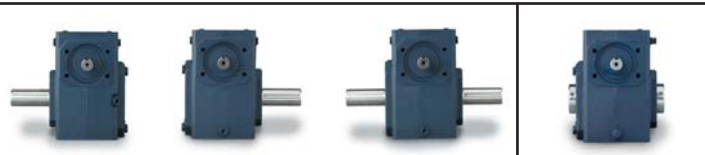
WASHGUARD® Reducers  
and GEAR+MOTOR™

Ratio Multipliers

Accessories and  
Additional Capabilities

Style B

Style H



**Size 860**









Ratio	Input RPM	Output RPM	Input HP	Output HP	Output Torque (lb-in)	Left Hand Catalog No.	Right Hand Catalog No.	Double Extension Catalog No.	Hollow Output Catalog No.*
<b>5</b>	2500	500	39.83	38.29	4827	_8600085	_8600090	_8600095	_8600501.XX
	1750	350	35.10	33.70	6068				
	1170	234	29.94	28.69	7726				
<b>7.5</b>	100	20	6.203	5.581	17587	_8600086	_8600091	_8600096	_8600502.XX
	2500	333	34.20	32.60	6163				
	1750	233	29.98	28.52	7704				
<b>10</b>	1170	156	25.41	24.11	9740	_8600001	_8600008	_8600015	_8600503.XX
	100	13	5.018	4.371	20662				
	2500	250	28.53	26.90	6782				
<b>15</b>	1750	175	24.99	23.51	8467	_8600002	_8600009	_8600016	_8600504.XX
	1170	117	21.17	19.84	10687				
	100	10	4.198	3.542	22324				
<b>20</b>	2500	166	21.95	20.17	7628	_8600003	_8600010	_8600017	_8600505.XX
	1750	116	19.23	17.61	9515				
	1170	78	16.30	14.85	11996				
<b>25</b>	100	6.7	3.337	2.623	24797	_8600004	_8600011	_8600018	_8600507.XX
	2500	125	17.93	16.11	8123				
	1750	87	15.71	14.06	10127				
<b>30</b>	1170	58	13.32	11.84	12758	_8600005	_8600012	_8600019	_8600508.XX
	100	5.0	2.805	2.078	26194				
	2500	100	14.89	13.04	8219				
<b>40</b>	1750	70	13.06	11.378	10245	_8600006	_8600013	_8600020	_8600509.XX
	1170	46	11.094	9.582	12903				
	100	4.0	2.418	1.678	26436				
<b>50</b>	2500	83	12.73	10.87	8222	_8600007	_8600014	_8600021	_8600510.XX
	1750	58	11.177	9.486	10249				
	1170	39	9.507	7.989	12911				
<b>60</b>	100	3.3	2.143	1.400	26480	_8600008	_8600093	_8600098	_8600511.XX
	2500	62	9.922	8.119	8187				
	1750	43	8.722	7.083	10203				
<b>80</b>	1170	29	7.433	5.963	12848	_8600009	_8600094	_8600099	_8600512.XX
	100	2.5	1.761	1.042	26260				
	2500	50	8.226	6.417	8088				
<b>100</b>	1750	35	7.242	5.597	10079	_8600088	_8600093	_8600098	_8600511.XX
	1170	23	6.188	4.712	12691				
	100	2.0	1.544	0.823	25925				
<b>100</b>	2500	41	6.977	5.202	7869	_8600089	_8600094	_8600099	_8600512.XX
	1750	29	6.152	4.539	9808				
	1170	19	5.269	3.822	12352				
<b>100</b>	100	1.7	1.376	0.669	25283	_8600088	_8600093	_8600098	_8600511.XX
	2500	31	4.130	2.939	5962				
	1750	21	3.702	2.522	7264				
<b>100</b>	100	1.3	0.950	0.382	19249	_8600089	_8600094	_8600099	_8600512.XX
	2500	25	2.849	1.905	4802				
	1750	17	2.571	1.635	5886				
<b>100</b>	1170	11	2.323	1.376	7408	_8600089	_8600094	_8600099	_8600512.XX
	100	1.0	0.686	0.244	15389				

**How To Build a Part Number For Size GR860, EL860**

1. Select partial catalog number from the selection table
2. Replace leading “\_” with series code (GR, EL)
3. For hollow output, replace “XX” suffix with bore code (see next page for codes)

**Example:**

Grove Gear IRONMAN, style B, 5:1 ratio, left hand output  
 GR-B860-5-L  
 GR8600085

	Style BM			Style HM	Style BMQ			Style HMQ	
									
NEMA C Input Flange ▲	Left Hand Catalog No.	Right Hand Catalog No.	Double Extension Catalog No.	Hollow Output Catalog No.*	Left Hand Catalog No.	Right Hand Catalog No.	Double Extension Catalog No.	Hollow Output Catalog No.*	Ratio
254-6TC	__8600130	__8600135	__8600140	__8600537.XX	__8600289	__8600301	__8600313	__8600597.XX	5
254-6TC	__8600131	__8600136	__8600141	__8600538.XX	__8600290	__8600302	__8600314	__8600598.XX	7.5
213-5TC 254-6TC	__8600043 __8600064	__8600050 __8600071	__8600057 __8600078	__8600527.XX __8600539.XX	__8600255 __8600291	__8600267 __8600303	__8600279 __8600315	__8600587.XX __8600599.XX	10
213-5TC 254-6TC	__8600044 __8600065	__8600051 __8600072	__8600058 __8600079	__8600528.XX __8600540.XX	__8600256 __8600292	__8600268 __8600304	__8600280 __8600316	__8600588.XX __8600600.XX	15
182-4TC 213-5TC	__8600024 __8600045	__8600031 __8600052	__8600038 __8600059	__8600517.XX __8600529.XX	__8600221 __8600257	__8600233 __8600269	__8600245 __8600281	__8600577.XX __8600589.XX	20
182-4TC 213-5TC	__8600102 __8600117	__8600107 __8600122	__8600112 __8600127	__8600518.XX __8600530.XX	__8600222 __8600258	__8600234 __8600270	__8600246 __8600282	__8600578.XX __8600590.XX	25
182-4TC 213-5TC	__8600025 __8600046	__8600032 __8600053	__8600039 __8600060	__8600519.XX __8600531.XX	__8600223 __8600259	__8600235 __8600271	__8600247 __8600283	__8600579.XX __8600591.XX	30
182-4TC 213-5TC	__8600026 __8600047	__8600033 __8600054	__8600040 __8600061	__8600520.XX __8600532.XX	__8600224 __8600260	__8600236 __8600272	__8600248 __8600284	__8600580.XX __8600592.XX	40
182-4TC	__8600027	__8600034	__8600041	__8600521.XX	__8600225	__8600237	__8600249	__8600581.XX	50
143-5TC 182-4TC	__8600028	__8600035	__8600042	__8600522.XX	__8600190 __8600226	__8600202 __8600238	__8600214 __8600250	__8600570.XX __8600582.XX	60
143-5TC 182-4TC	__8600103	__8600108	__8600113	__8600523.XX	__8600191 __8600227	__8600203 __8600239	__8600215 __8600251	__8600571.XX __8600583.XX	80
143-5TC 182-4TC	__8600104	__8600109	__8600114	__8600524.XX	__8600192 __8600228	__8600204 __8600240	__8600216 __8600252	__8600572.XX __8600584.XX	100

For input/ output shaft overhung load and thrust load ratings, refer to pages 419-422.

▲ Consult Factory for other motor flanges available.

\* Catalog numbers are for hollow output shaft reducers.

When ordering, substitute the XX suffix with the required output bore code.

### Available bore codes

Fraction Size	2"	2-3/16"	2-1/4"	2-7/16"	2-1/2"	2-11/16"	2-15/16"	3"	3-3/16"	3-7/16"
Decimal Size	2.000	2.188	2.250	2.438	2.500	2.688	2.938	3.000	3.188	3.438
Output Bore Code	32	35	36	39	40	43	47	48	51	55

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Ratio Multipliers

Accessories and  
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# GR Series Dimensions

Styles: FHM, FHM, FH

**CAST IRON**  
**GR SERIES**

Single Reduction  
Worm Gear Reducers

Double Reduction  
Worm - Worm Gear Reducers

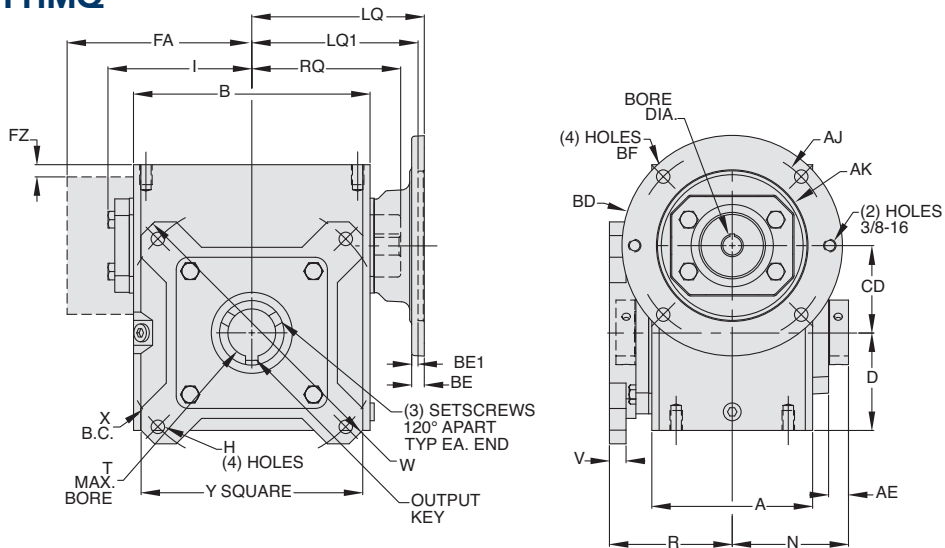
Double Reduction  
Helical - Worm Gear Reducers

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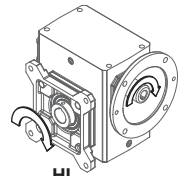
Ratio Multipliers

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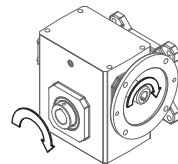
## Style FHM



### ASSEMBLIES

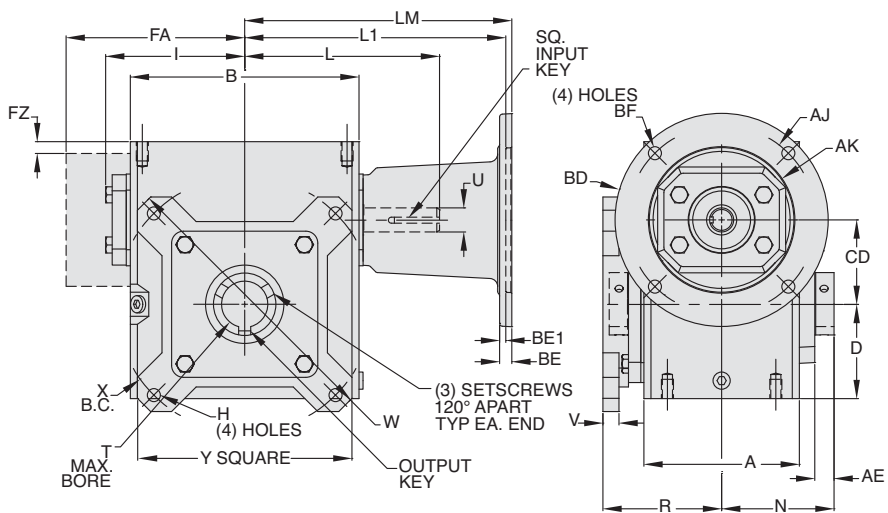


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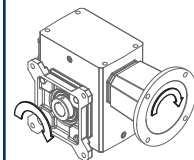


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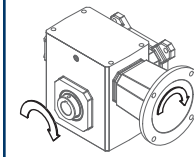
## Style FHM



### ASSEMBLIES

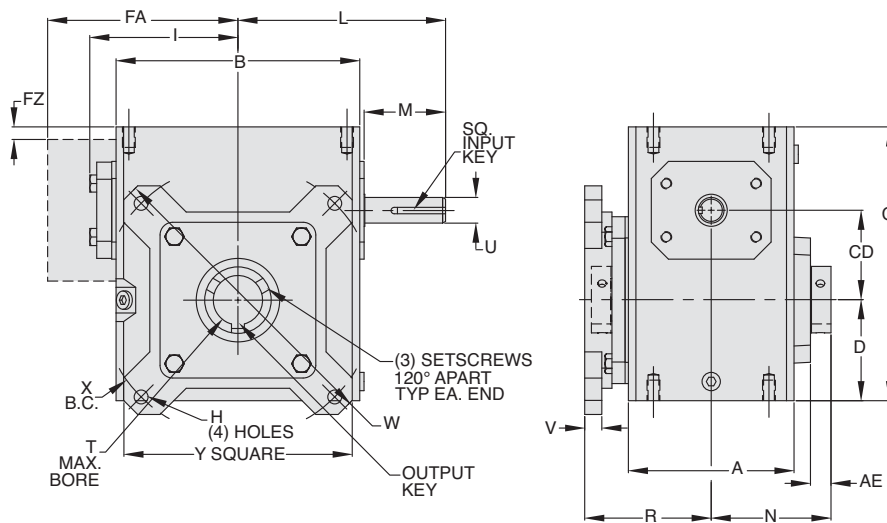


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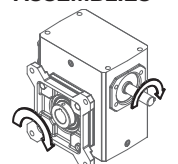


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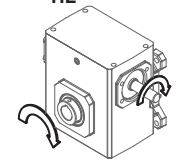
## Style FH



### ASSEMBLIES



HL



HR

REVERSE ALL ARROWS FOR OPPOSITE INPUT SHAFT ROTATION. CONTACT FACTORY FOR OTHER MOUNTINGS OR ASSEMBLY POSITIONS.



**STYLE FHM, FHM, FH DIMENSIONS (Inches)**

Series	A	B	BB	C	D	CD	FA t	FZ t	H	I	L	M	N	O	R	V	W	X	Y	T MAX+ -0.000 +0.0025	U +0.000 -0.0015	Input Key*	Output Key
GR813	2.82	3.80	0.675	4.66	1.72	1.33	N/A	N/A	0.03	2.61	3.82	1.76	4.00	1.94	2.52	0.38	5.92	5.00	4.50	0.625	0.500	1/8 x 1.00	3/16 x 1.50
GR815	3.44	4.88	0.675	5.38	1.91	1.54	N/A	N/A	0.03	3.14	4.35	1.76	4.31	1.90	2.87	0.38	5.88	5.00	4.50	0.750	0.625	3/16 x 1.38	3/16 x 1.50
GR818	3.56	5.06	0.925	5.75	2.06	1.75	N/A	N/A	0.03	3.24	4.45	1.76	4.31	1.84	3.18	0.38	6.64	5.88	5.00	0.875	0.625	3/16 x 1.38	3/16 x 1.38
GR821	3.81	5.80	1.240	6.38	2.28	2.06	N/A	N/A	0.41	3.61	4.82	1.76	4.68	2.08	3.69	0.44	7.88	7.00	5.99	1.000	0.625	3/16 x 1.38	1/4 x 1.44
GR824	4.06	6.12	1.560	6.94	2.50	2.38	N/A	N/A	0.41	3.77	5.51	2.38	5.14	2.44	3.73	0.44	8.39	7.50	6.27	1.125	0.750	3/16 x 1.63	1/4 x 1.75
GR826x	4.84	7.12	0.796	8.00	2.94	2.63	N/A	N/A	0.41	4.34	6.07	2.38	5.63	2.52	3.70	0.50	8.88	8.00	6.67	1.125	0.750	3/16 x 1.63	1/4 x 1.75
GR830	5.25	8.12	0.636	8.88	3.25	3.00	N/A	N/A	0.41	4.84	6.57	2.38	6.75	3.36	3.78	0.50	9.89	9.00	7.37	1.250	0.875	3/16 x 1.63	1/4 x 1.75
GR832x	5.75	8.50	0.636	9.38	3.50	3.25	N/A	N/A	0.41	5.02	6.76	2.38	7.06	3.42	4.03	0.50	9.89	9.00	7.37	1.688	0.875	3/16 x 1.63	3/8 x 2.25
GR842	6.13	10.25	0.940	11.38	4.44	4.25	N/A	N/A	0.56	6.10	9.57	3.47	8.12	4.21	4.56	0.62	12.95	11.50	9.65	1.875	1.250	1/4 x 2.50	1/2 x 3.06
GR852	7.19	13.00	1.340	14.00	5.12	5.25	N/A	N/A	0.69	7.50	10.88	3.38	9.16	4.53	5.62	0.75	15.50	14.00	11.75	2.000	1.250	1/4 x 3.00	1/2 x 3.50
GR860	8.13	14.25	2.603	16.50	6.50	6.00	11.13	0.33	0.69	N/A	11.78	3.41	10.00	4.65	7.26	0.75	18.00	15.63	14.00	2.500	1.500	3/8 x 3.00	5/8 x 4.00
GR870	7.63	14.88	2.770	18.91	7.59	7.00	11.37	0.35	0.78	N/A	11.50	2.97	11.76	5.65	7.45	0.75	21.00	18.38	15.63	2.750	1.625	3/8 x 2.87**	5/8 x 4.00**
GR880	8.63	17.00	3.090	20.96	8.86	8.00	12.52	0.57	1.03	N/A	12.50	2.84	12.25	5.98	8.34	0.75	24.00	21.00	17.88	3.000	1.875	1/2 x 2.81**	3/4 x 4.50**
GR8100	9.53	20.88	3.298	25.47	10.36	10.00	14.69	0.51	1.03	N/A	15.50	3.76	14.75	6.76	9.07	1.00	29.00	25.00	21.19	3.750	2.250	1/2 x 3.69**	7/8 x 5.00**

**FEATURE COMPARISON (821)**

Size	Output Shaft Diameter Needed?	Mounting Footprint Needed?	All Other Features	Grove Gear Flexaline Interchange	LEESON IRONMAN Interchange	Replace With Series Code Below:
821	Identical	Identical	Identical	✓	✓	GRL

◊ If Accessory kit is removed, dimensions will vary. NOTE: If reducer is used without the accessory mounted, select based mounting dimensions on pages 52-53 (B, BM, BMQ).

**Motor Mounting Dimensions**

**NEMA DIMENSIONS (Inches)**

Size	LM		L1	LQ	180TC	LQ1	250TC	RQ			
	48CZ/140TC	56C/140TC						180TC/210TC	250TC	48CZ/56C/140TC	180TC
GR813	5.63	6.07	N/A	3.46	N/A	N/A	N/A	3.09	N/A	N/A	N/A
GR815	6.16	6.60	N/A	3.99	N/A	N/A	N/A	3.62	N/A	N/A	N/A
GR818	6.26	6.70	N/A	4.09	N/A	N/A	N/A	3.59	N/A	N/A	N/A
GR821*	6.63	7.07	N/A	4.46	N/A	N/A	N/A	4.06	N/A	N/A	N/A
GR824	N/A	7.76	8.76	4.63	5.06	N/A	N/A	4.09	4.56	N/A	N/A
GR826*	N/A	8.32	9.32	5.19	5.62	N/A	N/A	4.82	5.13	N/A	N/A
GR830	N/A	8.82	9.82	5.95	6.15	6.56	N/A	5.32	5.63	6.06	N/A
GR832*	N/A	9.01	10.01	6.14	6.34	6.75	N/A	5.51	5.81	6.25	N/A
GR842	N/A	11.81	12.90	6.45	7.21	7.21	7.77	6.04	6.68	6.68	7.24
GR852	N/A	13.21	14.30	7.85	8.61	8.61	9.17	7.35	7.98	7.98	8.54
GR860	N/A	N/A	15.88	16.50	10.45	9.33	9.33	9.94	10.01	8.69	8.69
GR870	N/A	N/A	15.50	15.50	N/A	N/A	N/A	N/A	N/A	N/A	N/A
GR880	N/A	N/A	16.58	16.58	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**NEMA DIMENSIONS (Inches)**

Frame	AjB	AK	BD	BE	BE1	Bore Dia.	Keyway	BFB
48CZ	3.75	3.00	4.36	0.38	N/A	.500	1/8 X 1/16	0.28
56C	5.88	4.50	6.50	0.38	N/A	.625	3/16 X 3/32	0.41
140TC	5.88	4.50	6.50	0.38	N/A	.875	3/16 X 3/32	0.41
180TC	7.25	8.50	9.00	N/A	0.50	1.125	1/4 X 1/8	0.53
210TC	7.25	8.50	9.00	N/A	0.50	1.375	5/16 X 5/32	0.53
250TC	7.25	8.50	9.00	N/A	0.50	1.625	3/8 X 3/16	0.53

**IEC B5 & B3/B5 METRIC DIMENSIONS (Inches)**

Size	LQ1							RQ					
	D63D	D71D	D80D	D90D	D100LD/D112MD	D132D	D63D	D71D	D80D	D90D	D100LD/D112MD	D132D	
GR813	2.62	2.65	2.89	N/A	N/A	N/A	2.45	2.47	2.71	N/A	N/A	N/A	
GR815	3.15	3.18	3.42	N/A	N/A	N/A	2.98	3.00	3.24	N/A	N/A	N/A	
GR818	3.25	3.28	3.52	N/A	N/A	N/A	2.95	2.97	3.21	N/A	N/A	N/A	
GR821*	3.62	3.65	3.89	N/A	N/A	N/A	3.43	3.44	3.68	N/A	N/A	N/A	
GR824	N/A	3.72	4.34	N/A	N/A	N/A	3.46	3.71	N/A	N/A	N/A	N/A	
GR826*	N/A	4.28	4.90	4.90	5.30	N/A	N/A	4.09	4.72	4.72	5.07	N/A	
GR830	N/A	4.78	5.41	5.41	5.88	N/A	N/A	4.59	5.22	5.22	5.57	N/A	
GR832*	N/A	4.97	5.59	5.59	6.07	N/A	N/A	4.78	5.41	5.41	5.76	N/A	
GR842	N/A	N/A	N/A	6.38	6.39	7.17	N/A	N/A	N/A	6.16	6.14	6.93	
GR852	N/A	N/A	N/A	7.78	7.78	8.57	N/A	N/A	N/A	7.46	7.45	8.24	

**IEC B5 & B3/B5 METRIC DIMENSIONS (MM)**

Frame	AJ	AK	BD	BE	Bore Dia.	Keyway	BF TAP	OD
D63D	115	95	117	10	11	4 X 2	M8 X 1.25	131
D71D	130	110	132	11	14	5 X 2.5	M8 X 1.25	146
D80D	165	130	165	15	19	6 X 3	M10 X 1.50	184
D90D	165	130	165	15	24	8 X 3.5	M10 X 1.50	184
D100LD/D112MD	215	180	216	18	28	8 X 3.5	M12 X 1.75	237
D132D	265	230	267	18	38	10 X 4	M12 X 1.75	290

⚡ Max bore dimensions shown. For additional bores available, refer to page 20.

\* Applies to double output shaft

\*\* Key not provided with gear reducer. Keyway dimension shown.

◆ Keyway width by depth

⚙ Mounting holes rotated 45 degrees from positions shown on Size GR860, Style FHM with frame sizes 180TC-250TC.

■ 48CZ not available

● 180TC not available

⚡ Metric IEC B5 input flange options are available only on quill input styles.

\* Dimensions same for GRG and GRL Series

\* Style FH and FHM only.

▼ Sizes 860-8100 are supplied with a fan. Dimensions refer to fan guard location.



**WARNING** For safety, purchaser or user should provide protective guards over shaft extensions and any couplings, sheaves and belts, sprockets and chains, etc., mounted thereon.

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Ratio Multipliers

Accessories and  
Additional Capabilities